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THE FUTURE OF ASEAN LOGISTICS

29 November 2022

Transport | Logistics

Logistics

The Future Of ASEAN Logistics

- **As the demand for logistics services continue to grow in ASEAN, the governments of Indonesia, Malaysia, Singapore and Thailand have embarked on strategies to encourage the sector in their own countries to move up the value chain.** That said, Singapore has enjoyed extraordinary success in this respect, over the past few decades. In this thematic report, we elaborate on the key issues of logistics businesses in the countries under our coverage.
- **Demand for logistics services in Indonesia is underpinned by a rising middle-income segment**. The transportation & warehousing segment contributed 4.8% of 1H22 GDP, marking the highest growth of all sectors (+21.3% YoY). Indonesia's logistics sector revenue is expected to chart a 7.9% CAGR to reach USD300.3bn in 2024, supported by growing disposable income, high internet and mobile penetration, and rapid e-commerce development. Indonesia relies on long-distance transportation, so upgrading seaports and airports is key to the development of the logistics sector itself. We like pure logistics players like Adi Sarana Armada, Satria Antaran Prima, the shipping company Pelita Samudera Shipping, and Blue Bird which venturing into the logistics business.
- **Malaysia's logistics sector contributed 3.8% of GDP in 2019.** Furthermore, the freight and logistics market is expected to expand at a >4% CAGR over 2022-2027. Efforts to develop this sector have borne fruit, and there are supportive policies boosting different sub-sectors like freight, third-party logistics (3PL), couriers and airports. Meanwhile, Malaysian Investment Development Authority (MIDA) has also implemented attractive tax incentives that have benefited 3PL players like TASCO. This sector pick's near-term performance should be underpinned by robust trade flows and new business wins.
- **Singapore's logistics sector is in a sweet spot.** The country should maintain its pole position as Asia's top logistics hub on the back of supply chain shifts, government policies and major infrastructure upgrades to its seaport and airport. The Singapore Government expects the logistics sector to post an annual value-added (VA) growth of 2% to SGD6.9bn by 2025 (2020: SGD6.2bn) and add 2,000 new jobs. We expect the demand for warehouses to remain robust. Overall, logistics players should still enjoy healthy occupancy rates and rental rates increase. We like ESR LOGOS REIT, AIMS APAC REIT and CapitaLand Ascendas REIT.
- **Thailand is upgrading its railway systems and road networks to strengthen its logistics industry** (which accounts for 6% of GDP). Although there have been delays in launching new infrastructure projects, the ratio of logistics cost-to-GDP declined to 13.2% prior to the pandemic. Higher inventory costs, meanwhile, should be mitigated by the upgrade of low-cost transportation modes. Our country picks: Bangkok Expressway & Metro (highly likely to win new concessions) and WHA Corp (set to benefit from a pick-up in demand for logistics services like warehouses).

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Company Name	Rating	Target	% Upside (Downside)	P/E (x) Dec-23F	P/B (x) Dec-23F	ROAE (%) Dec-23F	Yield (%) Dec-23F
AIMS APAC REIT	Buy	SGD1.48	21.0	9.8	0.8	8.7	7.8
Bangkok Expressway and Metro	Buy	THB11.00	18.9	39.7	3.5	9.1	1.6
Blue Bird	Buy	IDR1,900	22.6	13.4	0.7	6.7	1.8
ESR-LOGOS REIT	Buy	SGD0.46	33.0	10.8	0.9	8.8	8.1
FM Global Logistics	Buy	MYR1.01	81.2	6.9	0.8	11.8	7.2
TASCO	Buy	MYR1.75	92.8	7.5	1.1	16.3	4.0
WHA Corp	Buy	THB4.35	16.9	13.1	1.8	14.3	4.3

Source: Company data, RHB

Convergence Of ASEAN Logistics

Optimistic over regional collaboration

Among the ASEAN member countries covered in this report, only Singapore has been ranked among the top positions, at no. 7 out of 160 countries measured by the World Bank's 2018 Logistics Performance Index (LPI) score. Singapore's score was comparable to Europe's developed nations, while the other three countries – Indonesia, Malaysia and Thailand – also performed better than the majority of countries within the list and their ranks were not so much different from each other. For the LPI scores aggregated from 2012 to 2018, the ranking pattern for these four countries was also the same – Singapore led the pack, and other three were ranked close to one other.

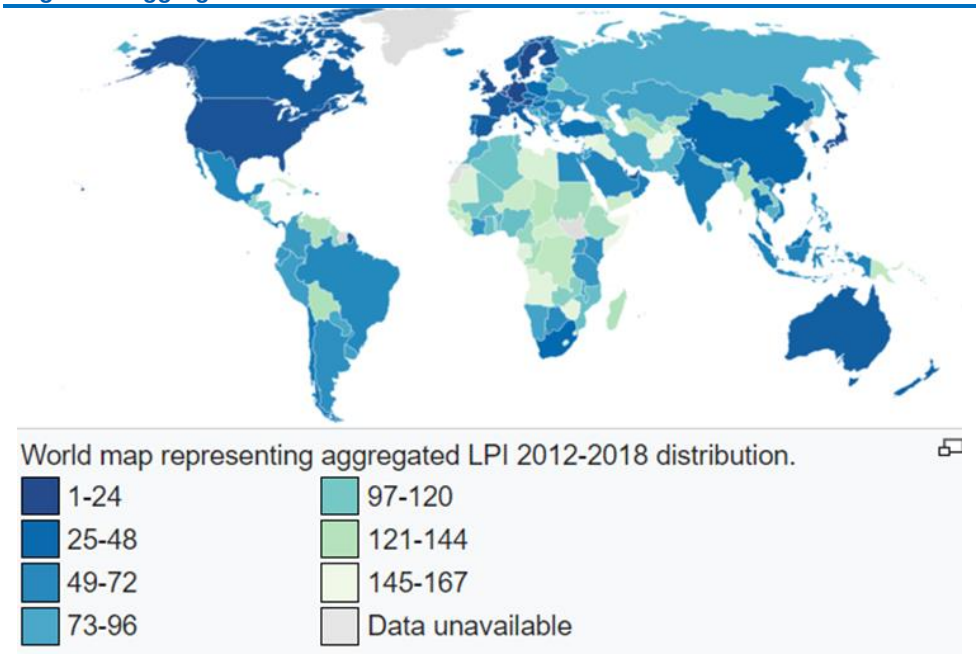
Meanwhile, the quality of their logistics-related infrastructure has put mild pressure on the LPI scores for Thailand, Malaysia, and Indonesia. That said, all three countries should be able to mitigate this by offering a high quality of logistics services. In summary, we believe that these four ASEAN nations can work together to create positive synergies in areas like regional infrastructure connectivity, eliminating logistics barriers across borders, enhancing the efficiency of the clearance process.

Figure 1: Singapore had the best LPI score, while Malaysia, Indonesia, Thailand were close to one another in the medium-top rankings

2018	Overall ranking	LPI score	Aggregated LPI 2012-2018	Rank	LPI score	Score on infrastructure dimension (Quality of trade and transport-related infrastructure)
Germany	1	4.20	Germany	1	4.19	4.38
Sweden	2	4.05	Netherlands	2	4.07	4.23
Belgium	3	4.04	Sweden	3	4.07	4.22
Austria	4	4.03	Belgium	4	4.05	4.03
Japan	5	4.03	**Singapore**	**5**	**4.05**	**4.14**
Netherlands	6	4.02	UK	6	4.01	4.09
Singapore	**7**	**4.00**	Japan	7	3.99	4.19
Thailand	**32**	**3.41**	**Thailand**	**34**	**3.36**	**3.17**
Malaysia	**41**	**3.22**	**Malaysia**	**35**	**3.34**	**3.30**
Indonesia	**46**	**3.15**	**Indonesia**	**51**	**3.08**	**2.81**

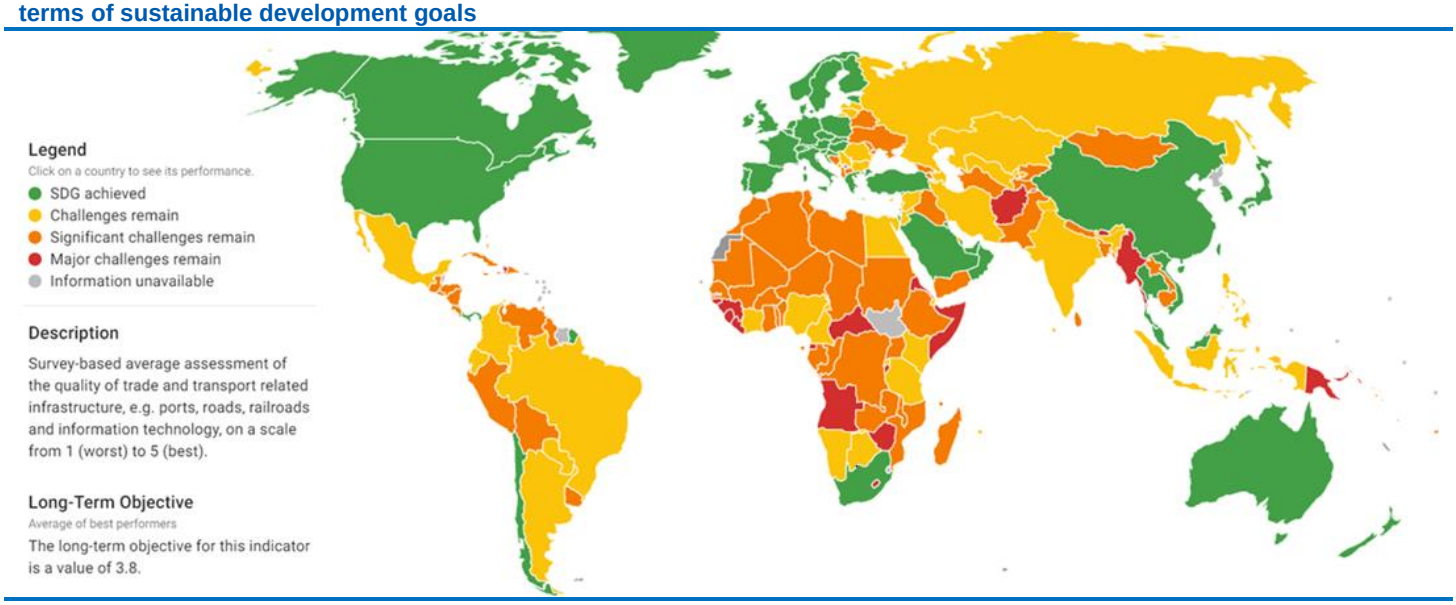
Source: World Bank

Figure 2: Aggregated LPI scores for 2012-2018



Source: World Bank

Figure 3: The quality of trade and transport-related infrastructure in Malaysia, Singapore, and Thailand has been achieved, in terms of sustainable development goals



Source: World Bank

Proprietary forces to inevitably drive logistics activities in the region

Although all four countries under our coverage are in the top tiers of the LPI, their infrastructure development should progress according to their own long-term government masterplans. As the logistics sector contributed to 1-6% of GDP – the lowest percentage in Singapore, the highest in Thailand – developing the logistics sectors is necessary to improve the value-add of logistic service providers themselves.

There are also several market mechanisms driving the demand for logistics activities within the region and for a better quality of logistics-related infrastructure to support any ramp-up in activities in the future. These mechanisms include: i) International and intra-regional trade playing a more important role; ii) realising the benefit of such upgrades to FDI inflows into these countries, iii) the e-commerce boom, iv) new transportation platforms being in compliance with long-term sustainability initiatives, and v) robots and automation enhancing productivity. For Singapore and Indonesia, both are focusing on developing new projects to enhance their marine and air transportation. Malaysia is likely to upgrade broad-based transportation modes, and Thailand is gearing towards new road and railway projects.

Figure 4: Thailand was tops in terms of length of road network, while Singapore was the leader in terms of best-paved roads throughout the country

Road network	Total length (KM)	Road density (KM per sq KM)
Thailand	702,577	137
Indonesia	544.474	28
Malaysia	238,823	72
Singapore	3,500	489

Source: Organisation for Economic Co-operation and Develoment (OECD)

Figure 5: Singapore has the shortest length of railways – almost all of its network uses electric trains. Indonesia and Thailand have the longest railway lengths.

Railway network	Total length (KM)	Population per KM
Indonesia	7,032	39,306
Thailand	4,351	16,077
Malaysia	2,783	11,779
Singapore	240	22,725

Source: OECD

Figure 6: Singapore still has the busiest marine logistics industry in the region

Seaport	Container port traffic (million TEU)	Number of ports (Seaports and river ports)
Singapore	37.98	2
Malaysia	26.22	25
Indonesia	14.76	154
Thailand	10.76	21

Source: World Port Source

Figure 7: Airport upgrades should be the key strategy for developing air transportation services in all four countries

Seaport	Number of international airports	Number of domestic airports
Singapore	2	-
Malaysia	6	16
Indonesia	32	163
Thailand	12	23

Source: OECD

Different but similar angles for each country to focus on

There are normally five major elements of logistics management:

i. **Storage, warehousing and materials handling**, to balance steady supply from manufacturers and unpredictable demand from consumers by storing the surplus goods in facilities with the assistance of specialist storage equipment.

ii. **Packaging and unitisation** which are necessary for the maintenance and safe transportation and delivery of goods.

iii. **Inventory management** to control the balance between demand and supply, and manage the flows of goods through the supply chain,

iv. **Transport** via all modes including road vehicles, freight trains, cargo shipping and air transport to yield benefits such as timely deliveries, reduced cost, minimised carbon footprint, etc.

v. **Information and control** to design information systems that can control operational procedures by adopting the forecasting of demand and inventory

Among these five elements, packaging & unitisation, inventory management, and information & control seem to be almost similar in terms of efficiency and productivity. Despite the inequality of these services within the region, these elements may not be much differentiated from each other. In contrast, two remaining elements including: i) storage & warehousing & materials handling, and ii) transport should be the key factors to differentiate themselves from peer countries as they normally require huge investments.

Based on the World Bank's LPI scores of four countries and each country's proprietary force, Singapore – armed with the best quality of infrastructure in ASEAN – can devote its focus to the enhancement of storage, warehousing and materials handling in order to sustain the country's best-in-class qualifications.

Meanwhile, Malaysia, Indonesia, and Thailand have to enhance their infrastructure quality and other service areas in order to be comparable with Singapore in the future. Therefore, our analyst in Singapore provides Top Picks that are concentrated in the business of warehousing & storage and business parks catering to logistics sector. At the same time, RHB analysts based in Malaysia, Indonesia, and Thailand have a more diversified selection for their featured stocks in several sectors including transportation services, freight forwarding, delivery services, shipping solutions, and warehousing & storage.

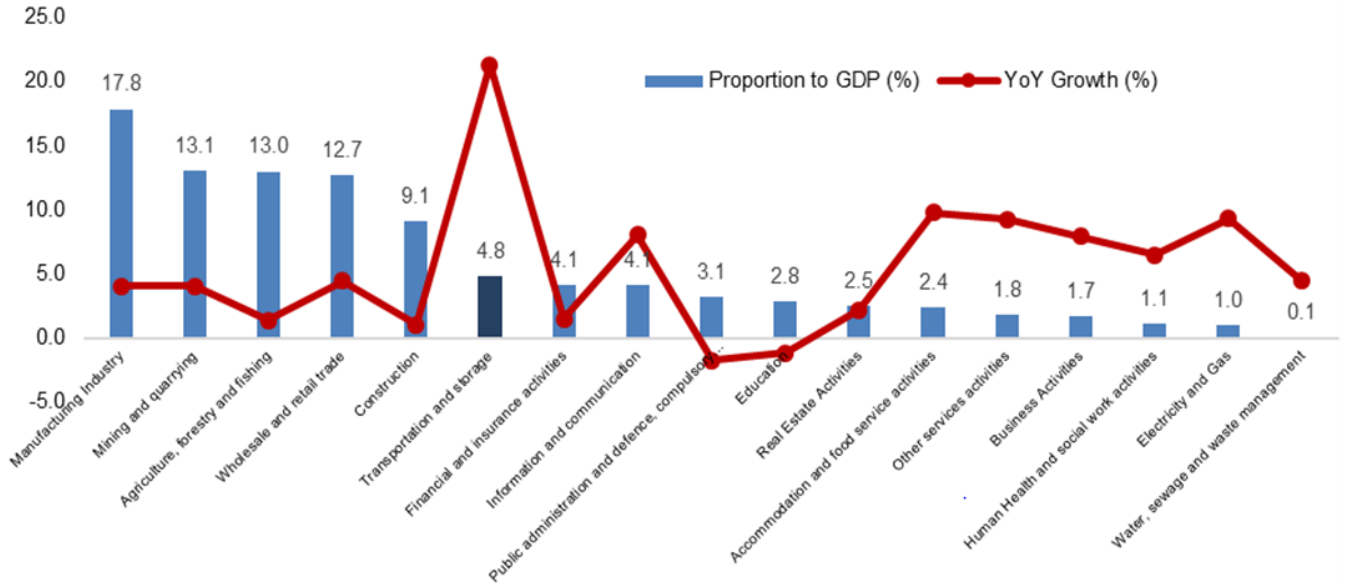
Indonesia

Indonesia's logistics landscape

The development of Indonesia's logistics industry is crucial for the continuous improvement of most manufacturing businesses throughout Indonesia. The transportation & warehousing industry contributed 4.8% of Indonesia's GDP in 1H22, and recorded the highest growth among sectors, at 21.3% YoY. The value of the industry, which is still in its early stages of adopting competitive methods and streamlining bureaucratic permits, is expected to reach USD300.3bn in 2024, according to Ken Research. This includes freight transportation, forwarding, warehousing, courier, express and parcel (CEP), value-added services, and cold chain logistics.

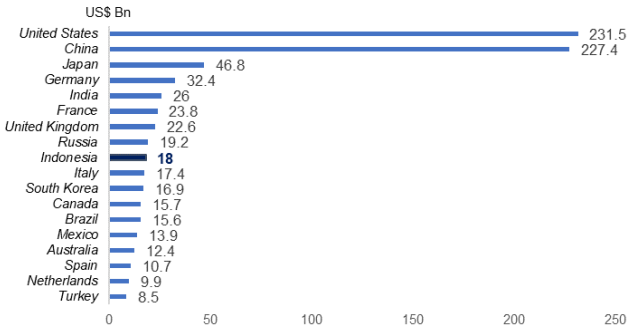
The logistics industry still offers attractive opportunities for new entrants and investors. This may be due to Indonesia being among the top 10 global markets for third-party logistics income (for companies that offer outsourced logistics services) in 2020. It is also among the top five Asia-Pacific countries for the best total road coverage. Furthermore, the Government has established a bonded logistics centre, ensuring ease of doing business in terms of licensing and import duty suspension for up to three years.

Figure 8: Breakdown of Indonesia's GDP by type in 1H22



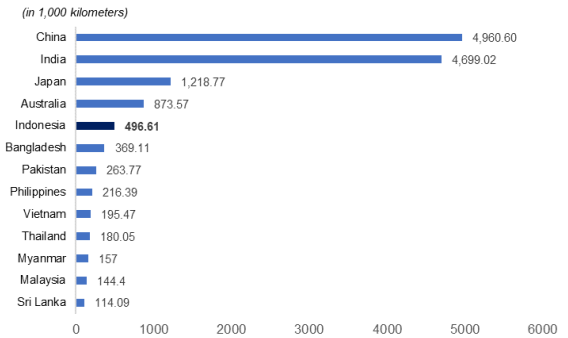
Source: Indonesia Central Bureau of Statistic (BPS)

Figure 9: 3PL revenue in 2020 by major country



Source: Statista

Figure 10: Total roadway coverage in the Asia-Pacific region in 2022, by country or territory



Source: Statista

AC Venture's data on logistics in 2020 shows that Indonesia's logistics portion is still largely dominated by road transportation (mainly trucking haulage), while sea transportation accounts for 9% of the market. Because Indonesia is an archipelago, this situation is ironic – land transportation is more widely used rather than via sea. In some areas, high logistics costs are the result of a lack of sea transportation infrastructure, coupled with the spike in delivery times because densely populated cities like Jakarta have frequent traffic jams, making long-distance shipping a challenge.

Since 2014, the Government has focused on transforming Indonesia into a global maritime axis. The Sea Toll Programme, pivoted by President Joko Widodo, served 32 routes across the country by improving and developing distribution routes and ports, with a focus on a ship carrying capacities and cargo volume. According to Indonesia's Ministry of Commerce, the prices of goods in areas under Sea Toll Programme routes decreased by 20-50%. The programme mainly reduced price disparities in remote areas. Despite the Government's proactive role in improving transport infrastructure, logistics costs in Indonesia remain high.

Transportation and energy are strongly intertwined in terms of costs and benefits. The issue is how effectively this energy is captured in practical use. The relationship between transportation and energy is a direct one, but subject to different interpretations – because it involves various modes of transportation, each with its utility and level of performance. There is frequently a trade-off between speed and energy consumption against the desired economic returns. Delivery costs vary significantly by region. As a comparison, the delivery cost from Jakarta to Papua can cost as much as USD8.20 per kg – twice more expensive than the cost of a 1kg package sent to Kalimantan, Maluku and Sulawesi. Costs are dictated by:

i. The distance of the end-point;

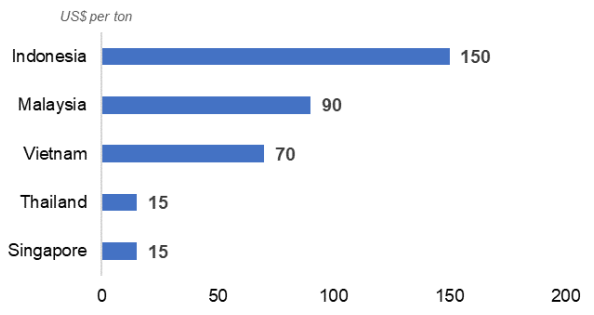
ii. Infrastructure accessibility;

iii. Volume and frequency of deliveries.

On average, road transportation consumes 85% of the total energy consumed by transport sectors of developed economies. Despite a declining market share, rail transport remains twice as efficient for freight movement compared with road transport, based on 1kg of oil equivalent. Regarding volume, maritime transportation accounts for 90% of global cross-border trade. Because of the nature of transportation via water and its economies of scale, it is the most energy-efficient mode – taking up 7% of all energy consumed by transportation activities, and a figure far below its contribution to goods mobility.

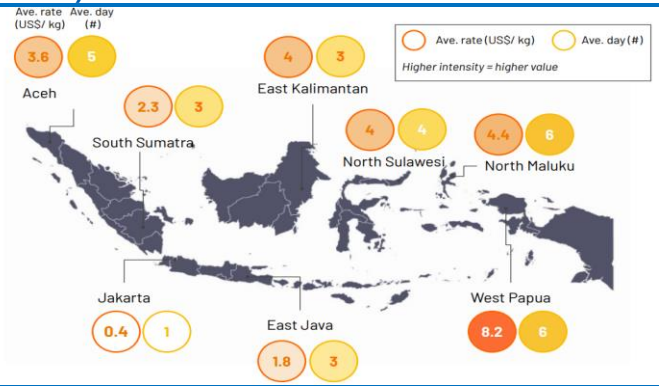
Meanwhile, air transportation is crucial to the globalisation of transportation networks. The aviation industry accounts for 8% of total transportation energy consumed. Fuel is the second most expensive component of the airline industry, accounting for 13-20% of total expenses. The high transportation cost is another factor capping the growth of the Indonesian trade and logistics sector.

Figure 11: Air cargo service charges (total of processing and warehousing & handling charges)



Source: Worldwide Network of German Chambers of Commerce

Figure 12: Delivery costs and times by location (from Jakarta)

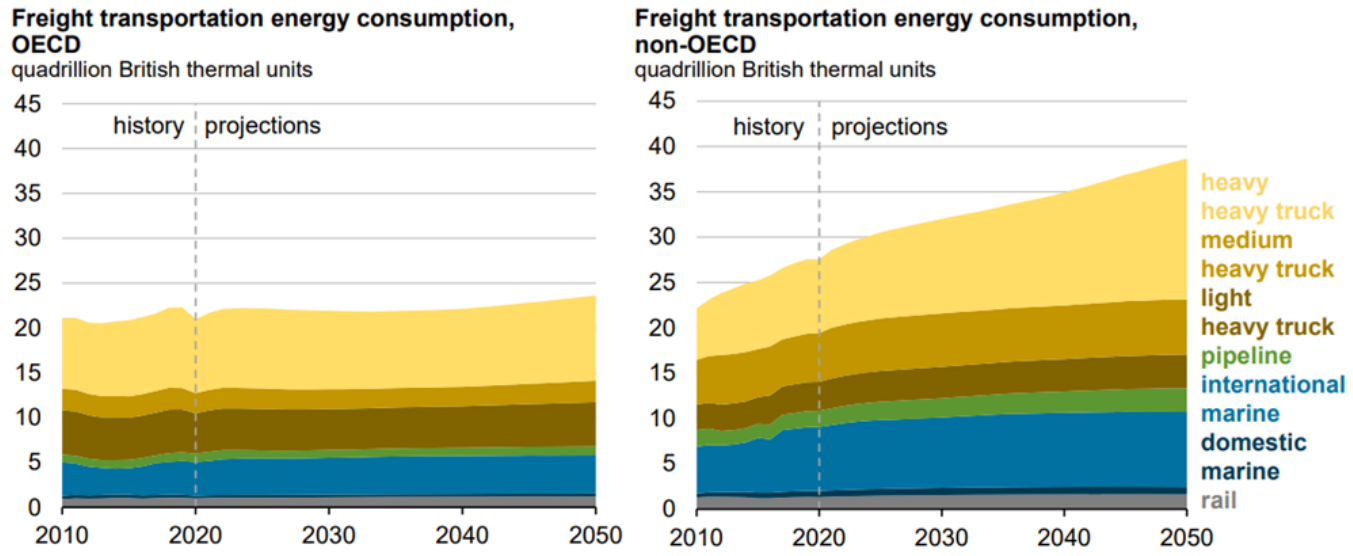


Source: JNE, Momentum Works analysis

In the World Bank Logistics Index for 2018, Indonesia was ranked 46th out of 160 in terms of logistics expenses, with transportation accounting for 72% of it. For instance, Indonesia's air cargo, a key segment in the country's international trade – which facilitates the export of retail, apparel and electronics products – is by no means at a competitive level in comparison to other countries in South-East Asia. This is because the Government has the highest air cargo service charges (total processing and warehousing & handling charges) in the region.

From the viewpoint of energy consumption, the transportation of goods via trucks consumes the most energy. Data from the US Energy Information Administration (EIA) shows that truck transportation tops energy consumption, followed by sea, then rail. EIA also projects that, for non-Organisation of Economic Co-operation and Development (non-OECD) countries, trucking transportation – especially heavy trucking transportation – will continue to ramp up while rail transportation will be stagnant. For OECD countries, energy consumption tends to relatively unchanged.

Figure 13: Consumption of energy by mode of transportation

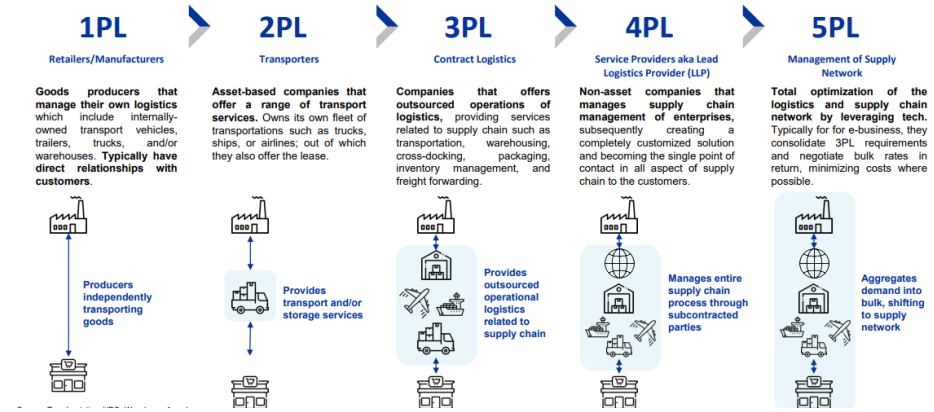


Source: US EIA

Furthermore, when assessing market opportunities for logistics technology, it is essential to understand the chronological steps of the supply chain process from retailers/manufacturers (1PL) to contract logistics (3PL) to transporters (2PL), and to the end-customer. The first stage of the supply chain necessitates the 1PL shipper to record detailed transportation information. The 2PL import freight forwarder can also receive a smaller load of goods (LCL) or a larger load of goods (FCL). In this case, the 2PL import freight forwarder must combine pallets from various shippers.

The information recorded by the shopper and the relevant data on storage and packaging must then be stored by the responsible 3PL warehouse provider. The contract logistics provider must communicate with the 3PL warehouse provider and the 1PL shipper to collect products from the warehouse. As for 4PL, this would be a non-asset company that handles the supply chain management of enterprises, subsequently creating a completely customised solution and becoming the single point of contact in all aspects of the supply chain to the customers. 4PL has the capability to manage the entire supply chain process, by way of sub-contracted parties. 5PL players consolidate 3PL requirements and negotiate bulk rates to minimise costs.

Figure 14: Logistics supply chain by category



Source: AC Ventures

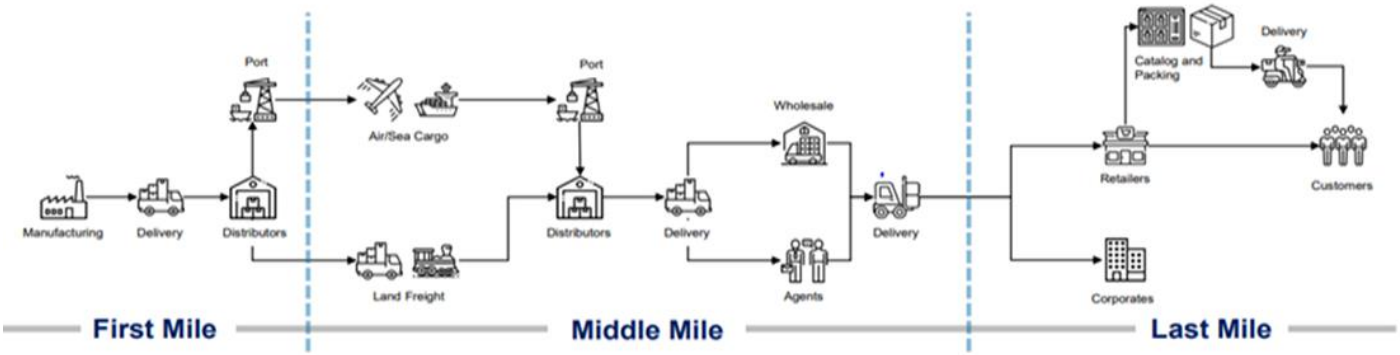
In logistics, the supply chain is identified based on three sections: first mile, middle mile and last mile. The first mile or leg of the supply chain journey, spans from the manufacturer transporting finished goods to distributors, or retailers transporting goods from a warehouse. Meanwhile, the middle mile can have multiple layers ranging from main distributors to sub-distributors to area distributors to wholesalers to sub-wholesalers before reaching modern trade (groceries)/general trade (wet market/*warungs*). The distributor typically sells to wholesalers at a 3-5% discount from the pricelist. The journey from retailers to end-customers generally is the final step in the supply chain process. Last-mile logistics has since expanded into its own e-commerce/delivery logistics. The growth of e-commerce and improvements to the infrastructure will continue to fuel logistics growth in Indonesia. This growth is mainly driven by:

i. A rising middle-class segment boosting disposable income;

ii. E-commerce development and GDP growth;

iii. Growing demand for end-to-end distribution.

Figure 15: Conventional supply chain

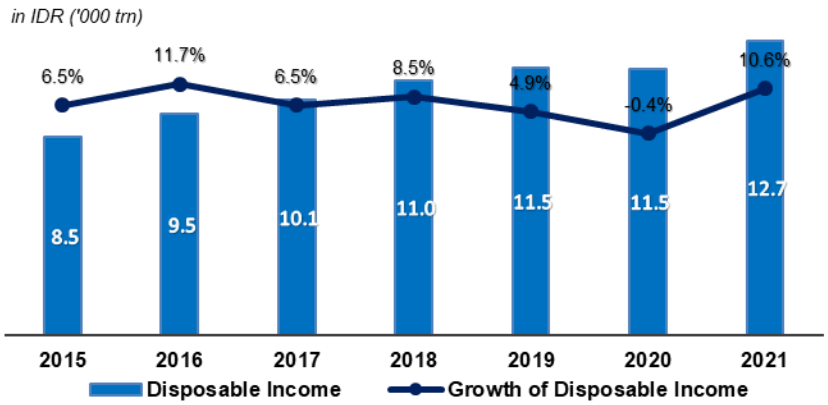


Source: AC Ventures

Rising middle-class boosting disposable income

Indonesia's middle-income segment has been a major driver of economic growth for the past decade, and now accounts for almost half of all household consumption in Indonesia. This also trickles down to the continuous growth in disposable income. We believe that this will continue, as a significant portion of the population is in a productive age group – and this segment tends to be more technology-savvy. This, as a result, is one factor underpinning the growth of e-commerce.

Figure 16: Trend of disposable income in Indonesia (2015-2021)

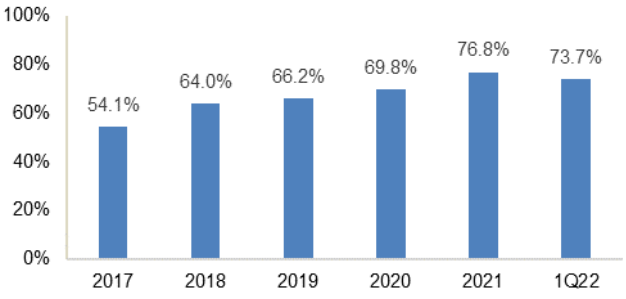


Source: AC Ventures

E-commerce development buoys logistics demand

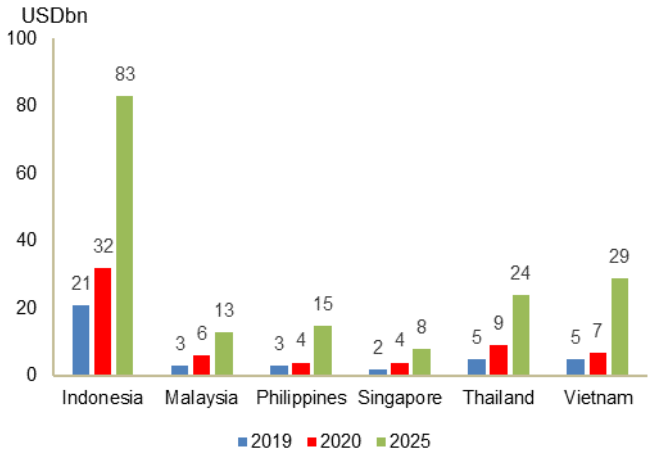
Rising internet and smartphone penetration have given the Indonesian population (across different socioeconomic segments) access to online shops, marketplaces, social media sellers, and mobile apps. Mobile internet usage is growing by double digits, and the penetration rate of mobile data is currently at over 60%. This high rate has also sparked the surge in new MSMEs. Of these, 99% of them are microenterprises, and 50% of them are online-only businesses with no physical store.

Figure 17: Internet penetration in Indonesia



Source: Statista

Figure 18: Estimated value of the e-commerce markets in ASEAN countries



Source: Janio

Indonesia's e-commerce market was valued at USD32bn in 2020, vs USD21bn from 2019. Many institutions such as Google, Bain, and Temasek have estimated that the market value of e-commerce in Indonesia may reach USD83bn by 2025. This could make Indonesia as the biggest e-commerce market in South-East Asia, and its growth could be driven by:

i. The COVID-19 pandemic, which accounts for 37% of new digital service consumers in Indonesia;

ii. More than 60% of Indonesia's population being active social media users;

iii. A growing middle class with high internet and mobile penetration;

iv. The growing number of fintech start-ups;

v. E-commerce tech investments ramping up in Indonesia.

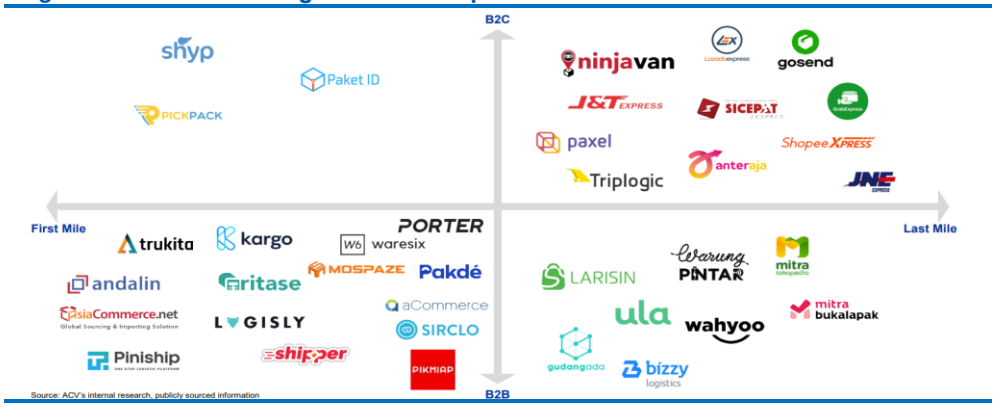
E-commerce has grown in tandem with digital financial services. These services have enabled platforms to collaborate on creating an integrated online infrastructure. Meanwhile, government support – which covers several areas such as national broadband development and encouraging foreign direct investments – has significantly boosted the expansion of e-commerce in the country. Note that the development of e-commerce has boosted the growth of the logistics industry as well – although there is little differentiation between service providers, and there is currently a price war between them as they vie to secure more business.

Indonesians are among the world's most dedicated users of social media such as Instagram, Twitter and YouTube. At the same time, e-commerce, ride-sharing services, financial services, and media distribution have been growing rapidly. As such, the increase in digitalisation has had a great effect on Indonesians – their access to online services has improved, there are new job opportunities in the technology fields, and connectivity has improved. As such, the surge of e-commerce has also boosted economic activities and growth in Indonesia. Note that the number of online shoppers grew by a staggering 225% from 2017 to 2019, according to Statista – this comes up to 65m online shoppers in 2022.

Significant growth in end-to-end distribution

Indonesia's logistics market has grown in recent years, because of the consistent growth of international trade, the acceleration of e-commerce, and the strengthening of transportation infrastructure. Logistics firms are focusing more on delivery, fulfillment/warehousing, and analytics & optimisation. The expanding e-commerce market is expected to further drive demand for delivery services. Volume growth has been especially strong for e-commerce-focused 3PL and on-demand players. J&T Express, JNE and SiCepat are major logistics companies that have established themselves in trucking delivery. Instant and same-day delivery is the domain of regional giants such as Grab and GOTO Gojek Tokopedia (Gojek), as well as niche start-ups like Paxel. Grab and Gojek have an advantage because they rely on an extensive online infrastructure that can transport passengers, packages, or food. Such delivery-matching platforms increase transparency and close technological gaps in the value chain.

Figure 19: Indonesia's logistics landscape



Source: AC Ventures

With the growth of e-commerce, the warehousing and fulfillment segment has become increasingly important in the supply chain. Warehousing and fulfillment operators enable sellers to store their products in a mobile network of fulfillment centres, and work with logistics partners to deliver their products to customers.

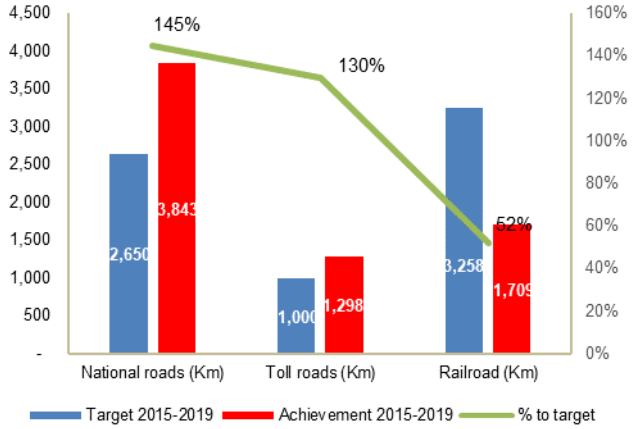
Several warehousing and fulfillment space players have been actively expanding in Indonesia. Waresix, an Indonesian start-up, provides warehousing and fulfillment and most end-to-end logistics services, such as trucking, warehousing, multimodal transport, and vendor management. It claims to work with 40,000 trucks and 375 warehouse operators.

Another central warehousing and fulfillment player is Shipper, which expanded into warehousing and fulfillment after acquiring the e-commerce warehouse company Pakde. With customers demanding more from delivery providers, a highly competitive environment, and customers' sensitivity to spiking costs, the pace of logistics technology adoption will impact the overall condition of the logistics market in Indonesia.

Infrastructure development

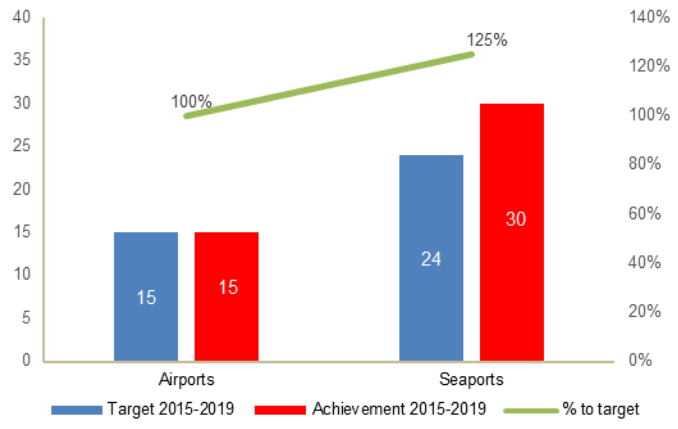
Underinvestment in transportation infrastructure has led to great disparity among regions – so there is inefficient and ineffective transport delivery and high logistics costs. During President Joko Widodo's first term in office (2014-2019), the Government set a transportation infrastructure development target for 2015-2019. So far, railroad development has fallen short, with only c.52% of the target reached. There were also targets set for other modes of transportation – 60 ferries, 29 bus rapid transit routes, and six mass rapid transit (MRT) routes across 17 major cities. However, the specific details of progress in reaching these targets have been difficult to obtain.

Figure 20: Target vs achievement for road and railroad development (2015-2019)



Source: Ministry of Finance, Indonesia Central Bureau of Statistic (BPS), Ministry of Transportation

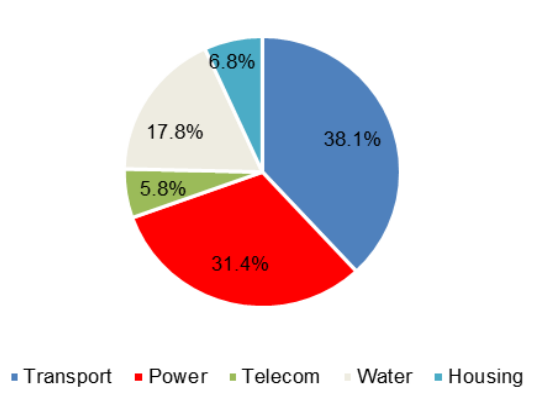
Figure 21: Target vs achievement for airport and seaport development (2015-2019)



Source: BPS, Ministry of Transportation

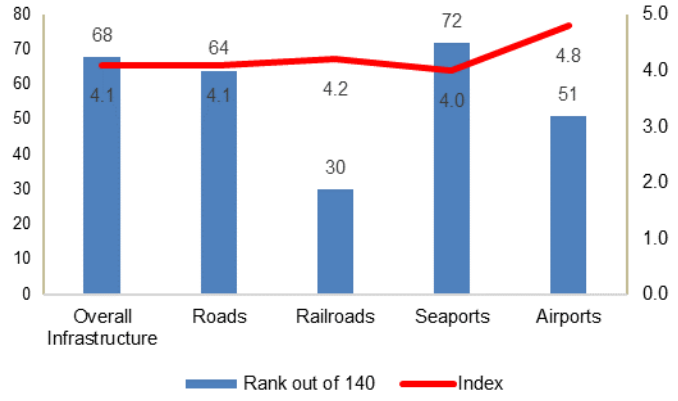
The Government has set a medium-term strategy to encourage investments in transportation infrastructure. The current condition of Indonesia's infrastructure – ports, airports, roads and railways – is still inadequate in facilitating traffic and logistics efficiently. This affects transportation, continues to depress the quality of logistics services, and keeps service rates high.

Figure 22: Indonesia's infrastructure investment plan by sector (2015-2019)



Source: National Development Agency (Bapennas)

Figure 23: Performance and ranking of Indonesia's infrastructure



Source: Global Competitiveness Report 2018

In 2015-2019, Indonesia allocated the majority of its budget to the development of the transportation sector – and statistics indicate that its contribution to GDP has grown significantly since 2011.

In 2017, the transportation sector contributed c.24% of GDP. That said, despite significant investments made in the sector, the quality and supply of infrastructure remains insufficient – these were ranked as the third biggest impediment to doing business in the country.

In 2022, Indonesia has several projects consisting of roads, railroads, seaports, and airports. An example is the fast train from Jakarta to Bandung. This project was supposed to be completed this year but, due to some hiccups, the Government has pushed back the expected date of completion to 2023.

Meanwhile, on the development of Indonesia's new capital city or IKN, President Joko Widodo has announced that its concept will be the "Future Smart Forest City of Indonesia". Phase 1 of this project (2022-2024) will involve activities such as moving the Upper and Lower Houses from Jakarta to IKN. The second phase (2025-2029) will involve some long-term growth strategies such as creating innovation and economic centres.

Government policies supporting the shipping sector

Cabotage regulations, first established in 2008, address the right of a company from one country to trade in another country. Article 8 of Law no. 17 of 2008 on Shipping (which covers cabotage laws) said that domestic sea transportation activities must be carried out by local players using vessels bearing the Indonesian flag, and manned by Indonesian crew members. Foreign ships are prohibited from transporting passengers and/or goods between islands or between ports in Indonesian waters.

Further regulations state that foreign ships can carry out other activities that do not include transporting passengers and/or goods in domestic sea transportation activities in Indonesian waters, as long as vessels bearing the Indonesian flag are not yet available or not sufficiently so. The foreign ship must obtain permission to do this, from the Ministry of Transportation.

National policies supporting domestic shipping can boost demand for such services, and stabilise the industry. These would also buoy the employment of domestic crew workers while providing much room for the growth of the industry domestically. We believe the Government is still working on improving its policies to advance the domestic shipping industry.

Regulatory and national development plan

Transport infrastructure development is directly regulated by specific laws on roads, sea, rail and air transport. Each segment must develop a masterplan that usually begins at the national level, and this will trickle down to the local government levels. At the moment, the Ministry of Transportation is still evaluating and developing regulations for the segments.

Figure 24: Indonesia's transportation infrastructure target

Sub-Sector	Target	Cost (IDRtrn)	Target Completion
National roads	11.483 km	n/a	2030
Toll roads	6.220 km	720	2025
Airports	299	n/a	2030
Seaports	340	n/a	2030
Rail	12.000 km	605	2030
Urban Transport	29 BRT and 6+17 transit	173	2019

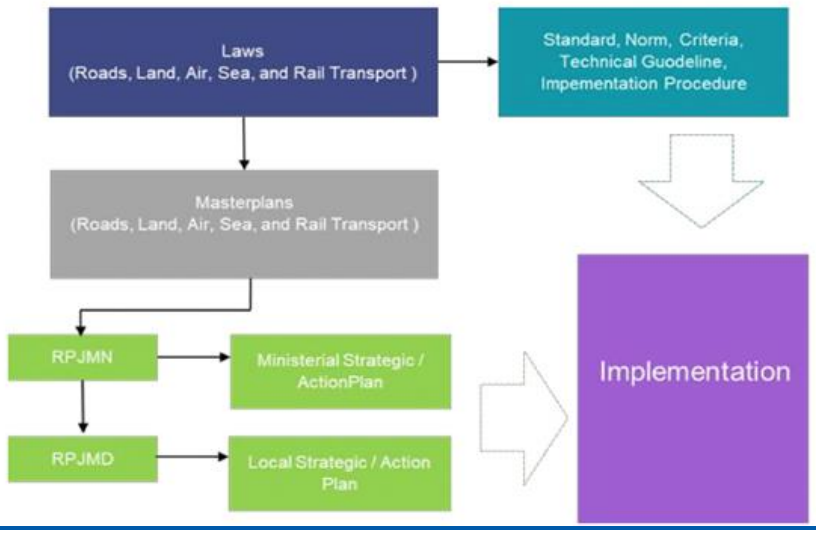
Source: Ministry of Finance, Directorate of Government Support Management and Infrastructure Financing (PDPPI)

Looking forward, the development of transportation infrastructure – according to government projections – will mainly focus on physical achievements (eg length in terms of km). Over the mid- and long term, the development of transportation infrastructure should also boost connectivity, lower costs and enable regional economic growth.

Past plans to upgrade transportation infrastructure have been a part of the Indonesian Government's economic development masterplan. This has led to projects like the National Air Bridge, Trans-Sumatra Railway, Maritime highway, and Trans Kalimantan Highway Southern Road, which have started to take shape.

In conclusion, the development of transportation infrastructure has greatly benefited companies and communities. This, for example, has enabled supply chains to grow significantly – creating a wide network that enables logistics companies to offer more features and more services – and improved the connectivity between different islands.

Figure 25: Regulatory framework for transport infrastructure development



Source: Ministry of Finance, PDPPI

What transport infrastructure should Indonesia focus on?

Connectivity between ASEAN countries as well as infrastructure are considered the main building blocks of Indonesia's economic corridors. Over President Joko Widodo's two terms in office, Indonesia has focused much on developing toll roads. Meanwhile, we believe that seaports need to be upgraded or developed further, because:

i. Logistics activities between Asian countries are usually via sea transportation;

ii. Due to Indonesia being an archipelago, sea transportation is the most common mode of transportation;

iii. Seaports can handle larger volumes (compared to airports, etc), and scaling these upwards would improve cost effectiveness.

Ports serve as important transportation hubs that facilitate the movement of raw materials, parts and finished consumer products. Note that Indonesian waters are about four times bigger than its land area, at 7.9m sq km vs 1.9m sq km. As such, seaport development would be crucial to improve access to the more remote parts of the country. Other benefits of this would include lower shipping costs and widen and diversify its revenue streams, eg port-of-call revenue, handling revenue, concession fees charged.

Featured Stocks

Adi Sarana Armada (ASSA IJ, NR)

Adi Sarana Armada (ASSA) is an Indonesian transportation service provider that offers car rental services for individuals and corporations, transportation, and driver management services. It began operating in 2003 and was listed on the Indonesian Stock Exchange (IDX) in Nov 2012, raising approximately IDR504bn from its IPO.

In 2019, ASSA built its digital ecosystem to improve services and increase its own value. Under Tri Adi Bersama, ASSA created logistics/delivery services called Anteraja, Titipaja, warehousing services, and the Betulinaja application. By establishing a digital ecosystem, ASSA can fulfill consumer demand. The company has since expanded into cross-border services (export and import goods), Travylite (aiding airline passengers with excess baggage), Titipaja (e-fulfilment services on warehouse sharing), BisnisAja (order management and operation for clients). For 2022, ASSA expects to deliver 1.5m parcels per day – note that in April, it was delivering 1.3m parcels per day, and as such, may not be able to meet its own target.

ASSA also has invested in an automated sorting system that uses robots to increase accuracy and efficiency. Some benefits:

i. Flexible capacity – this grows in tandem with volume, so ASSA does not have to contend with unutilised capacity while preparing itself for any increase in the future;

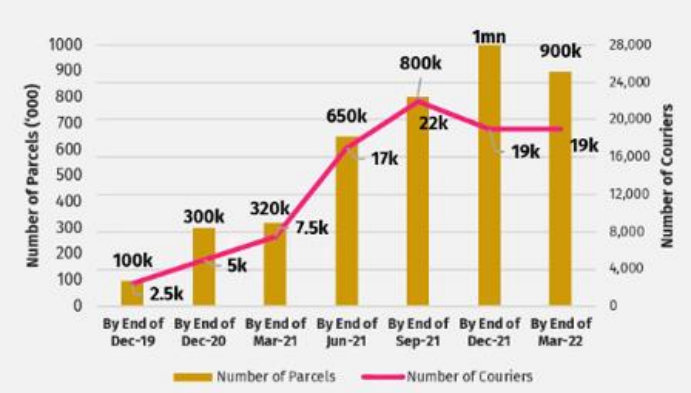
ii. The system occupies less space – unlike conveyor belts, robotic sorting does not require much spaces, so ASSA would be saving costs;

iii. No single point of failure – if one robot malfunctions, ASSA is able to shift tasks to another without putting the entire automated system at risk.

Figure 26: ASSA's robot sorting facility

Source: Company

Figure 27: ASSA's parcels delivered per day



Source: Company data

Satria Antaran Prima (SAPX IJ, NR)

Satria Antaran Prima offers courier, freight forwarding, warehousing, transportation and handling, printing services, agency, and outsourcing services. In 2014, the company began its commercial operations. It was listed on the IDX in Oct 2018, raising IDR108bn from its IPO. Initially, the company served heavy equipment and automobile manufacturers. As of Dec 2018, the company delivers packages to numerous locations across Indonesia through 79 branches in various provinces. The number of branches in Indonesia increased to 154 in 2020, from 89 in 2019.

Pelita Samudera Shipping (PSSI IJ, NR)

Pelita Samudera Shipping (PSSI), a part of the IMC Group, primarily provides logistics and shipping solutions to Indonesian coal-mining companies. It was listed on the IDX in Dec 2017, and raised IDR136bn from its IPO. Its area of operations was then expanded to Palembang, in South Sumatra. In Oct 2021, the company established Pelita Global Logistik to develop and better manage its assets, ie six bulk cargo ships.

In 2021, PSSI expanded its non-coal transportation segment to account for 29% of its total transportation business, from 10% in 2020. The non-coal transportation segment will be expanded in stages to represent 50% of its transportation business, by 2025. PSSI manages 41 tugboats, 38 barges, four floating loading facilities, and six motor vessels under its subsidiary, Pelita Global Logistik. Each segment contributes c.33% of total revenue, with most tugboats, barges and motor vessels operating at utilisation rates exceeding 90%. PSSI's long-term contracts account for c.80% of total contracts – these provide steady revenue, as contract timeframes are between 18 and 24 months.

Figure 28: Motor vessel

Source: Company

Figure 29: Loading activities

Source: Company

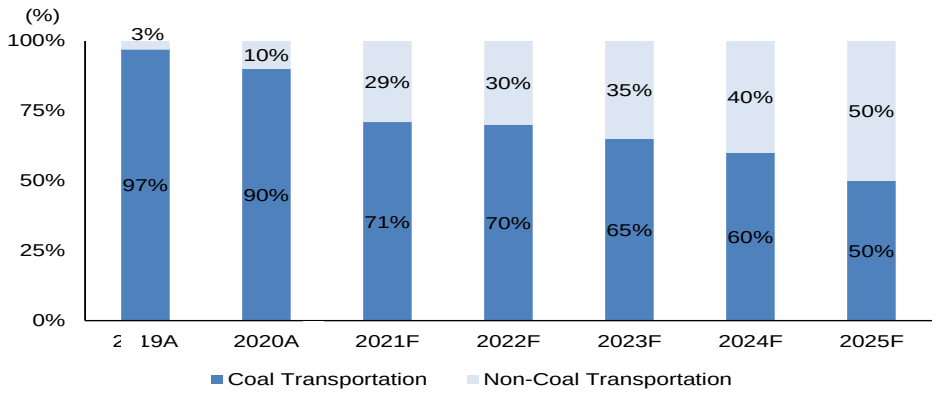
Figure 30: Floating loading facility

Source: Company

Figure 31: Tug boat

Source: Company

Figure 32: PSSI's 2019-2025F revenue diversification plan

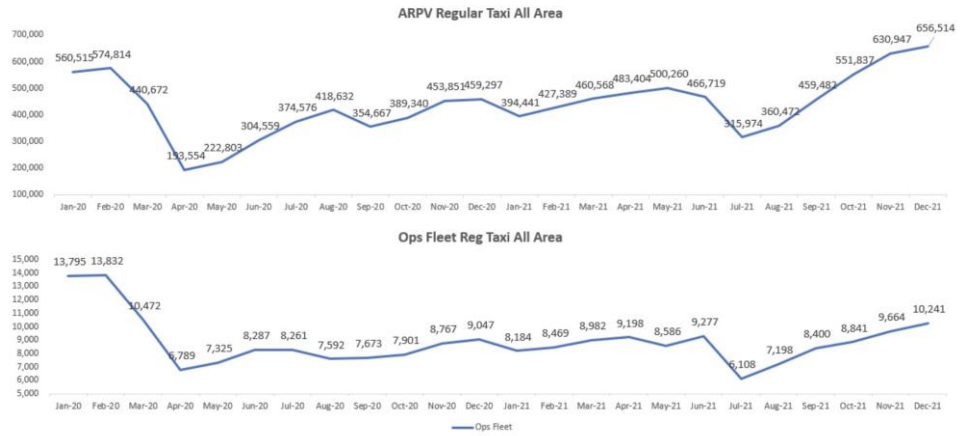


Source: Company data

Blue Bird (BIRD IJ, BUY, TP: IDR1,900)

Blue Bird was listed on the IDX in Nov 2014 and raised approximately IDR2.5trn from its IPO. Blue Bird provides taxi (regular and executive), car rental, bus charter and logistics services. In 2020, the company expanded by launching logistics/shipping services using its taxi fleet. It is expanding its logistics services across 16 cities. In Sep 2021, it changed the name of its logistics service from BirdKirim to Bluebird Kirim.

Figure 33: Performance of regular taxi fleet operators



Source: Company data, RHB

Multiple new toll road projects transversing Sumatra and Java have boosted growth opportunities for inter-province travel services. BIRD continues to see strong demand for large buses and higher-end inter-city mini-buses (Citi Trans), even during the pandemic. Management will focus on expanding Citi Trans services in Sumatra. During the pandemic, BIRD also began working with logistics firms – mainly business-to-consumer and e-commerce companies – to facilitate delivery services that could be fulfilled by its underutilised taxi fleet.

Additional digital collaborations to boost utilisation. When Indonesia was hit by the COVID-19 pandemic, BIRD began to diversify services and ventured into the delivery business, by collaborating with Shopee and Paxel. We believe delivery services complement its major business, and should help to boost its utilisation rate. BIRD also established an IoT system last year to facilitate drivers and customers. This should see a ramp-up in BIRD's utilisation rate, when the economy reopens further

Malaysia

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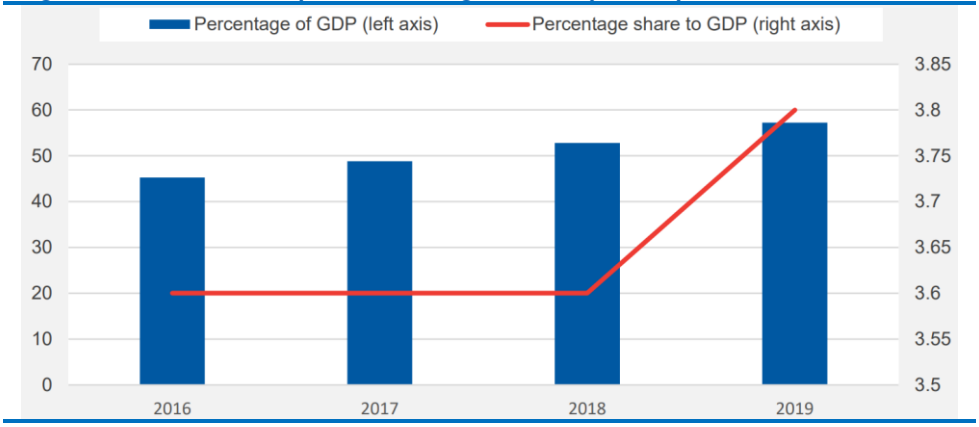
The logistics sector contributed 3.8% of Malaysia's GDP in FY19, with trade activities registering a CAGR of 6.5% over 2013-2018, while transportation activities expanded at a 3% CAGR over the same period. The sector employed 667,600 people in FY19, equivalent to 4.4% of the total employed population.

Due to the COVID-19 pandemic, the Malaysian economy contracted by 5.6% in FY20, and logistics companies have been impacted by operational constraints (delivery delays, congestion, higher freight rates). The OECD has recommended that Malaysia lowers its regulatory barriers to competition in the logistics sector, to lend further support to the recovery of the industry.

Figure 34: Value of transport and storage sectors (MYRbn) as a % of GDP



Source: OECD

Nevertheless, even prior to the pandemic, there have been government initiatives already put in place to support the sector. Some of these include the Third Industrial Plan (IMP3), National Logistics Trade Facilitation (NLTF) 2015-2020 and National Transport Policy (NTP) 2019-2030, in tandem with the institutionalisation of the logistics industry locally to make way for the integration of regional trade. In tandem, the National e-Commerce Strategic Roadmap (NESR), which was established in 2016, also intends to ramp up the development of e-commerce activities, to help Malaysia establish its regional position as an e-fulfilment hub in the future. Mordor Intelligence has reported that Malaysia's freight and logistics market is expected to register a CAGR of over 4% between 2022 and 2027.

The exacerbation of the US-China trade war in recent years has also paved the way for corporations to restructure their global presence, and establish their own independent logistics networks within South-East Asia as a buffer against volatilities and disruptions resulting from these trade tensions.

Meanwhile, as multi-national corporations are establishing their regional operations within ASEAN, the Malaysian Government established the Digital Free Trade Zone (DFTZ), the first electronic world trade platform introduced by Alibaba outside of China in 2017 to facilitate cross-border trade and enable local businesses to seamlessly export their goods. This was done to help establish an ecosystem that complements and strengthens Malaysia's positioning as a regional logistics hub.

Malaysia's GDP is expected to grow by 5-6% this year, which should drive the growth of the logistics industry. The OECD reported that the growth of the logistics sector is expected to be positive in the future, and there is much scope for improvement in terms of freight volume, delivery times and delivery costs. While the logistics infrastructure of the country is improving, there is a need for continuous investment into such, eg port upgrades and expansion, road networks, and advanced IT systems.

In 2018, based upon the throughput of TEUs, Port Klang was the 12th busiest port in the world and the Port of Tanjung Pelepas the 18th busiest – both have contributed to the growth of Malaysian ports' total container throughput. There are nine ports in the ASEAN region that area ranked among the world's top 100, and two of these are in Malaysia.

Figure 35: Ranking of ASEAN ports based on throughput, in 2018

Ranking	Port
1	Singapore
2	Port Klang (Malaysia)
3	Tanjung Pelepas (Malaysia)
4	Laem Chabang (Thailand)
5	Tanjung Priok (Indonesia)
6	Ho Chi Minh City (Vietnam)
7	Manila (Philippines)
8	Tanjung Perak (Indonesia)
9	Cai Mep (Vietnam)

Source: Lloyd's List Hundred Container Ports 2019

Figure 36: Total merchant ships by flag of registration

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brunei	82	82	81	81	97	102	104	100	104
Cambodia	836	754	740	699	606	580	351	364	268
Indonesia	5,960	6,341	6,768	7,542	8,132	8,472	8,974	9,053	9,879
Lao PDR	1	2	1	1	1	1	1	1	1
Malaysia	1,405	1,456	1,525	1,561	1,617	1,658	1,682	1,704	1,748
Myanmar	83	86	86	88	98	98	96	95	95
Philippines	1,407	1,403	1,390	1,436	1,461	1,534	1,565	1,615	1,706
Singapore	2,772	3,117	3,306	3,166	3,339	3,419	3,480	3,526	3,433
Thailand	769	746	747	767	776	795	795	807	825
Vietnam	1,756	1,774	1,776	1,752	1,761	1,798	1,836	1,863	1,868

Source: United Nations Conference on Trade and Development (UNCTAD)

Within our coverage of Malaysia stocks, the spotlight is on:

i. Infrastructure providers/ports (Westports (WPRTS MK, NEUTRAL, TP: MYR3.56) and Malaysia Airports (MAHB) (MAHB MK, NEUTRAL, TP: MYR6.60));

ii. Third-party logistics providers or freight forwarders (TASCO, FM Global Logistics);

iii. Last-mile delivery (Post Malaysia (POSM MK, NEUTRAL, TP: MYR0.56), GDEX (GDX MK, NEUTRAL, TP: MYR0.14)).

Road freight transport. Land transport accounts for 25% of total sector gross value add (GVA), while SME and independent truckers represented around 70% of the Malaysian trucking industry. Malaysia's road network has also tripled between 2000 and 2019 – which is testament to the effort put in by local players to develop the domestic industry.

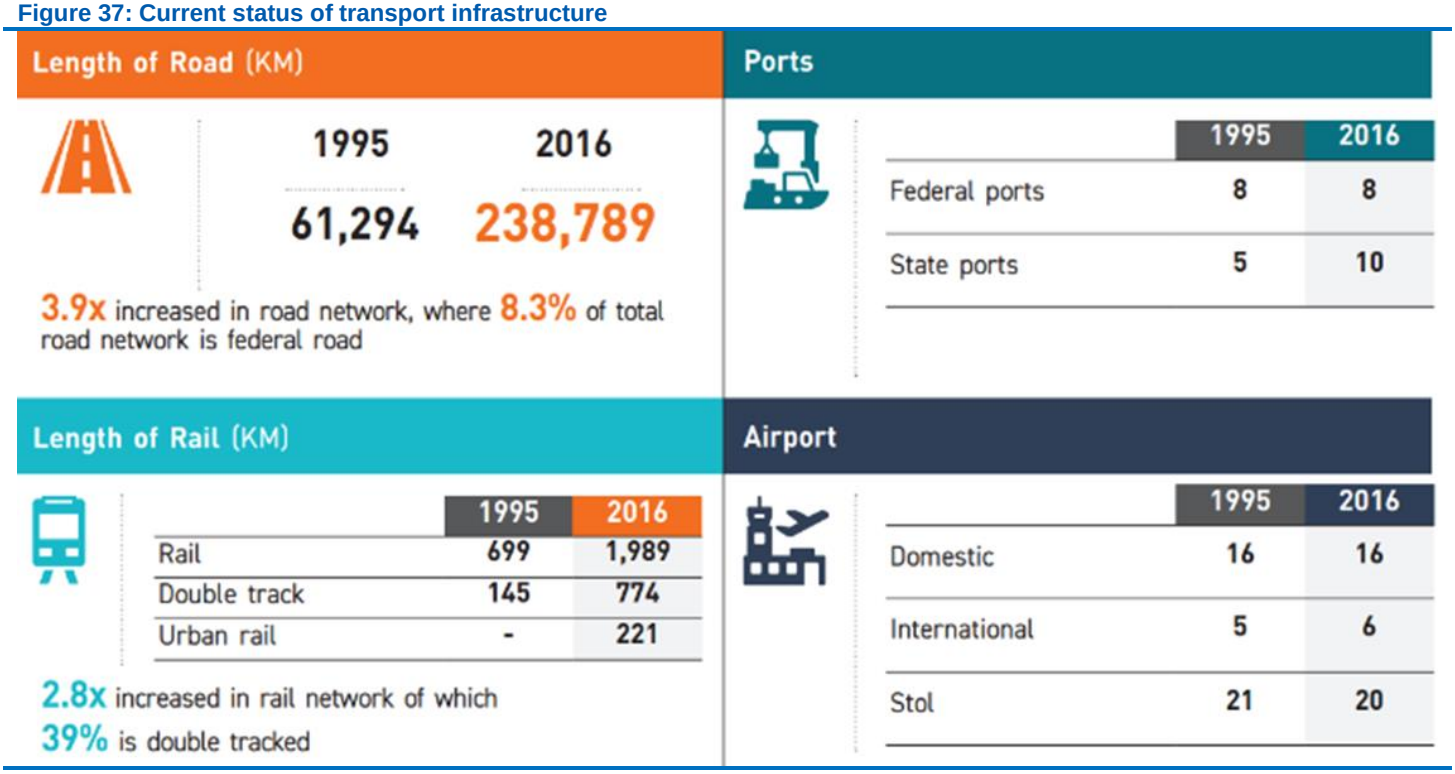
Maritime freight transport. There have been significant improvements in Malaysia's liner-shipping connections with other countries since 2006. According to the World Economic Forum's Global Competitiveness Report, Malaysia ranks fifth among 141 countries for liner shipping connectivity, while its seaport services are ranked 19th out of 141 countries in efficiency. Port Klang and Port of Tanjung Pelepas are ranked in the 12th and 18th spots worldwide in terms of throughput loadings, and second and third in ASEAN after Singapore. The number of merchant vessels registered under the Malaysia flag has increased from 1,405 vessels recorded in 2011 to 1,748 vessels recorded in 2019.

Freight forwarding in Malaysia remains a fragmented business. There are approximately 3,000 service providers holding various customs brokerage licences that are affiliated with the Federation of Malaysian Freight Forwarders. We gather that there is no national legal framework for general purpose warehouses.

Courier, express and parcel market remains the weak point for the transport landscape. In 2019, Malaysia's revenue from these services accounted for just 17.8% of the ASEAN market. The 2-year moratorium on the freezing of new courier licences in the country came to an end back in September. As it is, there is already an excess of players saturated within the last-mile delivery space, and concerns linger on whether or not the end of the moratorium would result in more new faces entering a crowded playing field.

Contribution to trade. Among the three modes of transport (sea, air and land), seaborne trade contributes the most to Malaysia's export and import values – making up more than 50% of the total trade value in 2021. Meanwhile, land transport contributes the least to Malaysia's trade, at only less than 15% of export and import values in 2021.

Figure 37: Current status of transport infrastructure



Source: Department of Statistics, Ministry of Transport, Ministry of Works

Figure 38: Contributions to trade based on mode of transport

Mode of Transport	Export value in 2021 (MYRm)	Contribution to total exports value in 2021 (%)	Import value in 2021 (MYRm)	Contribution to total import value in 2021 (%)
Sea	**679,116**	**54.8%**	**558,434**	**56.6%**
Port Klang	245,769	19.8%	266,139	27.0%
Bintulu	68,586	5.5%	10,702	1.1%
Pasir Gudang, Johor	85,918	6.9%	78,561	8.0%
North Butterworth Cargo Terminal	52,093	4.2%	42,826	4.3%
Port of Tanjung Peleas	40,901	3.3%	17,673	1.8%
Kuantan Port	31,696	2.6%	14,889	1.5%
Others	154,153	12.4%	127,644	12.9%
Air	**383,508**	**30.9%**	**306,391**	**31.0%**
Bayan Lepas (Penang International Airport)	295,171	23.8%	193,654	19.6%
Kuala Lumpur International Airport	78,866	6.4%	100,530	10.2%
Others	9,471	0.8%	12,207	1.2%
Land*	**177,177**	**14.3%**	**122,419**	**12.4%**
Tanjung Kupang, Johor	138,086	11.1%	78,736	8.0%
Johor Bahru (Causeway)	11,881	1.0%	14,366	1.5%
Bukit Kayu Hitam	19,715	1.6%	24,584	2.5%
Others	7,496	0.6%	4,733	0.5%
Total	**1,239,801**	**100.0%**	**987,244**	**100.0%**

*Note: *Land includes pipeline and cable*
Source: Department of Statistics Malaysia

According to the OECD, within ASEAN, Malaysia still takes a backseat in terms of government initiatives for the logistics industry. Malaysia is ranked 41st out of 160 countries in the World Bank's Logistics Performance Index (LPI) – behind Singapore, Thailand and Vietnam – which is a drop from 25th place in 2014 and 32nd place in 2016. While initiatives like IMP3, NLTF and NTP have set in motion some awareness on the importance of a holistic and complete logistics network, we note that on the local front, the initiatives have yet to reach their full potential.

We commend Malaysian Investment Development Authority's (MIDA) participation in the growth of the logistics sector. It has supported the integrated logistics (ILS) space by offering companies (new entrants, and existing service providers intending to expand or diversify) tax incentives over a course of five years. This tax incentive is meant to establish an efficient and competitive logistics industry, to encourage the integration and consolidation of the various transport intermediaries along the logistics supply chain in Malaysia. Through this, Malaysian logistics players would be encouraged to expand and venture into higher value-added services, to enable them to step up to the world stage.

These incentives are categorised as below:

i. Pioneer status (PS) – tax exemption of 70% of statutory income;

ii. Investment tax allowance (ITA) – 60% of qualifying capital expenditure.

According to MIDA, a company granted pioneer status gets to enjoy a 5-year partial tax exemption, and would pay taxes on just 30% of its statutory income. Unabsorbed pioneer losses after the end of the pioneer period are allowed to be carried forward for seven consecutive years of assessment.

Alternatively, ITA is granted to companies – with an allowance of 60% of its qualifying capex incurred within the five years from the date the first capex is incurred. The company would be able to offset this allowance against 70% of its statutory income for each year of assessment and any unutilised allowance can be carried forward to subsequent years until fully utilised. The remaining 30% of its statutory income will be taxed at the prevailing company tax rate.

Eligible services should undertake the following three principal activities;

i. Freight forwarding (including customs clearance);

ii. Warehousing;

iii. Transportation.

This is in addition to at least one of the following value-added services: Distribution, palletising, product assembly, breaking bulk, consolidation, packaging, procurement, quality control, labelling, testing, and supply chain management.

An existing approved logistics company that has enjoyed the ILS incentive can be considered for a second round of ILS. The expansion criteria would have to be an increase of fixed investment assets of at least 50% on top of existing assets related to logistics, and the companies must maintain separate accounts for the new activities – also, only the new activities would be eligible for income tax exemption.

National Transport Policy (NTP) 2019-2030

The policy highlights five policy thrusts and 23 strategies meant to enhance a company's economic competitiveness, and provide an overarching policy to guide the relevant federal ministries and local authorities to develop and streamline transport initiatives towards a common goal. This would ensure the effective and efficient use of resources.

Meanwhile, for the private sector, the NTP is meant to give a sense of direction by laying down a framework to create a conducive ecosystem that facilitates the seamless movement of goods and passengers.

The NTP was developed with the following objectives:

i. Create a conducive ecosystem for the transport industry to enhance productivity and competitiveness;

ii. Facilitate the seamless movement of goods to boost trading activities and ease of doing business;

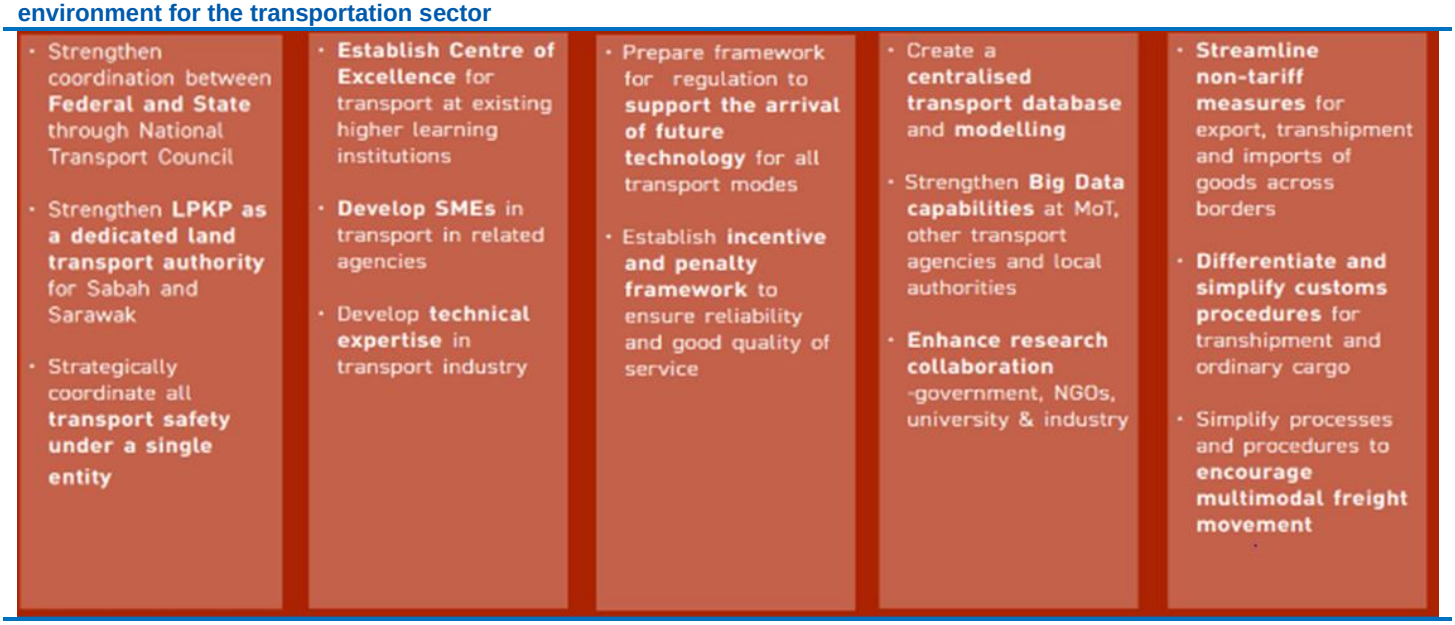
iii. Provide mobility that meets the expectations of people and promotes inclusivity;

iv. Increased modal share for public transport;

v. Deliver an intelligent, safe and secure transport system;

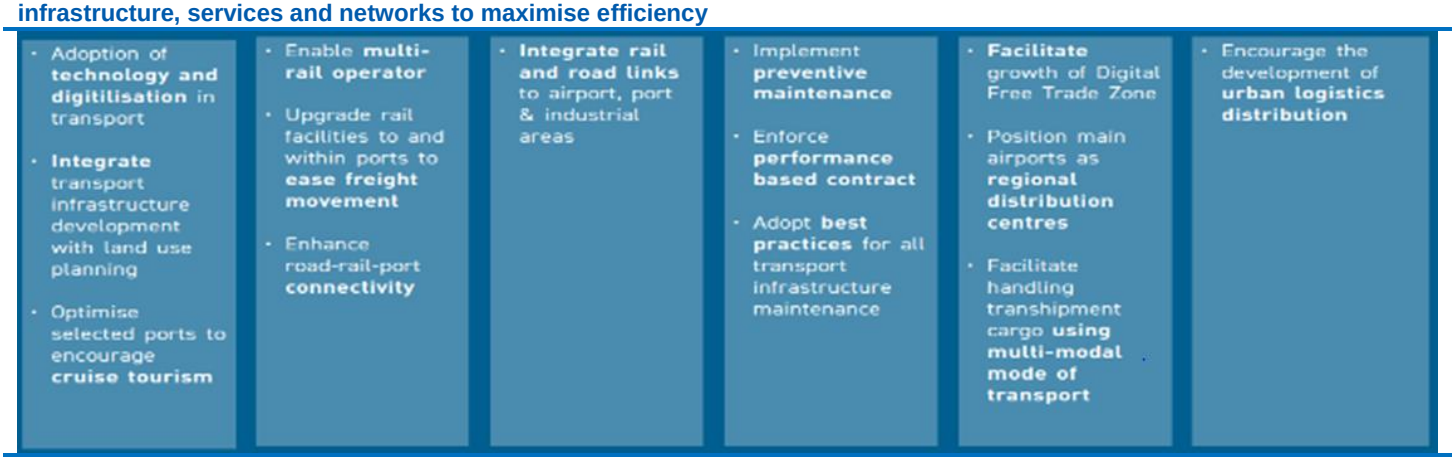
vi. Ensure the efficient and sustainable use of resources and minimise environmental pollution.

Figure 39: Core strategies across policy thrust 1 of the NTP 2019-2030 – strengthen governance to create a conducive environment for the transportation sector



Source: Ministry of Transport

Figure 40: Core strategies across NTP 2019-2030's second policy thrust – optimise, build and maintain the use of transport infrastructure, services and networks to maximise efficiency



Source: Ministry of Transport

Figure 41: Core strategies NTP 2019-2030's fifth policy thrust – expand global footprint and promote the internationalisation of transport services

Source: Ministry of Transport

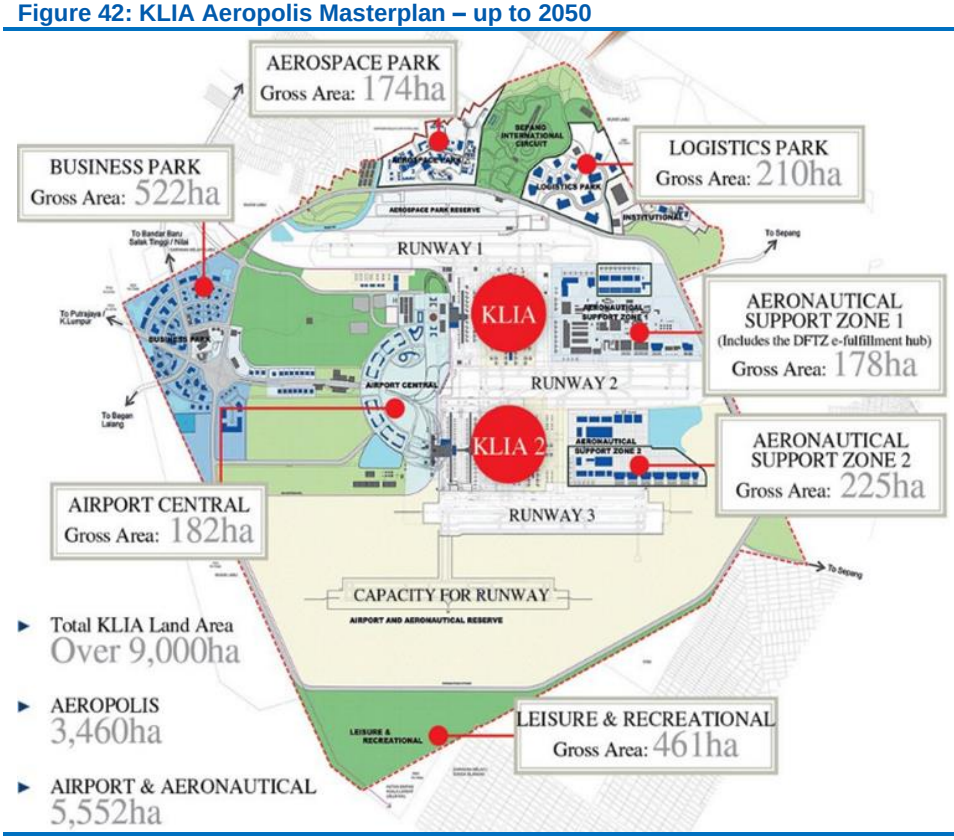
KLIA Aeropolis Masterplan

The DFTZ in Malaysia (part of the aeronautical support zone of the KLIA Aeropolis masterplan) was envisioned to help SMEs grow and develop, by streamlining primarily e-commerce-specific functions. Removing critical barriers to growth such as high tax rates, customs clearances, and inspections on foreign goods are all concepts that will help jumpstart SME growth rates, with the DFTZ focusing on bootstrapping Malaysian startups. Furthermore, the DFTZ benefits from powerful backers such as the Malaysia Digital Economic Corporation (MDEC), China's Alibaba Group, and the Electronic World Trade Platform (eWTP), which all serve to validate the DFTZ's concept to help boost international e-commerce trade between China and Malaysia.

The DFTZ mainly focuses on two components: an e-fulfillment hub and an e-service platform. The first phase of the e-fulfillment hub is a warehousing facility near KLIA operated by Pos Malaysia (with an investment of MYR60m) to initially serve South-East Asia's e-commerce giant, Lazada. The facility takes up the old LCCT terminal, and has been transformed into the Kuala Lumpur Air Cargo Terminal 1 (KACT1) – a full-fledged storage facility for e-commerce with automated sorting and pick-and-pack systems.

The second phase of the DFTZ's e-fulfillment hub consists of the Cainiao Aeropolis eWTP Hub developed via a 70:30 JV between Cainiao and MAHB – which began operations in November 2020. The Cainiao Aeropolis eWTP is situated on 60 acres of land within KLIA's vicinity and boasts 1.1m sq ft of warehouse space to house facilities, cargo terminal operations, warehousing, sorting, and a dedicated customs clearance area that is backed by a first-of-its-kind innovative digital customs clearance system. This system, in turn, is capable of reducing clearance time from 24-48 hours to 1.5 hours. This has been made possible by the Royal Malaysian Customs Department through the establishment of satellite operations and an administrative office away from its main base in KLIA. It allows for more rapid cargo clearance, while ensuring onsite supervision. As at end-2021, the said facility has an 80% occupancy rate, indicating high demand for warehousing and sorting services.

Figure 42: KLIA Aeropolis Masterplan – up to 2050



Source: Company data

Figure 43: Location of Cainiao Aeropolis eWTP Hub in Malaysia at the aeronautical support zone 1 of KLIA Aeropolis

Source: MAHB

Figure 44: Cainiao Aeropolis eWTP

Source: MAHB

Figure 45: Aerial view of Cainiao Aeropolis eWTP's future development

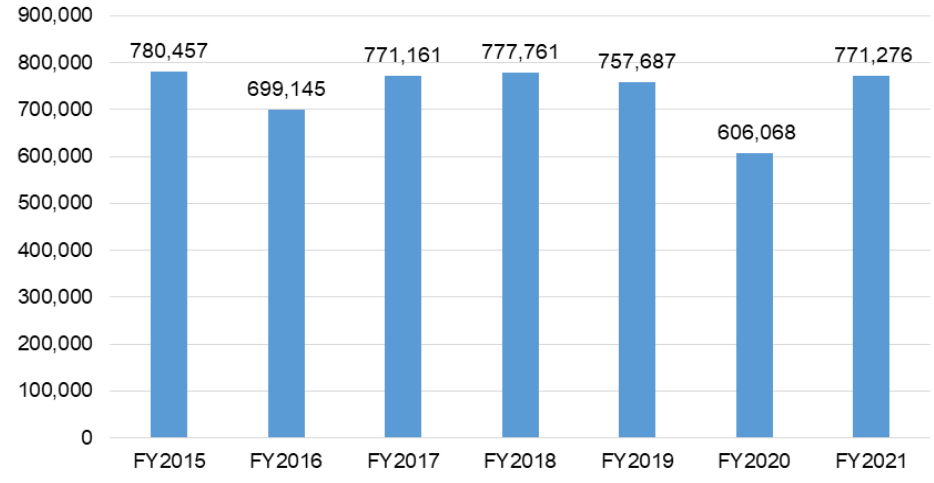
Source: Cainiao

Today, Cainiao Aeropolis eWTP Hub is making it possible for consumers in Malaysia to receive items within a 24-hour delivery window, while consumers outside of Malaysia can count on a 72-hour delivery window. With its strategic location, the hub provides merchants with easier distribution access to all major cities in South-East Asia. In fact, Cainiao at its Cainiao Aeropolis eWTP Hub has further expanded its direct flight network from China to Malaysia to boost efficiency for cross-border e-commerce in Jul 2022. Cainiao has included direct flights taking off from Shenzhen to Kuala Lumpur three times a week, adding to the five weekly freight trips from Hangzhou to Kuala Lumpur already in operations – this would reducing transit times by 24-48 hours,

As a result, business owners now have better delivery options and can reach more customers across the globe – as this facility would position KLIA as a preferred cargo hub for regional distribution centres in the Asia Pacific. Moreover, direct flights from Malaysia to Mainland China will increase air freight stability and decrease overall logistics costs by 6-10% and help business-to-business (B2B) export merchants outside the Alibaba ecosystem to gain access to the Chinese market.

Looking ahead, the hub is a growth engine for Malaysia, with projections to generate a cumulative GDP of MYR4.2bn in the next 10 years and support over 35,000 jobs during this period. As for MAHB, the group aims to double its cargo volume from the current 600,000-700,000 tonnes to 1.3m tonnes by 2030, via the Cainiao Aeropolis eWTP. Furthermore, the revenue stream that will come from this hub includes land lease revenue, which is charged based on the market price, in addition to the potential dividends from the JV in the long run, and higher aeronautical revenue (such as aircraft landing and parking charges) with more air cargo that is expected to come in. Indirectly, the Cainiao Aeropolis eWTP hub also has the potential to help improve airline route profitability, especially along marginal routes which struggle to break even without cargo throughput.

Figure 46: MAHB's international cargo movement at its Malaysian airports (tonnes)

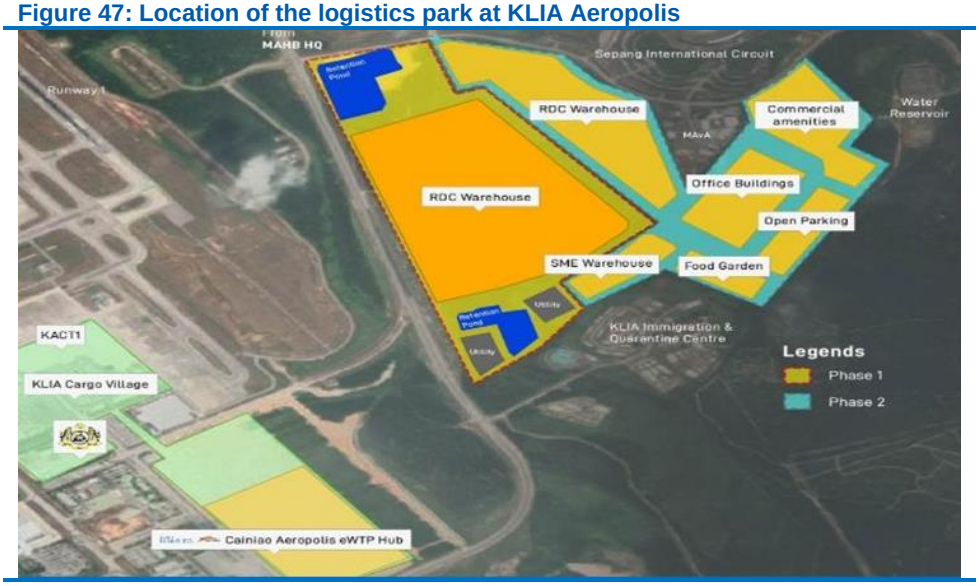


Source: MAHB

The second component of the DFTZ revolved around the eServices platform, an integrated trade facilitation platform that is said to offer SMEs market access to reach global customers, while accelerating the online trade facilitation process and end-to-end business support for cross-border trade.

In the long run, there are also plans to build a logistics park in the industrial precinct of KLIA Aeropolis. The logistics park is a natural spin-off from the KLIA Cargo Village and is meant to serve the expansion of the current Free Commercial Zone (FCZ) at the Cargo Village, KLIA and part of the Cainiao Aeropolis eWTP Hub expansion, whereby the first right of refusal has been given to Cainiao to develop the land. The park will house regional distribution centres, modern warehouses and light manufacturing facilities. The development of the logistics park will be done in two phases: i) Phase 1, spanning 270 acres, is demarcated for the Cainiao Aeropolis eWTP hub expansion with a target operational timeline by 1Q26; and ii) Phase 2, spanning 310 acres, is targeted to be operational by 2030. The strategic location of the logistics park near the Cainiao Aeropolis eWTP Hub or even KACT1 will enable companies to facilitate the distribution of their products overseas.

Figure 47: Location of the logistics park at KLIA Aeropolis



Source: Company

National Courier Accelerator Plan (PAKEJ)

With the rapid growth in e-commerce, courier services are a crucial component, especially during the new normal in the wake of the COVID-19 pandemic. However, the quality of service in Malaysia leaves much to be desired, and there is an urgent need for a turnaround. To help remedy this situation, the Malaysian Communications and Multimedia Commission (MCMC) introduced the National Courier Accelerator Plan (PAKEJ) in Jun 2021 to improve courier and postal services in Malaysia. According to the MCMC, there has been a significant decline in the quality of service, with delivery times increased from 2.1 to 4.6 days during the MCO. On top of that, the MCMC has received more complaints and most centre around poor service, late deliveries, and missing or damaged parcels.

The Malaysian Government and key industry players through the National Postal Courier Industry Lab (NPCIL) established PAKEJ to deliver first-class courier services in Malaysia in terms of reliability, reach, relevance and resilience. Somewhat similar to the JENDELA plan for the telecommunications industry, the PAKEJ initiatives encourage the sharing of assets and infrastructure to increase efficiency and improve operational costs. These initiatives aim to deliver a quality of service that can support a projected e-commerce growth from 14 parcels per capita in 2020 to 30 parcels per capita by 2025.

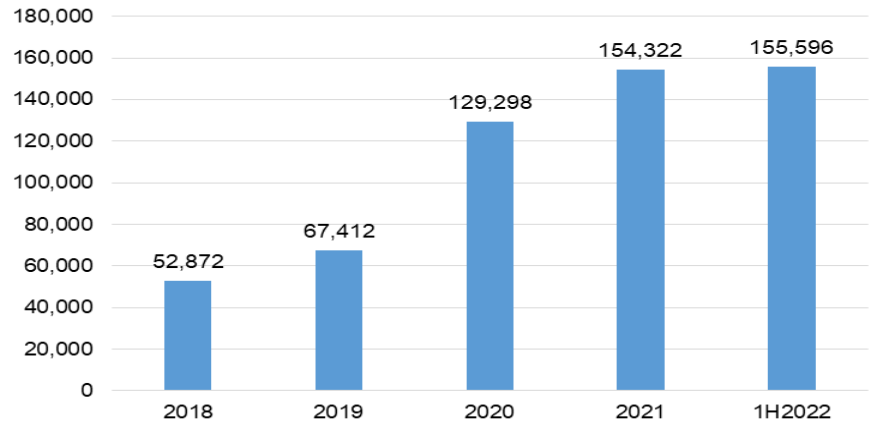
PAKEJ's first initiative is setting up a shared parcel point network of pick-up and drop-off (PUDO). PUDOs are seen as a complementary network to support the existing delivery system. It provides convenience for customers who are not at home to receive their parcels, and these points are mostly located in strategic locations.

PAKEJ has proposed a collaboration of e-commerce players, marketplaces, couriers and parcel locker providers to offer inter-operable platforms, by opening up access to PUDO to all courier players. For example, a PosLaju Ezibox can also be utilised by other private courier companies. This will enable all courier companies to provide greater convenience without bearing the extra cost of setting up their own PUDOs. At the moment, there are about 10,000 PUDOs in Malaysia, and the MCMC aims to increase the number to 30,000 by 2025.

The sharing of postmen across different service providers via *Posmen Komuniti* is another emphasis under PAKEJ. To improve delivery especially to the last mile, PAKEJ proposed a universal service obligation (USO) where delivery personnel can deliver packages on behalf of other companies that have no access to certain areas. For example, an industry player shared that coverage in West Malaysia is more than 80%. However, coverage is only at around 66% in East Malaysia. As such, the cost of delivery to East Malaysia is high, with many relying on delivery agents to deliver parcels. Pos Malaysia currently operates the Posmen Komuniti (PK) Programme, with 500-odd riders servicing rural communities in Sabah and Sarawak. An option for delivery asset-sharing and a collaboration between Pos Malaysia and courier companies under the Program Perantis Posmen Komuniti (P3K) will help lower the cost of delivery and expand network coverage to East Malaysia. It will also improve the utilisation of PKs, as well as provide additional income to the riders to compensate for the declining mail volumes.

Both of these aforementioned initiatives under PAKEJ aim to lower capital and operating costs of courier players. Such efforts appear to be promising, as labour is a major fixed cost (75% of this is to pay pick-up and dispatch staff) that has been hampering the profitability of courier players. We believe that the effort to centralise the asset will be challenging, as each courier player has different cost structures and capacities.

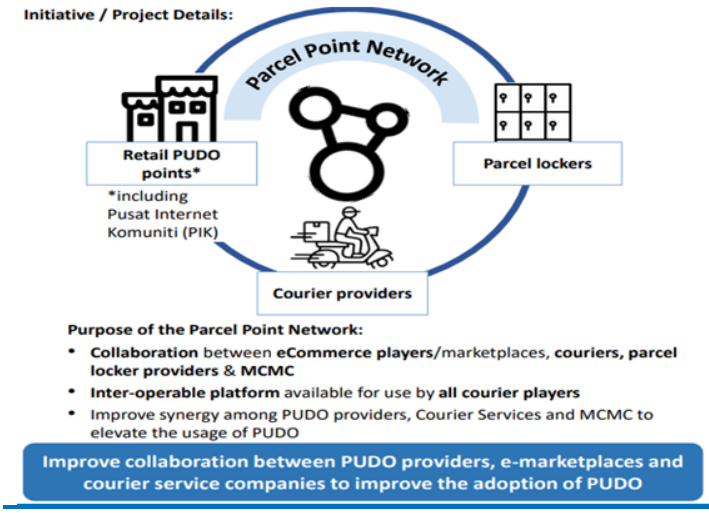
Figure 48: Number of employees in the postal and courier services industry



Source: MCMC

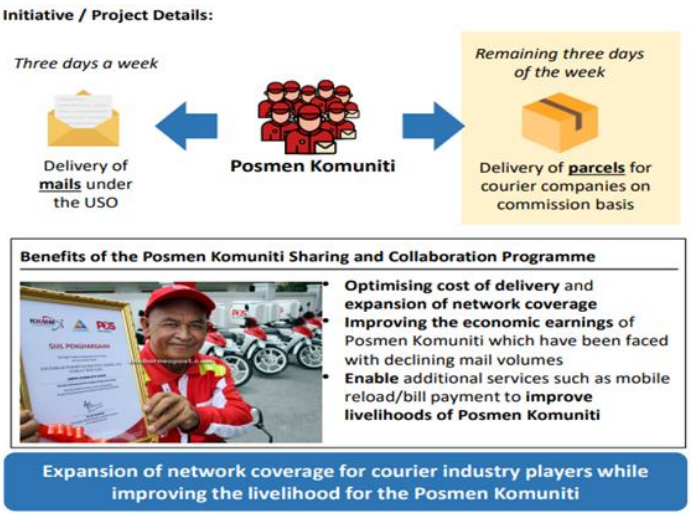
Nonetheless, we believe it may lead to a industry consolidation in the future, thereby paving the way to improved operational efficiency and profitability. MCMC has mentioned that courier companies' revenues have stagnated despite the higher courier volume in the past years, due to the increase in competitive pricing. Only a small percentage of over 100 courier players are profitable, while others remain in the red.

Figure 49: Shared parcel point network



Source: MCMC

Figure 50: Asset-sharing and collaboration in *Posmen Komuniti*



*Note: *USO – universal service obligation*
Source: MCMC

Aside from this, PAKEJ includes a proposal to enhance parcel commercial vehicles. In addition to motorbikes, vans and trucks, PAKEJ is also looking into introducing electric-powered three-wheelers (3W) that come with a roof. These not only offer 15 times the capacity of a regular rider delivery box, it can have operating costs that are lower than a van's – besides also being more environmentally friendly. However, the 3W vehicles would require approval from the Ministry of Transport before they are allowed for commercial use. The Association for Malaysian Express Carriers (AMEC) has conducted an assessment to justify the cost benefit of introducing alternative modes of commercial transportation to the courier industry. AMEC, through J&T Express (Malaysia), has submitted a collective proposal on behalf of the industry. Subsequently, MCMC has engaged further with Ministry of Transport (MOT) and the Road Transport Department (JPJ) to verify, validate, and assess the suitability of the 3W design to further accelerate a trial run.

So far, Ministry of Transport and Road Transport Department (JPJ) has strongly supported and recommended the proposed engineering design within the existing L4 (motorcycle with sidecar) specifications, with Vehicle Type Approval (VTA) issued for operation under the existing land transport regulations. Key features of the design specifications are as follows:

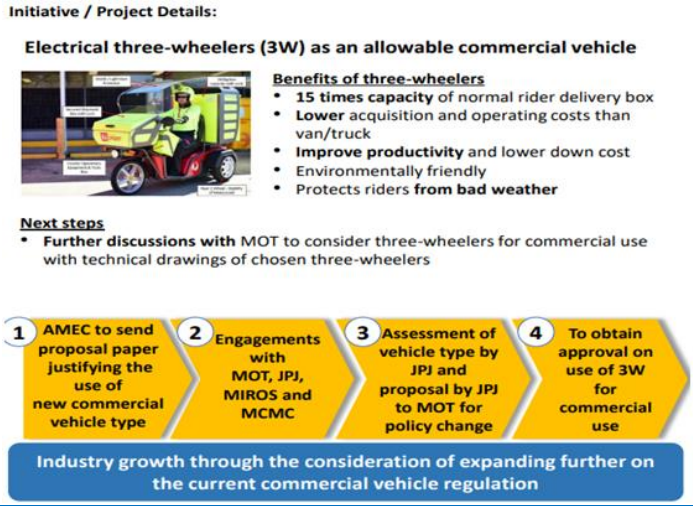
i. Large-volume container: 1,300-1,450 litres;
ii. Material: stainless steel;
iii. Balanced weight distribution;
iv. Convenient for dispatchers;
v. Reduced carbon emissions;
vi. Higher parcels delivered vs time spent ratio.

Other initiatives to improve the courier service include improving the quality of service standards and insurance policy. If a courier company fails to meet the required service level agreement (SLA), it will be required to provide compensation to the consumer. Moreover, there's also a need to relook into the current licensing framework. The focus of a newly proposed courier licensing framework is to achieve first-class services through the 4R strategy namely reachability (seamless coverage), reliability (delivery times and customer service), resilience (sustainability) and relevancy (growth in digital economy).

Due to high investment expenses, courier service providers have yet to fully embrace digitalisation despite the many incentives made available by the Government. As such, some form of incentives or grants from the Government with regards to this would be necessary to ensure that the underserved in Malaysia get to enjoy courier services and access to e-commerce.

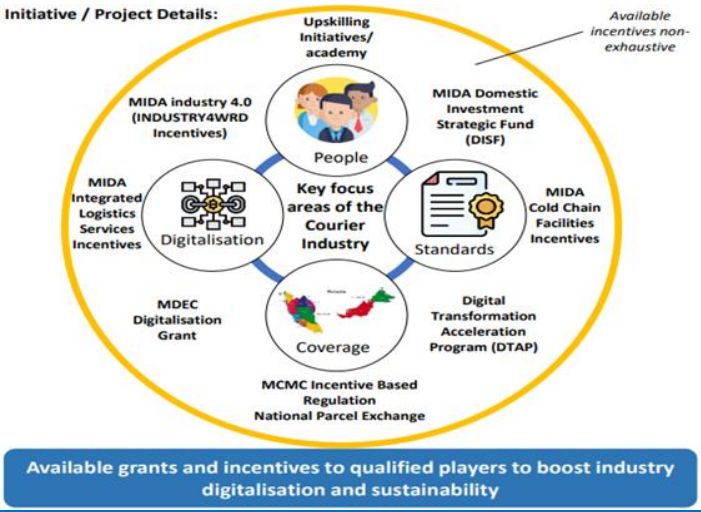
However, some information on the available incentives do not reach the industry sufficiently despite past efforts, resulting in low utilisation of incentives among courier service providers, in particular the local players (eg digital improvement, network coverage expansion, cold-chain logistics). As such, MCMC – via PAKEJ – has made a point to collaborate with the Ministry of International Trade and Industry (MITI) and MIDA to promote awareness on the government facilitation made available for the courier industry in Malaysia, by providing comprehensive guidelines on eligibility and process requirements.

Figure 51: Proposal to use electrical 3W units as delivery vehicles



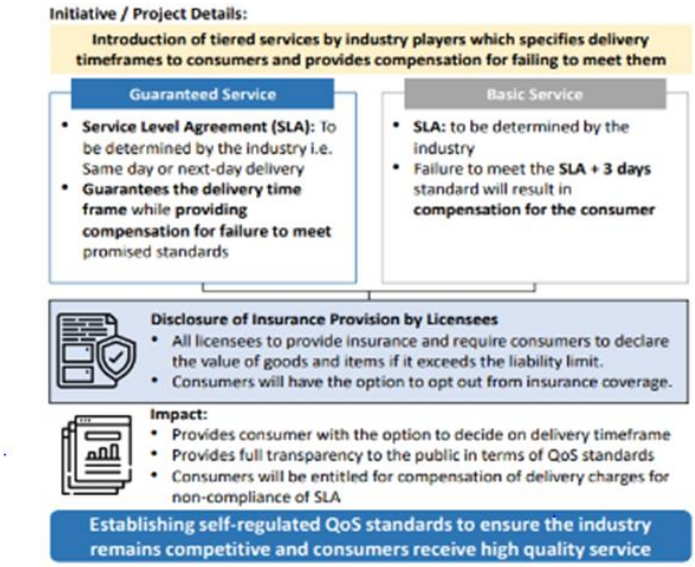
Source: MCMC

Figure 52: Incentives for industry players to embrace digitalisation



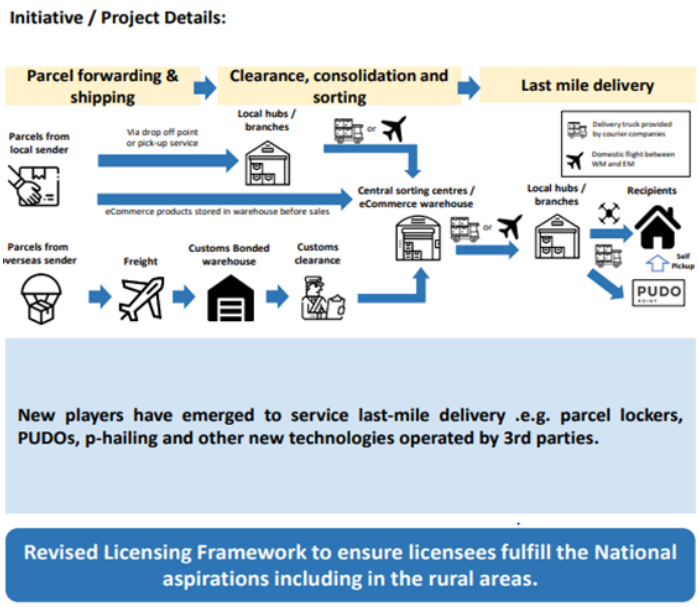
Source: MCMC

Figure 53: Self-regulated QoS standards



Source: MCMC

Figure 54: Licensing framework review



Source: MCMC

Overall, the PAKEJ initiative is a good move to increase the efficiency and quality of courier services through infrastructure-sharing. Besides optimising operating costs for courier companies, it can potentially reduce delivery time especially during major eCommerce sales like 11.11 (Singles Day in Asia).

Status update of the ILS tax scheme

We highlight that TASCO, the prime beneficiary of the ILS tax scheme, has recorded commendable earnings growth in recent quarters – partly contributed by the tax credit under the ILS tax scheme. The most recent tax benefit would be the tax credit enjoyed with the demolition of an existing warehouse to make way for the construction of the Shah Alam Logistics Centre (SALC).

Its MYR520m capex cycle over five years will come equipped with a second round of investment tax incentives – first received in 2011 – granted under the Government's ILS scheme. This should boost the value accretion of the group's new asset acquisitions and fast-track its market share growth within the domestic logistics market.

Future earnings are set to be further lifted by a second round of ILS tax incentives granted by MIDA, which are expected to generate minimum tax savings of MYR35m (subject to the final amount of qualified capex) until fully utilised.

Figure 55: Approval of the first ILS tax incentive obtained in 2005

Qualifying capex investment	**MYRm**
Building and Warehouse facilities	47.1
Truck fleet	25.7
Racking, plant and machinery	9.6
Total qualifying investment	**82.4**
Total ILS tax credit claimed	**11.9**

Source: TASCO

Figure 56: The effect of the second ILS tax incentive on TASCO's assets (2021-2026)

	Build-up size (sqf)	**Value (MYRm)**	**Construction period**	**Estimated completion date**
SALC 4-storey phase 1	620,000	150	Jan 22 – Dec 23	Jan-24
SALC 4-storey phase 3 (extension)	400,000	80	Jan 23 – May 24	Jun-25
Westport 2-storey warehouse	470,000	120	Jul 22 – Sep 23	Oct-23
Haisan warehouse	500,000	100	Jan 24 – Nov 25	Dec-25
Total building investment		**450**		
Prime movers, trucks and trailers		50		5-year period
ICT hardware and software		20		5-year period
Total ILS capex investment		**520**		

Source: TASCO

Figure 57: Shah Alam Logistics Centre (SALC)

Source: Company data

Artificial intelligence and automation in Malaysia's transportation and logistics industry

Malaysia has reported a sluggish adoption rate of Industry 4.0, with only 15-20% of businesses having really embraced it. McKinsey & Co found that 50% of work in Malaysia are made up of repetitive actions that can be automated. The Government has set out frameworks for the incorporation of artificial intelligence (AI) by numerous sectors of the economy. These comprise the Malaysia Artificial Intelligence Roadmap 2021-2025 (AI-Rmap) and the Malaysian Digital Economy Blueprint (MDEB), spearheaded by the MyDIGITAL Corporation and the Economic Planning Unit. The National Industrial Revolution 4.0 (4IR) Policy is estimated to increase the country's output by 30% across all sectors by the end of 2030, with AI playing a substantial role in attaining that target.

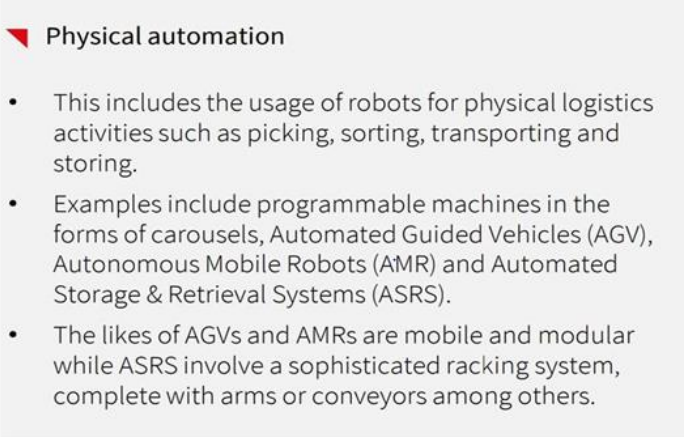
Notwithstanding this, AI adoption has gained traction in Malaysia's logistics industry. For example, Port of Tanjung Pelepas has entered into an agreement with software company Innovez One, MarineM Solution, to embark on digitalisation using the latter's MarineM Solution. The solution will help Port Of Tanjung Pelepas optimise tug and pilot operations, and minimise delays in the first and last miles of its logistics chains. Innovez One's MarineM Solutions has a track record garnered from its application in some regional ports like the Port of Tanjung Priok in Indonesia. Here, the solution reduced the overall distance travelled during tug and pilot operations by 20%, cutting emissions from these vessels and saving USD155k in fuel costs pa. The average waiting time for visiting ships was also reduced from 2.4 hours to 30.6 minutes.

For Port of Tanjung Pelepas specifically, Innovez One's MarineM software will provide an interface where agents can register their vessels and order services to support arrivals such as supplies, logistics and marine services. Using algorithms powered by AI and machine learning, its planning module will automatically manage schedules and dispatch resources, assigning pilots and tugs to various jobs and handling the logistics required to transport pilots to boarding grounds. The system is able to instantly reallocate resources if a vessel's estimated time of arrival (ETA) changes, thereby helping to reduce waiting times and congestion. Agents can monitor the status of their orders in real time and automate their billing processes, while a live map of vessel movements is also included. Digitalisation is absolutely vital for ports, and certainly the way of the future, as shipping activities are expected to grow even further ahead.

In light of the growth in ASEAN's internet economy, it comes as no surprise that the logistics sector, and the subset of warehousing, has become an area of growth in the region. Warehouse businesses are ramping up, as the demand for more efficient warehouses has logistics companies turning to technology to build next-generation storage spaces. In fact, warehouses are even identified as the new hot property in Asia, due to the unique problem created by strong online shopping demand and supply chain disruptions. This problem is that warehouses around the world are close to full capacity, with vacancy rates at record lows – the vacancy rate in Asia is at around 3%.

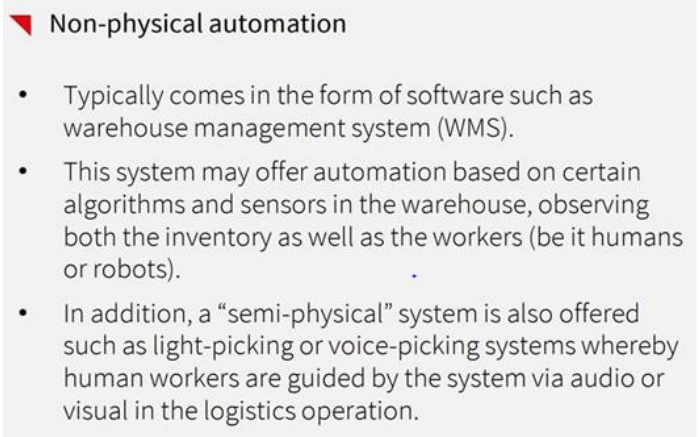
Henceforth, implementation of AI via warehouse automation in Malaysia is crucial in addressing the dearth in warehousing options. Automation undoubtedly brings with it improved financial gains. At least 5-7% revenue growth is recorded by companies as a direct result of the automation they adopted. In the logistics sector, revenue boost is around 10-20% per square foot of space, particularly those used for e-commerce operations. Warehouse automation comes in two forms – physical and non-physical.

Figure 58: Examples of physical automation



Source: JLL Research

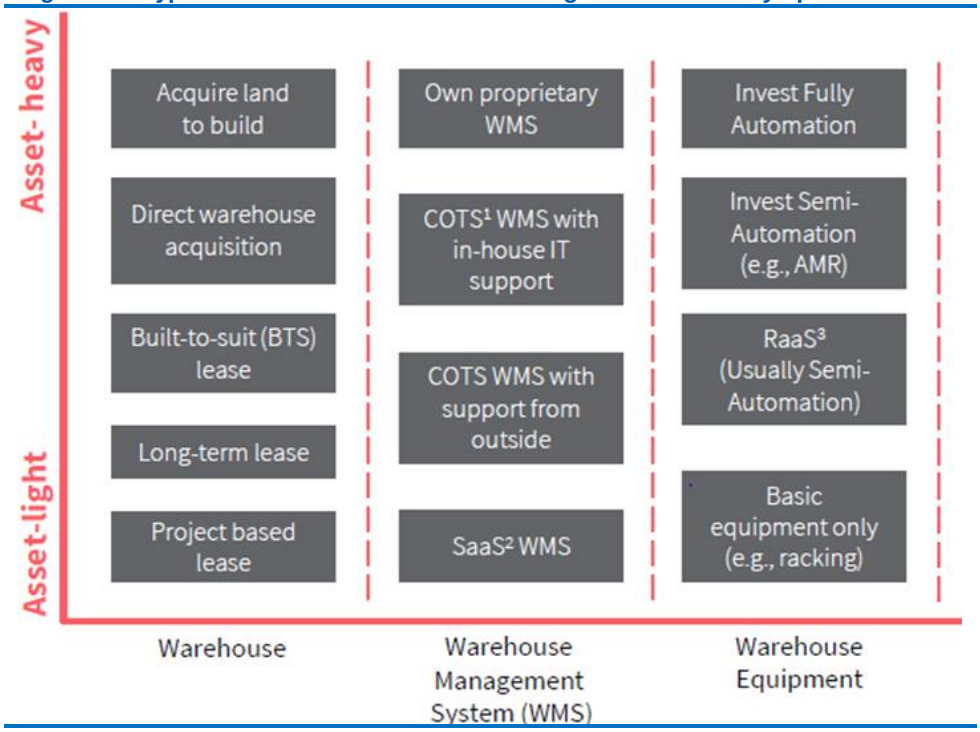
Figure 59: Examples of non-physical automation



Source: JLL Research

Both physical and non-physical automation comes with varying degrees of services and types. Logistics players can make choices depending on whether their operations are asset-light or asset-heavy. For example, an automated storage and retrieval systems or ASRS warehouse is typically for asset-heavy logistics, while modular machines such as automated guided vehicles or AGVs and autonomous mobile robots or AMRs can also be suitable for asset-light operations. For high-throughput or smaller operations, warehouse management systems and voice/light picking systems can be considered.

Figure 60: Type of automation based on asset-light or asset-heavy operations



Note: COTS = commercial off-the-shelf, SaaS = software as a service, RaaS = robot as a service
Source: JLL Research

As adopting automation is a significant commitment for the logistics players – especially in terms of capex, maintenance and operation management – it is important to quell the misconception that it always comes with steep costs. The scale and types of warehouse automation vary – which means the cost of implementing automation will vary as well. Systems that require physical installation and fittings and are non-modular such as ASRS will comparatively have higher price tags. For instance, ASRS adopters can potentially be looking at a cost of between MYR800 to MYR1,500 per pallet position. Meanwhile, for mobile or modular robots, the cost can be much lower, ie in the tens of thousands of ringgit depending on the robot models, services offered and complexity. Non-physical automation, such as those provided by WMS, have even lower price tags, ie, few hundred ringgit depending on the service and package offered (such as license types, number of users, etc.).

While the push factor has been apparent, such as the Government's initiative and foreign investment's directive – the pull effort by warehouse and logistics players has significant room for improvement. Increasing the awareness of warehouse automation and eliminating misconceptions could improve the situation. Going forward, parties such as industry players and the Government will have to play strategic roles to drive up the rate of automation in the sector.

Featured Stocks

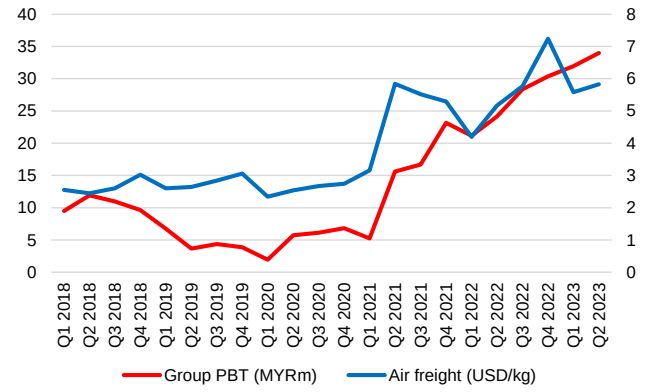
TASCO (TASCO MK, BUY, TP: MYR1.75)

We expect its near-term performance to be underpinned by robust trade flows in spite of the deceleration of global economic growth, new business wins across multiple industries, and the ILS tax incentive supporting earnings.

Volumes holding up. Comparing ocean and air freight indices to TASCO's quarterly PBT proves the sustainability of its international business segment's performance, despite the continuous drop in freight rates. Management guided that the year-end will likely see ocean freight rates dropping further, but the resulting volume surplus – given the new-found affordability – should more than mitigate its impact, along with strength in its contract logistics & transport (CLT) segment. That said, we expect the trade flow traction to sustain, with the Department of Statistics reporting that both export/import volume indices continued to see an uptrend even in Aug 2022, growing by 7.4% YoY and 52.7% YoY. While we remain cautious of the slowdown of the global economy, the positive total trade locally should entail positive throughput volume growth for TASCO in the near term.

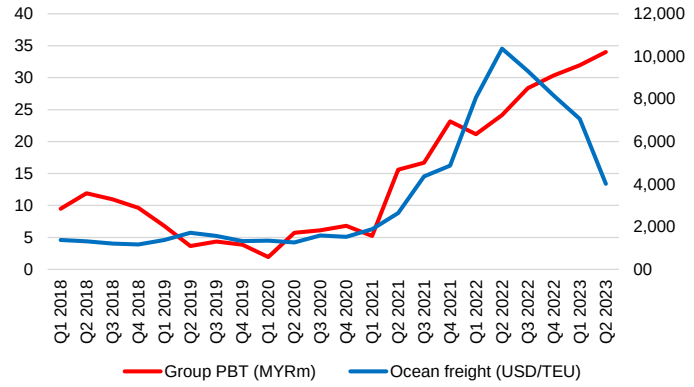
Expansion plans and tax credit allowance still underway. We also look forward to the construction of a 650k sq ft warehouse under Phase 1 of the Shah Alam Logistics Centre expansion, targeted to be completed in Oct 2023. This should allow TASCO to capture the warehouse shortage opportunity, while enjoying superior yields come 1H24, given the low land cost. Recall that the total ILS capex investment amounting to MYR520m is indicative of MYR75m worth of tax credit over the next five years, which should bolster TASCO's bottomlines.

Figure 61: Air freight rates vs group BPT



Source: Bloomberg, RHB

Figure 62: Ocean freight rates vs group PBT



Source: Bloomberg, RHB

Business wins looking promising. For the CLT segment, management believes this year would continue to bring major business wins, with a target of 80 tenders (higher than last year), primarily from the quick-serve restaurant/fast food and oil & gas segments. This will further support its already-diverse clientele base that encompasses various economic sectors – providing support to its business operations.

The sustainable outstanding performances from the past few quarters have highlighted the importance of operational excellence and management's strategy in defying the investors' expectation of a contraction in earnings, due to decreasing freight rates – which, in turn, have led to its share price underperformance YTD. The stock's below-peer valuation of 7x presents a compelling investment proposition into the country's leading integrated logistics player that delivers consistent earnings. We make no changes to our earnings forecasts and TP, which is pegged to 15x FY23F P/E (in line with the historical mean) and incorporates a 2% ESG premium.

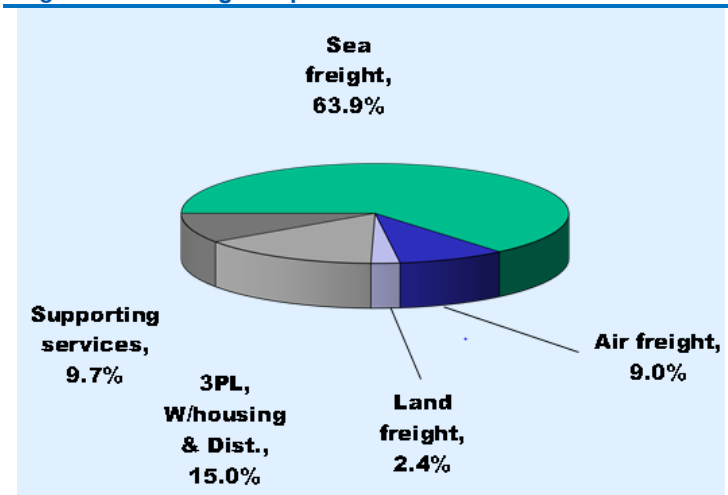
Key risks include weaker-than-expected volumes recovery and higher-than-expected opex.

FM Global Logistics (FMH MK, BUY, TP: MYR1.01)

FM Global Logistics' (FMH) full-year FY22 (Jun) results came in above expectations – with the year closing at a record high, thanks to a robust freight forwarding segment (particularly sea freight). This unit, despite the geopolitical headwinds, recorded steady volume growth and benefitted largely from the elevated freight rates. Moving forward, freight rates should continue to benefit FMH, and a continued trade flow recovery should continue to support volume growth – further complemented by the company's customer acquisition efforts.

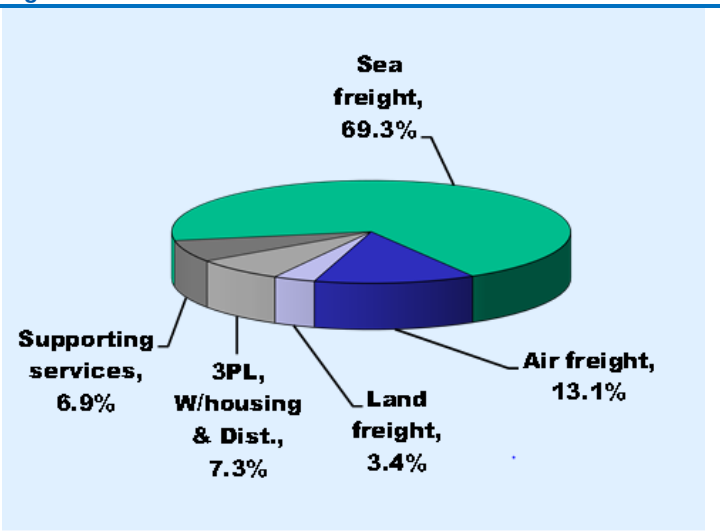
FY22 core profit was at a high of MYR46.2m. At 108% and 110% of our and Street full-year estimates, FMH's results have outperformed expectations. On a YoY basis, FY22 core profit surged +57.1%, as FY22 revenue grew +51% to an all-time high of MYR1.2bn, due to the robust growth of the freight forwarding segment – particularly for sea freight, which made up for the slight weakness of the air and land freight segments. Nevertheless, the freight forwarding segment overall saw encouraging gross profit growth, on the back of the record-high throughput volume of 126,941 TEUs (+3.8% YoY) and higher global freight rates amid market tightness. A third interim DPS of 2 sen was also declared.

Figure 63: FMH's gross profit breakdown for FY22



Source: Company data

Figure 64: FMH's revenue breakdown for FY22



Source: Company data

FMH remains positive on its growth momentum, and expects to see sturdy growth in trade activities, despite geopolitical headwinds and disruptions arising from the lockdown in China. Freight rates should stay high, and are unlikely to return to pre-pandemic levels – which bodes well for the group. The continued rebound in the post-pandemic global trade flow upon the further reopening of the economy should underpin earnings growth – albeit at a more moderate pace – complemented by the group's ongoing customer acquisition efforts.

The group will continue to enhance its client portfolio for the third-party logistics (3PL) segment, prioritising customers with quicker inventory turnover and credit terms. We look forward to the lifting of the lockdown measures in China, which would boost trade volumes for FMH, and the additional warehousing space to capture the high demand and underpin positive earnings growth for its currently-underperforming 3PL segment.

Key downside risks include a weakening in global trade flows and higher-than-expected opex.

Singapore

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The logistics sector acts as a critical enabler of the economy and our everyday lives. It connects suppliers to manufacturers, and merchants to consumers, both domestically and across borders. The logistics industry is poised to benefit from Asia's growth, with the anticipated rise of consumption and manufacturing in the region. As companies look towards diversifying their existing production bases and supply chains, the emergence of South-East Asia as a viable alternative location has also placed Singapore in a good position.

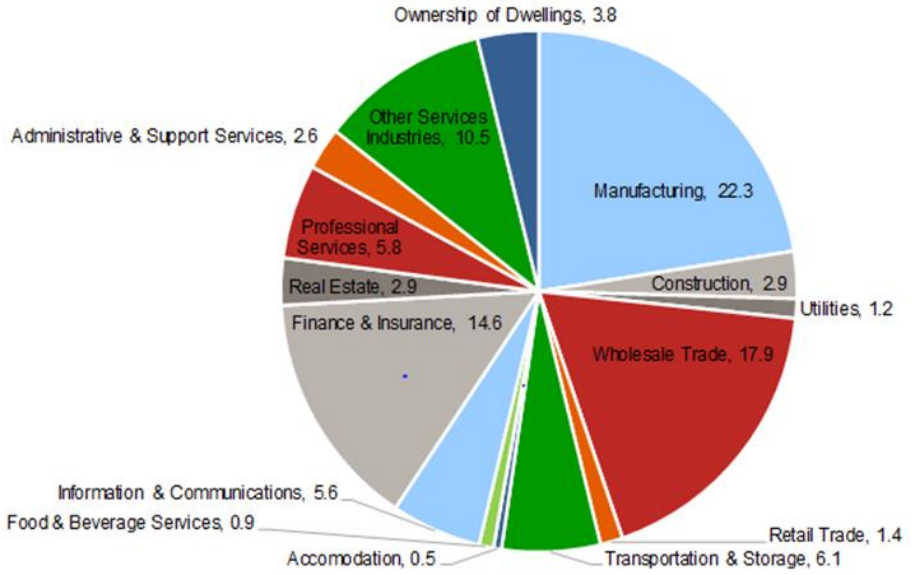
Singapore has been ranked by the World Bank as Asia's top logistics hub for 10 years in a row, and offers world-class connectivity to the region and beyond. The unprecedented boom in regional cross-border trade and consumption strengthens Singapore's relevance as a secure, highly-efficient logistics and supply chain management hub.

A key regional hub for global logistic players with the top 25 companies conducting operations here. Most of them, like DHL and Schenker, have set up regional or global headquarter functions here. Singapore acts as a base for these firms to anchor major logistics and supply chain operations, specialise capabilities, and conduct innovation activities to provide new supply chain solutions.

Comprising over 12,000 firms covering contract logistics, freight forwarding and trucking, the logistics industry is part of the transport & storage sector which contributed 6.1% (~SGD33bn) of Singapore's nominal GDP in 2021. Based on available official data, the logistics sector accounted for 1.4% of GDP (2018) and employed 2.3% of the island nation's workforce.

The sector has remained not only resilient, it also emerged strong post COVID-19, as many businesses seized opportunities to consolidate and scale their operations. This is reflected in the 2021 GDP contribution of the transport and logistics sector, which was at 1% above pre-pandemic (ie 2019) levels.

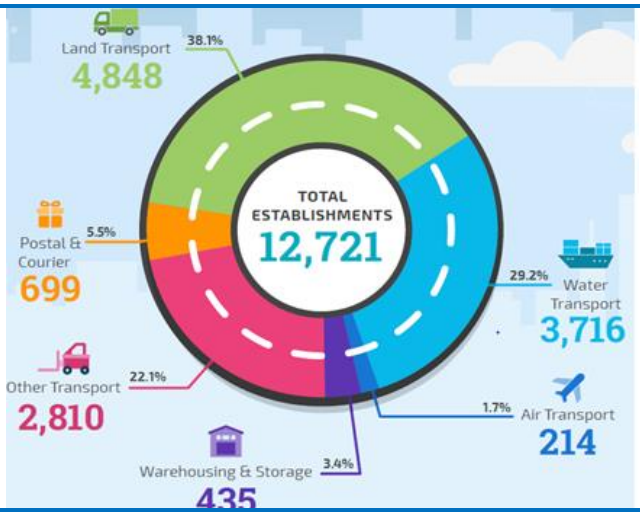
Figure 65: Breakdown of Singapore's 2021 nominal GDP of SGD533bn



Source: Singstat

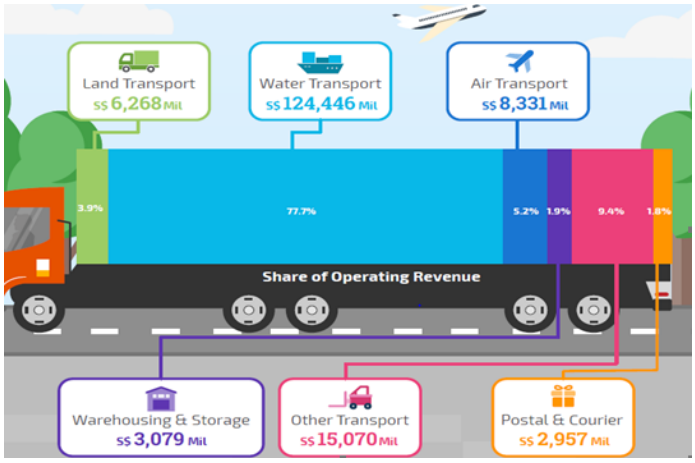
Breaking down Singapore's transport and storage sector in terms of total establishments in 2020. Land transport accounts for the majority (38%), followed by water transport (29%) and other transport sectors (24%). Based on total operating revenue and value added to the economy, however, water transport accounts for the bulk – at 78% and 63% of the totals. This is not surprising, considering Singapore's strategic location as a major sea port and global trading hub in Asia. The sectors' profitability ratio, defined as the ratio of operating surplus to operating revenue, increased to 10.6% in 2020 from 9.9% in 2019, based on official government statistics.

Figure 66: Transportation and storage establishments



Source: Singstat

Figure 67: Total operating revenue (2020) – SGD160.5bn



Source: Singstat

World-class infrastructure the key for rapid logistics sector growth. The development of the logistics industry started to speed up in 1967 when the Association of Southeast Asian Nations (ASEAN) was formed. With a 700m-strong ASEAN population, Singapore's hinterland expanded. The subsequent implementation of free trade agreements between ASEAN and other countries facilitated the growth of goods- and services-producing industries, which in turn promoted the growth of the logistics industry.

A key link between the Pacific and Indian Oceans, Singapore is strategically located along the Straits of Malacca. Its geographical advantage – at the nexus of major shipping lanes – is one of the critical factors spurring the development of the logistics industry since the 1950s. This is even more important in recent and future times, with the launch of China's Belt and Road Initiative (BRI) and with Singapore being a key node along the 21st Century Maritime Silk Road.

Singapore's external transport connectivity mainly depends on seaports, airports and road connectivity between Singapore and Malaysia. From being a mere gateway to Malaysia, it has transformed into an international shipping hub. Annual seaport cargo throughput increased from 130m tonnes in 1987, when Singapore was known as a South-East Asia shipping hub, to 600m tonnes in 2021. Its annual seaport container throughput grew to reach 37.5mn TEU in 2021, a 5-year CAGR of 4%.

Globally recognised as one of the best airports in the world today, Singapore Changi Airport handled just 200,060 tonnes of airfreight throughput back in 1981. This grew to 2m tonnes of airfreight throughput in 2021. The improvements in transport connectivity have indeed supported the growth of the logistics industry, by providing the necessary infrastructure for the industry to flourish.

Figure 68: Key logistics facilities distributed across Singapore

Source: SurbanaJurong

There are plans to double Singapore's annual cargo handling capacity at Changi Airport from 3m to 5.4m tonnes, with the completion of the upcoming Changi Airport Terminal 5 by 2030. Singapore also has Asia's most extensive network of free trade areas. There are currently nine free trade zones (FTZs) demarcated in Singapore that enjoy temporary suspension of duties and the Goods and Services Tax (GST) imposed on products. Supporting the development of the logistics industry, these FTZs are strategically located around airports, seaports/ferry terminals, as well as distribution and logistics parks.

Tuas Mega Port – embedding technology and sustainability to build world's largest container port. Tuas Mega Port, expected to be fully operational by 2040, will be the world's largest container port. It is capable of handling 65m TEUs, as the world's largest fully automated terminal. The first phase of the port was officially opened on 1 Sep 2022.

The smart port will harness advanced technologies such as artificial intelligence and the IoT to deliver green and sustainable solutions. These include driverless automated guided vehicles, smart sensors to detect shipping anomalies such as piracy, and data analytics to predict traffic congestion spots.

Sustainability is integral to the construction of Tuas Mega Port. It provides a single consolidated location for Singapore's container activities, which significantly reduces inter-terminal haulage operations and greenhouse gas emissions. To adapt to rising sea levels, Tuas Mega Port will have an operational platform of 5m above the mean sea level. More than 50% of the total fill materials for phases 1 and 2 of this mega project are dredged material and excavated earth from construction projects. Reusing such materials cuts down the reliance on sand for reclamation and saves more than SGD2bn in fill material costs.

The combination of having world-class air connectivity through Singapore Changi Airport and sea connectivity from Tuas Mega Port will put the country in a strong position to be the world leader in global logistics in the coming years.

Figure 69: Artist's impression of Tuas Mega Port

Source: Channel News Asia

Figure 70: Artist's impression of Changi Airport Terminal 5

Source: Channel News Asia

Industry Transformation Map (ITM) 2025

Logistics ITM 2025. In Oct 2022, the Singapore Government introduced a refreshed Logistics ITM, which seeks to position Singapore as a world-class logistics hub in Asia, where companies build innovative capabilities to keep Singapore and the world's goods moving. This was announced along with four other manufacturing sector ITMs (for electronics, precision engineering, energy & chemicals, and aerospace). The aim of these ITM's is to grow advanced manufacturing sector value-adds to the economy by 50% from 2020 to 2030, and continue to account for c.20% of the nation's overall GDP.

The refreshed logistics ITM will focus on transforming the industry through productivity and innovation, and strengthening Singapore's role as a critical node in global supply chains. In 2020, the logistics sector generated SGD6.2bn in value-add, and employed 85,000 workers. Through the ITM, the industry is expected to achieve an annual value-add growth of 2% pa to SGD6.9bn, and introduce 2,000 new jobs by 2025. The Government has laid out four key strategies to achieve these objectives, as detailed below:

i. **Attract new investments and transform warehouse operations.** Singapore will work closely with companies to attract and anchor best-in-class warehouse operations that are highly automated and provide high value-added services that will set a new benchmark for operations in Singapore. Dubbed the "Red Lion", DB Schenker's next-generation warehouse in Singapore is an example. The facility houses state-of-the-art warehouse management systems and adds more than 250 positions in Singapore.

   To support the transformation of existing warehouse operations, EDB and EnterpriseSG have set a target to on-board 75 warehouses to the goDCE distribution centre of excellence assessment framework by 2025. The goDCE programme was created by the Centre of Innovation for Supply Chain Management (COI-SCM) at Republic Polytechnic and funded by SkillsFuture Singapore. It provides companies with an assessment of their warehouse processes, identifies gaps and proposes productivity and innovation solutions. It will also provide support to implement the proposed solutions and build capability through project-based training for employees.

ii. **Create quality jobs, focus on job redesign.** The attraction of best-in-class warehouses will create quality jobs as companies anchor more sophisticated roles in operations and innovation. The Logistics Jobs Transformation Map, launched in Nov 2021, has identified the emerging skills for the industry. The priority skills for the logistics workforce are digital and green skills, such as data interpretation and analysis, artificial intelligence application, applications development, business advisory, as well as sustainability management. These skills will enable workers to take on in-demand roles in technology and data analytics, such as software engineers and digital innovation leads. The Government will partner with institutes of higher learning, training providers, industry players and trade associations and chambers support the training of workers in these new roles.

   Job redesign will also be important, as companies transform their activities. Agencies will work closely with companies to redesign roles, particularly in warehouse operations, freight forwarding and administrative processes.

Government will also support the reskilling of these workers through various initiatives and education programmes.

iii. **Digitalise the sector to drive productivity initiatives.** Digitalisation allows logistics companies to gain better visibility of their operations, optimise processes, and invest in automation to increase efficiency. This will allow the broader supply chain to reap full benefits such as increased productivity and cost-savings. Under the refreshed Logistics ITM, agencies seek to enable 40% of small and micro firms to adopt at least one digital solution by 2025. Examples of these includes: The Container Depot and Logistics Association (Singapore) initiated a project to develop a container tracking system for the logistics ecosystem, supported by EnterpriseSG. This system enables container haulage companies to track assets such as trailers and prime movers through installing IoT sensors and trackers. Companies can use the system to improve their operational efficiency and use applications such as trailer sharing to optimise resources.

Since its launch in 2021, about 30 haulage companies with over 500 vehicles and 1,600 trailers have adopted the solution. It is expected that 160 more companies will adopt the solution over the next two years. Another example is iHub Solutions, a local SME that has invested in a proprietary virtual logistics system that integrates with e-commerce marketplaces and enterprise resource systems to track, trace, and monitor inventory in real time. This has enabled iHub to maintain near-perfect stock accuracy and to make better inventory decisions, allowing employees to better manage the inbound and outbound flow of goods. iHub has also developed its own digital cloud transport system which manages delivery routes and assignments for drivers, through a series of sensors attached to their vehicles. This cost-saving initiative has helped ensure greater fuel efficiency and improve driver safety and productivity.

iv. **Support companies' internationalisation efforts.** Internationalisation remains a key strategy for enterprise growth. Companies need to build capabilities in new growth areas, to capture opportunities in overseas markets and expand their global presence. A local example of this initiative is Legend Group, a diversified logistics company which has created a logistics ecosystem to provide end-to-end solutions including trade financing for bulk liquid, dry commodities, perishables, heavy haulage, and oversized cargo. It worked closely with EnterpriseSG on the introduction of in-market partners to explore collaboration opportunities with, and its M&A efforts to acquire new networks and capabilities.

These capabilities have allowed Legend Group to expand and scale its business overseas. Today, it has 15 regional offices across 11 countries and is one of the five largest tank operators in Asia-Pacific. To develop a pipeline for its overseas positions, it has also created local and overseas internships tapping on EnterpriseSG's Global Ready Talent Programme. The Government, through these ITMs, plans to continue to support companies in seizing new opportunities and expanding their global footprint.

New initiative to keep supply chains agile. Additionally in 2021, Singapore launched a SGD18m Supply Chain 4.0 Initiative to help diversify its supply chains. The initiative aims to integrate more technology to assist SMEs to develop digital and automation solutions, as well as use technology to make supply chains more resilient and secure. This is expected to drive the demand for high-specification warehouse facilities in Singapore, according to Savills.

Logistics sector – stock, supply and outlook

As of 3Q22, there is 51.5m sq m of industrial space, based on JTC data. About half of this stock is single-user factory space, which has been directly allocated by JTC to end-tenants. This is followed by multi-user factory space (23%). Logistics warehouses account for 22%, and the rest comprise business parks (5%).

As of 1Q22, there was 121.5m sq ft of warehouse space in Singapore, of which 97% was held by the private sector and 3% by the public sector. Net supply in 2021 amounted to 3.1m sq ft, significantly higher than that in 2020 (1m sq ft) as construction delays resulting from COVID-19 pushed back the completion of several warehouse projects.

Based on a JTC report (3Q), there is around 7.5m sq ft of warehouse space in the pipeline until 2024. About 1m sq ft is expected to come on-stream in 4Q, followed by 5m sq ft in 2023 and 1.5m sq ft in 2024. This translates to an average new supply of ~2.5m sq ft for the next three years (2022-2025), which is lower than the 4-year average historical completion of 2.7m sq ft (2018-2021).

Although there is a big pipeline of supply in logistics space in 2023, our discussions with landlords indicate that there is strong demand backing this, from a combination of new and expansion demand as well as stockpiling demand.

Demand drivers. Based on a Savills report, leasing demand for logistics space comes from lease renewals by existing e-commerce players, and some 3PL companies that expanded their warehouse network to support growing demand for domestic and international delivery amid the accelerated adoption of e-commerce. For instance, J&T Express opened a new warehouse at Changi Airfreight Centre to manage its international delivery and a new fulfilment centre at Penjuru to meet the rise in demand for ecommerce fulfilment and warehousing solutions.

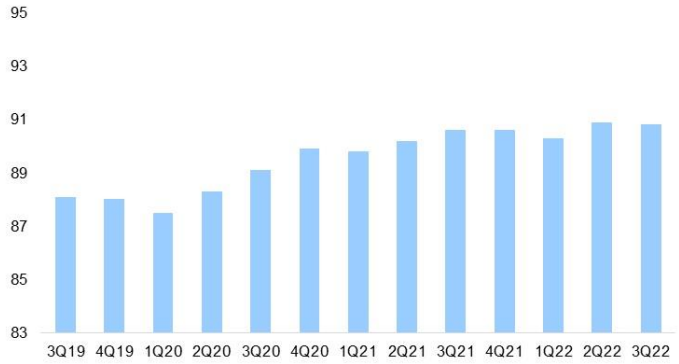
Demand is also driven by some industrialists which have successfully up scaled and internalised their own distribution and warehousing operations (and subsequently expanded or relocated to a larger facility). Furthermore, the rapid adoption of digital supply chain solutions also propelled demand for modern warehouse developments, with more industrialists relocating from older warehouses to newer or ramp-up warehouse facilities. This contributed to the healthy take-up in the West Planning Region last year, with larger firms taking up significant space in Tuas due to a lack of ready-built ramp-up facilities in other parts of Singapore.

Modern ramp-up logistics are better-positioned to cater to growing demand. Our discussions with various industrial REIT landlords show that there is a clear growing preference among tenants to choose modern ramp-up warehouse facilities over conventional warehouses, on the premise of efficiency, costs and scalability. This is reflected in rental rates of modern ramp-up facilities in the market, which can command a 30-60% premium over rental rates for traditional cargo-lift warehouses.

Logistics sector occupancy rate to remain high at above 90% levels... Overall, the logistics sector's occupancy rate dipped slightly in 3Q22 to 90.8% (-0.2ppts QoQ, +0.2ppts YoY). This was mainly due to the completion of more logistics facilities during the quarter, which outpaced supply.

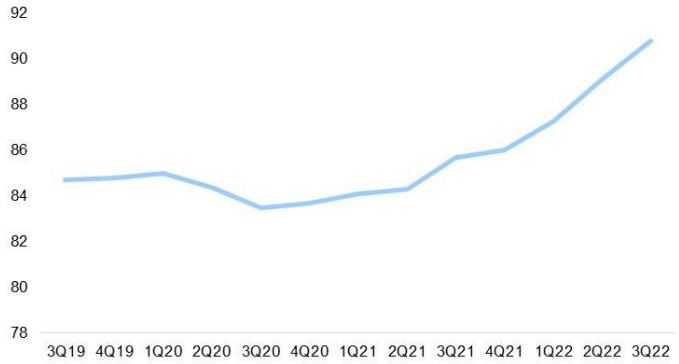
…with rental rates continuing to inch up. Warehouse rental rates in 3Q22 continued to rise (+1.9% QoQ, +6.0% YoY) despite the slight dip in the occupancy rate for the quarter. Despite higher supply in the pipeline and the economic slowdown, our channel checks show that it clearly remains a landlord's market – especially for the modern-specification ones in high-demand locations. For 2022, we expect logistics sector rental rates to grow by 5-7% YoY, and in 2023, we expect this to increase by 1-3% YoY.

Figure 71: Occupancy rates of warehouses in Singapore (by quarter)



Source: JTC

Figure 72: Logistics facilities rental index



Source: JTC

Who are the S-REIT winners of the logistics boom?

In summary, we believe S-REITs with these key differentiating elements stand to benefit from the boom of the logistics sector:

i. Location of the industrial assets, and with particular accessibility to transport nodes and a presence in supporting industrial clusters.

ii. Asset enhancements and asset rejuvenation via redevelopment to maximise GFA or adapt to fast-changing industrial sector trends. Over the last decade, various industrial REITs have revamped and replaced their old-fashioned cargo lift logistics facilities, and some have also added cold storage amenities.

iii. Modern design specifications of the buildings, with effective space utilisation, customisations and automation.

iv. A focus on sustainability, which helps in reducing carbon emissions and power consumption, as well as improving access to renewal energy sources such as solar power and EV charging points.

Industrial S-REITs are generally well-diversified across various industrial asset classes and markets – this is in order to diversify and scale up their presence. Among the S-REITs there is only one pure-play logistics REIT – Mapletree Logistics Trust, which has presence across Asia.

Figure 73: Breakdown of industrial REITs by asset class

	Business Parks (incl suburban offices)	High Tech Buildings	General/Light Industrial	Logistics	Data Centers	Factory	Others	Total
Ascendas REIT	47%	0%	19%	25%	9%	0%	0%	100%
Mapletree Industrial Trust	7%	16%	6%	0%	54%	17%	0%	100%
Mapletree Logistics Trust	0%	0%	0%	100%	0%	0%	0%	100%
Frasers Logistics & Commercial Trust	24%	0%	0%	66%	0%	0%	10%	100%
Keppel DC REIT	0%	0%	0%	0%	100%	0%	0%	100%
AIMS APAC REIT*	31%	7%	20%	42%	0%	0%	0%	100%
FM Glob REIT*	18%	12%	20%	51%	0%	0%	0%	100%
Sabana Shari'ah Compliant REIT*	0%	58%	9%	33%	0%	0%	0%	100%

*Note: *Based on revenue*
Source: Companies data, RHB

Figure 74: Breakdown of industrial REITs' assets by country

	Singapore	Australia	US	UK/Europe	Japan	Hong Kong	Others	Total
Ascendas REIT	61%	14%	15%	10%	0%	0%	0%	100%
Mapletree Industrial Trust	49%	0%	51%	0%	0%	0%	0%	100%
Mapletree Logistics Trust	20%	8%	0%	0%	11%	22%	38%	100%
Frasers Logistics & Commercial Trust	10%	52%	0%	38%	0%	0%	0%	100%
Keppel DC REIT	56%	9%	0%	30%	0%	0%	5%	100%
AIMS APAC REIT*	70%	30%	0%	0%	0%	0%	0%	100%
ESR-LOGOS REIT**	87%	13%	0%	0%	0%	0%	0%	100%
Sabana Shari'ah Compliant REIT	100%	0%	0%	0%	0%	0%	0%	100%

*Note: *Based on revenue ** Estimated*
Source: Companies data, RHB

Featured Stocks

Ascendas REIT (AREIT SP, BUY, TP: SGD3.15). Ascendas REIT is a pioneer in Singapore's business park space which caters to a good mix of R&D companies, technology firms and high-tech manufacturing sectors. It has also been scaling up its presence in logistic sectors, which we see as positive. The REIT has the largest number of BCA Green Mark properties (40) in its total portfolio (49), the largest number of public EV charging points (76) and largest combined solar farm (>21,000 solar panels) in Singapore.

ESR-LOGOS REIT (EREIT SP, BUY, TP: SGD0.46). Post recent-merger with ARA LOGOS Logistics Trust, ESR-LOGOS REIT has emerged stronger, with a well-diversified portfolio of majority new-economy assets – which puts it in a good position to take on the rising macroeconomic uncertainties. The REIT's active portfolio recalibration via divestment of non-core shorter lease assets and addition of high-quality freehold logistic assets are a step in the right direction, in our view. Another key positive has been the strong commitment of its sponsors, via acquisitions of additional stakes at a premium, and a healthy asset injection pipeline.

AIMS APAC REIT (AAREIT SP, BUY, TP: SGD1.48). AIMS APAC REIT remains an attractive proxy to the favourable Singapore industrial sector outlook, with a majority of its income derived from the attractive logistics sector and long leased Australian business parks. The REIT is also minimally impacted by rising interest rates and utility charges. Its modest gearing offers room for opportunistic acquisitions. It recently partnered with SP Group to install large-scale rooftop solar systems across six properties in Singapore

Thailand

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Thailand's transportation network for logistics and travel has long been unable to fulfil the country's demand for services efficiently. In terms of overall transportation infrastructure quality, Thailand is ranked lower than its neighbours – especially Singapore and Malaysia. It still relies heavily on road transport. Note that >90% of logistics activities are facilitated by trucks, while most Thais still prefer to use private cars to travel. As such, this has led to a heavy spike in road transportation usage, and yet unresolved traffic congestion.

At the macroeconomic level, the country's plans for developing the transportation network over the past decade include the 20-year National Strategy (2017-2036), the 12th National Economic and Social Development Plan, the 3rd Thailand Logistics Development Plan (2017-2022), and Thailand's Transport Infrastructure Development Strategy (2015-2022). Details of these plans concur, that Thailand should concentrate on shifting its reliance on road transportation to other low-cost modes, as well as on developing infrastructure and facilities linking major cities across the country. In this regard, focusing on developing the railway system as the country's major transportation network should be the key priority.

Road transport

According to the Department of Highways, Thailand's network of roads currently span 66,871km – including 4-lane highways (16,697km) and motorways (146km). Roads under the supervision of the Department of Rural Roads and Expressway Authority of Thailand span 49,080km and 208km. For provincial roads under the local authorities on a countrywide basis, these networks total 101,846 km. Based on the Ministry of Transport, the transportation volume via road networks in Thailand accounts for 80% of total transportation volume via all modes. As such, road transportation has become the most widely used mode in the past decades – due to the size of its network and the underdevelopment of low-cost transportation modes including railway and marine.

Deep-rooted problems related to the country's road network include:

i. Extensive traffic congestion in urban areas where the population continues to increase – more and more people are using their own vehicles even during peak hours, and the growth of road networks remains sluggish;

ii. Poor discipline among road users, which can be resolved by education and stricter law enforcement;

iii. Cities are expanding without direction and proper control;

iv. The budget to maintain and expand the highways is insufficient;

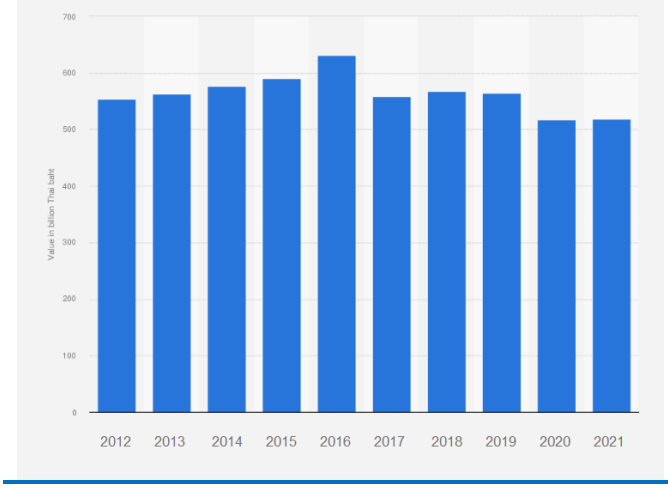
v. The unresolved cumulative financial loss of Bangkok Mass Transit Authority (BMTA) has led to low-quality public buses services in Bangkok and the vicinities;

vi. The majority of infrastructure, regulations and public transport systems have not been designed or modified to accommodate the elderly, which is a segment that is growing.

Prior to FY13, major routes – especially Highways no. 1, 2, 3 and 4 – were widely used to connect Bangkok to the provincial areas in four different directions. From FY27 onwards, without any major expansion of road networks, traffic congestion within major highways will reach a density of >90% during the rush hour and festive holiday periods, and congestion will be found even in industrial production areas and commercial gateways (Suvarnabhumi International Airport, Don Mueang Airport, Laem Chabang Port, etc.).

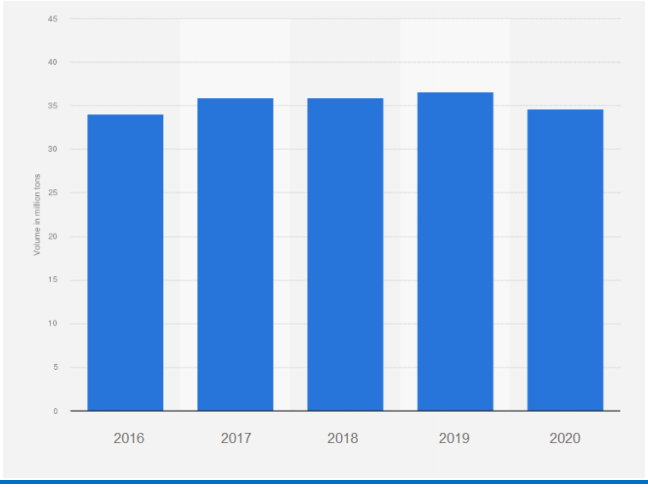
Currently, the road network in Thailand has covered all areas but its quality has been a long-time factor behind the worsening traffic congestion and the incidence of accidents. Therefore, future developments in the country's road system should focus first on the quality of the network at hand, and not on just building new routes. As the road networks span across the country, about two-thirds of the population can access highways and rural roads, while >80% can reach these networks within just a 5km distance.

Figure 75: Cost of road transportation for the logistics industry in Thailand (2012-2021)



Source: Statista

Figure 76: Volume of international road freight in Thailand (2016-2020)



Source: Statista

Rail transport

State Railway of Thailand (SRT), which oversees the railway network in Thailand, covers routes spanning 4,043km across 47 provinces. Before the major expansion project over the past decade, the network consisted of 3,764km of single-track, 174km of double-track and 105km of triple-track routes. Due to the low proportion of double- and triple-track railway routes within the network, there have been initiatives to expand the tracks to ease the bottlenecks within the network, and avoid the frequency of turnarounds. In addition, the intersections between railways and roads may total 2,460 – and these obstacles have limited the speeds of passenger and freight trains to only 60km per hour on average and 35km per hour.

For mass rapid transit networks under the supervision of MRTA and Bangkok Metropolitan Administration (BMA), existing routes under the operation include:

i. MRT Green Line, widely known as the Bangkok Train System (BTS) Line, covering 68km and cutting across Bangkok's central business district;

ii. The full circle loop of the MRT Blue Line (48km);

iii. Phase 1 of MRT Purple Line (23km);

iv. The airport Link from Phayathai to Suvarnabhumi International Airport (28.5km);

v. MRT Red Line (37.6km).

The MRT network is hugely popular, and is an alternative to public bus services within Bangkok and the vicinities.

Meanwhile, there have been limitations in using the railway for logistics purposes, because Thailand's railways cannot reach all logistics destinations and, at some point, deliveries have to switch to some other modes of transportation. Therefore, logistics activities via road networks are still viable and flexible for all destinations. For intercity transportation, the railway is normally used for shipping dry bulk (coal, cement, minerals, agricultural products, etc) and liquid bulk (chemicals, petroleum, etc) from factories and processing facilities to deep seaports. Multi-modal transport is still a pre-requisite for shipping via rail. According to SRT, miscellaneous goods are the top items transported via rail, followed by petroleum and cement.

The number of passengers travelling by rail is still negligible, while daily trips per route are expected to exceed 150,000 by 2032. Note that the Ministry of Transport has set a target of 75m trips for people travelling by rail a year. Major obstacles against rail travel include:

i. A limited network of urban railways;

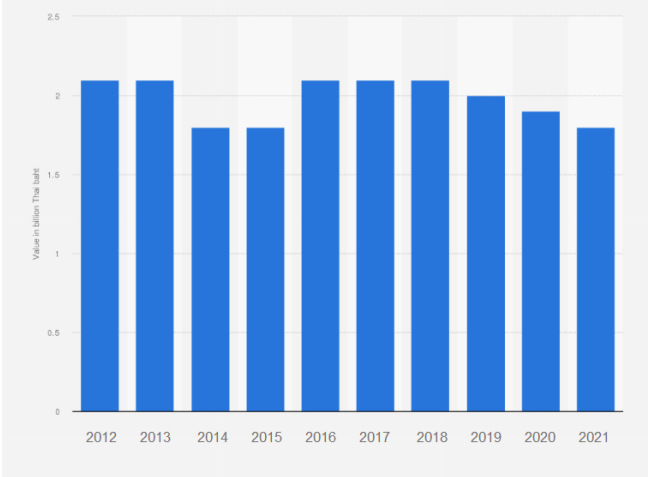
ii. The poor quality of intercity railway networks;

iii. Insufficiency of other transportation modes to feed passengers into the railway network;

iv. Inefficient operations managed by SRT.

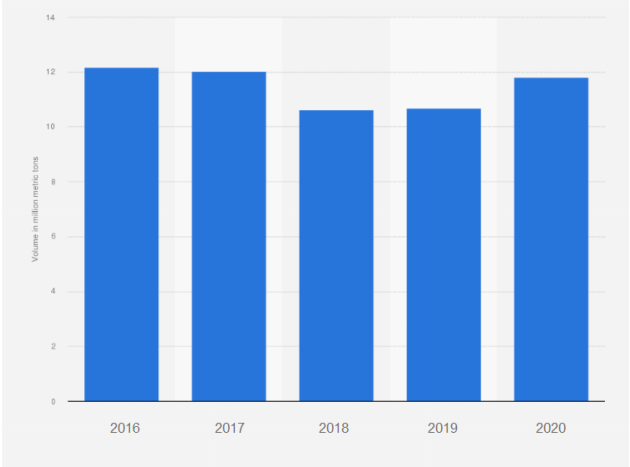
Accessibility to railway stations in Thailand has been rather limited. 40% of the population can access the railway network within a 20km distance, while <60% can access the railway network within a 40km distance. Only two-thirds of them can access the railway network within a 60km distance. The most accessible area has been the Southern region of Thailand, where >80% of population can reach railway stations within a 40km distance.

Figure 77: Cost of railway transportation in the logistics industry in Thailand (2012-2021)



Source: Statista

Figure 76: Total volume of railway freight in Thailand (2016-2020)



Source: Statista

Marine transport

Thailand has 22 major rivers with a total length of 5,800km. Among these, five rivers (Chao Phraya River, Pa Sak River, Mae Klong River, Bang Pakong River and Tha Chin River) spanning 1,400 km have been widely used for transportation and logistics activities, and the Chao Phraya River has accounted for the highest volume of goods transported for a long time, due to its strategic location, ie it cuts a vertical path from the lower part of the Northern region to the Gulf of Thailand.

For coastal transportation, there have been three locations for seaports adjacent to the Gulf of Thailand within the Central, Eastern and Southern regions. Currently, there are 490 ports registered with the Marine Department for travel and tourism purposes, while there are five major ports mainly used in freight forwarding activities – Bangkok Port, Laem Chabang Port, Ranong Port, Chiang Saen Commercial Port, and Map Ta Phut industrial port.

There are normally three major logistics activities for marine transportation and these include transporting:

i. Dry bulk (coal, rock, sand, cement, minerals, sugar, grains, wood chips, etc) and liquid bulk,

ii. Container cargo mostly found in sea transportation;

iii. Other miscellaneous goods (metals, beverages, machinery, etc).

Construction materials in bulk (soil, rock, sand) are normally the most common cargo passing through the Chao Phraya, while cement and coal are the most common items transported through the Pasak River. For coastal transportation, petroleum and miscellaneous goods account for the highest volume through the Gulf of Thailand and Andaman Sea, at >90% of inbound and outbound coastal transportation volume. Bangkok Port has already reached its maximum capacity, while Laem Chabang Port has reached 70% of its maximum capacity.

As coastal transportation accounts for 7% of Thailand's total transportation volume, there have been several issues impeding companies from redirecting their shipments to the mode with the lowest cost, ie sea transportation. Most seaports are not conveniently located, and incapable of facilitating large ships – this has led to double-handling and marine traffic congestion, and the insufficiency of industrial estates nearby to support sea transportation activities. As such, the majority of the national budget for sea transportation is allocated for dredging the watercourse and studying possible locations of new seaports. That said, even if the locations for new deep seaports are found, the Government also has to contend with objections from local communities.

Among the ASEAN countries, Thailand also lags behind its neighbours in terms of vessel tonnage. The countries with the most vessels are Singapore (58m gross tonnes), Indonesia (10.8m gross tonnes), Malaysia (7.8m gross tonnes), and the Philippines (4.7m gross tonnes). Thailand has a vessel tonnage of only 3m gross tonnes, and oil & petrochemical vessels and bulk vessels make up the highest proportion of this.

Air transport

In Thailand, there are 58 airports in operation, which include:

i. 28 regional airports under the supervision of the Civil Aviation Department;

ii. Six international airports under Airports of Thailand (Suvarnabhumi International Airport, Don Mueang Airport, as well the Chiang Mai, Hat Yai, Phuket, and Mae Fah Luang-Chiang Rai airports;

iii. Three airports owned by Bangkok Airways (Samui, Sukhothai, and Trat);

iv. The Royal Thai Navy's U-Tapao International Airport in the Eastern Economic Corridor.

These 38 airports are commercially operated, while other 20 are used for specific purposes. Note that the Ministry of Transport is planning to transfer the supervision and management of three airports in Buriram, Udon Thani, and Krabi from the Civil Aviation Department to Airports of Thailand, in order to strengthen the regional aviation hubs in the Northeastern and Southern regions. Among the Civil Aviation Department's airport portfolio, the Udon Thani airport is top-ranked in terms of passenger numbers while the Krabi airport contributes the highest proportion of earnings.

There are also air traffic congestion issues, as the number of passengers have exceeded the handling capacities of several major airports. This problem will return when international flights resume and recover post-pandemic, as tourists are apt to return to popular destinations in Thailand. Also, the rapid growth of low-cost airlines has been the long-time factor boosting the demand for the major expansion of several airports. Before the pandemic, airports in Bangkok, Phuket, Udon Thani, Surat Thani, Ubon Ratchathani, Krabi, and Khon Kaen already had congestion problems on the runways and passenger terminals, while others – the airports in Chiang Mai, Hat Yai, Nakhon Sithammart and Trang – have almost reached full passenger capacity.

Traffic congestion has inevitably caused delays in passenger and cargo flights, due to:

i. The lack of integration between the country's major airports;

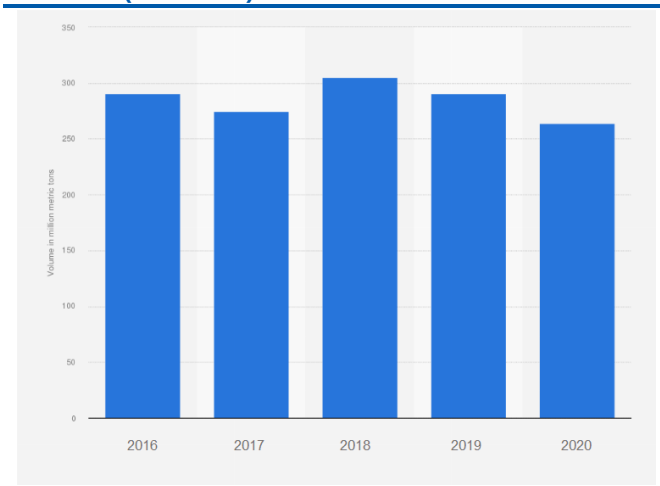
ii. The limitations large airports have in expanding capacity, due to environmental issues and objections from local communities;

iii. The under-utilisation of provincial airports.

Therefore, we believe that a review of air transportation is required to tackle the problems mentioned above. We also think that there should be an overhaul of the sector, for it to better adapt to any changes in travel and commercial demand post-pandemic.

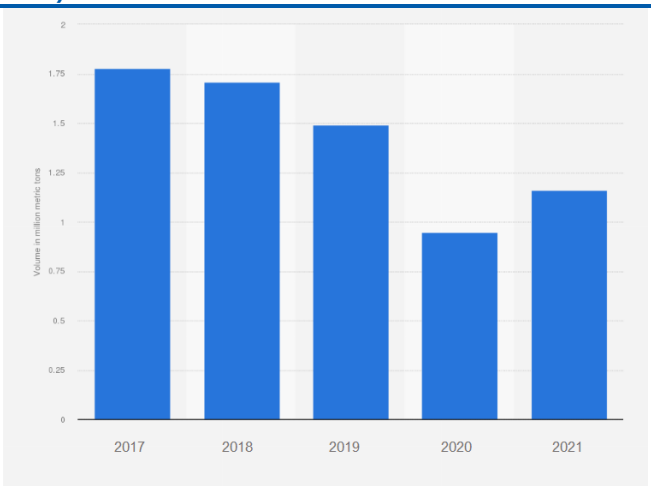
Thailand's aviation industry has grown rapidly prior to COVID-19, with the number of flights up by 9-10% YoY – driven by the advent of low-cost airlines, and the high accessibility of airports. Two-thirds of the population can access an airport from their homes or workplaces within an hour's drive, while over 90% are within two hours' drive to an airport. That said, as the aviation industry is expected to recover solidly after the pandemic, the infrastructure for air transportation still needs to be upgraded, along with improvements in aviation management and safety, as well as accessibility.

Figure 77: Total volume of international sea freight in Thailand (2016-2020)



Source: Statista

Figure 78: Total volume of air freight in Thailand (2017-2021)



Source: Statista

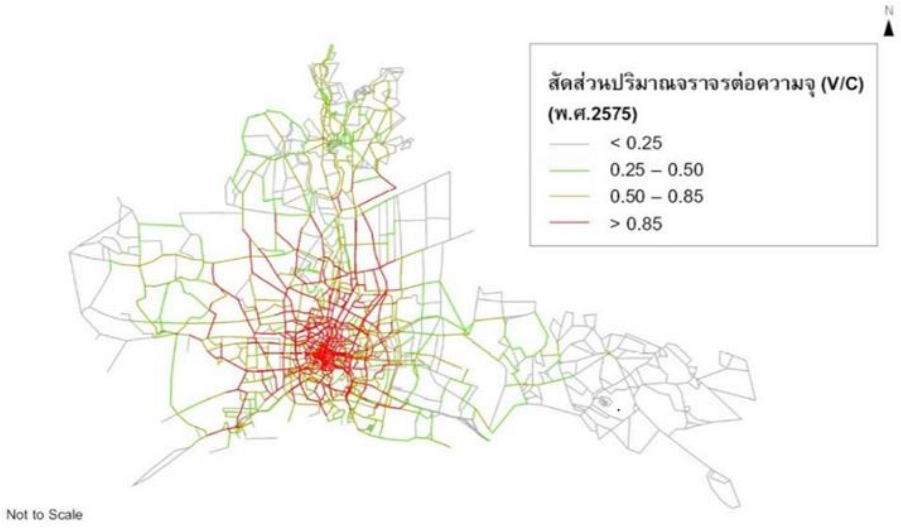
The spillover of volume

Even though connectivity within the country and the ASEAN region improves, there will still be an imbalance in the traffic via different modes of transportation. This is especially so in Thailand, when there are delays in the development of new infrastructure projects even as transportation volume increases in all its regions. If there is no upgrade of the railway network, the volume of cargo will simply spill into road networks.

Meanwhile, intra-province passenger travel is expected to increase to 1.84m trips by 2032 – this will mostly be via roads, if there are no significant developments of the railway network. 62% of passengers will use personal cars, and 33% will use public buses. Only 5% will use railway services and flights.

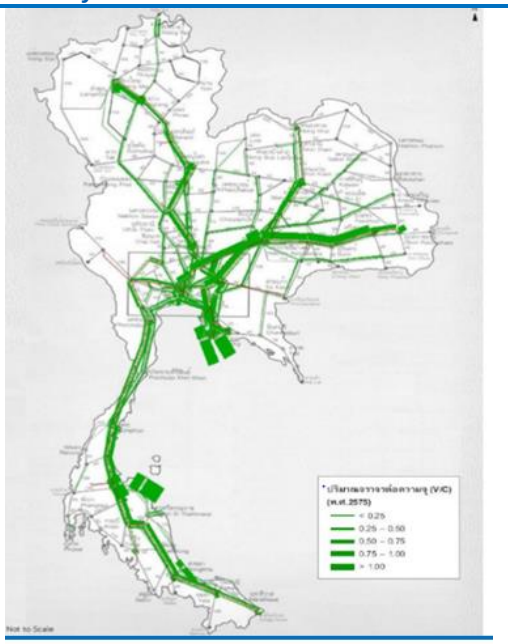
We also believe that when international trade opportunities via regional gateways pick up, the demand for logistics services will grow – particularly to transport agricultural products and industrial goods. Simultaneously, the rebound of tourism should also be another factor spurring the further development of public infrastructure.

Figure 79: Volume/capacity (V/C) ratio in Bangkok and the vicinities estimated for 2032



Source: The Office of Transport and Traffic Policy and Planning

Figure 80: V/C ratio throughout the country estimated for 2032



Source: The Office of Transport and Traffic Policy and Planning

Legal frameworks governing the development of the transportation network

The Thai Government does focus on developing new transportation projects, to ease foreseeable bottlenecks. There are three strategic frameworks that have guided the country's infrastructure development over the past 10 years:

i. **The 20-Year National Strategy (2017-2036)** is a long-term development framework that aims to make Thailand a developed nation. The focus on transportation is as follows:

- Providing guidelines to develop transportation networks, to achieve complete network connectivity and reduce socio-economic costs. The emphasis is on switching from roads to a low-cost transportation mode especially water transportation, and developing cooperative ties with neighbouring countries.
- Providing guidelines to focus on regional development, eg improving the transportation network within the Special Economic Zone (SEZ), Eastern Economic Corridor (EEC) between regional major cities.

ii. **The Third Thailand Logistics Development Plan (2017-2022)**, under the framework of the 20-year National Strategy (2017-2036) and the 12th National Economic and Social Development Plan, aims to upgrade the national logistics system so that Thailand becomes a regional hub of trade, services and investment. This involves a 3-pronged strategy:

- Supply chain enhancement;
- The development of infrastructure and facilities;
- The development of logistics supporting factors to increase competitiveness and enhance integration and cooperation between related agencies.

There is also a draft of The Fourth National Logistics Development plan (2023-2027), with the aim of making Thailand a regional gateway, as well as enhancing digital connectivity and the business capabilities of Thai entrepreneurs. This draft has been approved by the committee chaired by the prime minister. This plan is expected to reduce logistics costs from 13.8% of GDP in FY21 to 11% before the end of the 13th National Economic and Social Development Plan (2023-2027).

Due to the economic recovery, the Government's myriad stimulus measures, and a rebound in tourism and strong exports, logistics costs are expected to improve, and be equivalent to 12.9-13.3% of GDP in 2022.

iii. **Thailand's Transport Infrastructure Development Strategy (2015-2022**) under the Ministry of Transport has integrated the country's transport infrastructure network. Under this strategy, the goal of infrastructure development will re-allocate the reliance on road transportation to low-cost modes, while improving connectivity with neighbouring countries.

- **Intercity railway network development.** This is to improve the system, equipment, and basic structure of the rail network. Six routes have already been upgraded into double-track ones, and there are initiatives to develop the standard-gauge route to better connect Thailand to neighbouring countries and southern China. The ultimate goals are to increase the double-track route to cover the country-wide network, to accelerate the speed of rail transport from 30-50km per hour to 60-100 km per hour, to increase the transport load by 25%, and to raise the transport volume through the railway network to 5%.

- **Improving the public transport network and services.** This plan focuses on Bangkok and the vicinities, and aims to ease traffic problems in the Bangkok metropolitan area by expanding new MRT routes, revamp public bus transportation, and to reduce pollution in urban areas. Finally, MRTs in combination will service 5-8m trips per day within a 299km network, while the ratio of travel via public transportation:own vehicles should be 60%:40%.

- **Enhancing connectivity between key domestic production bases and neighbouring countries.** Initiatives include improving the road network to link agricultural spots and tourism spots, upgrading the road network within major cities, expanding the network linking major cities and border checkpoints into 4-lane roads, and developing inter-city motorway projects. These project enhancements will benefit the country's road network in several ways including setting a new minimum standard of asphalt roads with a >460,000km distance, upgrade to 4-lane highways on major routes with a >1,800-km distance across the country.

- **Expanding the marine transport network.** The key focus is on the study concerning the new development of inland ports and coastal ports on the Gulf of Thailand and Andaman Sea. This would benefit domestic and international transportation and open the gateway to Andaman Sea, and transform the area into an economic corridor centred around the Gulf of Thailand. Based on this, the volume of marine transportation will increase by 20%, and the country's major coastal ports will expand from the Eastern to Southern regions of the country.

- **Enhancing air transport capability.** This is the roadmap to increase the capacity of air transport services, by accelerating the development of major airports to be the country's gateway for transportation and meet international standards to efficiently support the hike in passenger traffic. Promoting airports in provincial areas and developing the aviation hub should be urgent issues as well. These policies will lead to air travel being a major alternative for long-distance travel, a higher volume of transportation through major airports, and improved airport services supporting the ever-increasing number of flights throughout the country in the future.

New developments are more than necessary

All in all, Thailand's Transport Infrastructure Development Strategy (2015-2022) aims to upgrade transport and logistics activities, and increase the country's competitiveness by developing basic infrastructure for all modes (rail, road, marine, and air) as well as connecting the transportation network systematically. The Ministry of Transport has accelerated the implementation of such projects, under this strategy.

Highlighted projects currently operating or in construction include the prioritised double-track railway routes across the country, five major MRT network extensions (MRT Green line, MRT Orange Line, MRT Purple Line, MRT Dark Red Line and MRT Light Red Line). There will also be two new MRT routes – the MRT Yellow Line and MRT Pink Line – on top of a high-speed railway linking three international airports (Don Mueang, Suvarnabhumi, U-Tapao), the first phase of the Thai-Chinese high-speed railway (Bangkok-Nakhon Ratchasima), three motorway projects (Pattaya-Map Ta Phut, Bang Pa

In-Nakhon Ratchasima, Bangyai-Kanchanaburi), Expressway (Rama III-Dao Khanong), the third stage of the Laem Chabang seaport, the second phase of Suvarnabhumi Airport, expansions of the Krabi airport and Mae Sot airports, U-Tapao airport's maintenance, repair and overhaul (MRO), etc.

Thailand has ably executed or embarked on a series of infrastructure projects related to transportation and logistics activities. Furthermore, projects that may be frozen for the time being are not likely to be abandoned – even though a majority of these have long been delayed. Clearly, rail projects carry much weight within this list of infrastructure jobs – as this mode would have the least burden on logistics costs. In spite of major concerns over pollution and the high cost of road transport, new developments in this road network are more than necessary for transport either within provinces or across provinces, as it is still the most convenient for intra-country movement.

Figure 81: Road network projects to expand alternatives for in-land transportation and logistics

	Investment value (THBm)	Remark
Motorway		
Pattaya-Map Ta Phut	17,784	Under operation and began collecting fare from Mar 2021 onwards.
Bang Pa In-Nakhon Ratchasima	84,600	Construction is already completed for 40 contracts, and works are still underway for 16 contracts. Start to operate partially in late FY23 based on the overall current progress of 95%.
Bangyai-Kanchanaburi	62,452	82% completed in term of civil works, scheduled to start operating in 2023.
Hat Yai-Malaysia border	40,787	Under negotiations with Malaysia for the location of a second border checkpoint.
Bang Khun Thien-Banphaew	30,420	Phase 1 is under construction, with an investment value of THB10.5bn and construction progress of 75%.
Nakhonpathom-Cha Am	75,700	In the public hearing process
Rangsit-Bang Pa In	31,375	In the process of being considered by the Ministry of Transport.
Expressway		
Rama III-Dao Khanong	31,244	Under construction with faster-than-planned progress. Partial operations to begin in FY24.
Third-stage expressway (N2 + E-W Corridor)	14,400	Under the consideration of the Cabinet.
Krathu-Patong	13,920	Submitted to the PPP committee for consideration.

Source: RHB

Figure 82: Rail projects account for a major portion of Thailand's focus on transportation infrastructure development

	Investment value (THBm)	Remark
Double-track railway		
Jira-Khonkaen	26,000	In operation.
Mapkabao-Jira	29,853	Partial operations to begin in 2023.
Nakhonpathom-Hua Hin	15,718	Recently commenced operations.
Prachuapkhirikhan-Chumphon	12,457	Recently commenced operations.
Lopburi-Pak Nam Pho	21,467	In operation.
Hua Hin-Prachuapkhirikhan	5,807	Recently commenced operations.
Pak Nam Pho-Denchai	62,800	EIA approved.
Jira-Ubon Ratchathani	37,500	Submitted to Transport Ministry and Cabinet for approval.
Khonkaen-Nongkhai	29,748	Submitted to Transport Ministry and Cabinet for approval.
Chumphon-Surat Thani	24,200	EIA being revissed.
Surat Thani-Songkhla	57,300	In the EIA process.
Hat Yai-Padang Besar	6,660	Information collection phase.
Denchai-Chiang Mai	56,800	In the EIA process.
Denchai -Chiangrai-Chiang Khong	72,921	Construction contracts awarded to bid winners in early FY22.
Banphai-Nakhon Phanom	66,848	Construction contracts awarded to bid winners in early FY22.
Mass rapid transit		
Bangkok and vicinities		
MRT Orange Line (Phase 1: Cultural Center-Minburi)	110,116	Under construction, with faster-than-planned progress of >95%.
MRT Pink Line (Kae Rai-Minburi)	56,700	Under construction, with faster-than-planned progress of >90%.
MRT Yellow Line (Lat Phrao-Samrong)	54,650	Under construction, with faster-than-planned progress of >95%.
MRT Red Line (Bangsue-Hua Mark and Bangsue-Hua Lam Phong)	47,000	At the project design stage.
MRT Purple Line (Taopoon-Ratburana)	131,000	Construction contracts were recently awarded to bid winners and the current progress is at 3-4%.
MRT Blue Line (Bangkhae-Phutthamonthon sai 4)	21,200	
MRT Green Line (Samutprakarn-Bangpu)	12,150	
MRT Green Line (Khukhot-Lam Lukka)	9,800	
MRT Orange Line (Phase 2: Cultural Center-Talingchan)	123,400	Awaiting contract awards.
MRT Red Line (Rangsit-Thammasat)	6,468	Under the process of budget revisions.
MRT Red Line (Talingchan-Siriraj)	4,694	Under the process of budget revisions.
MRT Red Line (Talingchan-Salaya)	10,670	Under the process of budget revisions.
Provincial		
Phuket	23,500	Under the process of budget revisions.
Chiangmai	107,200	Under the process of budget revisions.
Nakhonratchasima	13,600	Under the process of budget revisions.
Khonkaen	13,950	Seeking project financing.
High-speed railway		
Thai-Chinese high-speed railway		
• Phase 1: Bangkok-Nakhon Ratchasima	229,600	Under construction. with a significant delay.
• Phase 2: Kaeng Khoi-Map Ta Phut and Nakhonratchasima-Nong Khai	139,500	
HSR linking three international airports	203,400	Under the re-negotiation process for contract amendment due to the pandemic crisis.
Bangkok-Chiang Mai	449,400	
Bangkok-Hua Hin	94,600	
Bangkok-Rayong	152,500	

Source: RHB

Figure 83: Developments in marine and air transportation projects should not be left behind

	Investment value (THBm)	Remark
Marine		
Laem Chabang seaport (3rd stage)	35,100	Under construction, with the due date for completion already extended to mid-2023.
Air		
Suvarnnabhumi Airport (Phase 2)	51,600	Under construction, with >90% progress for Satellite 1 building and test-run of the automated people mover. Operations are expected to kick off in Sep 2023. Plan to start the operation in Sep-23
Don Mueang Airport (Phase 3)	36,800	Under the design process
Krabi Airport expansion	6,800	
Mae Sot Airport expansion	430	
Khon Kaen Airport expansion	2,250	
Bae Tong Airport expansion	350	
Sakonnakhon Airport expansion	113	
MRO Center at U-Tapao Airport	4,000	

Source: RHB

Thai-Chinese high-speed railway

Better known as Thai-Chinese high-speed railway, the Bangkok-Nong Khai high-speed railway section or Northeastern high-speed rail line is currently under construction in Thailand. This is regarded as Thailand's first high-speed line. Phase 1 of the railway, from Bangkok to Nakhon Ratchasima, is scheduled to begin operating in 2026. The entire route is expected to be operational by 2028. This project is actually a part of Beijing's long-term plan to link China's Yunnan province to the bustling ports of Singapore via high-speed trains cutting through Laos, Thailand and Malaysia, in a key piece of its grand Belt and Road initiative. This project is broken into:

i. **Phase 1:** Bangkok (Bang Sue)-Don Mueang-Ayutthaya-Saraburi-Pak Chong-Nakhon Ratchasima

ii. **Phase 2:** Nakhon Ratchasima-Bua Yai-Ban Phai-Khon Kaen-Udon Thani-Nong Khai

iii. **Phase 3:** Nong Khai-Vientiane

In 2014, Thailand and China signed a memorandum of understanding to construct the Thai portion of the transnational railway running from Kunming in China to the Gulf of Thailand. In 2015, both parties agreed to divide duties and responsibilities over this project. China will conduct feasibility studies, design the system, construct tunnels and bridges, and lay the track while Thailand will conduct the social and environmental impact studies, expropriate land for construction, handle general civil engineering and power supply, and supply construction materials. China will operate and maintain the system for the first three years of operation. Both countries will share responsibility from the third to seventh years. Afterwards, Thailand will take over all of responsibility, while China will advise on operating the project running on dual standard-gauge tracks.

To capture the logistics and transportation activities from the Eastern Economic Corridor to domestic markets and then China's markets, two routes will diverge at a junction in Kaeng Khoi District in Saraburi Province. One will connect Bangkok to Kaeng Khoi. The other route will connect Kaeng Khoi with Map Ta Phut Industrial Estate in Rayong Province. From Kaeng Khoi, tracks will lead north to Nakhon Ratchasima, and on to Nong Khai Province. The Bangkok-Nong Khai line will connect to the 617km Boten-Vientiane railway from Vientiane to the northern Laos border, and the 414km line from the Laos border to Kunming. Within Thailand's territory, construction was divided into four sections: Bangkok-Kaeng Khoi, Map Ta Phut-Kaeng Khoi, Kaeng Khoi-Nakhon Ratchasima, Nakhon Ratchasima-Nong Khai.

Phase 1 has 14 construction contracts built in. When it came to financing the project, there were disputes between China, Thailand and Laos, so Thailand decided to finance the initial phase by itself. After several postponements, the Bangkok (Bang Sue Grand Station) to Nakhon Ratchasima high-speed rail project (Phase 1) was officially launched by the Thai Government in Oct 2020. However, the Nakhon Ratchasima to Nong Khai section (Phase 2) and the Nong Khai to Vientiane section (Phase 3) has not yet been confirmed.

All that said, delays are inevitable. The terms of the contract for the Thai-Chinese high-speed railway construction may need to be renegotiated, as construction of Phase 1 is now behind schedule. Progress is only at 15% when it should be 37%, based on the initial plan. The delay was largely blamed on COVID-19 restrictions, significant hold-ups in the land expropriation process, and the relocation of public utility lines from around the construction site. Under the current circumstances, the contract will have to be extended. Phase 1 was supposed to be completed in 2026, while Phase 2 – a 356km section from Nakhon Ratchasima to the border province of Nong Khai – was initially expected to be completely built 3-4 years after Phase 1 was completed, or between 2029 and 2030.

Case study: Laos-China high-speed railway

Unlock the landlocked area. Opened on 3 Dec 2021, the Laos-China railway offers a cheap, faster and more efficient travel mode and helps to slash the travel time to only one day compared to 3-5 days by road. Freight volume has exceeded 10m tonnes via this high-speed railway. Freight from China will also be transported to Thai customers along the Laos-Thailand railway, which is a project under construction. In the future, further rail links will also be forged to deliver goods further down to customers in Malaysia, Singapore and Indonesia.

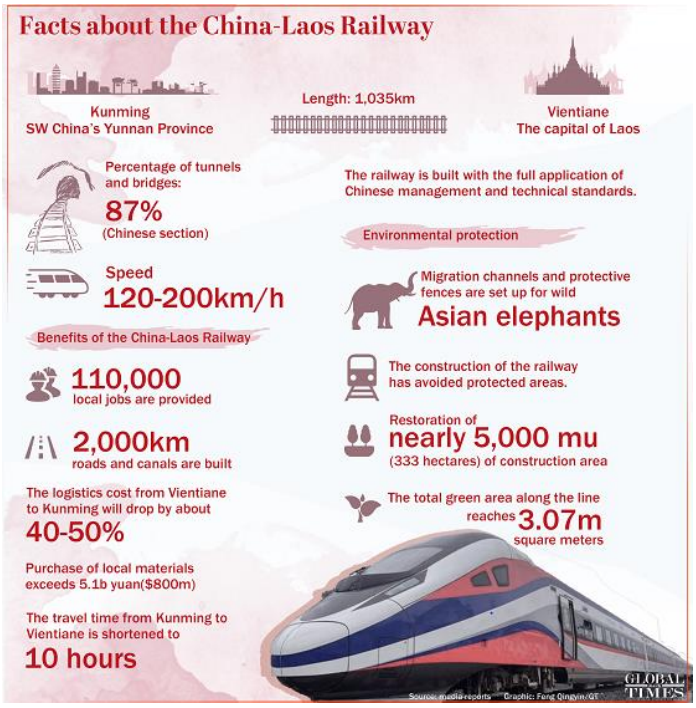
Support for tourism industry. Visitors, particularly those from Thailand, have easy access into Luang Prabang which is listed as a UNESCO World Heritage site and is one of the stations along the line. Between 9 May and 31 Jul when Laos re-opened the country, 250,000 tourists from the Thai side of the border visited it. A similar number of visitors from Laos also crossed the border into Thailand. Cross-border tourism during this period generated about THB800m.

A boon for the logistics park and dry port. The logistics park and the dry port have facilitated cross-border logistics and freight shipments from ASEAN via Thailand to Vientiane. From Vientiane, freight containers will be transported on cargo trains along the Laos-China railway to its northern end bordering China within three days. This service is beneficial especially for agricultural produce when these reach consumers in China, which is a major market. Meanwhile, the Thanaleng Dry Port project is based on a study by the Japan International Cooperation Agency and is intended to accommodate freight containers from Thailand at a rate of about 800 containers per day. During 1H22, the value of cross-border trade between Thailand and Laos was estimated at >THB120bn and this is expected to increase to THB200bn in 2H22 due to a further re-opening for cross-border trade.

Figure 84: Full scale of the high-speed railway project planned for Thailand

Source: Bangkok Post

Figure 85: Facts about the China-Laos railway



Source: Global Times

Southern Land Bridge

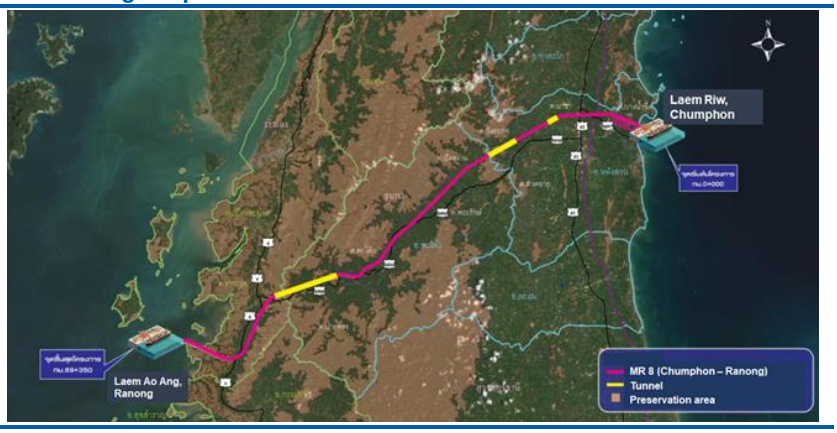
The idea of building a canal at Thailand's Isthmus of Kra dates back over two centuries. The objective is to offer a shorter sea route between Shanghai and Europe, as a navigation canal built through the Isthmus of Kra could reduce the sailing distance to several destination ports by up to two days compared to sailing either via the Malacca Strait or Strait of Selat Sunda. Under the current circumstance, Isthmus of Kra may not seem feasible for investment. Instead, Thai government has committed to develop a land bridge at the Isthmus of Kra, located between the Gulf of Thailand and the Andaman Sea. There is potential for such a land bridge to service certain types of bulk freight and container transfer operations.

Currently, the major trading partners with Thailand can be separated into three groups: i) Pacific Ocean countries (60% of total trade value) such as Japan, China, Korea, the US etc, ii) Indian Ocean countries (25% of total trade value) including South Asia, the Middle East, Europe and Africa, and iii) ASEAN countries (15% of total trade value). 75% of total trade value combined from Pacific Ocean countries and ASEAN countries can be transported directly from Bangkok Port and Laem Chabang Port. The remaining 25% must start the cargo from Bangkok Port and Laem Chabang Port via either Malacca Strait or transshipment at ports in Singapore and Malaysia. Therefore, this should be a great opportunity for Thailand's land bridge crossing the Gulf of Thailand at Chumphon and Andaman Sea at Ranong. Normally, there is traffic congestion in Malacca Strait, with almost 100,000 ships per year using it (these are mostly related to the petroleum industry). There has been an increasing trend of shipments with container volumes of >60m TEU (25% of global trade volume) through the Malacca Strait. In addition, the full capacity within this Strait is predicted to occur within 2024.

Figure 86: Southern Land Bridge bypassing the sea route via the Strait of Malacca

Source: Manageronline

Figure 87: Southern Land Bridge includes the development of two deep seaports and the construction of a 89.35-km road + railway connecting seaports



Source: The Office of Transport and Traffic Policy and Planning

Figure 88: Total investment cost for the Southern Land Bridge project

Unit: THBm	Andaman Port at Laem Ao Ang	Gulf of Thailand Port at Laem Riw	Land Bridge (Road, Rail, Pipeline) with 89.35km distance	Total
Capital expenditure				
Pre-construction work	11,442	21,203		
Civil work	238,300	196,760		
M&E	151,148	151,148		
Environment measures	15,216	14,161		
Contingencies	36,397	32,515		
Total	**452,503**	**415,607**	**212,537**	**1,080,647**
Maintenance expense				
For 50-year period	240,388	239,416	139,855	**619,659**
			Total investment	**1,700,307**

Source: The Office of Transport and Traffic Policy and Planning

Previously, Thailand had developed a deep seaport in Ranong Province to be the container port, as this strategic location has been designated as a trading gateway on the country's Andaman side that can link to other seaports in other South Asia countries, under an economic cooperation framework. This is Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) – and Thailand is a member, along with other six countries ie Bangladesh, Bhutan, India, Myanmar, Nepal and Sri Lanka. The Ranong seaport can shorten the transportation time and cut logistics costs, as it would not be necessary for shipments to pass through the Strait of Malacca. However, there are a few weaknesses of the Ranong seaport – the lack of a transportation network in the hinterland that links it to the deep seaport. As such, there has been low freight volume passing through the seaport.

Currently, the project is under the design process after the final option of project site has been selected out of three shortlisted options based on four dimensions (environmental, social, engineering, and financial investment). Under this final selection, total investment value was estimated at THB1.7trn, which can be divided into THB1.08trn for capital expenditure and THB620bn for 50-year maintenance work. Based on the estimated freight volume of around 20m TEUs passing through each seaport on either the Andaman Sea or Gulf of Thailand, both deep seaports can compete with the Laem Chabang seaport (the annual capacity is 18m TEUs after the 3rd phase is completed and it begins operating) which is the major deep seaport in Thailand's EEC. Therefore, the Southern Land Bridge project has the potential to develop transportation infrastructure and logistics networks in the southern region to connect with the eastern region, and this would elevate the Southern region to be one of the regional centres for marine transportation.

Figure 89: Freight volume anticipated for both seaports after commencing operations

Unit: million TEUs	Andaman Port at Laem Ao Ang	Gulf of Thailand Port at Laem Riw
Export	2.56	1.10
Import	0.38	0.95
Transshipment	16.42	16.42
Industrial production in port hinterlands	1.00	1.00
Total	**20.36**	**19.47**

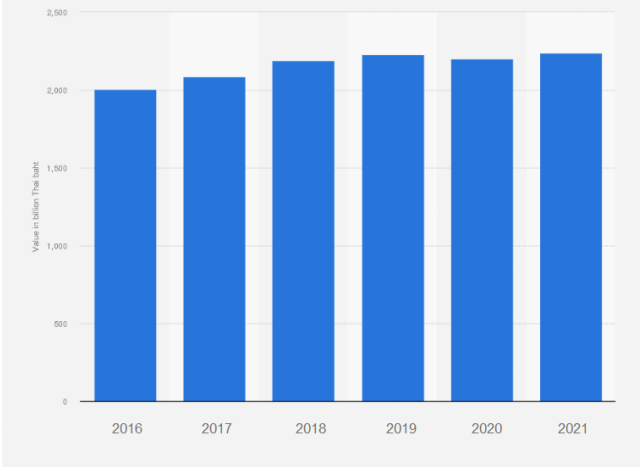
Source: The Office of Transport and Traffic Policy and Planning

Importance of logistics in Thailand

In 2020, logistics costs in Thailand amounted to THB2.2trn, down by 1.2% from THB2.23trn in 2019 and equivalent to 14.1% of nominal GDP. Freight cost totaled THB1.02trn, which accounted for 6.5% of GDP while inventory holding costs amounted to THB1.01trn, ie 6.5% of GDP. Logistics costs declined in tandem with the domestic economic contraction, as the country was hard hit by the COVID-19 pandemic.

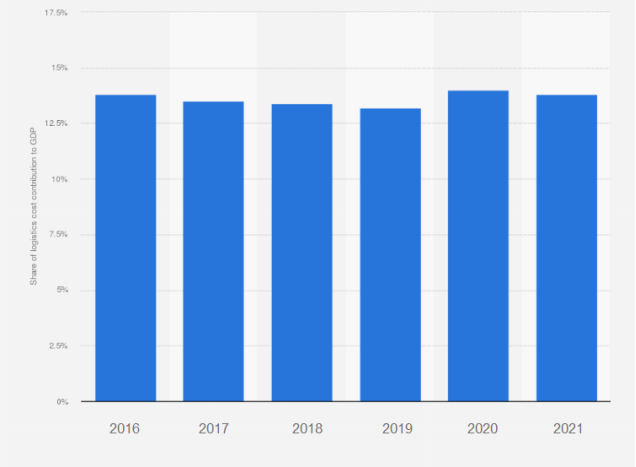
In 2021, logistics costs in Thailand were expected to reach THB2.24trn (+1.8% YoY) and represented 13.8% of GDP. Freight cost totaled THB1.04trn, which accounted for 6.4% of GDP while inventory holding costs were also higher at THB1.03trn or 6.4% of GDP. Logistics activities expanded in tandem with a recovery in economic activities.

Figure 90: Total costs in logistics industry in Thailand (2016-2021)



Source: Statista

Figure 91: Contribution of logistics costs to total GDP in Thailand (2016-2021)



Source: Statista

Figure 92: Actual contribution of logistics cost to total GDP in Thailand (2010-2020)

Unit: % of GDP	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Transportation costs	**7.5**	**7.5**	**7.5**	**7.4**	**7.5**	**7.4**	**7.4**	**6.8**	**6.8**	**6.5**	**6.5**
Pipeline	*0.3*	*0.3*	*0.3*	*0.3*	*0.4*	*0.3*	*0.4*	*0.4*	*0.4*	*0.4*	*0.3*
Rail	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Road	*4.5*	*4.5*	*4.6*	*4.4*	*4.4*	*4.3*	*4.3*	*3.6*	*3.5*	*3.3*	*3.3*
Marine	*1.5*	*1.5*	*1.6*	*1.6*	*1.5*	*1.6*	*1.5*	*1.5*	*1.5*	*1.4*	*1.5*
Air	*0.4*	*0.4*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.2*	*0.1*
Transport-related	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	*0.8*	*0.8*	*0.9*
Postal service	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*
Inventory holding costs	**6.3**	**5.9**	**5.5**	**5.5**	**5.4**	**5.3**	**5.1**	**5.7**	**5.6**	**5.7**	**6.5**
Inventory carrying costs	*6.2*	*5.8*	*5.4*	*5.4*	*5.3*	*5.2*	*5.0*	*4.4*	*4.5*	*4.6*	*5.3*
Warehousing costs	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*1.2*	*1.2*	*1.1*	*1.2*
Administrative costs	**1.4**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.0**	**1.0**	**1.0**	**1.1**
Total	**15.2**	**14.7**	**14.4**	**14.2**	**14.2**	**13.9**	**13.8**	**13.5**	**13.4**	**13.2**	**14.1**

Source: Office of the National Economic and Social Development Council

Financing infrastructure projects

To finance the investment projects in the pipeline, the Public Debt Management Office (PDMO) is planning to borrow almost THB900bn to develop new infrastructure in 2023-2027. The borrowing plan reflects the demands of state agencies and state enterprises while the investment will focus on the infrastructure of transport, energy, utilities, and commercial space development, with an aim to upgrade living standards and Thailand's competitiveness.

The PDMO will use a mid-term debt management strategy and diversified instruments to contain public debt at the appropriate cost and risk levels. This will ensure related local and international parties that Thai public financing remains strong. In line with the global trend, the PDMO plans to support state and private agencies in offering green bonds, social bonds and sustainability bonds, reflecting the office's commitment to solving environmental and social problems.

According to the PDMO, the public debt-to-GDP ratio in FY23 is expected to dip to 60.4% from 60.6% anticipated for FY22 due to GDP growth (driven by the domestic economic recovery). Note that GDP is expected to expand to THB18.5trn next year from an estimated THB17.2trn in FY22. The lower debt-to-GDP forecast has already factored in the Government's plan to borrow THB695bn to offset the budget deficit in FY23.

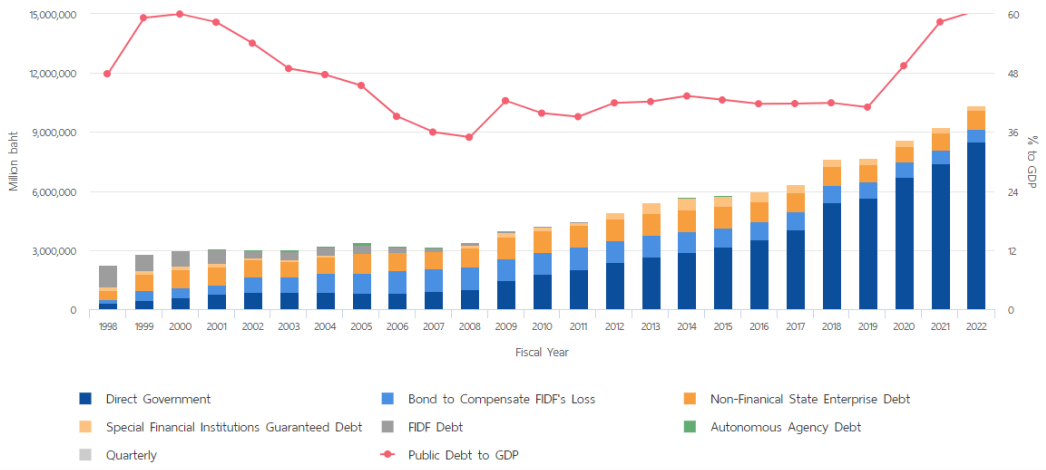
On the revenue side, the Fiscal Policy Office (FPO) is planning to ask the Finance Ministry to consider winding down unnecessary measures related to tax waivers and tax deductions, as net government revenue declined as a proportion of GDP. According to the FPO, net government revenue as a proportion of GDP is expected to fall from 14.6% in FY21 to 13.3% in FY26.

Figure 93: Public debt outstanding as of Sep 2022

Debt component	THBm	Percentage	% of GDP
1. Direct government debt	8,491,059.50	81.85	49.65
2. Government debt to fiscalise FIDF loss	672,613.50	6.48	3.94
3. SOE debts	955,633.21	9.21	5.59
4. Financial SOE debts (guaranteed)	248,108.49	2.39	1.45
5. Other government agencies' debt	6,522.89	0.07	0.04
6. FIDF debt	0.00	0.00	0.00
Total	10,373,937.59	100.00	60.67

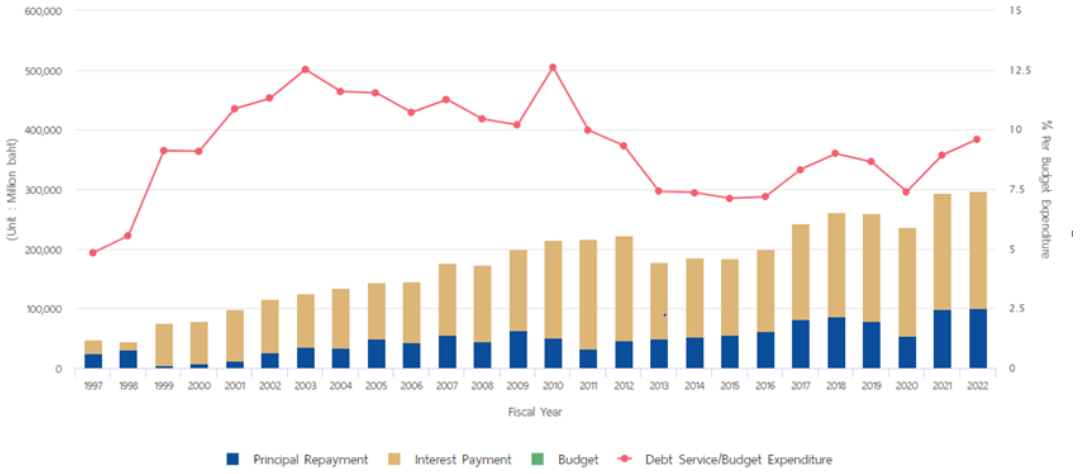
Source: Fiscal Policy Office

Figure 94: Public debt-to-GDP ratio has remained below 70% from 1998 to 2022



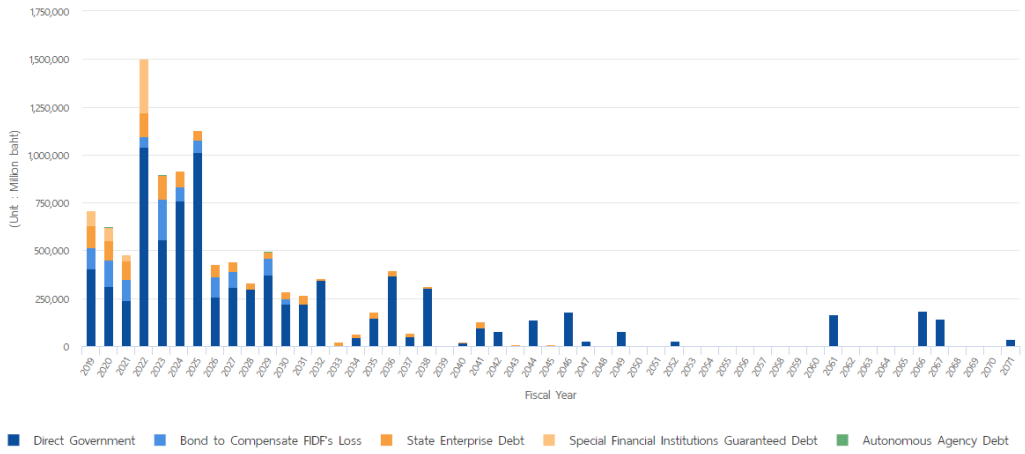
Source: Fiscal Policy Office

Figure 95: Debt service and budget expenditure trend (1997-2022F)



Source: Fiscal Policy Office

Figure 96: Debt service maturity classified by components of debt



Source: Fiscal Policy Office

Featured Stocks

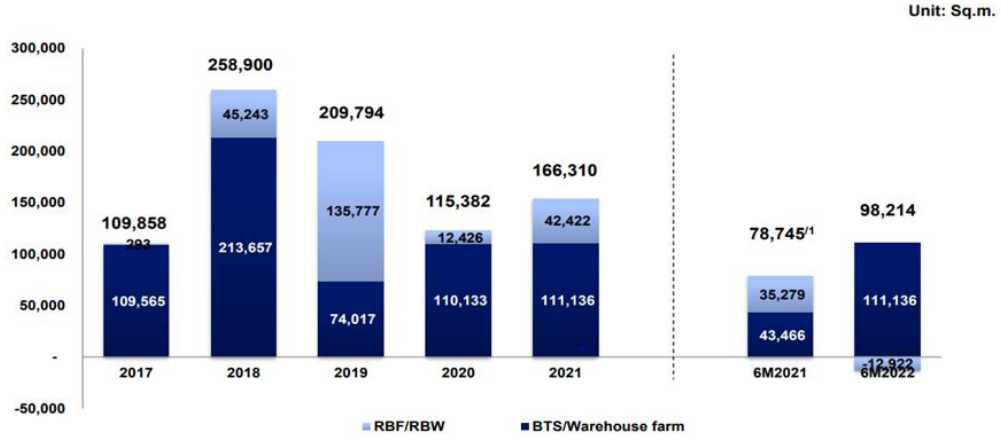
WHA Corp (WHA TB, BUY, TP: THB4.35)

WHA Logistics offers a total solutions package that includes customised site selection, world-class design and high-quality construction to optimise the long-term logistics costs of local and international customers. Currently, the group manages >2.6m sqm of warehouses, a distribution centre, built-to-suit facilities, ready-built factories, and logistics parks. In addition, WHA is committed to be the leading company in this regard for the projects located in strategic locations around Bangkok, the Eastern Economic Corridor, and in other provinces in Thailand.

Its logistics warehouse for lease has beaten the full-year target of 180,000sqm of new leased space, as WHA delivered 194,300sqm warehouse space to clients by 1H22, and plans to deliver another 51,000sqm space by the year-end.

The bright prospects for the country's logistics activities have also augured well for its industrial land sales. Since the pandemic, FY22 appears to be WHA's best year for industrial land sales, on a YTD basis. Land sales under the business segment for 6M22 came up to 513 *rai* (82ha) for its industrial estates in Thailand and Vietnam. It also recently clinched a mega deal, where it sold 600 *rai* (96ha) in WHA Rayong 36 Industrial Estate to China's EV producer, BYD (1211 HK, NR). As such, meeting its full-year target should be easy, as management previously revised up the group's full-year industrial land sales target from 1,250 *rai* (200ha) to 1,650 *rai* (264ha).

Figure 97: WHA's logistics warehouse business has been driven by the growing demand for e-commerce services



Source: Company data

Figure 98: WHA's warehouse portfolio is diversified in terms of location and tenant profile

Source: Company data

Figure 99: WHA's new warehouse project to further fulfil demand stemming from logistics activities

Source: Company data

Bangkok Expressway and Metro (BEM TB, BUY, TP: THB11.00)

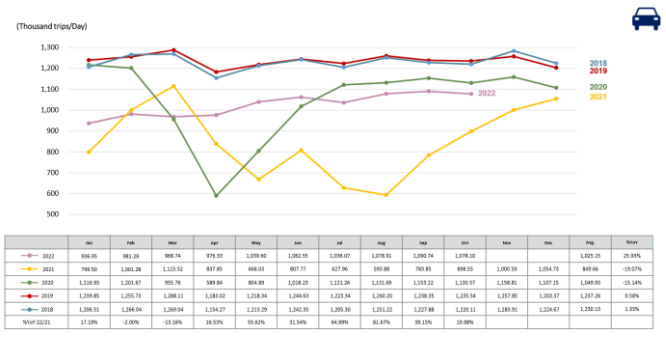
The post-pandemic organic growth in road traffic and MRT ridership confirms that both transportation modes still play a major role in the transportation and logistics activities in Thailand. Expressway traffic and MRT Blue Line ridership has improved on a YTD basis, but both numbers have yet to reach pre-pandemic levels. For 10M22, average, expressway traffic inched up to 1.03m trips per day vs the FY21 average of 0.85m trips per day, but fell below the pre-pandemic saturation range of 1.2-1.3m trips per day. Meanwhile, the MRT Blue Line ridership average for 10M22 also jumped to 254K (FY21: 147K trips per day), compared with the pre-pandemic high of 413K trips per day.

Transportation contract bids this year have been dominated by the MRT Orange Line project, for which BEM is an official bid winner awaiting the signing of the concession contract. In 2023, the Government will also ramp up the bidding process for motorway and expressway contracts – so BEM should get new opportunities to grow this cash cow business as well. There may be three major projects that will be put up for bids in 2023, ie two motorway routes covering the areas around Bangkok and one tunnel expressway project in Phuket.

BEM does not have a track record of operating and managing the Department of Highways' motorway routes. As such, if it bids for operations and maintenance concessions for Motorways no. 5 (Rangsit-Bang Pa In) and 82 (Bang Khun Thien-Ban Phaew), this would be its maiden foray into managing long-distance roads across the provinces. We think it has a stronger chance of winning the project related to Motorway no. 82.

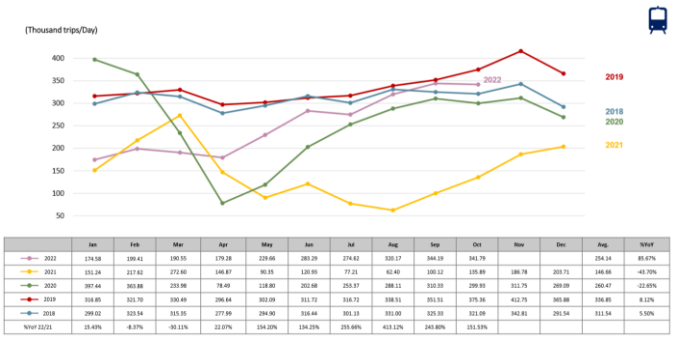
BEM has a fair chance of garnering expressway contracts as the company has been already operating the Expressway Authority of Thailand's expressway network in Bangkok and the vicinities. Also, its long experience (>30 years) in operating the expressway would put it in a good position to manage the new Kathu-Patong tunnel expressway in Phuket – if it wins the contract. BEM may be a potential winner of this project, which is also Thailand's first tunnel expressway.

Figure 100: Gradual improvement in expressway traffic



Source: Company data

Figure 101: Sharp recovery in Blue-Line MRT ridership



Source: Company data

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