

− Container demand retreated rapidly in 2H22

− Operators face rising labour costs and reduced storage revenues in 2023

+ Vietnamese port throughput up by 34% since 2019

+ Deepsea services calling Southeast Asia rise 21% over the past three years

Executive summary

This edition of Ports and Terminals Insight has a distinct Southeast Asian theme. Our Spotlight Analysis assesses how shifting global supply chains have created growth opportunities in markets including Southeast Asia, India and Mexico. The Regional Ports Monitor is focussed on Southeast Asia, while our Deals and Development section takes an in-depth look at four projects underway in Vietnam. The Port Sector Financial Analysis provides a round-up of the recent performance of the main terminal operators, and we look at how our Global Container Terminal Revenue, Cost and Earning Indices will develop into 2023.

Spotlight analysis

Shifting global supply chains have created growth opportunities for port operators in Southeast Asia, India and Mexico

- Container handling in Vietnamese ports has risen 34% since 2019 on the back of increased exports to the US
- Major developments planned for Northwest India following 22% growth in container traffic since 2019, Western Dedicated Freight Corridor will provide a further boost
- Nearshoring strategy favours Mexico's West Coast ports, where container traffic has risen 25% since 2019

Port connectivity index

Changes to MSC schedules in 4Q22 favoured its in-house terminal network

- The rationalisation of services in both the Transpacific and Asia-Europe trades resulted in the loss of mainline service connections at Shanghai and Ningbo
- Jebel Ali improves connectivity with African ports
- Abidjan gains services following the opening of CT2 in November 2022

Global ports monitor

US and European markets softened, but Greater China port handling picked up pace in 4Q22

- The rolling four-quarter average growth in global port throughput stabilised at 0.4% in 4Q22
- Greater China port throughput rallied in 4Q22, but growth slowed in key North American market
- The European market recorded a further slowdown, with the rolling four-quarter average growth rate falling to -6.6%

Regional ports monitor: Southeast Asia

Deepsea services calling at Southeast Asian ports rose 21% over the past three years

- Regional port handling rose almost 5% between 2019 and 2021, but is estimated to have fallen 0.9% in 2022
- Carrier investment in terminals influences the selection of port calls
- Around 35% of planned new capacity in the region is in Indonesia

Deals and developments

Vietnam's National Port Masterplan identifies \$13.3 billion investment in ports needed by 2030

- Expansion of Lach Huyen (Hai Phong) will provide 2.6 mteu additional capacity
- Construction of the Lien Chieu (Da Nang) port infrastructure is underway, but private sector investment is needed to deliver new terminals
- Dong Tam Group will develop a logistics park as well as a new port at Long An
- Vung Ang port being developed as a gateway to landlocked Laos

Port sector financial analysis

Container demand retreated rapidly in 2H22, with revenue per unit falling as port congestion eases

- Drewry projects a 0.8% increase in global port handling in 2023
- APMT and Westports report storage revenues back to 2020 levels
- Drewry expects a reduction in storage revenues and higher labour costs to put downward pressure on margins

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Spotlight analysis

Shifting global supply chains have created growth opportunities for port operators in Southeast Asia, India and Mexico

The trend towards diversification of global supply chains away from China-centric procurement models underpinned strong growth in container throughput in a number of markets, including Southeast Asia, India and Mexico. Improvements in inland connectivity and maritime accessibility are a common theme for the ports that have benefitted from this trend.

DP World’s latest Trade in Transition report indicated that in pursuing a supply chain diversification strategy companies were aiming to reduce costs and improve resilience. The survey of over 3,000 supply chain managers also revealed that both reshoring and nearshoring/ regionalisation were also increasing, with 96% of companies planning on making changes to their supply chains due to geopolitical events.

In this quarter’s edition of Ports and Terminal Insight we take a look at three key markets that have benefited from this trend – Southeast Asia, India and Mexico. A common theme is improvements in hinterland connectivity and maritime accessibility.

Drewry is currently collating the final port throughput statistics for 2022, therefore for this analysis we have used a combination of published data and estimates (based on YTD performance) to identify the markets which have shown the strongest growth in recent years.

While growth in some markets, for example Russian Far East, can be attributed to specific geopolitical events and growth in others to carrier transshipment strategies (eg Lome and the Canary Islands), the majority of the growth hotspots can be attributed to the combination of strong growth in North American consumer demand and the geographical diversification of production into other Asian markets.

Diversification strategy targets costs and resilience

Global growth since 2019 underpinned by US consumer demand and diversification of production

Figure 2.1 Container market growth hotspots: % growth 2022 vs. 2019



Source: Drewry Maritime Research

Spotlight analysis

Asian port markets continue to perform strongly

Drewry estimates that container handling in Greater China rose 1.3% YoY in 2022, although growth was uneven across major ports. Shanghai's modest increase of 1% was due to the loss of market share to Ningbo, which registered a 7% YoY uplift. However, average growth was significantly higher at 13% YoY across China's southernmost ports (i.e., in the range Zhanjiang to Fangcheng).

Traffic growth in the southern region has accelerated in recent years following the opening of the New International Land-Sea Corridor – a rail project promoted as part of China's Belt and Road initiative that links western Chinese provinces, via a rail hub in Chongqing, to the ports in Beibu Gulf (i.e. Qinzhou, Fangcheng and Beihai), where cargo is transferred to a growing number of intra-regional services linking with Singapore and other Southeast Asian markets. While many will assume that this project is concentrated on growing Chinese exports, for China, much of the focus has actually been on improving links with key supply markets across Southeast Asia – with inbound cargoes including fresh produce and raw materials for local industries such as paper manufacturing.

The state-owned Beibu Gulf Port Group opened a two berth semi-automated terminal at Qinzhou in 2H22, increasing port capacity by a further 1.0 mteu. A second phase will provide another two berths/1.6 mteu capacity in 2023.

New International Land-Sea Corridor provides cargo boost to China's southern ports

Beibu Gulf Port will add 1.6 mteu capacity in 2023

Figure 2.2 New International Land-Sea Corridor supports Beibu Gulf Port volume growth



Source: Drewry Maritime Research

Spotlight analysis

In Southeast Asia there has been a more mixed performance. Total volumes handled at the region's largest port Singapore fell 0.5% YoY in 2022, and during the first nine months throughput at Malaysian ports dropped by an average 3.6%. The drop in handling volumes in Malaysia was due to the 8% YoY reduction in transshipment handling over the first three quarters. Transshipment traffic at Port Klang fell 12% YoY between January and September 2022, while at Tanjung Pelepas transshipment traffic was down 4%. In contrast, total Malaysian gateway traffic increased by 5% over the same period. This is the same level of growth recorded by Vietnamese ports during 2022.

Vietnam records 5% YoY volume growth in 2022

While the Philippines recorded strong YoY growth in 2022, the total volumes handled remained 0.7% below the 2019 traffic levels. In contrast, traffic levels at Vietnam and Cambodia have risen by 34% and 23% respectively over the past three years.

Philippines' port traffic yet to recover to 2019 levels

Analysis of containerised trade statistics indicates that while China remains the dominant source of imports for both Europe and North America, it is losing market share to Southeast Asian and South Asian economies.

Greater China's share of US imports from Asia has dropped from 71% in 2016 to 61% in 2022 YTD (January-November). The double whammy of the US-China dispute and the Covid pandemic accelerated the trend. While Korea and Taiwan maintained their share of US imports, it was Vietnam that made the steepest gains with its share rising from 6% of Asian-origin imports in 2016 to 13% in 2022 YTD, and the country is often reported as the true winner in the US-China trade war.

US-China trade tensions underpin Southeast Asian volume growth

Table 2.1 Container throughput for major Southeast Asian economies, 2016-2022e

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | CAGR 2016-2021 | 2022e | 2022e vs 2021 | 2022e vs 2019 |
|------------------------|-------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------|---------------|---------------|
| Singapore | 30.9 | 33.7 | 36.6 | 37.2 | 36.9 | 37.5 | 3.9% | 37.3 | -0.5% | 0.3% |
| Malaysia ¹ | 24.6 | 23.8 | 24.9 | 26.4 | 26.7 | 28.4 | 3.0% | 27.5 | -3.2% | 4.1% |
| Vietnam | 10.9 | 11.8 | 12.7 | 14.9 | 16.5 | 19.0 | 11.9% | 20.0 | 5.0% | 34.2% |
| Indonesia ² | 13.2 | 14.2 | 16.0 | 15.0 | 14.8 | 14.9 | 2.5% | 15.2 | 2.0% | 0.8% |
| Thailand ³ | 9.4 | 10.0 | 10.4 | 10.2 | 9.6 | 10.5 | 2.2% | 10.5 | 0.6% | 3.6% |
| Philippines | 7.5 | 8.0 | 8.7 | 8.9 | 7.6 | 8.3 | 2.1% | 8.9 | 6.9% | -0.7% |
| Cambodia | 0.6 | 0.6 | 0.7 | 0.9 | 0.9 | 1.0 | 13.0% | 1.1 | 8.1% | 23.3% |
| Total | 96.9 | 102.1 | 110.1 | 113.5 | 113.0 | 119.6 | 4.3% | 120.4 | 0.7% | 6.1% |

Notes:

1. 2022 traffic estimated on basis of Jan-Sep data

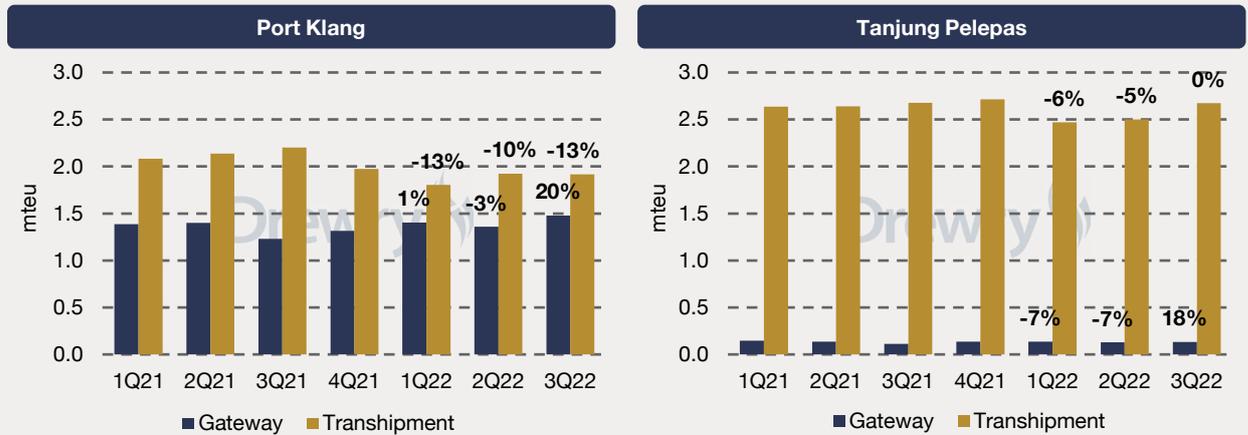
2. 2022 traffic estimated on basis of Jan-Nov data

3. 2022 traffic estimated on basis of Jan-Nov data

Source: Drewry Maritime Research

Spotlight analysis

Figure 2.3 Gateway and transshipment container handling at Port Klang and Tanjung Pelepas



Source: Ministry of Transport Malaysia

Vietnam has also increased its share of the European market, accounting for 6% share of Asian volumes in 2022 YTD (January-November) compared to 4% in 2016. This is expected to continue to grow following the EU-Vietnam trade agreement which came into force in August 2020. The deal makes investment in Vietnam by EU companies easier, and in time will remove duties on 99% of all goods within the trade.

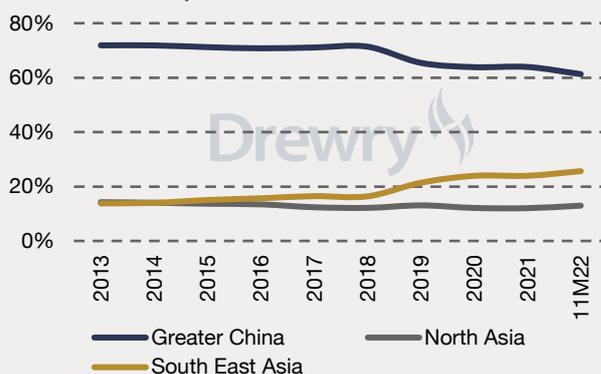
Vietnam has increased share in US and European containerised imports

Evidently, Vietnam is the standout performer in the region, and we cover the port investment opportunities in detail in the *Deals and Developments* section of this report.

Elsewhere in the region, expansion is planned for Malaysia's two largest ports. At Port Klang, the leading terminal operator Westports is progressing with the Westports 2.0 expansion programme, reporting in January 2022 that negotiations with the government to agree a new concession agreement are on track. The project will see the construction of eight new terminals – CT10 to CT17 – and double Westport's capacity from 14 mteu to 28 mteu.

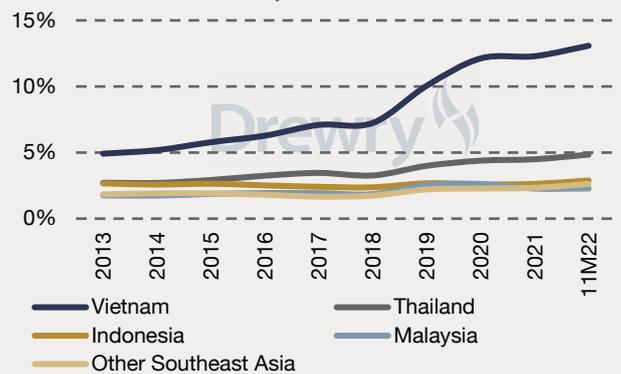
Westports makes progress with expansion project that will see capacity rise to 28 mteu

Figure 2.4 US imports by Asian region (% share total container teu shipped ex. Asia to USA)



Source: CTS

Figure 2.5 US imports by Southeast Asian country (% share total container teu shipped ex. Asia to USA)



Source: CTS

Spotlight analysis

Port Tanjung Pelepas (PTP), which handled in excess of 11 mteu in 2021, has been steadily expanding its capacity in recent years. The port now offers over 5 km of berth and a total capacity of 12.5 mteu. Prior to the Covid pandemic, the Malaysian Transport Minister stated that the long-term plan was to increase the port's capacity to 30 mteu by 2030, but it seems likely that this will be scaled back.

PTP is however further expanding its Free Zone, commencing development of the 33 hectare Phase 2C in 2022 with plots expected to be ready for investors from 2Q23. The earlier phases of the Free Zone, which together occupy over 260 hectare, are reported to be 90% let.

Meanwhile, PTP's closest competitor Singapore has opened the first three berths at Tuas Port. This huge development is designed to enable relocation of all current container terminal activity plus accommodate future growth – with a planned capacity of 65 mteu when fully built out in the 2040s. Operator, PSA International is clearly committed to maintaining its position as the premier regional transshipment hub, and the level of investment it is making is testament to the confidence it has in the growth prospects for the wider Southeast Asian market.

At the other end of the spectrum, Cambodia's Sihanoukville Port is expanding capacity with the construction of a new terminal, the first phase of which will provide a 350 metre berth with 14.5 metre draft and equipped with three ship-to-shore gantry cranes. The project is being financed by a \$300 million loan from the Government of Japan. When operational in mid-2025, the port will finally be able to accommodate mainline calls, which will help equalise logistics costs with larger regional competitors.

Also in Cambodia, the construction of the \$1.5 billion greenfield Kampot Port project commenced in 2022. When fully developed the 600 hectare site will offer deepwater berths complemented by an adjacent Special Economic Zone providing warehousing and logistics facilities. The first phase, with an estimated investment cost of \$200 million, is scheduled for completion in 2025, with an initial capacity of 0.3 mteu.

India the stand-out performer in South Asia

European importers have also increased the quantity of goods sourced from South Asia, with containerised imports rising by an average 5.2% per annum between 2016 and 2021 compared to an average 3.1% per annum growth in imports from Greater China.

As a result, port throughput across South Asia grew strongly between 2016 and 2021, with Indian ports recording average 8.6% growth per annum over the five-year period. However, regional volumes fell back in 2022 with both the Pakistani and Sri Lankan economies coming under extreme pressure, recording 10.0% and 5.4% reduction in port volumes respectively.

Tanjung Pelepas will expand its Free Zone in 2023

First phase of Singapore's Tuas Port is now operational

Japanese Government provides \$300 million loan to fund deepwater terminal at Sihanoukville

South Asian volumes drop as Pakistani and Sri Lankan economies falter

Spotlight analysis

Table 2.2 Container throughput for major South Asian economies, 2016-2022e

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | CAGR 2016-2021 | 2022e | 2022e vs 2021 | 2022e vs 2019 |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|------------------|------------------|
| India | 13.2 | 14.9 | 16.6 | 17.5 | 16.5 | 19.9 | 8.6% | 19.9 | -0.2% | 13.5% |
| Pakistan | 3.2 | 3.4 | 3.4 | 3.3 | 3.3 | 3.7 | 3.0% | 3.3 | -10.0% | 1.3% |
| Bangladesh | 2.5 | 2.7 | 2.9 | 3.1 | 2.9 | 3.3 | 5.8% | 3.1 | -3.5% | 0.6% |
| Sri Lanka | 5.7 | 6.2 | 7.0 | 7.2 | 6.9 | 7.3 | 4.8% | 6.9 | -5.4% | -5.1% |
| | 24.5 | 27.3 | 30.1 | 31.1 | 29.6 | 34.1 | 6.8% | 33.2 | -2.7% | 6.6% |

Source: Drewry Maritime Research

India is faring better, with container volumes remaining broadly stable YoY in 2022. The strongest growth in 2022 was recorded by the East Coast ports in the range Chennai to Krishnapatnam with volumes up by an average 3% YoY. However, the total volumes handled in this port range in 2022 remained 1% below the 2019 peak.

In contrast, container traffic across the Northwest port range (i.e. Mundra to Jawaharlal Nehru) has risen 22% between 2019 and 2022 to 14.3 mteu. In response to the recent steep growth in demand, there are a number of port expansion projects in the pipeline:

- Mundra – port owner and operator APSEZ commenced construction of the 1.2 mteu capacity CT5 in 2022, with operations expected to commence in 2024 or 2025.
- Jawaharlal Nehru – PSA has commenced the Phase 2 expansion of the Bharat Mumbai Container Terminal in April 2022, which will double the capacity of the terminal to 4.8 mteu. Construction work is expected to last for two years.
- Jawaharlal Nehru – Nhava Sheva Freeport Terminal Private Limited (NSFTPL), a JV formed between CMA Terminals and JM Baxi Ports & Logistics Ltd, secured loan finance from the Asian Development Bank in January 2023 to upgrade the Jawaharlal Nehru Port Container Terminal. NSFTPL secured the concession in July 2022.
- Tuna-Tekra – it was announced in January 2023 that DP World was awarded the Tuna-Tekra Terminal project in Gujarat, a 2.2 mteu capacity greenfield development located 60 km from Mundra Port.

Container handling at Northwest ports is expected to be further boosted in 2024 when the Western Dedicated Freight Corridor (WDFC) rail project is finally completed. The 1500 km line will link Jawaharlal Nehru port with Dadri (Uttar Pradesh), increasing the connectivity between the country's second-largest container port and the large National Capital Region. JNPT has invested in a common-user rail yard with capability to handle the double-stack trains that will be used on the WDFC. With more northerly sections of the line already in operation, Mundra received its first double-stack train in 2021, facilitated via the construction of the new link between New Kishanganj and the WDFC at New Palanpur (Gujarat).

Throughput across India's Northwest ports has risen 22% since 2019

DP World awarded Tuna-Tekra concession

Western Dedicated Freight Corridor will boost JNPT throughput from 2024 onwards

Spotlight analysis

Nearshoring strategy favours Mexican ports

Container throughput at Mexican ports totalled 8.3 mteu in 2022, 17% higher than the 7.1 mteu recorded in 2019. The strongest growth has been reported by the West Coast ports, where volumes have risen 25% since 2019. While this can in part be attributed to the diversion of US-bound cargo away from congested US West Coast gateways, Drewry's opinion is that the trend will be sustained due to increased levels of investment in the Mexican manufacturing sector as major US importers seek suppliers that are closer to home. This will increase the volumes of inbound raw materials and components, many of which will continue to be sourced from Asia.

The United States-Mexico-Canada Agreement (USMCA), which replaced the long-standing North American Free Trade Agreement (NAFTA) in 2020, restabilised the trading relationship between the neighbouring countries, but it has also required some fundamental changes in the supply chain for several sectors. For example, the automotive sector is impacted by updated Rules of Origin requirements that have increased the value that must originate within the region to 75% (vs. 62.5% under NAFTA). Similarly, the US's Inflation Reduction Act also requires that 40% of electric vehicle battery inputs originate in the US or in countries with which it has a free trade agreement (i.e., including Mexico). While tighter regulation regarding rules of origin were expected to put downwards pressure on containerised imports, the ongoing tensions between the US and China and widespread disruption of global supply chains have more than offset the downside risk.

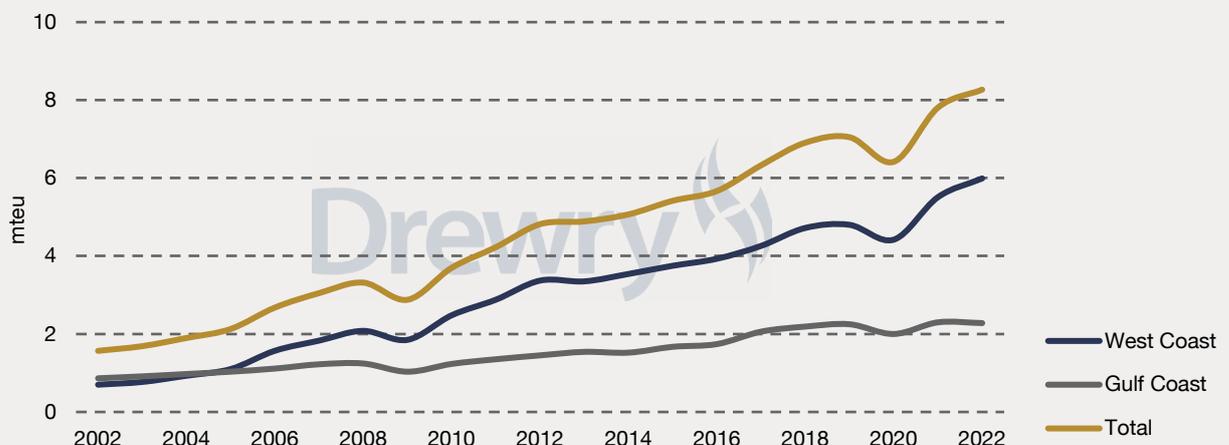
Chinese and other Asian companies are now investing heavily in Mexico, recognising the strategic importance of securing access to the US market via a third country. Wage costs in Mexico have also remained low, and are typically now lower than in the key Chinese manufacturing centres.

Container handling up 25% since 2019 at Mexico's West Coast ports

Replacement of NAFTA with USMCA restabilises the trading relationship between US and Mexico

Wage costs in Mexico now lower than in key Chinese manufacturing centres

Figure 2.6 Development of Mexican container handling by coast



Source: CTS

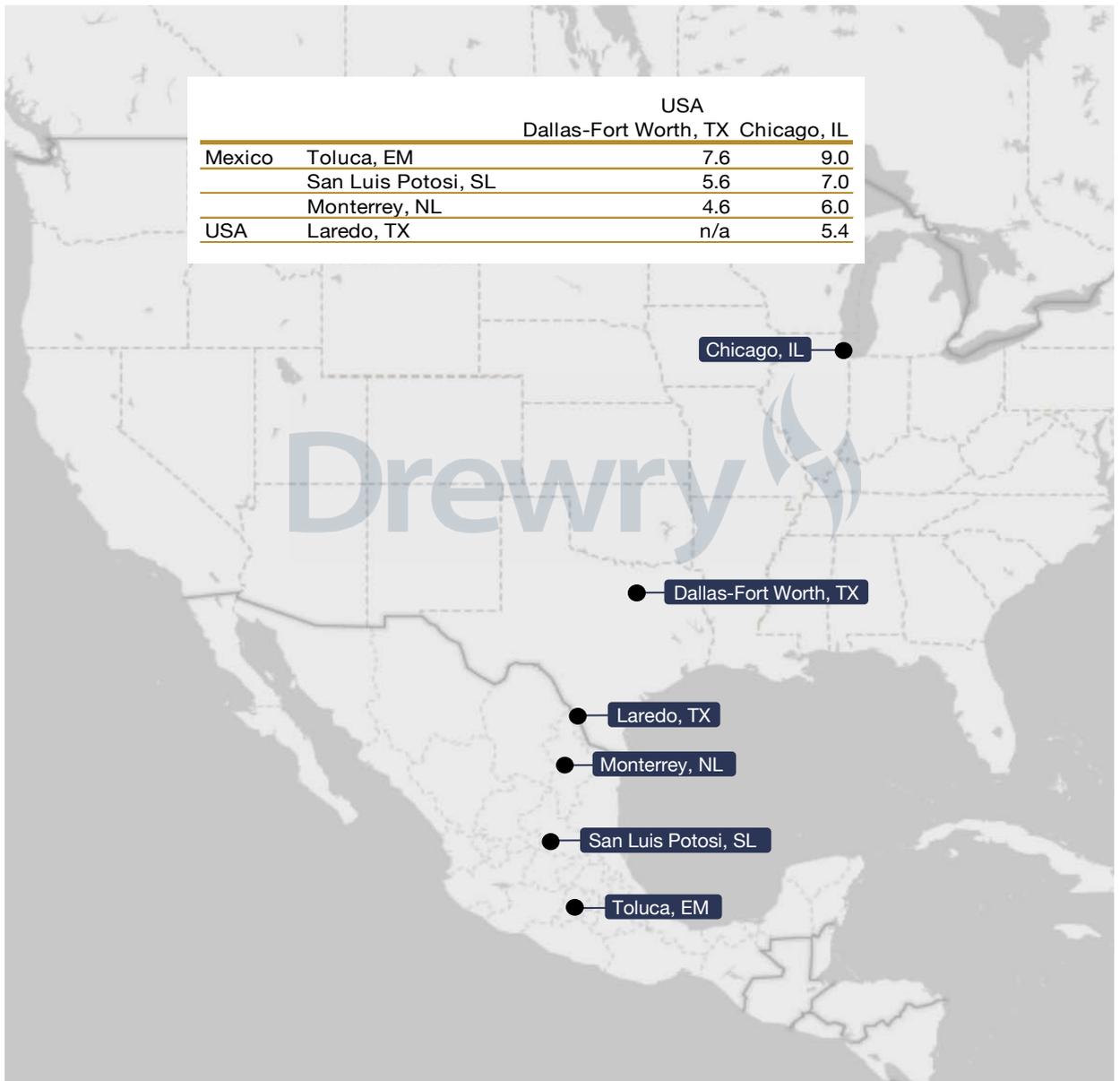
Spotlight analysis

One key benefit of Mexico as a nearshoring location is the existing intermodal connectivity with the US. The Class I railroads offer a range of cross-border intermodal services connecting key US markets to major Mexican manufacturing centres including Monterrey, San Luis Potosi and Toluca. Transit times from Mexican manufacturing hubs into the US Midwest markets are significantly shorter than from China, Southeast Asia and South Asia. Similarly, the main ports of Lázaro Cárdenas and Manzanillo offer regular connections to these same inland locations.

Rail infrastructure improvements are also underway, for example Kansas City Southern is investing \$75 million to construct a second span for the International Bridge across the Rio Grande River that links Laredo (Texas, US) and Nuevo Laredo (Mexico). When the project is completed in 2024, the capacity of this border crossing will increase from approximately 26 trains per day to over 50 trains per day.

Kansas City investing \$75 million to double the capacity of the International Bridge at Laredo

Figure 2.7 Mexico to US intermodal transit times (days)



Source: BNSF / Drewry Maritime Research

Spotlight analysis

Further evidence of the growing trend to nearshoring is the surge in demand for industrial property. According to global real estate advisory firm CBRE, manufacturers and logistics providers are expanding their operations. For example, in Monterrey, which is located just 140 miles from the US border, rental rates increased by more than 15% and the vacancy rate fell to just 2.5% in 2Q22.

To date, Mexico's main West Coast ports have played a primarily transit role – with containers moving swiftly inland via road and daily intermodal services. However, the state government of Michoacán has recently announced a plan to develop a 400 hectare logistics hub at the port of Lázaro Cárdenas. The announcement coincided with the news that Walmart is planning to relocate its logistics operations to the state.

Expansion is also underway at Manzanillo, where ICTSI has commenced the third phase of expansion at its Contecon terminal. With total investment of \$230 million, capacity is forecast to increase from the current 1.4 mteu to 2.0 mteu by 2027.

Conclusion

The drive to diversify supply chains has been a key factor behind the high growth in throughput across a range of geographical markets in recent years. Free trade deals will also create new opportunities for port expansion as supply chains are reshaped to meet changing requirements.

While macroeconomic outlook remains central to the success of port investments, Drewry believes many of the ports achieving high growth in recent years have additionally benefitted from wider investments that improve inland connectivity and/or maritime accessibility.

400 hectare logistics hub planned for Lázaro Cárdenas

ICTSI investing \$230 million to expand capacity in Manzanillo

Free trade deals will create new opportunities as supply chains are reshaped

Port connectivity index

MSC's service changes result in new services for TIL's operations in Gioia Tauro and Sines and Bolloré Ports' expanded Abidjan terminal

Changes to MSC schedules in 4Q22 favoured its in-house terminal network. The rationalisation of services in both the Transpacific and Asia-Europe trades resulted in the loss of mainline service connections at Shanghai and Ningbo.

Drewry has developed a bespoke index of container port connectivity to rank and monitor how well-connected global ports are with liner services. A detailed methodology is provided at the end of this section. Table 3.1 details the top 20 ports globally, based on liner service data for 4Q22.

Despite a 4% QoQ decline in the number of weekly service connections, Shanghai not only retained its position at the top of the connectivity league table but also maintained its lead over neighbouring Ningbo, which also recorded a 4% QoQ reduction in mainline service connections. Notwithstanding the reduction in connectivity since 3Q22, both ports were still handling a greater number of scheduled weekly services in 4Q22 than in 4Q21.

Elsewhere in the Greater China region, Hong Kong, Shekou and Guangzhou made QoQ gains, while Qingdao and Xiamen reported no change in the number of mainline service connections between 3Q22 and 4Q22. Yantian dropped one weekly service call QoQ, with its weekly service connections falling back to the same level recorded in 4Q21. In contrast, the 86 mainline service connections recorded for Qingdao in 4Q22 were 16% higher than in 4Q21.

Shanghai retains the top spot despite a 4% QoQ reduction in mainline service connections

Busan recorded a 5% QoQ reduction in mainline service connections

Table 3.1 Global container port connectivity index, 4Q22 (Top 20 ports)

| Rank 4Q22 (3Q22) | Port | Country | Region | Total number of mainline services | No. of trade routes served | Port connectivity index score |
|---------------------|------------|-------------|--------------------------|--------------------------------------|-------------------------------|----------------------------------|
| 1 (1) | Shanghai | China | Greater China | 192 | 6 | 100.0 |
| 2 (2) | Ningbo | China | Greater China | 172 | 6 | 89.6 |
| 3 (3) | Singapore | Singapore | South East Asia | 147 | 6 | 76.6 |
| 4 (4) | Busan | Korea | North Asia | 109 | 6 | 56.8 |
| 5 (5) | Qingdao | China | Greater China | 86 | 6 | 44.8 |
| 6 (6) | Shekou | China | Greater China | 84 | 6 | 43.8 |
| 7 (=8) | New York | USA | East Coast North America | 71 | 6 | 37.0 |
| 8 (7) | Hong Kong | Hong Kong | Greater China | 70 | 6 | 36.5 |
| 9 (=8) | Antwerp | Belgium | North West Europe | 68 | 6 | 35.4 |
| 10 (10) | Yantian | China | Greater China | 79 | 5 | 34.3 |
| 11 (11) | Port Klang | Malaysia | South East Asia | 76 | 5 | 33.0 |
| 12 (12) | Rotterdam | Netherlands | North West Europe | 59 | 6 | 30.7 |
| 13 (13) | Colombo | Sri Lanka | South Asia | 54 | 6 | 28.1 |
| =14 (=14) | Savannah | USA | East Coast North America | 48 | 6 | 25.0 |
| =14 (=14) | Xiamen | China | Greater China | 48 | 6 | 25.0 |
| =16 (23) | Jebel Ali | UAE | Middle East | 54 | 5 | 23.4 |
| =16 (=16) | Guangzhou | China | Greater China | 45 | 6 | 23.4 |
| 18 (=21) | Norfolk | USA | East Coast North America | 53 | 5 | 23.0 |
| =19 (=18) | Charleston | USA | East Coast North America | 43 | 6 | 22.4 |
| =19 (20) | Hamburg | Germany | North West Europe | 43 | 6 | 22.4 |

Source: Drewry Maritime Research

Port connectivity index

Busan, the leading North Asian transshipment hub, recorded a 5% QoQ reduction in mainline service connections, but Singapore managed to increase its connections by 1% QoQ. Both ports recorded an additional five mainline services in 4Q22 than in 4Q21.

Colombo dropped one weekly service connection in 4Q22 compared to 3Q22, but the number of services remained unchanged on a YoY basis.

Jebel Ali regained a position in the top 20, adding seven weekly service connections in 4Q22, up 15% QoQ and 23% YoY.

In North Europe, Antwerp, Rotterdam and Hamburg all added one service connection in 4Q22 compared to 3Q22. On an annual basis, Antwerp increased the number of mainline services handled by 2% in 4Q22, while Rotterdam recorded a 2% YoY reduction. Hamburg showed no change in the number of mainline services handled between 4Q22 and 4Q21.

The Port of Norfolk recorded a 10% increase QoQ in the number of services handled, pushing the East Coast US port into the top 20 in 4Q22. New York reported 6% QoQ growth in the number of mainline services, while Savannah and Charleston recorded no change. On an annual basis, New York and Savannah increased the number of mainline services handled by 20%, while the improvement was a more modest 8% at Norfolk and 2% at Charleston.

Table 3.2 summarises the ports that have reported the largest increases in weekly mainline service connections in 4Q22 vs 3Q22.

Jebel Ali gained seven additional mainline service connections in 4Q22, of which four increased the port's links with Africa. The port was added as a call on CMA CGM's Noura Express (South Asia-Middle East-East Africa), Maersk/Safmarine's Masika Express (South Asia-Middle East-East Africa) and Hapag-Lloyd/ONE/Niledutch operated MIAX/AIM (South Asia-Middle East-South Africa-West Africa) loops. Jebel Ali also features in the newly-launched EAX5/IDEA (South Asia-Middle East-East Africa) operated by Cosco/Sea Lead Shipping /TS Line/X-Press Feeders.

The 2M Alliance also added a backhaul call at Jebel Ali on its AE15/Tiger (Asia-Red Sea-East Med-Middle East-Asia) service and features in MSC's new India-East Med service that launched in December 2022.

Jebel Ali enters the top 20 after adding seven mainline connections in 4Q22

Mainline services handled by New York and Savannah up 20% YoY

Jebel Ali improves connectivity with African ports

Table 3.2 Ports with largest increase in mainline services per week, 4Q22 vs 3Q22

| Port | Country | Region | Total number of mainline services per week | | Change 4Q22 vs 3Q22 | |
|-------------|-------------|--------------------------|--|------|---------------------|--------------|
| | | | 4Q22 | 3Q22 | vs 3Q22 | Increase (%) |
| Gioia Tauro | Italy | West Med | 19 | 12 | 7 | 58.3% |
| Jebel Ali | UAE | Middle East | 54 | 47 | 7 | 14.9% |
| Sines | Portugal | North West Europe | 15 | 9 | 6 | 66.7% |
| Abidjan | Ivory Coast | West Africa | 16 | 11 | 5 | 45.5% |
| Norfolk | USA | East Coast North America | 53 | 48 | 5 | 10.4% |

Source: Drewry Maritime Research

Port connectivity index

The Central Mediterranean Port of Gioia Tauro, which TIL operates, unsurprisingly benefitted from several service adjustments made by MSC which has a majority shareholding in TIL. The Italian hub features on MSC's new India-West Med service, which commenced in December 2022 and was added as a call on the INDUSA (South Asia-Med-North America-Med-South Asia) service with port calls at Barcelona and Sines dropped. MSC also reinstated the Gioia Tauro call on its Canada Express 1 (Med-ECNA) service in 4Q22.

Grimaldi also added Gioia Tauro as a call on its USEC-West Africa-Med loop with effect from January 2023.

Sines, where TIL is a 50% shareholder in the terminal operating company, has also benefitted from MSC's service changes. The Portuguese hub was added as a call on MSC's Indus Express (Middle East-South Asia-Med-ECNA-Central America-Middle East), Himalaya Express (Middle East-South Asia-Europe-Middle East) and Turkey/Greece-USA (Med-ECNA-Central America-Med) loops.

The JV formed between APM Terminals and Bolloré Ports opened a second terminal (CT2) at the West African port of Abidjan (Cote d'Ivoire) in November 2022. The new terminal, which provides 1,100 metres of deepwater berthing, will provide an additional 1.5 mteu capacity when fully developed.

MSC, which completed its acquisition of Bolloré Ports in December 2022, added Abidjan as a port call to its Africa Express (Asia-South Asia-West Africa-South Asia-Asia), NWC to/from Morocco-West Africa (North Europe-West Africa-North Europe) and West Med-Canary-Dakar-West Africa Strong 1 (Med-West Africa-Med) in 4Q22.

The port was also added back into the CMA CGM-operated MEDWAX (Med-West Africa-Med) service, with the call at the competing Cote d'Ivoire port of San Pedro being dropped.

The USEC port of Norfolk also gained a call on MSC's Indus Express (Middle East-South Asia-Med-ECNA-Central America-Middle East) service in 4Q22 at the expense of Savannah. It was also added back into THE Alliance's EC1 (Asia-Central America-ECNA-Central America-Asia) service in November 2022.

Table 3.3 summarises the ports which reported the largest reduction in weekly mainline service connections in 4Q22 vs 3Q22.

As highlighted above, Shanghai and Ningbo reported a significant decline in mainline service connections in 4Q22, with recent entrants and established carriers/alliances rationalising their operations on the Transpacific and Asia-Europe trades.

In the Asia-Europe trade lane, CU Lines suspended its AEM (Asia-Med) and AEX (Asia-North Europe) services in 4Q22, both of which called at Shanghai and Ningbo. Similarly, Ellerman Lines suspended its GB Express (Asia-North Europe) service, shifting vessels to a new Transatlantic loop, with this change also impacting both Chinese ports. DKT Allseas suspended its China Xpress (Asia-North Europe) service, which called at Ningbo, in December 2022.

MSC adds Gioia Tauro calls to India-West Med and INDUSA loops

Sines added to MSC's Indus Express, Himalaya Express and Turkey/Greece-US services

Abidjan gains services following the opening of CT2 in November 2022

Service suspensions hit Shanghai and Ningbo in 4Q22

Port connectivity index

Table 3.3 Ports with largest decline in mainline services per week, 4Q22 vs 3Q22

| Port | Country | Region | Total number of mainline services per week | | Change 4Q22 vs 3Q22 | Increase (%) |
|------------------|---------|--------------------------|--|------|---------------------|--------------|
| | | | 4Q22 | 3Q22 | | |
| Shanghai | China | Greater China | 192 | 201 | -9 | -4.5% |
| Ningbo | China | Greater China | 172 | 180 | -8 | -4.4% |
| Busan | Korea | North Asia | 109 | 115 | -6 | -5.2% |
| Chiwan | China | Greater China | 3 | 7 | -4 | -57.1% |
| Halifax | Canada | East Coast North America | 16 | 20 | -4 | -20.0% |
| Ho Chi Minh City | Vietnam | South East Asia | 13 | 17 | -4 | -23.5% |
| Zeebrugge | Belgium | North West Europe | 5 | 9 | -4 | -44.4% |

Source: Drewry Maritime Research

Shanghai gained a call on Hapag-Lloyd's CGX (Asia-North Europe) in November 2022, but the loop was subsequently suspended in early 2023.

In the Transpacific trade lane, Shanghai and Ningbo were impacted by the suspension of 2M's TP9/Eagle (Asia-WCNA) service, MSC's Zephyr (Asia-Central America-ECNA-WCNA-Asia), and CU Lines/Transfar Shipping's Transpacific Express II (Asia-WCNA) services. Transfar Shipping has also merged its AES1 and AES3 services, which resulted in a loss of a mainline service connection for Ningbo.

Ocean Alliance dropped calls at Shanghai and Ningbo on its AACI/VCS/SEA/AE6CC4 (Asia-WCNA) service, adding instead calls at the Vietnamese ports of Haiphong and Cai Mep from January 2023.

Shanghai was also affected by the suspension of Cosco's CEN (Asia-WCNA) and OOCL/Cosco's PCSX/SEAX (Asia-WCNA) services, while the suspension of the CMX (Asia-WCMA) service operated by Zhonggu Shipping/BAL impacted Ningbo.

However, there was better news on the secondary trades, with both ports receiving calls on SITC's new CBX2 service (China - Chittagong) which commenced in November 2022, and Shanghai included in Cosco's CNX/BAE (China - Auckland) service, which also launched in November 2022. Notably both services are focused on serving specific ports, indicating that supply chain disruption remains an issue for shippers serving some markets.

Busan was dropped as a call from 2M's AE6/Lion (Asia-North Europe) and Ocean Alliance's NP4/PNW1/OPNW (Asia-WCNA) loop with effect from January 2023. The South Korean hub was also impacted by the suspension of MSC's Zephyr (Asia-Central America-ECNA-WCNA-Asia), Maersk/Sealand's TP7 (Asia-WCNA) and 2M's TP9/Eagle (Asia-WCNA) loops in 4Q22.

2M service changes were the cause of the loss of connectivity recorded for the Chinese port of Chiwan, with both the AE15/Tiger (Asia-Red Sea-Med-Middle East-Asia) and AE12/Phoenix (Asia-Middle East-Asia) being transferred to Shekou in 4Q22.

CU Lines suspends both AEM and AEX loops, DKT Express suspends China Xpress loop

Service suspensions at Shanghai and Ningbo partially offset by two new loops serving Chittagong and Auckland

Chiwan lost 2M's AE15/Tiger and AE12/Phoenix services to Shekou

Port connectivity index

In December, the suspension of 2M/Zim's TP23/Liberty/ZSE (Asia-ECNA) and Ellerman Lines' GB Express services reduced the number of service connections recorded by Ho Chi Minh in 4Q22. Additionally, Wan Hai switched the Ho Chi Minh port call for Cai Mep on its AAP (Asia-Central America-ECNA-Asia) service.

MSC's suspension of the INDUS 2 (South Asia-Red Sea-Med-ECNA-Central America-South Asia) and the Sea Consortium operated MAX (Med-ECNA) services were behind the loss in service connections recorded for the Canadian port of Halifax.

Zeebrugge was dropped from 2M's AE6/Lion service, which was introduced in the summer of 2022 to help mitigate the impact of landside congestion in Rotterdam and Antwerp. CMA CGM/Marfret also dropped the Zeebrugge call from their PDL/NASP (North Europe-ECNA-Central America-Oceania-Central America-ECNA-North Europe) loop in 4Q22.

Zeebrugge call dropped from 2M's AE6/Lion service due to easing landside congestion in Rotterdam and Antwerp

Drewry Port Connectivity Index: Methodology and notes

Two simple variables are used to generate each port's Drewry Port Connectivity Index score. First, the number of scheduled mainline liner service connections for each port per week and second, the number of global regions with which each port is directly connected by these services. The number of weekly mainline service connections is listed for every port in the seven world regions. Each port is located in one world region and so, the maximum number of regions it can be connected to is six. Note: Only direct liner services are included, not indirect services that involve transshipment. The index produces a score for over 340 ports around the world.

Each quarter, the port with the highest number of service connections per week sets the maximum figure against which calculations are made; so, the connectivity measure is always relative to the port with the most services. A figure for mainline service density is calculated out of an overall score of 10 for the port with the most weekly services. Thereafter, a trade route breadth index is calculated, with a maximum score of 10, when a port has connections with six world regions. A port with connections to three world regions would score 5 and so on. The mainline trade density and trade route breadth index are then multiplied to produce a maximum connectivity index score of 100.

It is important to note here that the connectivity index deliberately does not take into account vessel size. The purpose of the index is to show the degree of connectivity (in essence, the ability of shippers using the port to directly access the widest range of origins and destinations). Hence, even though a large port with the same range of shipping services but with larger ships is likely to generate more port volume overall, its connectivity index may be no better than a smaller port with the same range of liner services.

When looking at the results, there are several important facts to consider:

1. The degree of connectivity is determined by the combination of a) the number of trade routes served and b) the number of mainline service connections per week.
2. The maximum number of mainline services per week is taken from whichever port in the global sample has the highest number that quarter. The port and the maximum number of services may vary from quarter to quarter.
3. Trade routes that are not direct (i.e., that involve transshipment) do not count as a 'service' for connectivity.
4. The maximum number of possible trade routes served will always be six (there are seven world regions, and each port will always be in one of them).
5. Intra-regional services are not included in the analysis.

Global ports monitor

Global port market performance

The rolling four-quarter average growth in global port throughput stabilised at 0.4% in 4Q22. Greater China port throughput rallied in 4Q22, but growth slowed in key North American market. The European market recorded a further slowdown, with the rolling four-quarter average growth rate falling to -6.6%.

The rolling four-quarter average growth in global port throughput stabilised at 0.4% in 4Q22.

Rolling four-quarter average growth stable at 0.4% in 4Q22

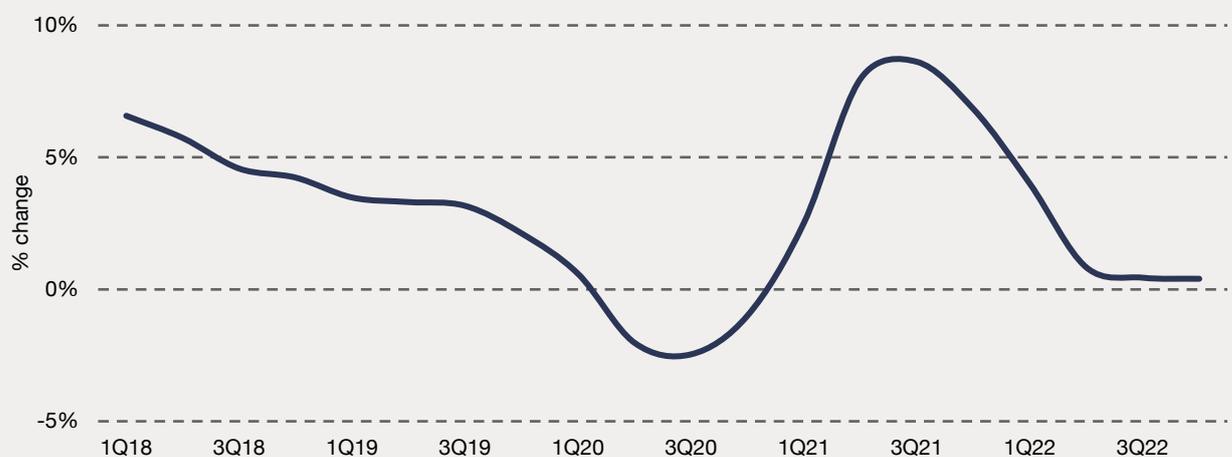
The North American port market slowed further in 4Q22. The West Coast market moved further into the red, with the rolling four-quarter average growth rate dropping to -3.2% in 4Q22, down from -1.1% in 3Q22. The risk of industrial action has increased since the previous labour agreement expired in July 2022, and as a result, shippers have decided to divert cargo to US East coast ports. Negotiations between the ILWU (representing 22,000 West Coast US dockworkers) and the PMA (representing 70 port employers) are reported to be ongoing, but the leaders of the major ports of Los Angeles and Long Beach are expressing concern that they may not regain volumes lost to the East Coast, where the rolling four-quarter average growth rate was recorded at 4.2% in 4Q22.

Container throughput across the ports in the Greater China region picked up pace in 4Q22, with volumes up by an average 1.3% QoQ. Shanghai reported a 0.6% QoQ increase in container traffic, regaining market share from Ningbo, which recorded a 20.6% QoQ reduction in handling levels.

Greater China port handling picked up pace in 4Q22

The performance of the main Asian transshipment hubs also slowed. Container throughput at Busan dropped 6% YoY in 4Q22, and Kaohsiung recorded an 8.3% reduction over the same period. In Southeast Asia, volumes at Tanjung Pelepas fell 13.3% YoY, although Singapore fared better, recording a loss of just 0.5% YoY in 4Q22. Port Klang benefitted from strong growth in gateway traffic and reported a 1.5% YoY rise in container throughput in 4Q22.

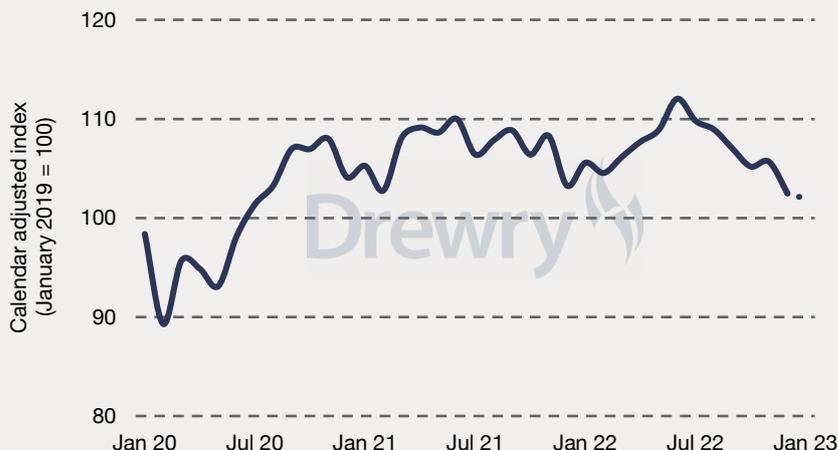
Figure 4.1 Global container port throughput: rolling 4-quarter average (sample ports)



Source: Drewry Maritime Research

Global ports monitor

Figure 4.2 Drewry Global Container Port Throughput Index



| Comparisons | MoM | YoY |
|--------------------|-------|-------|
| Dec 2022 | -3.0% | -0.7% |
| Jan 2023 - nowcast | -0.5% | -3.4% |

The Drewry Global Container Port Throughput Index is a calendar adjusted volume growth/decline index based on monthly throughput data for a sample of over 340 ports worldwide, representing over 80% of global volumes.

Source: Drewry Maritime Research

The Middle East market proved resilient in 2022, with the rolling average four-quarter growth rate increasing to 2.3% in 4Q22, up from 1.8% in 3Q22. In contrast, the South Asia market – which had boomed immediately post-pandemic -has slowed, with the rolling average four quarter growth rate falling to -3.1% in 4Q22 (vs. -0.9% in 3Q22).

Middle East market showed resilience in 4Q22, South Asia and European markets continued to fall

The European market continues to struggle, with the rolling four-quarter average growth rate dropping to -6.6% in 4Q22 (vs. -4.8% in 3Q22). Container handling at the Russian ports in the Baltic and Black Sea in 4Q22 was down by over 50% (0.5 mteu) compared to 4Q21. High inflation continues to drag the European economy down, and this is reflected in the performance of the major gateway ports. Container volumes at Antwerp Bruges dropped 6.0% YoY / 4.8% QoQ in 4Q22, while Bremerhaven traffic levels fell 7.9% YoY / 2.7% QoQ. Spanish ports fared no better, with traffic down on an annual and quarterly basis at Algeciras, Barcelona and Valencia.

Since the previous edition, the Drewry Global Container Port Throughput Index has been rebased to January 2019, which has increased the number of ports included within the index to over 340, which together handle over 80% of global port throughput.

Drewry Global Container Port Throughput Index drops 8.5% in 2H22

The index has been on a downward trajectory since July 2022, falling 8.5% from a high of 112 points in June 2022 to 102.5 points in December. According to Drewry’s nowcasting model, which uses vessel capacity and terminal duration data (derived from our proprietary AIS model) to make short-term predictions of port throughput, the index is expected to fall 0.5% MoM / 3.4% YoY in January 2023.

Global ports monitor

Global capacity and utilisation forecast

Global port capacity is projected to grow at an average annual rate of 2.6% to reach 1.4 billion teu by 2026. Despite weakening market conditions, large-scale developments are underway in Egypt, where four projects are expected to increase port capacity by more than 7 mteu.

Global container port capacity is projected to grow at an average annual rate of 2.6% to reach 1.4 billion teu by 2026, an increase of 136 mteu over the 1.27 billion teu of terminal capacity in 2022. The capacity baseline for 2022 has been lowered by 5 mteu based on updated information from terminal operators, but the outlook for 2023 has improved by 0.2% (3 mteu).

Comparing the latest forecast with the 1Q22 projections, the outlook for global port capacity has marginally strengthened. Global port capacity is now projected to reach 1.38 billion teu in 2025, 2.6% above the 1.34 billion teu forecast in 1Q22.

The global demand outlook has continued to weaken, and Drewry has further downgraded its forecast of global port handling. As a result, the forecast average utilisation level for 2025 is reduced to 66.5%, down from the 74.2% utilisation forecast in 1Q22.

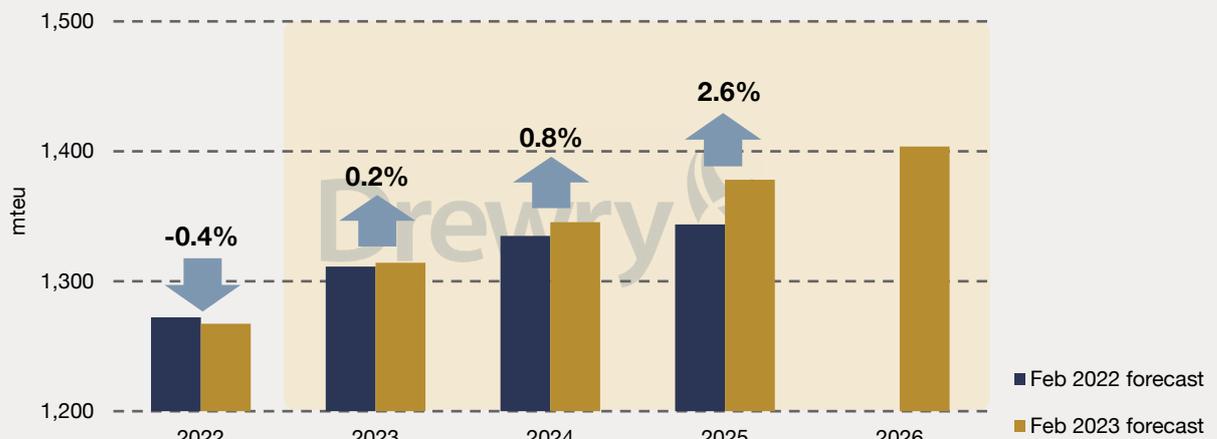
Figure 4.5 details forecast capacity and utilisation levels until 2026 for each region.

In Greater China, the average utilisation level is forecast to rise from 86.6% in 2022 to 87.4% in 2026. As previously reported, there are a number of large-scale developments in the pipeline across a range of ports including Shenzhen, Guangzhou, Qinzhou, Ningbo and Shanghai.

Global container port capacity to increase at a CAGR of 2.6% to reach 1.4 billion in 2026

Global port utilisation forecast for 2025 reduced to 66.5%

Figure 4.3 Changes to Drewry's global port capacity forecast, 1Q23 vs 1Q22



Source: Drewry Maritime Research

Global ports monitor

Utilisation in Asia (ex. China) region is forecast to increase to 68.1% in 2026. In North Asia, expansion is focussed on existing ports, with new terminals scheduled to commence operations at Busan and Kaohsiung. These new facilities will provide greater capability to handle ULCVs. In Southeast Asia, there are more greenfield projects in the pipeline, including projects in Indonesia, Cambodia and Vietnam, in addition to major expansion projects in Singapore, Port Klang, Tanjung Pelepas and Laem Chabang.

The downgrading of the demand outlook for Europe, where average utilisation is now forecast to reach just 57.1% in 2026, is likely to see some major projects put on hold until market conditions improve. For instance, it was reported in 3Q22 that APM Terminals would delay the planned expansion of its Maasvlakte II Terminal in Rotterdam due to rising costs. Notwithstanding the difficult market conditions, PSA Antwerp is pushing ahead with its planned €335 million (\$358 million) investment to upgrade and expand its Europa Terminal. This nine-year project will see the staged conversion of the terminal yard from manual straddle carrier operation into an automated ASC facility. The company awarded the contracts for the project's first phase in December 2022, which is scheduled to commence operations in 2H24.

In the Mediterranean, Egypt's capacity expansion will be the highest in the next five years. Trial operations at CMA Terminals' new 1.5 mteu capacity Trans Misr Terminal were underway in February 2023, and construction is well advanced at Hutchison Ports' new 1.0 mteu capacity Abu Qir Terminal. Hapag-Lloyd has also confirmed its investment in a new transshipment hub at Damietta with a planned capacity of 3.3 mteu when fully developed and in December 2022 Suez Canal Container Terminal (owned 55% APM Terminals / 20% Cosco Pacific / 25% local shareholders) announced a \$500 million investment to further expand the terminal with construction of additional 955 metre quay and 50-hectare yard.

Greenfield projects underway in Indonesia, Vietnam and Cambodia

PSA commences \$358 million upgrade of Antwerp's Europa Terminal

About 7 mteu additional capacity is planned for main Egyptian ports

Figure 4.4 Changes to Drewry's global port utilisation forecast, 1Q23 vs 1Q22

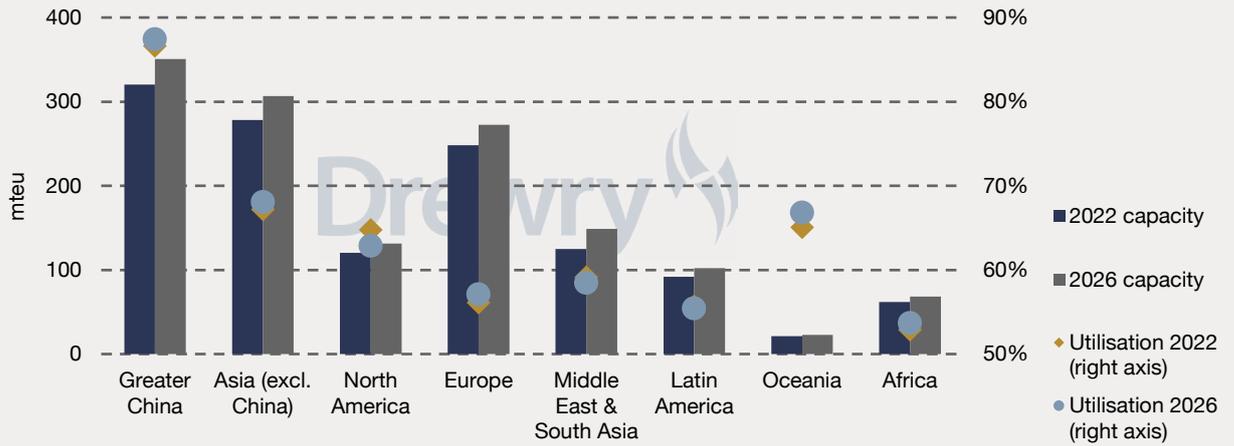


Source: Drewry Maritime Research

Global ports monitor

Drewry estimates that these four projects will add in excess of 7.0 mteu capacity by 2030. Hutchison Ports has also announced new concession agreements in El Dekheila and Ain Sokhna, but the company has yet to announce details of these projects.

Figure 4.5 Regional capacity and utilisation forecast, 2022-2026



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Port Throughput

Port volumes in Southeast Asia dropped 0.7% in 2020 due to the pandemic but recovered in 2021, with a net increase of 4.9% over the two years. The strongest growth over the past three years has been at ports in Vietnam, while 2022 throughput at Bangkok, Surabaya and Port Klang was below pre-pandemic levels.

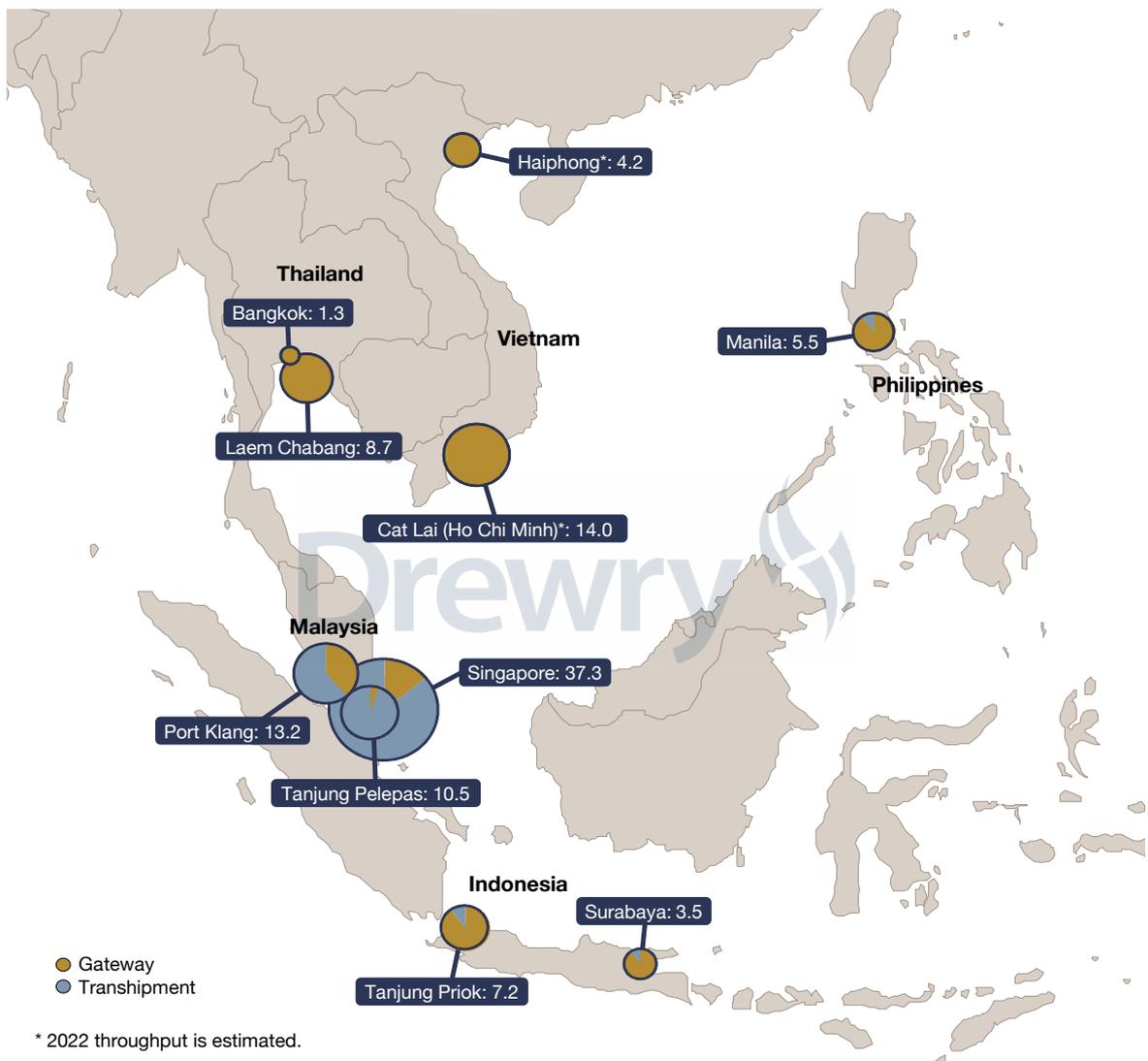
In 2022, there were volumes in excess of 10 mteu at four ports, Singapore (37.3 mteu), Cat Lai (14.0 mteu), Port Klang (13.2 mteu) and Tanjung Pelepas (10.5 mteu).

Singapore, Port Klang and Tanjung Pelepas are the main hub ports

Singapore, Port Klang and Tanjung Pelepas are the main hub ports in the region, with their port volumes dominated by transshipment. Cat Lai has the largest gateway volumes.

There are a further three deepsea ports among the top 10 ports, Laem Chabang (8.7 mteu), Tanjung Priok (7.2 mteu) and Haiphong (4.2 mteu). There are also three ports in the top 10 which have no deep sea calls, Manila (5.5 mteu), Surabaya (3.5 mteu) and Bangkok (1.3 mteu) where volumes are generated by regional, domestic and feeder services.

Figure 5.1 Southeast Asia container port throughput, 2022 (mteu)



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

It is noted that Tanjung Priok, Surabaya and Manila handle some transshipment activity with transfers between deepsea or regional loops and domestic services.

Table 5.1 shows how individual ports in Southeast Asia have fared during the pandemic in comparison to the regional performance.

Regional volumes dropped by 0.7% in 2020, before recovering by 5.6% in 2021. However, volumes are estimated to have fallen by 0.9% in 2022, which is marginally lower than the estimated 0.5% reduction in global port handling.

Among the top 10 regional sea ports, ports in Vietnam (Cat Lai and Haiphong) achieved increases in 2020, against the general trend, benefiting from the diversion of export business from China. Volumes at Tanjung Pelepas also grew in 2020 as a result of operational challenges at Singapore. These ports continued their strong growth in 2021 and 2022.

Three ports - Bangkok, Surabaya and Port Klang, failed to recover their 2019 volumes by 2022.

Southeast Asia volumes dropped initially due to the pandemic, but recovered in 2021

Cat Lai, Haiphong and Tanjung Pelepas achieved above average growth over three years

Table 5.1 Southeast Asia container ports throughput 2019 - 2022e (mteu)

| | 2019 | 2020 | Growth 2020 vs 2019 | 2021 | Growth 2021 vs 2020 | 2022 | Growth 2022 vs 2021 |
|----------------------------------|--------------|--------------|---------------------|--------------|---------------------|--------------|---------------------|
| Singapore | 37.2 | 36.9 | -0.9% | 37.5 | 1.6% | 37.3 | -0.5% |
| Port Klang | 13.6 | 13.2 | -2.5% | 13.7 | 3.7% | 13.2 | -3.7% |
| Cat Lai (Ho Chi Minh) * | 10.2 | 11.2 | 9.4% | 13.3 | 19.2% | 14.0 | 5.0% |
| Tanjung Pelepas | 9.1 | 9.8 | 8.5% | 11.2 | 13.8% | 10.5 | -6.1% |
| Laem Chabang | 8.0 | 7.5 | -5.4% | 8.5 | 12.9% | 8.7 | 2.6% |
| Tanjung Priok | 6.8 | 6.5 | -4.3% | 6.9 | 6.3% | 7.2 | 3.3% |
| Manila | 5.3 | 4.4 | -16.5% | 5.0 | 12.1% | 5.5 | 10.0% |
| Haiphong* | 3.5 | 3.7 | 7.2% | 4.0 | 7.7% | 4.2 | 5.0% |
| Surabaya | 3.5 | 3.3 | -6.5% | 3.1 | -6.5% | 3.5 | 13.5% |
| Bangkok | 1.5 | 1.4 | -3.0% | 1.4 | -2.3% | 1.3 | -8.6% |
| TOTAL - TOP 10 PORTS | 98.7 | 98.1 | -0.6% | 104.7 | 6.7% | 105.4 | 0.7% |
| Other* | 16.4 | 16.2 | -1.5% | 16.1 | -0.6% | 14.2 | -11.7% |
| TOTAL - ALL SE ASIA PORTS | 115.1 | 114.3 | -0.7% | 120.7 | 5.6% | 119.6 | -0.9% |

Note: * 2022 throughput is estimated

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Regional Service Coverage

There are 136 deepsea loops calling in Southeast Asia, providing direct services in all the main trades. The greatest capacity is provided in the trade to North Europe, while the largest number of loops operate in the South Asia trade.

There are 136 weekly deepsea loops serving Southeast Asia, an increase of 24 loops over the last three years (see Table 5.2). This reflects the key position of the Strait of Malacca in the routing of both East-West and North-South container services. 95% of these loops call at one or more of the Southeast Asia hub ports - Singapore, Port Klang and Tanjung Pelepas, to maximise the connectivity between services, as well as providing hub and spoke feeder connections in the region.

Only seven deep sea loops bypass the hub ports, mainly focused on serving Vietnamese ports.

There are multiple direct services from Southeast Asia in all the main deepsea trades. The greatest capacity is provided in the Asia-North Europe trade. The largest number of loops are in the South Asia trade (32 loops), which has also seen the greatest increase over the last three years. Average vessel sizes are much lower in the South Asia trade than in the longer distance trades.

Average vessel sizes have decreased in a number of trades, reflecting the deployment of extra loops using smaller vessels during the pandemic. Maximum vessel sizes have however increased, with the largest ULCVs now deployed in the trades to North Europe, Mediterranean and the Middle East. Additionally, vessels up to 16,000 teu are now scheduled on the North American trade, both to the west coast, and to the east coast via Suez.

Among the alliances, Ocean has the most loops serving Southeast Asia (22 loops), followed by THE Alliance with 18 loops and 2M with 14 loops (Figure 5.2). One reason why 2M has fewer loops is that Maersk and MSC operate their Middle East loops outside the alliance structure.

2M also has limited connectivity from Southeast Asia to WCNA, with only one direct loop. Ocean and THE Alliances both use pendulum loops from Europe/ECNA/Middle East which transit the Strait of Malacca and link up with the trade to WCNA.

The number of alliance services has been reasonably stable over the last three years, THE Alliance added a Singapore call to its FE4 North Europe loop in 3Q20, increasing the number of alliance North Europe loops. Ocean Alliance withdrew its small East Med loop, operated with 6,000 teu vessels, in 1Q20.

The large number of loops calling in Southeast Asia reflects the key position of the Malacca Strait in lines' networks

ULCVs are deployed on the main East-West loops calling in Southeast Asia

Ocean Alliance has the most calls in Southeast Asia

Table 5.2 Number of weekly deepsea loops calling at Southeast Asia ports 4Q19 vs 4Q22

| | 4Q19 | 4Q22 | Increase |
|--|------------|------------|-----------|
| Loops calling at hub ports only | 84 | 100 | 16 |
| Loops calling at hub ports and other regional ports | 25 | 29 | 4 |
| Loops call at non hub ports only | 3 | 7 | 4 |
| Total | 112 | 136 | 24 |

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

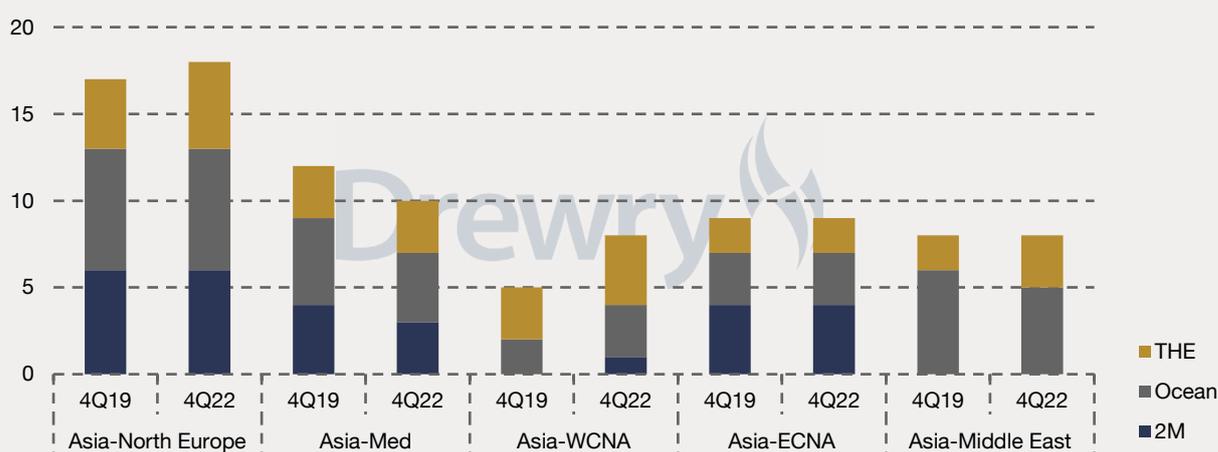
Table 5.3 Weekly deepsea loops by trade calling at Southeast Asia ports, 4Q19 vs 4Q22

| Trade | Number of weekly loops | | | Average vessel size (teu) | | | Maximum vessel size (teu) | | | Annual Capacity (teu) |
|--------------------|------------------------|------------|-----------------------|---------------------------|--------------|--------------|---------------------------|---------------|-------------|-----------------------|
| | 4Q19 | 4Q22 | Increase/ decrease | 4Q19 | 4Q22 | % | 4Q19 | 4Q22 | % | 4Q22 |
| | | | | | | | | | | |
| Asia-North Europe | 17 | 19 | 2 | 16,698 | 17,424 | 4.3% | 23,756 | 23,999 | 1.0% | 17,214,496 |
| Asia-Med | 12 | 11 | -1 | 12,592 | 13,788 | 9.5% | 19,224 | 23,756 | 23.6% | 7,886,840 |
| Asia-WCNA | 7 | 11 | 4 | 8,372 | 11,200 | 33.8% | 11,388 | 16,020 | 40.7% | 6,406,556 |
| Asia-ECNA | 9 | 13 | 4 | 9,527 | 8,461 | -11.2% | 14,100 | 16,020 | 13.6% | 5,719,688 |
| Asia-Middle East | 14 | 16 | 2 | 9,232 | 8,293 | -10.2% | 20,988 | 20,988 | 0.0% | 6,899,880 |
| Asia-South Asia | 23 | 32 | 9 | 5,420 | 4,195 | -22.6% | 10,050 | 9,592 | -4.6% | 6,980,948 |
| Asia-Africa | 17 | 19 | 2 | 5,071 | 5,280 | 4.1% | 14,036 | 14,952 | 6.5% | 5,216,224 |
| Asia-South America | 5 | 6 | 1 | 8,434 | 8,948 | 6.1% | 11,800 | 13,870 | 17.5% | 2,791,828 |
| Asia-Oceania | 12 | 12 | 0 | 4,802 | 4,208 | -12.4% | 9,403 | 9,200 | -2.2% | 2,625,480 |
| Total | 116 | 139 | 23 | 8,787 | 8,542 | -2.8% | 23,756 | 23,999 | 1.0% | 61,741,940 |

Note: Pendulum loops counted against both trades served

Source: Drewry Maritime Research

Figure 5.2 Number of weekly deep sea loops calling at Southeast Asia ports by alliance, 4Q19 vs 4Q22



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Regional Port Coverage

Singapore has the most scheduled calls in the region with an increase over the last three years. There has also been a significant increase in port calls in Vietnam.

Among the hub ports, Singapore has the most scheduled loop calls (111 calls) followed by Port Klang with 59 calls, and Tanjung Pelepas with 30 calls. Singapore has seen an increase of 18 scheduled calls over the last three years, while there have been 9 extra calls at Port Klang and none at Tanjung Pelepas.

2M's hub port calls are split between Singapore (9 calls) and Tanjung Pelepas (9 calls), influenced by APM Terminals' shareholding in the operating company Port Tanjung Pelepas (PTP). Ocean Alliance has 18 calls at Singapore and also 9 calls at Port Klang, although the calls at Port Klang will also be servicing the Malaysian gateway market. THE Alliance also has its calls concentrated at Singapore (16 loop calls) with 4 calls at Port Klang.

On the non-alliance loops, Maersk and CMA CGM are the lead lines with the most scheduled hub port calls across the three hubs (20 calls each) followed by MSC and COSCO (15 calls each). On shared non-alliance loops, the lead line is the line which operates the greatest capacity, measured in teu, on the loop.

MSC, Maersk, and CMA CGM have their calls spread across the three hubs, reflecting the need for connectivity with alliance loops, as well as serving the Malaysian gateway market via Port Klang. Other lines call only at Singapore and Port Klang.

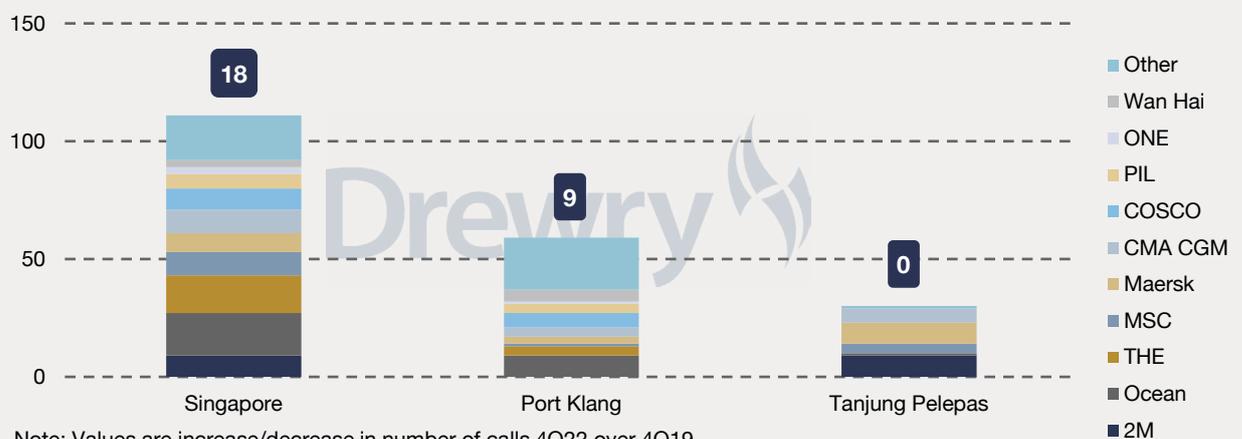
Among the gateway ports, the most scheduled deep sea loop calls are at Cai Mep with 14 calls, and Laem Chabang with 13 calls.

There has been a significant increase in the number of calls at the Vietnamese ports, with five additional calls at Cai Lan (Haiphong), four at Ho Chi Minh City, and three at Cai Mep.

2M's hub port calls are split between Singapore and Tanjung Pelepas

Maersk, MSC and CMA CGM have calls spread across the three hub ports

Figure 5.3 Number of weekly deepsea loop calls at Southeast Asia hub ports by alliance/lead line: 4Q22 vs 4Q19



Note: Values are increase/decrease in number of calls 4Q22 over 4Q19.

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

The alliance loops are mainly concentrated at Cai Mep with connections to North Europe, ECNA, WCNA and Middle East/South Asia. The added loops have been in the Southeast Asia-WCNA trade.

The increase in loops calling at Cai Lan (Haiphong), from four to nine loops, has been in the North America trade to both west and east coast, with additional alliance loops, as well as loops operated outside the alliance arrangements

There has been an increase from 13 to 15 deepsea loops calling at Laem Chabang. These cover all the main trades, with alliances providing services to North Europe, ECNA and WCNA. One extra loop has been added in both the ECNA and WCNA trades

Tanjung Priok has four deepsea loop calls. Ocean Alliance has a call on its ECNA-Asia-WCNA pendulum loop, which was withdrawn in 2Q20, and then reinstated in 4Q22. Maersk introduced a call on its independent WCNA loop (TP20) in 4Q22 but has just announced the suspension of the entire loop. Tanjung Priok also has calls are in the Oceania trade.

Terminal investments in the region by carriers are spread across all the countries with deepsea services.

Following the development of PTP in 2000 which resulted in a significant loss of Maersk volumes, PSA has entered into a number of partnership arrangements with major carriers, and by 2022 six lines have invested in JV terminal operations in Singapore, reflecting the importance of their transshipment activities there. These are MSC, CMA CGM, COSCO, ONE (via its shareholders), HMM and PIL.

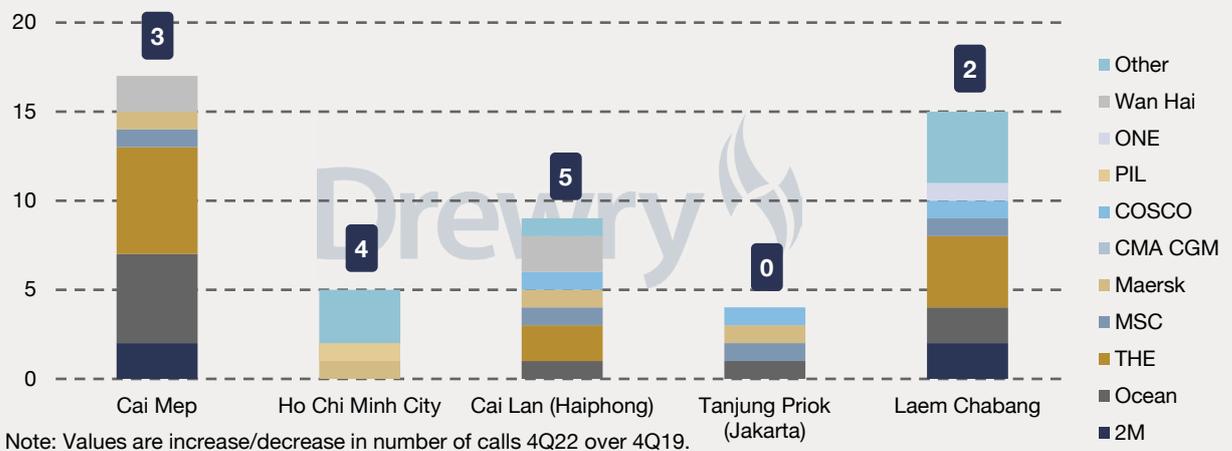
Four lines have investments in different terminals at Laem Chabang, Maersk, CMA CGM, Evergreen and NYK (ONE).

The alliances have increased their calls at Cai Mep and Haiphong

Tanjung Priok has connections to both ECNA and WCNA

Stakeholder interests at the hub ports influence their port calls in the region

Figure 5.4 Number of weekly deepsea loop calls at Southeast Asia non hub ports by alliance/lead line: 4Q22 vs 4Q19



Note: Values are increase/decrease in number of calls 4Q22 over 4Q19.

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

In Vietnam, lines have taken stakes in a number of terminals. At Cai Mep, Maersk, CMA CGM and MOL/Wan Hai have interests in three different terminals, while MOL/Wan Hai also have a stake in the terminal at Lach Huyen. CMA CGM has an interest in the Vietnam International Container Terminal at Cat Lai.

Other investments in the region are by Maersk (via APMT) at Tanjung Pelepas, and by NYK (ONE) at Tanjung Priok.

The main impact of these shareholding interest on port call choices is at the transshipment hubs, where lines/alliances with interests in Singapore focus most of their transshipment activity there, while Maersk has calls at Tanjung Pelepas on both 2M and non-alliance loops. After the termination of the 2M alliance in 2025, it is expected that Maersk loops will be concentrated at Tanjung Pelepas, while MSC loops will call at Singapore.

Average vessel sizes at individual ports vary from 2,500 teu up to 11,000 teu. This contrasts with the maximum vessel sizes which at most of the ports range from 16,000 up to 24,000 teu. Even at the ports with high numbers of calls by ULCV operated loops, the average vessel size is reduced by the smaller vessels deployed in the South Asia, Middle East and Oceania trades.

Maximum vessel sizes have increased at all Southeast Asia ports over the last three years. Increases have been more limited at the main hub ports, as ULCVs were already calling three years ago.

CMA CGM, Maersk, MOL and Wan Hai have invested in terminals in Cai Mep

Increases in average vessel size have been moderated by additional small vessel loops

Table 5.4 Carrier investment in Southeast Asia terminals

| Country | Port | Terminal | Carrier Shareholders |
|-----------|-----------------------|---|---|
| Indonesia | Tanjung Priok | New Priok Container Terminal 1 (NPCT1) | NYK Line |
| Malaysia | Tanjung Pelepas | PTP Container Terminal | APMT (Maersk) |
| Singapore | Singapore | CMA CGM-PSA Lion Terminal (CPLT – Located in Pasir Panjang) | CMA CGM (Terminal Link) |
| Singapore | Singapore | COSCO-PSA Terminal (CPT – Located in Pasir Panjang) | Cosco Shipping |
| Singapore | Singapore | MSC-PSA Asia Terminal (MPAT – Located in Pasir Panjang) | TIL (MSC) |
| Singapore | Singapore | PIL-PSA Singapore Terminal (PPST – Located in Keppel) | Pacific International Lines (PIL) |
| Singapore | Singapore | Magenta Singapore Terminal (MST) | MOL/K Line/NYK |
| Singapore | Singapore | HMM – PSA Singapore Terminal (HPST) | Hyundai |
| Thailand | Laem Chabang | Terminal A0-B0 (LCMT) | APMT (Maersk) |
| Thailand | Laem Chabang | Terminal B1 (LCB1) | APMT (Maersk) |
| Thailand | Laem Chabang | Terminal B2 (Evergreen Container Terminal Thailand) | Evergreen |
| Thailand | Laem Chabang | Terminal B4 (TIPS) | NYK Line |
| Thailand | Laem Chabang | Terminal B5_C3 (LCIT) | CMA CGM (Terminal Link) |
| Vietnam | Cat Lai (Ho Chi Minh) | Vietnam International Container Terminal (VICT) | CMA CGM (Terminal Link) |
| Vietnam | Lach Huyen | Lach Huyen Container Terminal (HICT) | MOL/Wan Hai Lines |
| Vietnam | Cai Mep | Cai Mep International Terminal (CMIT) | APMT (Maersk)/Vietnam National Shipping Lines |
| Vietnam | Cai Mep | Gemalink International Port (Gemadept- Terminal Link) | CMA CGM (CMA Terminals) |
| Vietnam | Cai Mep | Tan Cang-Cai Mep International Terminal (TCIT) | MOL/Wan Hai Lines |

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

There have been significant increases in maximum vessel size at the regions gateway ports:

- Laem Chabang (+68%)

A call was added on 2M’s AE6 loop in 3Q20. This loop is now tonnaged with vessels up to 23,656 teu

- Cai Lan (+52%)

Maximum vessel size has increased from 8,600 teu to 13,100 teu; the largest ships are Wan Hai’s new buildings deployed on their AA3 WCNA loop, THE Alliance’s PN2 WCNA loop also employs vessels just below 13,000 teu.

- Cai Mep (+45%)

The largest vessels on Ocean Alliance’s FAL7 (North Europe) loop have increased from 14,500 teu to 20,988 teu

- Tanjung Priok (+41%)

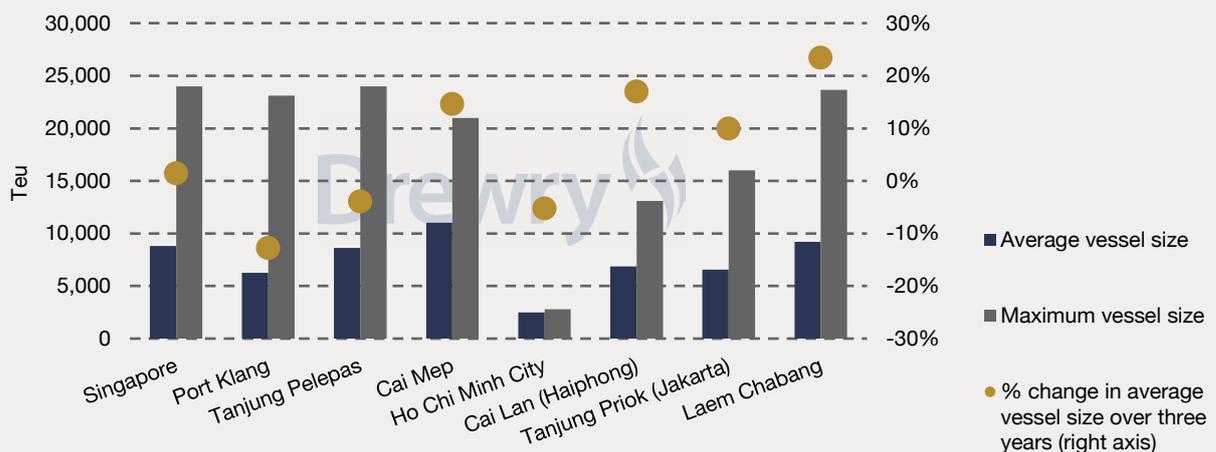
Maximum vessel size on Ocean Alliance’s Columbus loop has increased from 11,388 teu to 16,020 teu

The upgrading of these loops has also been one of the main factors influencing the increase in average vessel size at these ports, while decreases in average vessel size at Port Klang (-13%) and Ho Chi Minh City (-5.2%) have been driven by an increase in the number of small vessel loops in the South Asia trade.

There has been a significant increase in maximum vessel size at ports

Cai Mep now receives calls from 21,000 TEU capacity vessels

Figure 5.5 Average and maximum vessel size at Southeast ports, 4Q22



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Regional Port Connectivity

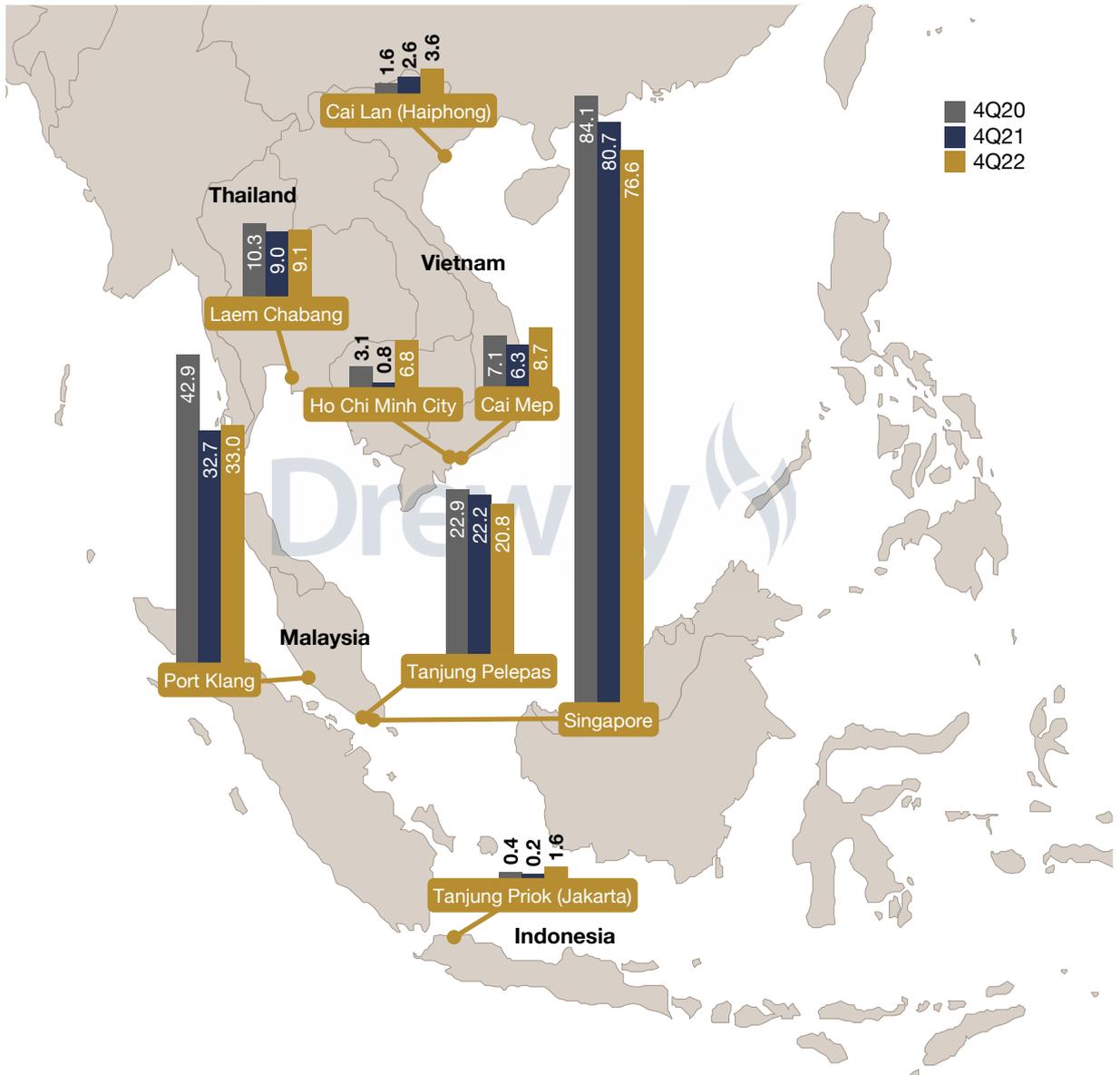
Port connectivity has decreased at four of the eight deep sea ports, but has increased at the other four ports. The increases are due to added loops providing more trade connectivity.

Four of the eight deepsea ports in Southeast Asia have shown a reduction in their port connectivity index score between 4Q20 and 4Q22. Singapore, Tanjung Pelepas and Laem Chabang have the highest trade connectivity within the region, but a decline in their number of service connections relative to the global port with the most service connections (i.e., Shanghai) has resulted in a reduction in their respective connectivity scores.

Port Klang showed a reduction in connectivity due to the loss of its direct trade connection to Latin America when MSC’s Ipanema loop to ECSCA was cancelled.

Connectivity has declined at Port Klang due to the loss of a connection to Latin America

Figure 5.6 Port connectivity index - main Southeast Asian ports, 4Q20 to 4Q22



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Four ports have shown an increase in their connectivity index from 4Q20 to 4Q22.

The increase in Cai Mep's connectivity score from 7.1 to 8.8 was due to an increase in the number of services calling at the port. There was a more significant increase at Ho Chi Minh City where the score increased from 3.1 to 6.8 between 4Q20 and 4Q22. As well as having more service connections in 4Q22, the addition of the port as a call on Bahri's multipurpose service provides additional trade connections to Africa (Durban) and Latin America (Salvador) which provided direct service connections to all of the six world regions.

The connectivity index score recorded for Cai Lan also increased from 1.6 in 4Q20 to 3.6 in 4Q22. This is due to additional service connections, as well as an extra trade connection to Latin America on Wan Hai's Asia-ECNA loop (AA9), introduced in 1Q22, which calls at Balboa

Tanjung Priok has seen an increase in its connectivity index from 0.4 to 1.6. This is due to the addition of a call on Ocean Alliance's pendulum Columbus loop which adds trade connections to North America and the Middle East.

Ho Chi Minh City, Cai Lan and Tanjung Priok gained trade connections over the last two years

Regional Port Performance

Tanjung Pelepas has the best port productivity in the region, closely followed by Singapore. Waiting times deteriorated at the hub ports, though with some improvement in 2022.

Drewry uses its proprietary AIS database to assess productivity trends at major ports.

Looking at the main hub ports, then Tanjung Pelepas was the most productive port in the region between 2019 and 2021, followed closely by Singapore, and with Port Klang ranked third. However in 2022, while Singapore sustained its level of productivity, there was a decline at both Port Klang and Tanjung Pelepas with average terminal time per 1000 teu handled increasing by 35% and 133% respectively between 1H21 and 1H22.

Among the three gateway ports for which data is available, Manila has the highest productivity and Bangkok the lowest, both with relatively consistent performance across the four years. Performance at Sihanoukville has been variable, with good productivity in 2020 and 2021, but poorer performance in 2019 and 2H22.

Pre-berth waiting times have increased at Port Klang, Singapore, and Tanjung Pelepas, although there has been some improvement in 2022.

Manila has the longest waiting time among the gateway ports, up to 2.1 days in 2H22. Latest waiting time at Sihanoukville is 0.2 days, and 0.4 days at Bangkok. At all three ports there are significant fluctuations across the time period.

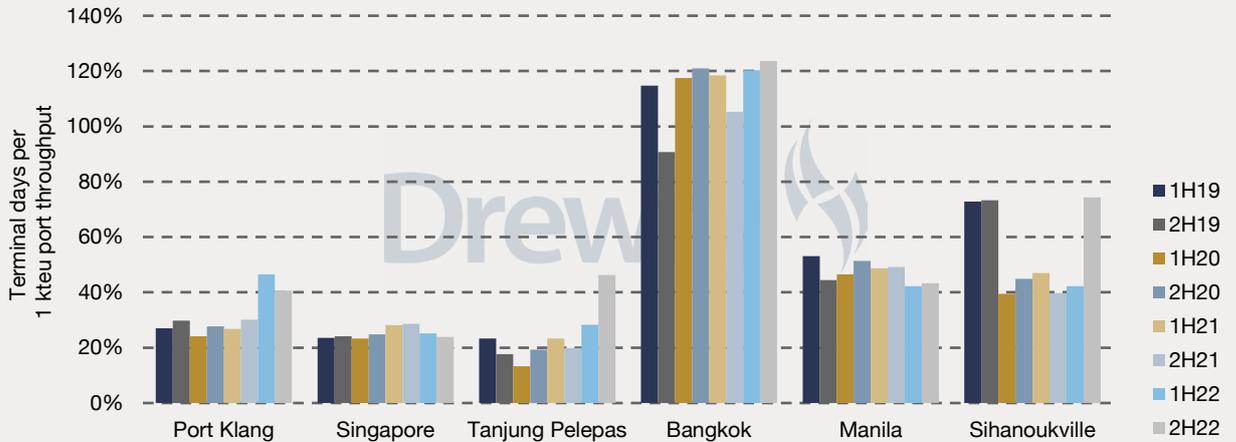
Performance declined at Tanjung Pelepas and Port Klang in 2022

Waiting times have increased at the hub ports, though with some improvement in 2022

Waiting times are longer at the regional feeder ports

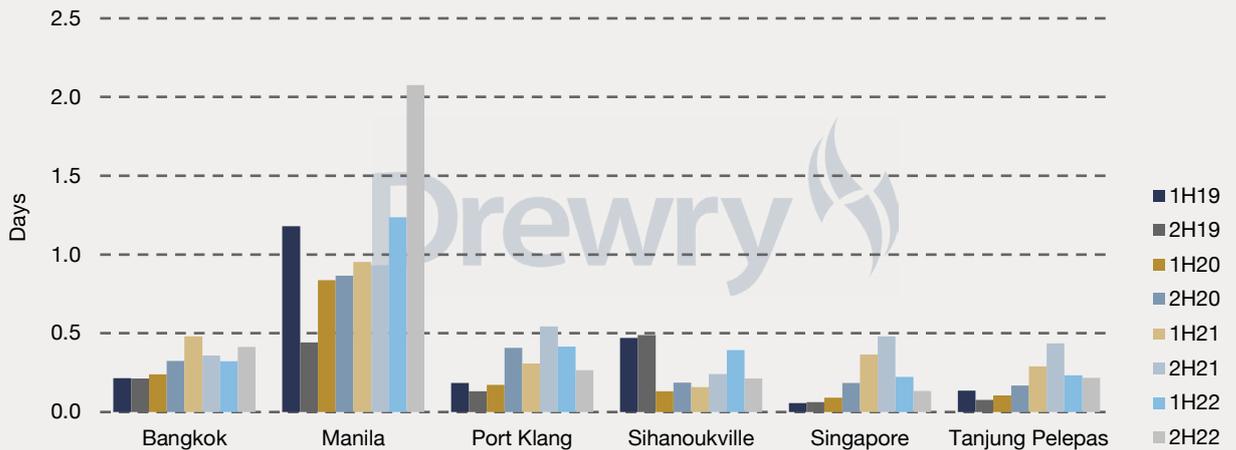
Regional ports monitor – Southeast Asia

Figure 5.7 Productivity at selected Southeast Asia ports



Source: Drewry Maritime Research

Figure 5.8 Southeast Asia major ports - average pre berth waiting time by port



Source: Drewry Maritime Research

Figure 5.9 Southeast Asia ports forecast capacity and utilisation



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Regional Investment Performance

An increase in terminal capacity in the Southeast Asia region over the next five years is expected to keep pace with demand, with extra capacity spread across the main countries in the region.

Terminal capacity is expected to expand roughly in line with volume growth across the region as a whole. Utilisation is forecast at 71.0% in 2026, compared to 73.4% in 2022.

As Figure 5.11 shows, 35% of the forecast capacity expansion between 2022 and 2026 will take place in Indonesia, including:

- Development of NPCT2 at Tanjung Priok (1 mteu)
- New terminal development at Patimban in West Java (1 mteu)
- Expansion of Terminal Teluk Lamong, Surabaya, East Java (2.8 mteu)
- DP World / Maspion JV development at Gresik, East Java (1 mteu)

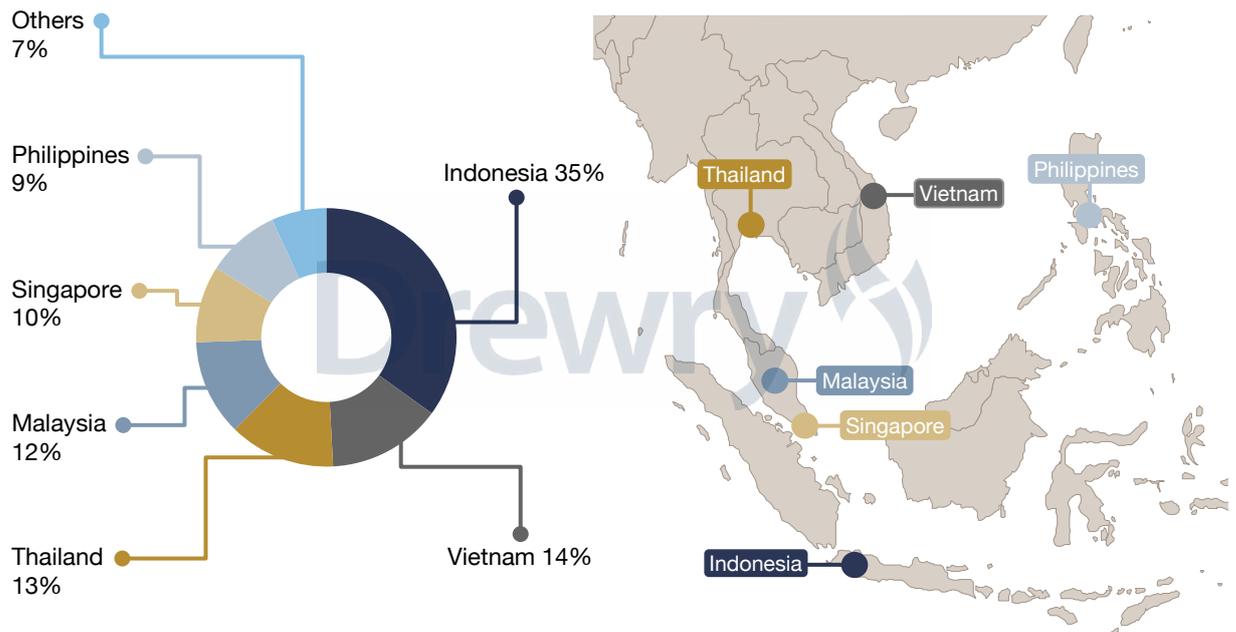
Other significant capacity expansion projects in the region include:

- PSA's development of the Tuas Megaport at Singapore (4 mteu)
- Further expansion of Hutchison Ports' Laem Chabang Terminal D (2.4 mteu)
- Investment by Haiphong Port JSC and Hateco Group Joint Stock Group in four new terminals at Lach Huyen (2 mteu)
- Expansion of the Gemalink Terminal at Cai Mep, a joint venture between Vietnamese port operator Gemadept and CMA Terminals (1.2 mteu)

Average utilisation in the region is forecast to remain above 70% until 2026

35% of the extra capacity in the region is at ports in Indonesia

Figure 5.10 Breakdown of forecast capacity expansion by 2026



Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Table 5.5 summarises recent transactions in the Southeast Asia ports market.

PT Pelindo Terminal Petikemas (SPTP), the state-owned container terminal operator which was established following the merger of the four state-owned port companies in October 2021, acquired the minority shareholdings in PT Prima Terminal Petikemas, the operator of the Belawan New Container Terminal (BNCT). It subsequently announced that the expansion of BNCT will be undertaken in collaboration with a consortium of the Indonesian Investment Authority and DP World.

ICTSI's regional portfolio has also undergone a number of changes in the past year. In July 2022, the Philippines headquartered operator acquired a majority interest in the company which holds the concession to operate a multipurpose terminal in Lamongan Regency, East Java (Indonesia). However, its agreement with Pelindo IV, by which ICTSI operated the container terminal in Makassar, ended on 31 January 2023, and has not been renewed.

ICTSI has also sold its 65% interest in Hijo International Port Services Inc. (HIPSI) to its co-owner Hijo Resources, as the intended container terminal development at Hijo International Port, in the Gulf of Davao, did not materialise.

State-owned Pelindo Terminal Petikemas gains full control of Belawan New Container Terminal

ICTSI acquires multipurpose terminal in Lamongan but exits Makassar

Table 5.5 Selected Southeast Asia port and terminal transactions, 2021-22

| Country | Port | Vendor | Acquirer | Details |
|-------------|----------|---|--------------------------------------|--|
| Indonesia | Belawan | PT Wijaya Karya / PT Hutama Karya | PT Pelindo Terminal Petikemas (SPTP) | Jul 2022: PT Pelindo Terminal Petikemas (SPTP) acquired the 15% shareholdings of PT Wijaya Karya (Persero) Tbk and PT Hutama Karya (Persero) to achieve 100% shareholding in PT Prima Terminal Petikemas, the operator of the Belawan New Container Terminal (BNCT). Value: undisclosed. |
| Indonesia | Lamongan | Indo Port Holding Pte Ltd / Eastlog Holding Pte Ltd | ICTSI | Jul 2022: ICTSI acquires majority 66.7% ownership in PT East Java Development which holds the concession to operate a multipurpose terminal in Lamongan Regency, East Java. Value: \$47 million. |
| Philippines | Hijo | ICTSI | Hijo Resources Corp | Sep 2022: ICTSI sold its 65% shareholding in Hijo International Port Services Inc. (HIPSI) to Hijo Resources, already owned 35% stake in the business. Value: P325 million (\$6 million) |

Source: Drewry Maritime Research

Regional ports monitor – Southeast Asia

Table 5.6 Summary of concession tenders and awards, 2021-22

| Country | Port | Concession Authority | Concessionaire | Details |
|--|------------|--|---------------------------|---|
| (i) Concession tenders | | | | |
| Myanmar | Mawlamyine | Ministry of Transport and Communications | | May 2022: Myanmar Port Authority announced invitation to tender to conduct a feasibility study for construction of an international standard port near Mawlamyine. Estimated investment: undisclosed |
| (ii) Concession awards / extensions | | | | |
| Indonesia | Belawan | Pelindo | INA / DP World | Aug 2022: Pelindo announced that the expansion of Belawan New Container Terminal (BNCT) will be delivered in conjunction with a consortium formed between the Indonesian Investment Authority (INA) and DP World. Estimated investment: undisclosed |
| Malaysia | Sabah | Sabah State Government | Sabah Port Sdn Bhd (SPSB) | Dec 2022: Suria Capital reported that it is entering into negotiations with the Sabah State Government to secure a 30-year extension to its current concession, which is due to expire in 2034. Suria Capital's Sabah Port Sdn Bhd (SPSB) operates Sapangar Bay Container Terminal, Kota Kinabalu Port, Sandakan Port and several other small ports. Estimated investment: undisclosed. |
| (iii) Concession expiry | | | | |
| Indonesia | Makassar | Pelindo IV | ICTSI | Jan 2023: ICTSI announced that the Cooperation Agreement, that was originally signed in 2006 and extended for a further 10-years in 2013, would not be renewed. |

Source: Drewry Maritime Research

Deals and Developments

Vietnamese ports in expansion mode

Vietnam’s container throughput has increased by average 14% per annum on average since 2018, boosted by the US-China trade dispute. The Vietnamese government has identified \$13.3 billion investment requirement in the port sector by 2030. Projects in the pipeline will not only expand capacity but also enable handling of larger vessels.

Container handling at Vietnamese ports has increased by an average 14.1% per annum since 2018, with growth accelerated by the US-China trade dispute. Not only did US importers seek to diversify their procurement away from China-centric models, but Chinese firms have also invested heavily with the dual purpose of securing a lower cost base and also establishing a manufacturing presence in a market which benefits from more preferential tariffs with the key US market.

Two of the three main ports in Vietnam – Ho Chi Minh and Cai Mep – are located in the south of the country, which together handled 70% of the national volumes in 2021. As Cai Mep (located approximately 50 kilometres southeast of Ho Chi Minh on the Thi Vai estuary) offers larger-scale terminal facilities with deeper draft berths, it has been gaining market share from the smaller, shallower draft terminals in Ho Chi Minh. Cai Mep is benefitting also because of its location (close to the industrial zones and the National Highway 51) in addition to the government policy that favours the relocation of port activities away from central Ho Chi Minh.

Carriers are also driving the demand for deeper water terminals that enable the deployment of larger vessels on the increasing number of mainline services calling at Vietnam ports. CMA Terminals (100% owned by CMA CGM) is a 25% shareholder in Cai Mep’s Gemalink Terminal, which opened in January 2021 and reported throughput of 0.7 mteu in its first year of operation.

Container handling in Vietnamese ports has grown 14% per annum since 2018

CMA Terminals has 25% shareholding in Gemalink Terminal which handled 0.7 mteu in 2021

Figure 6.1 Vietnamese container ports



Source: Drewry Maritime Research

Deals and Developments

MSC-affiliated TIL is also reported to be considering investing in a planned \$6 billion greenfield project in Can Gio (located to the south of Ho Chi Minh/west of Cai Mep) which could handle 24,000 teu capacity vessels.

In the north of the country, container handling activity at Hai Phong has increased from less than 0.3 mteu in 2001 to over 4 mteu in 2021, an average annual increase of 14.1%. Growth in demand can be attributed to the development of industrial zones in Dinh Vu, Nam Dinh Vu and Tien Phong.

Vietnam has enjoyed strong economic growth, with GDP growing by 8.6% on average between 1995 (when Vietnam joined ASEAN) and 2021. GDP growth is supported by its large population (98 million), which is urbanising at a fast pace. Vietnam's Central Government expects 7% annual growth in GDP until 2030.

According to the IMF data, Vietnam's trade surged in 2021, with exports up 22.9 % and imports by 20.7 % YoY. Growth slowed in 2022, but it is expected to remain in the 6-10% range between 2023 and 2027.

The forecast expansion in both the economy and trade is the primary driver for the Vietnamese government to further develop the port sector.

Vietnam's National Master Plan, which covers the period from 2021 to 2030 and provides a longer-term vision to 2050, includes a framework for the transport sector which is focused on upgrading both port and landside infrastructure to improve connectivity.

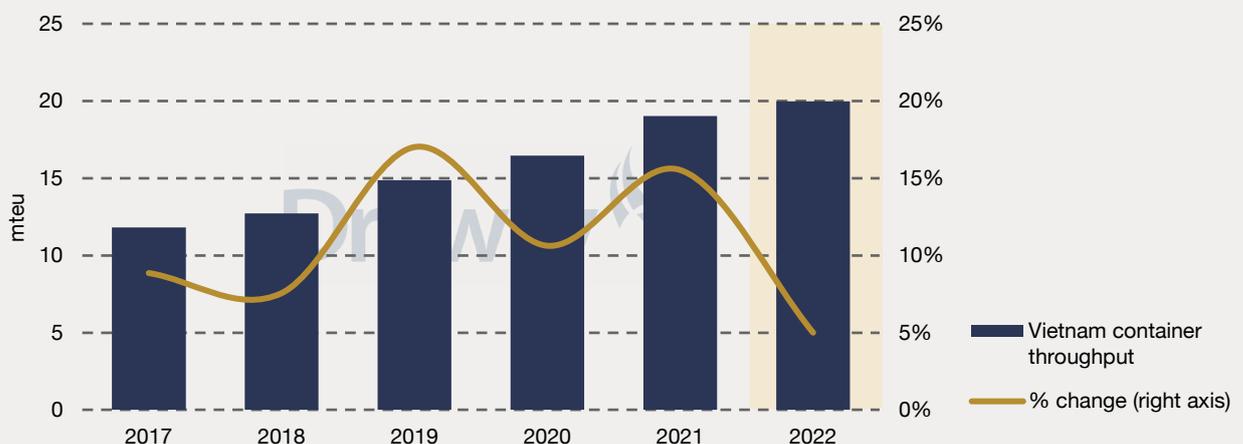
In respect of the port sector, the government estimates a total investment of \$13.3 billion in the period to 2030 to develop handling infrastructure (i.e. terminals). This will be funded by non-national government budgets, corporate investment funds and other legally raised capital (for example: private sector funding (domestic/foreign), funding from international financing institutions or overseas development funds). According to the National Master Plan, Vietnam's ports are classified into four rankings. The level of policy support as well as the capital investment for individual ports will depend on these rankings. Ports having Special Tier and Tier I status in the master plan will be prioritised.

Hai Phong handled over 4 mteu in 2021

Vietnamese government projects 7% annual growth in GDP to 2030

National Port Master Plan identifies \$13.3 billion investment in ports needed by 2030

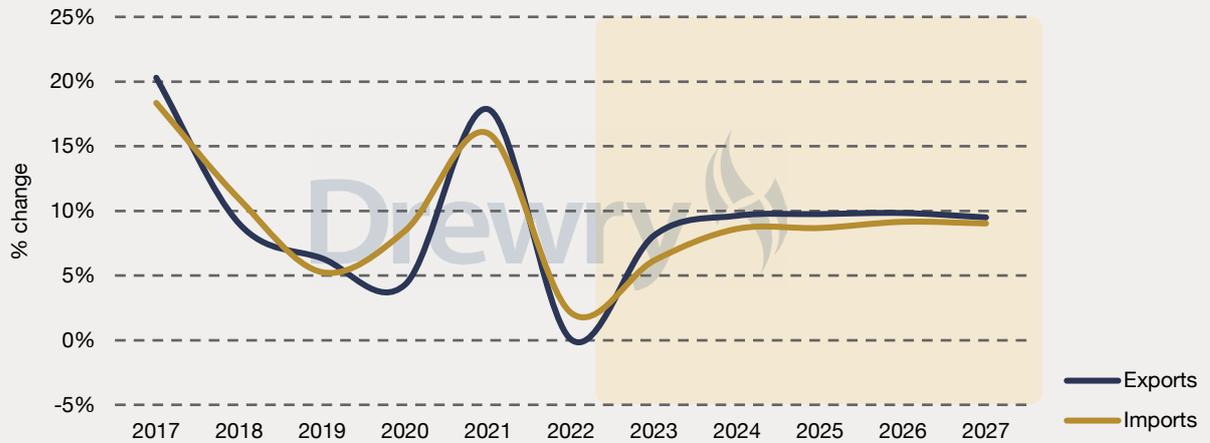
Figure 6.2 Vietnam container port throughput



Source: Drewry Maritime Research

Deals and Developments

Figure 6.3 Growth in Vietnamese exports and imports



Source: IMF

The national government budget will be focused on provision and upgrade of public maritime infrastructure including port channels and aids to navigation. Related initiatives for multimodal transport and logistics services are also being developed.

National government to fund upgrade of public maritime infrastructure including port channels and aids to navigation

In this edition, we have selected four port development projects, which together will provide more than 7.0 mteu capacity when fully developed. In summary:

- Hai Phong – Lach Huyen Terminal expansion
- Da Nang - Lien Chieu project
- Long An – Phase 2 expansion
- Vung Ang

| Hai Phong Port | |
|----------------------|--|
| Region: | Southeast Asia |
| Country: | Vietnam |
| Terminal: | Lach Huyen Terminal |
| Government agency: | Hai Phong Maritime Administration |
| Company: | Port of Hai Phong Joint Stock Company/Hateco Group |
| Investment required: | \$677 million |
| Terminal capacity: | 2.6 mteu |

Hai Phong is the largest port city in north Vietnam, with a total throughput of 4.7 mteu in 2021.

Hai Phong industrial zones are attracting overseas investments

Terminal expansion in Hai Phong has moved in step with the expansion of nearby industrial zones including Dinh Vu, Nam Dinh Vu and Tien Phong. The region has proven to be increasingly attractive as a manufacturing location with many global brands establishing a presence. For example, South Korea’s LG Group has invested over \$4.5 billion in Hai Phong where its three plants are manufacturing LCD and OLED panels, electronics and electronic components. Similarly, Taiwan’s Pegatron Corporation, which assembles products for Apple, Microsoft and Sony, is planning to further expand its operations in Dinh Vu.

Deals and Developments

The Vietnamese government is focused on transitioning Hai Phong from an intra-Asian feeder port into an international gateway port. This will enable exports from northern Vietnam to move more quickly and at a lower cost to key US and European markets, eliminating the cost of transshipment at regional hubs such as Singapore.

Expansion of Hai Phong Port is now focused on the Lach Huyen area, the first phase of which started operations in 2018. Located on Cat Hai Island to the east of the city, Lach Huyen is closer to the sea which enables development of larger, deeper draft berths. The access channel depth for Lach Huyen terminals is 14 metres, a material improvement over the 7-9 metres depth available at the more centrally located terminals. Connection to the national highway network at Tan Vu is facilitated by the Dinh Vu-Cat Hai sea bridge, which opened in 2017.

Overall, the Lach Huyen development is in line with the city planning policy to relocate smaller, river ports towards coastal areas to take advantage of deeper water depths in these areas.

The first phase of the Lach Huyen terminal (berths 1-2), operated by Tan Cang Hai Phong International Container Terminal Co., Ltd (TC-HICT), has an operational capacity of 1.1 mteu. The terminal handled 0.7 mteu in 2021 (64% utilisation rate). TC-HICT is a JV between Saigon Newport Corporation (51%), Mitsui OSK Lines (17.5%), Wan Hai Lines (16.5%) and Itochu Group (15%).

Lach Huyen terminals served by 14 metre deep channel

TC-HICT handled 0.7 mteu in 2021

Figure 6.4 Location of Hai Phong and Lach Huyen ports



Source: Drewry Maritime Research

Deals and Developments

While originally scheduled to start in 2020, construction of the second phase (berths 3-4) finally commenced in July 2022 and is now scheduled for completion in 4Q24. The total investment of this 1.1 mteu terminal is reported to be \$296 million. The 47 hectare terminal will provide two deepwater berths with total length of 750 metres and draft of 16 metres, handling container vessels up to 8,000 teu capacity. Once complete, Port of Hai Phong Joint Stock Company will operate both berths under a 70-year concession.

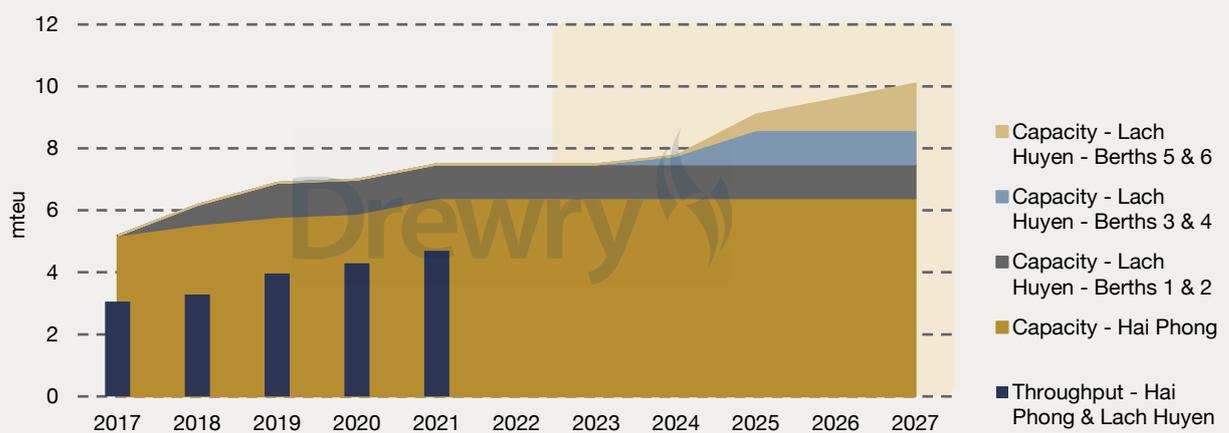
Concurrently, Lach Huyen berth 5 and 6 are also being developed following receipt of the necessary approvals in March 2021. With a total area of 58 hectares, the main berth will have an overall length of 900 metres and will be able to accommodate container vessels in the range of 12-18,000 teu. The 1.5 mteu project with a total capital investment of \$381 million is being delivered in two phases – Phase 1 is expected to start operations in 2025 while Phase 2 is scheduled for completion by 2030. Berths 5-6 will be operated by the Hateco Group, also under a 70-year concession.

Long-term success for the Lach Huyen developments will undoubtedly be linked to the region’s ability to continue to attract Foreign Direct Investment (FDI), together with continued government commitment to improve landside transport links. To this end, the development of the first phase of Lach Huyen Free Trade Zone is expected to be completed in 2025 with the second and third phases in 2030, supporting the development of traffic via these new terminal assets.

Construction of Lach Huyen berths 3-4 commenced in July 2022

Lach Huyen berths 5-6 to be delivered between 2025 and 2030

Figure 6.5 Hai Phong / Lach Huyen - development of container throughput and capacity



Source: Drewry Maritime Research

Deals and Developments

| Vung Ang Port | |
|----------------------|---|
| Region: | Southeast Asia |
| Country: | Vietnam |
| Terminal: | Vung Ang Port expansion |
| Government agency: | Ha Tinh Maritime Administration |
| Company: | Lao-Viet International Port Joint Stock Company |
| Investment required: | \$43 million |
| Terminal capacity: | 0.125 mteu (estimated) |

The Vung Ang region is an established economic zone within Ha Tinh province, accounting for 56% of provincial budget and 95% of revenues collected from import/export activities. The port is located 145 kilometres from the Napao-Chalo border crossing between Vietnam and Laos, and is therefore well-positioned to act as a gateway into central Laos and northeast Thailand.

The development of Vung Ang Port, as part of the economic zone, commenced in 1999, with berth 1 operational in 2001 and berth 2 in 2010.

The port's existing berths, berth 1 and 2, have combined capacity of 4 million tonnes per year and can accommodate vessels up to 45,000 dwt. Vung An mainly handles liquid bulk, dry bulk and general cargoes.

In September 2016, Lao-Viet International Port Joint Stock Company (VLP) started the construction of berth 3 which was expected to be in service by 2019. However, construction was delayed and operations are now scheduled to commence in 1Q23.

Vung Ang is located 145 kilometres from the Laos border

Berth 3 is scheduled to start operations in 1Q23, increasing port capacity by 2.5 million tonnes per annum

Figure 6.6 Location of Vung Ang port



Source: Drewry Maritime Research

Deals and Developments

Berth 3 is 225 metres long and can accommodate vessels of up to 45,000 dwt. It has a capacity of 2.5 million tonnes per year.

Drewry believes the outlook for container handling at Vung Ang has strengthened recently. First, the existing Vung An economic zone will be combined with the nearby Son Duong region to create Vung Ang-Son Duong economic zone as the Central Committee plans to make it the logistics center for the region. Son Duong port will also be developed to connect with Vung Ang port, creating a group of ports in the region.

Secondly, the Vietnamese government has committed to cooperate more closely with the Laotian government to promote the economic corridor between the two countries. Through VLP, Laos wants to develop the Vung Ang port as its gateway to the sea. To prove its commitment, the Laotian government has increased its ownership in VLP to 60% from the previous 20%, recognising the importance of the port in developing trade activity along this corridor.

Finally, in 2022 Laos declared its plans to develop a railway service connecting Vientiane to the Vung Ang region. When developed, this will support growth in cargo volumes and development of the port's maritime service network.

Provided both governments deliver on their commitments to develop the road and rail infrastructure linking the port to its wider hinterland, Vung Ang's entry into the regional container market seems assured.

Berth 3 will increase port capacity by 2.5 million tonnes per annum

Laos wants to develop Vung Ang Port as its gateway to maritime service networks

Planned rail link will provide a boost to cargo volumes when developed

| Da Nang Port | |
|----------------------|--|
| Region: | Southeast Asia |
| Country: | Vietnam |
| Terminal: | Lien Chieu port development |
| Government agency: | Da Nang Maritime Administration |
| Investment required: | \$144m for infrastructure / undisclosed for terminal |
| Terminal capacity: | 1.0 mteu (estimated) |

Da Nang Port is the largest port in Central Vietnam serving both Da Nang and Quang Nam provinces.

Currently container handling is undertaken in the Tien Sa port. Although the existing berths are only handling around 0.6 mteu, this is above the design capacity of the Tien Sa berths. Any further increase in container handling will result in traffic congestion in the city area, and therefore the city council is promoting a new cargo port development at Lien Chieu, with the view of redeveloping the Tien Sa berths as a cruise terminal.

Da Nang city council plans to move cargo handling activities to Lien Chieu

Deals and Developments

Figure 6.7 Location of Tien Sa and Lien Chieu port area in Da Nang



Source: Drewry Maritime Research

Figure 6.8 Da Nang container throughput



Source: Drewry Maritime Research

The Central government approved the request for construction of Lien Chieu Port in September 2018. The pre-study and detailed planning of Lien Chieu Port, undertaken by Da Nang’s Department of Planning and Investment, was subsequently approved in March 2021 and construction commenced in December 2022.

Construction of Lien Chieu commenced in December 2022

The Lien Chieu project consists of two components:

- **Component A** comprises the public maritime infrastructure including breakwaters, port channels, port VTS/aids to navigation, road connection and power and water supply infrastructure. The budget of VND 3,426 billion (\$144 million) will be funded by the central as well as local governments.

Deals and Developments

- **Component B** comprises the terminal infrastructure. The initial phase will deliver a two-berth container terminal with 750 metres quay line suitable to handle two mainline vessels up to 100,000 dwt/8,000 teu capacity. This initial phase will be operational by 2025. The expected level of investment required to build and equip the terminals has not yet been announced.

Future phases will include expansion of container and general cargo berths, together with liquid bulk terminals, with total throughput capacity of 17.5 million tonnes by 2030.

Due to its unique structure, the developers for this port will consist of two groups.

For construction of Component A, the Management Board of Infrastructure Investment Projects of Da Nang City, as the authority in-charge, has assigned the project to a JV between Phu Xuan Consulting and Construction Joint Stock Company; Lung Lo Construction Corporation; Truong Son Construction Corporation; Dacinco Construction and Investment Limited Company; and Xuan Quang Construction Joint Stock Company.

However, for Component B, there is a requirement for private sector funding to deliver the project. It is reported that there are two groups of investors looking to participate – first a JV between Vietnam's BRG Group and Japan's Sumitomo Group, and secondly a JV between India's Adani Group and Vietnam's Anh Phat Investment Construction and Trading Joint Stock Company. The Adani Group has pledged to invest \$10 billion in Vietnam and is targeting the Lien Chieu Port as one of its first investments.

Throughput capacity planned at 17.5 million tonnes by 2030

Japan's Sumitomo Group and India's Adani Group are contesting to develop Phase 1 Terminal

| Long An Port | |
|----------------------|--------------------------------|
| Region: | Southeast Asia |
| Country: | Vietnam |
| Port: | Long An International Port |
| Government agency: | My Tho Maritime Administration |
| Company: | Dong Tam Group |
| Investment required: | \$426 million |
| Terminal capacity: | 0.5 mteu |

Long An Port, which is located southwest of Ho Chi Minh City in the lower reaches of the Soai Rap River, will be developed into a Tier I port from its current Tier III status. As cargo handling activity is shifted outwards from the draft and space constrained terminals located in central areas of Ho Chi Minh, Long An Port is banking on its downstream location and ample land area as being an attractive option for intra-Asian and feeder services.

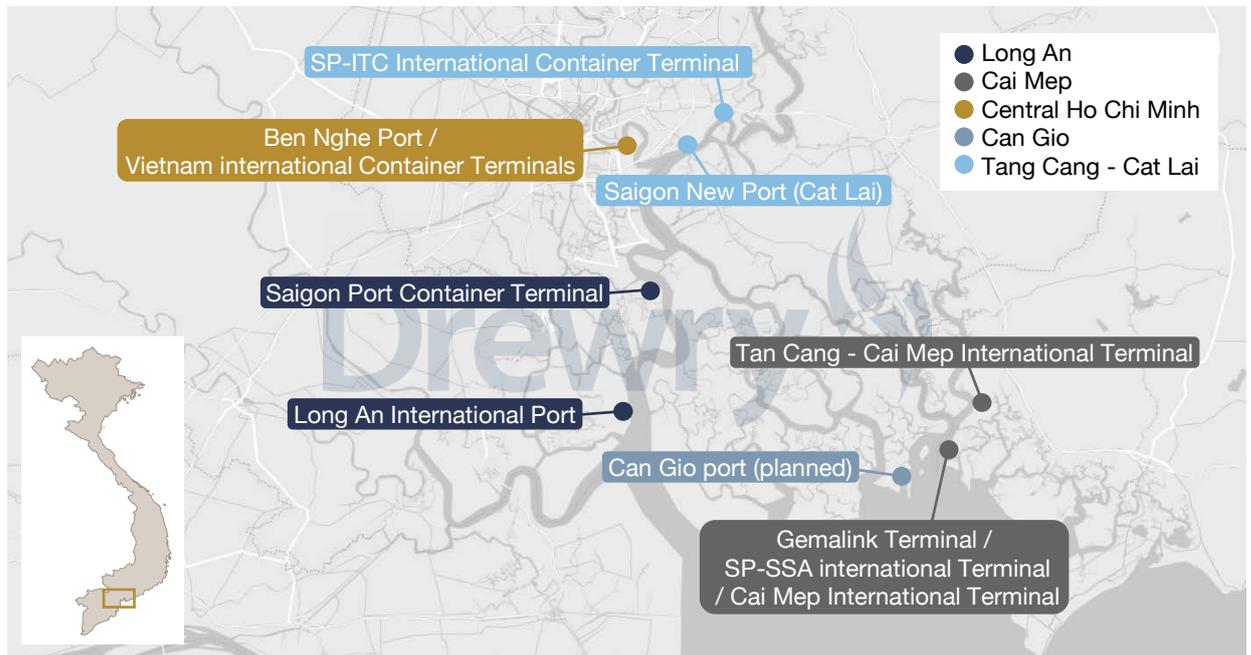
A government funded dredging programme is underway which will deepen the channel depth from current 9.5 metres to 10.5 metres.

Dong Tam Group operates the port through its subsidiary, Long An International Port Joint Stock Company (LAIP). Long An International Port will be developed as an integrated logistics and business hub comprising four key areas:

Long An International Port counting on downstream location and ample land area to capture market share

Deals and Developments

Figure 6.9 Location of current and planned container terminals in Ho Chi Minh area



Source: Drewry Maritime Research

- Long An International Port – 147 hectares
- South East Asia Logistics Services Centre – 239 hectares
- South East Asia Industrial Park – 396 hectares
- South East Asia Residential Area – 1,145 hectares

Long An International Port is being developed in three phases. When fully developed it will provide seven container berths with total length of 1,670 metres and able to accommodate vessels up to 70,000 dwt/7,000 teu capacity.

In Phase 1, Dong Tam has constructed two container berths with total length 560 metres, which can handle vessels up to 50,000 dwt/2,500 teu capacity. The initial delivery of three ship-to-shore gantry cranes from Mitsui were received in 4Q22, and a further three are scheduled for delivery during 2023. The port is also investing in 18 RTGs, which are also being supplied by Mitsui.

Future plans may include development of a further two container berths (berths 8 and 9) with combined length of approximately 700 metres and each capable of handling vessels up to 100,000 dwt/8,000 teu capacity. The developer has also touted plans to develop liquid bulk berths.

In addition to the volume of cargoes the port will take from Ho Chi Minh City's ports, it is also expected that Long An will capture the growth of cargo volumes from local industrial zones including Long Hau and Tan Kim. The People's Committee of Long An province also plans to further expand the provision of industrial zones to support the local economy and create synergies with the development of port, increasing from the current 22 industrial parks to 37 planned parks.

Considering the investments that the provincial authority commits not just for the port but also for the land infrastructure, Long An will be a key element helping to boost the domestic cargo flow between Mekong Delta region and Ho Chi Minh City.

Dong Tam Group is developing logistics and industrial park alongside the port

Phase 1 provides 560 metre quay, but further 700 metre berth could be added

Long An provincial government is planning to increase the number of industrial zones in the port hinterland

Port sector financial analyses

Drewry container outlook

Container demand retreated rapidly in 2H22, with global port handling estimated to have contracted by 0.5% YoY in 2022. Falling demand improved port congestion, which reduced storage revenues and put downward pressure on operator margins. Rising wage costs in 2023 are expected to be partially offset by savings in fuel and energy costs.

Container demand has been retreating for some time, but the speed of the decline certainly accelerated in 2H22 as high inflation eroded consumers' spending power and confidence.

This compounded the already anticipated shift in expenditure away from goods towards services and inventory de-stocking. The reverse occurred in 2021 which took container volumes sky high, but these volumes are now falling, adding to the dramatic effect of the current collapse. The higher the mountain, the further there is to fall.

Nonetheless, when full-year 2022 data comes in we expect to see a contraction of at least 0.5% in global port throughput. For 2023, we anticipate a minor uplift of 0.8% with YoY comparisons likely to be the strongest in 2H23.

Our assumptions include falling inflation, weakening US dollar and some inventory replenishment, which together should permit modest growth in container trade in 2023.

Economists do seem to be a little more optimistic than they did at the end of 2022. Gas prices are down, inflation in most parts of the advanced world is weakening – with the exception of the UK - and stock markets have had a roaring start to the year.

When we plugged the GDP inputs into our model in December, we purposely selected the lower bounds as our baseline prediction, simply to try and get ahead of anticipated future downgrades that had been the pattern of 2022.

However, our source for economics data, Oxford Economics, has bucked the trend and on 7 February upgraded the real GDP growth outlook for 2023 to 1.5%, from 1.3% in December and January, stating that a short global recession is still likely, but that downside risks are balancing out.

Container demand retreated rapidly in 2H22

Drewry projects modest 0.8% YoY growth in global port handling in 2023

Downside risks are balancing out; global recession likely to be short-lived

Table 7.1 Drewry's port throughput forecasts, % change on previous year

| Forecast | 2022 | | | 2023 | | |
|---------------|--------|--------|----------------|--------|--------|----------------|
| | Sep 22 | Dec 22 | Fcst Direction | Sep 22 | Dec 22 | Fcst Direction |
| World | 1.5% | -0.5% | ↓ | 1.9% | 0.8% | ↓ |
| Asia | 1.8% | 0.2% | ↓ | 2.3% | 0.9% | ↓ |
| Europe | 0.7% | -2.8% | ↓ | 2.1% | 2.1% | ↔ |
| North America | 3.0% | 0.7% | ↓ | -2.1% | -4.2% | ↓ |
| Latin America | -1.6% | -2.7% | ↓ | 1.0% | 0.4% | ↓ |
| Middle East | 3.1% | 1.7% | ↓ | 4.0% | 2.1% | ↓ |
| South Asia | 1.8% | -2.6% | ↓ | 5.3% | 5.5% | ↑ |
| Africa | -1.1% | -2.1% | ↓ | 0.8% | -0.6% | ↓ |
| Oceania | 2.5% | 1.9% | ↓ | 0.9% | -0.5% | ↓ |

Source: Drewry Maritime Research

Port sector financial analyses

Hopefully this renewed optimism will grow into something more tangible, but for now we think our global port handling projection from December is still the most likely outcome.

As always there are multiple wildcard variables that could change our opinion. Uppermost is the dramatic end of China's zero-Covid strategy.

With any luck, the lifting of social restrictions will boost the Chinese economy and productivity, although higher demand in the country is unlikely to be enough to fully offset the global economic drag.

Moreover, the policy pivot might be a double-edged sword. Due to China's elderly population and relatively low rate of vaccination, there is a threat of an unsustainable surge in infections which would strain the country's health system and potentially restrict manufacturing output and logistics capacity. Scenario modelling by The Economist predicts that as many as 1.5 million people will die in China if the virus is allowed to spread unencumbered.

Attempts to control future outbreaks could lead to temporary closure of port operations and associated connections, setting off a chain of widespread maritime supply chain disruption which could support rates and come to the rescue of carriers.

Additionally, any escalation of the war between Russia and Ukraine, or indeed elsewhere, could further impact energy and commodity prices, thereby prolonging the cost-of-living crisis that has sapped consumer spending power.

Amid rising geopolitical tensions, there is growing risk that more protectionism will stifle global trade. China and the West are trying to reduce their interdependency for critical resources and technologies. America's trading partners are irked by the change in the country's industrial policy to include the "Buy America" rule in the new climate law.

While downside risks have not been entirely eliminated, there is at least a sense that things are starting to look brighter.

Higher demand in China unlikely to fully offset global economic drag

Escalation of war between Russia and Ukraine would impact energy and commodity prices, with knock-on effect on consumer spending

Industry profitability and financial trends

Throughput performance

In 4Q22, throughput from our sample of global and regional port operators registered a second consecutive decline. Barring Global Ports Investments (GLPR), which remains the outlier with a volume decline of more than 50% in 4Q22, the container volume across our sample declined on average by 1.4% YoY (vs 3Q22: -2.0%, 2Q22: 1.0% and 1Q22: 3.4%). Higher inflation, rapid monetary tightening and deteriorating consumer confidence across major economies have taken a toll on the volumes in 4Q22, reducing the estimated global throughput by 3% to 207.8 mteu.

GLPR throughput was impacted by a significant drop in vessel calls to Russian ports as a result of the ongoing sanctions imposed after the Russian invasion of Ukraine in February 2022.

Container volumes declined for the second consecutive quarter

Port sector financial analyses

Germany’s HHLA also reported a double-digit YoY drop (-14.1%) in its container throughput in 4Q22, due to lower transshipment volumes to/ from Russia’s Baltic ports at its flagship Hamburg terminals, weakening European consumer demand and lowering volumes through its subsidiary in Odessa.

Turning to the global operators, APM Terminals’ (APMT’s) container moves fell 5.0% YoY (like-for-like growth: -3.8%) in 4Q22 mainly due to lower moves in North America, where the trade was affected by the diversion of cargo away from USWC ports, combined with lower consumer sentiments and rapid monetary tightening. For DP World (DPW), 4Q22 volume remained stable with a decline of -0.1% YoY, but like-for-like growth declined by 1.5% on the back of a 10.2% fall reported by its Asia Pacific and India business divisions.

The slowdown in the market is also echoed in the annual numbers reported by PSA International (PSA), which reported a 0.7% reduction in total volumes handled in 2022 compared to 2021.

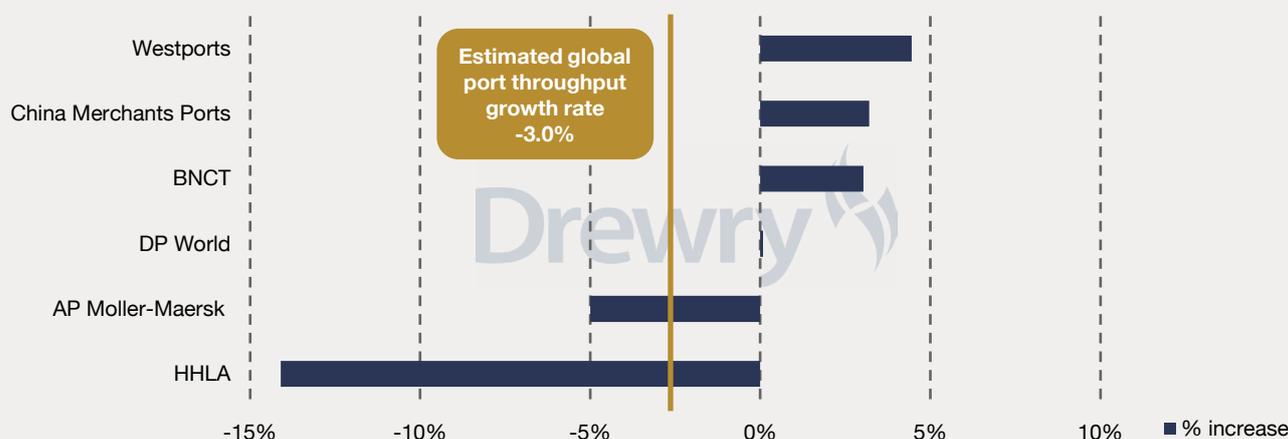
Looking at the major Chinese operators, China Merchants Ports (CMPorts) posted YoY growth of 3.2% in 4Q22 mainly led by the weaker 4Q21 comparable and higher volume managed by its Chinese operations (+4.7% YoY). Cosco Shipping Ports has yet to release its 4Q22 results, but total throughput across its global portfolio (i.e. including traffic handled at all terminals in which the company has a shareholding rather than the financially consolidated assets) dropped 4% YoY in 4Q22, with the positive performance of its international portfolio insufficient to offset steep declines at its Yangtze River and Pearl River Delta terminals. Similarly, Hutchison Ports Holdings Trust, which reports volumes on a half-yearly basis, reported a 14.3% drop in throughput in 2H22 compared to 2H21.

Elsewhere in Asia, Westports registered an increase of 4.5% YoY in container volume in 4Q22, benefitting from significantly higher gateway traffic (up 14%) while South Korea’s Busan Newport Container Terminal (BNCT) posted volume growth of 3.0% in 4Q22.

APMT volumes down 5% YoY in 4Q22, DPW traffic down 3.8% on like-for-like basis

Westports, CMPorts and BNCT outperformed their peers

Figure 7.1 Container throughput growth for selected terminal operators, 4Q22 vs 4Q21



Source: Company filings, Drewry Maritime Financial Research

Port sector financial analyses

On a sequential basis, all these companies posted an average decline of 0.6% (QoQ) with APMT being the worst performer recording a 6.1% fall followed by DPW, CMPorts, Westports and HHLA each registering a decline of 1.7%, 1.5%, 0.4% and 0.1% in 4Q22 respectively. BNCT remained the only outperformer with 6.3% QoQ volume growth in 4Q22.

Revenue growth

For revenue, the sample size further gets squeezed as Cosco Ports, CMPorts, DPW and PSA have published only their volume numbers.

For APMT, the consolidated topline decreased by 8.3% to \$1.0 billion led by the aforementioned volume decline and lower storage income. It should be noted that storage revenue had a significant positive effect on the company's topline in the first three quarters of 2022. However, in 4Q22 APMT observed a swift normalisation of operations across its US terminals, which bought the storage income close to the 2020 level. The steeper decline in total revenues vis-à-vis volume translated into lower revenue per move, which declined by 2.7% to \$327. For APMT, growth in revenue per move had been slowing throughout 2022 (3Q22: 6.7%, 2Q22: 13.3% and 1Q22: 21.1%).

Westports reported a 3.4% YoY increase in its operating topline to MYR 511 million (\$111.8 million) in 4Q22. However, container revenue (about 85% of the consolidated topline) remained somewhat flat. Similar to APMT, Westports' quarterly growth of container revenue has largely trended downwards in 2022 (4Q22: 1.4%, 3Q22: 0%, 2Q22: 2.8% and 1Q22: 4.6%). Additionally, easing congestion has reduced the dwell time for containers, which lowered the revenue from value-added services (primarily storage revenue) to 2020 levels.

HHLA's preliminary (unaudited) figures suggest that the company's revenue from ports logistics subgroup increased by 4.6% to EUR 396.2 million in 4Q22 (\$416.6 million). However, similar to APMT and Westports, the quarterly growth has been trending downwards (4Q22: 4.6%, 3Q22: 5.9%, 2Q22: 8.9% and 1Q22: 10.4%).

APMT and Westports report storage income close to the 2020 levels

Each quarter, Drewry analyses the latest operating/financial results including the volume, revenue, EBITDA and capital expenditure trends of a sample of leading terminal operators. To support our analysis, we provide data in the appendix (in Microsoft Excel) that summarises the key financial metrics for the companies under our coverage on a quarterly or half-yearly basis from 2017.

At the time of publication only a small number of port and terminal operators covered by DMFR had reported their 4Q22 financials (HHLA and Westports). However, by comparing the available results with those published by other global and regional terminal operators (i.e., APMT, Busan Newport Container Terminal, DP World, Global Ports Investment and PSA) we aim to provide a more comprehensive assessment of underlying industry trends.

Port sector financial analyses

Figure 7.2 Revenue growth for selected terminal operators, 4Q22 vs 4Q21



Source: Refinitiv, Drewry Maritime Financial Research

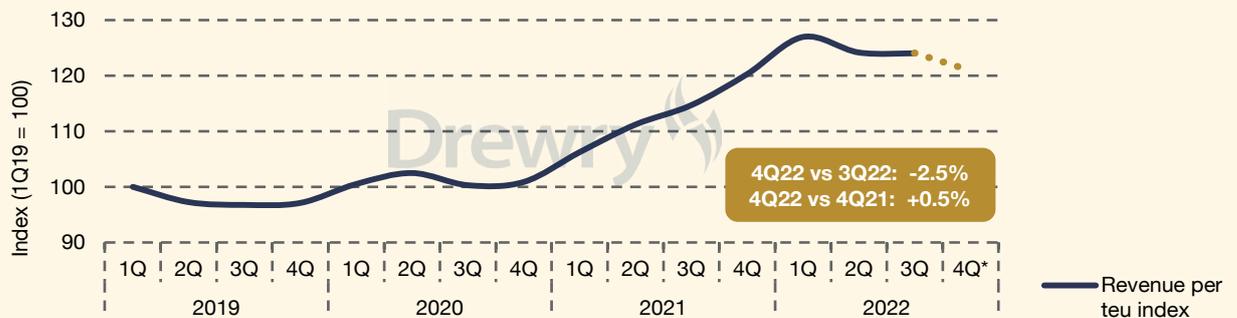
Drewry Global Container Terminal Revenue Index

For 4Q22, Drewry Global Container Terminal Revenue Index has been calculated by extrapolating the results of APMT, Westports and BNCT, which have published their 4Q22 results, on to the other constituents of the Index. Even though we believe this reduced sample should provide a reasonable approximation of the industry’s revenue trend, the 4Q22 index result is published as an estimated value only. The same extrapolation method is used for calculating the Drewry Global Container Terminal Cost Index and Drewry Global Container Terminal Earnings Index.

As anticipated in our previous edition, widespread easing of port congestion reduced the average container dwell time at terminals and led to a corresponding fall in storage revenues in 4Q22, pulling the Global Container Terminal Revenue index down. Both APMT and Westports confirmed that the companies’ storage income has dropped back to 2020 levels.

Looking ahead, weakening demand combined with excess fleet capacity means that carriers are once again looking to blank sailings in an attempt to prop up freight rates. Even though an increase in blank sailings reduces the frequency of port calls, it increases the volume per call. For terminals this results in higher peaking factor compared to the standard weekly call schedules, which may see dwell times settle at levels higher than pre-pandemic in the short term. Furthermore, the industry topline should benefit from the CPI-linked uplift in annual contract prices, and therefore we do not expect the gains made between 4Q20 and 2Q22 to retreat fully in 2023.

Figure 7.3 Drewry Global Container Terminal Revenue Index



Note: Index measures QoQ change in revenue per teu, based on the quarterly financial results reported by AP Moller-Maersk, ICTSI, Santos Brasil, Westports HHLA and BNCT. The Index is weighted on throughput, with Drewry estimates of teu:box ratio used to convert AP Moller-Maersk and Santos Brasil reported moves into teu.
 * 4Q22 index value is preliminary.

Source: Drewry Maritime Research

Port sector financial analyses

Operating costs and earnings growth

While cost pressures continued to affect profitability margins of the terminal sector in 4Q22, reducing fuel prices helped limit the decline.

For Westports, despite higher revenue, EBITDA declined 17.6% to MYR 286 million (\$63 million) as operating costs expanded 12.5%, marking the inclusion of one-time extraordinary income from the insurance recoveries in 4Q21 and write-off expenses of seven cranes in 4Q22. Excluding these items, the mark-down in EBITDA should be muted. Analysing the major components of Westports' cost structure highlights that fuel cost (22.2% of the operating cost) jumped 40% YoY, whereas manpower cost (31.1% of the operating cost) increased 5% YoY. Consequently, the margin lowered by 14.4 percentage points (4Q22: 55.9% vs 4Q21: 70.3%). However, the sequential trend suggests that fuel cost pressures have been abating since 2H22 (4Q22: -11.1%, 3Q22: -8.5%, 2Q22: +47.5% and 1Q22: +17.6% - QoQ growth), whereas manpower cost remained stable at approximately MYR 66 million (\$14.4 million).

APMT's EBITDA margin also declined (4Q22: 28.8% vs 4Q21: 35.3%) due to higher labour and energy costs, and lower volumes. The company's cost per move increased 5.4% YoY. Similarly, HHLA's operating figures mark an 8.1% decline in the company's 4Q22 operating profitability (EBIT) to EUR 56.7 million (\$59.6 million) due to higher personnel expenses.

Sequential cooling off of fuel and energy prices has limited the margin declines

APMT and HHLA reported lower 4Q22 margins

Table 7.2 Financial results of selected terminal operators (\$ million)

| Parent Company | Division | Revenue | | | EBITDA | | | EBITDA margin | |
|------------------|----------------|---------|------|-------|--------|------|--------|---------------|-------|
| | | 4Q21 | 4Q22 | % | 4Q21 | 4Q22 | % | 4Q21 | 4Q22 |
| AP Moller-Maersk | Terminals | 1,089 | 999 | -8.3% | 384 | 288 | -25.0% | 35.3% | 28.8% |
| Westports | | 118 | 112 | -5.3% | 83 | 63 | -24.5% | 70.3% | 55.9% |
| HHLA* | Port Logistics | 448 | 417 | -7.0% | 73 | 60 | -18.3% | 16.3% | 14.3% |

Notes:

Local currency numbers were converted into US dollars using the exchange rate for the relevant financial period

*EBIT Figure

Source: Drewry Maritime Financial Research, company filings

Port sector financial analyses

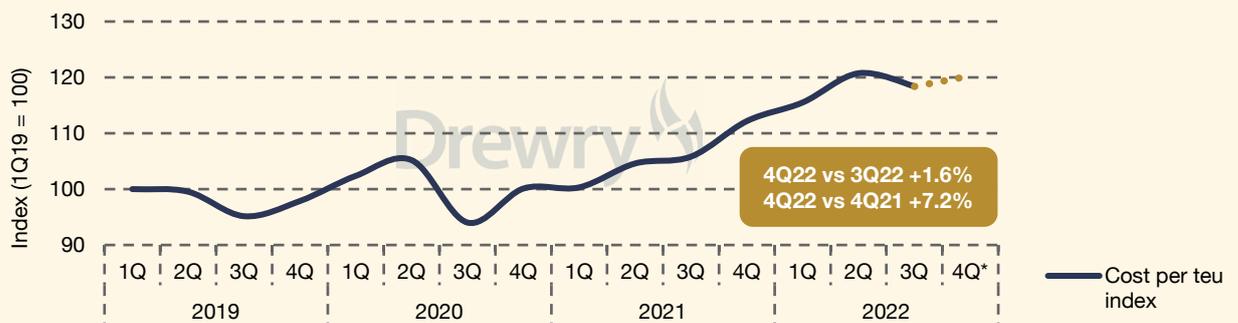
Drewry Global Container Terminal Cost Index

The Drewry Global Container Terminal Cost Index continued its upwards trajectory (it started trending upwards in 4Q20), rising 1.6% QoQ and 7.2% YoY in 4Q22.

We expect personnel costs, which are partially inelastic and typically account for the highest proportion of opex per unit, to increase from 1Q23 with the rise in annual salaries. Drewry’s analysis of the recent pay deals underpins our previous expectation that dock workers’ wages will rise by 6-9% in 2023 (based on announcements of CPI-linked increase in Australia, plus negotiated increases in South Africa 6%, Germany 7.7%, Rotterdam 8.5%, Felixstowe 8.5%, Liverpool 14-18%).

On the contrary, fuel and energy costs should start to fall over the course of the year in line with the expected cooling off of per unit fuel and energy prices. Additionally lower volumes will lead to further easing of port and landside congestion which should also result in efficiency gains. However, these gains could be reversed if terminal utilisation levels fell too low.

Figure 7.4 Drewry Global Container Terminal Cost Index



Note: Index measures QoQ change in operating cost per teu, based on the quarterly financial results reported by AP Moller-Maersk, BNCT, HHLA, ICTSI, Santos Brasil and Westports. Where separately stated, depreciation and amortisation costs are excluded. The Index is weighted on throughput, with Drewry estimates of teu:box ratio used to convert AP Moller-Maersk and Santos Brasil reported moves into teu.
 * 4Q22 index value is preliminary.

Source: Drewry Maritime Research

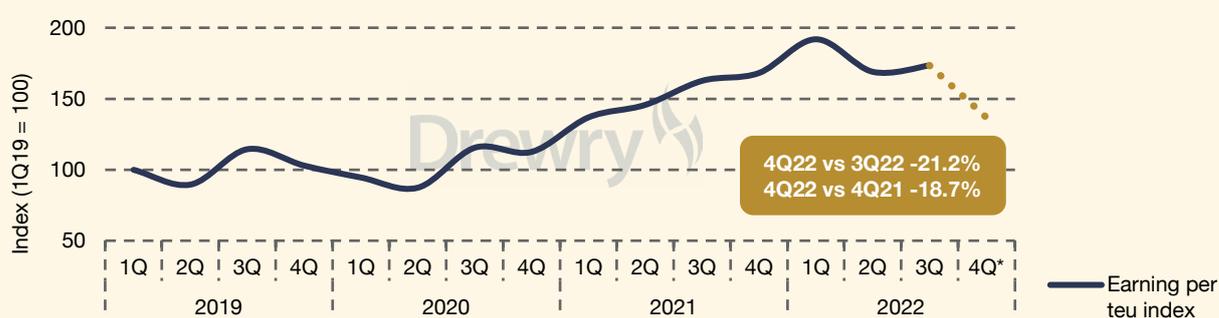
Port sector financial analyses

Drewry Global Container Terminal Earnings Index

The Drewry Global Container Terminal Earnings Index dipped 18.7% YoY and 21.2% QoQ in 4Q22 as a result of falling revenue and rising cost per unit.

The outlook for 2023 is less certain, with annual tariff increases expected to help offset the loss of storage revenues in 1H23, but higher manpower costs could keep margins under pressure and falling demand could lead to diseconomies of scale. The expected easing in energy and fuel costs plus recovery in volumes is expected to relieve the pressure on margins in 2H23, when we hope to see the index return to a positive trajectory.

Figure 7.5 Drewry Container Terminal Earnings Index



Note: Index measures QoQ change in earnings per teu, based on the quarterly financial results reported by AP Moller-Maersk (calculated from reported average revenue / average cost per move), BNCT (EBITDA), HHLA (EBIT), ICTSI (EBITDA) Santos Brasil (EBITDA) and Westports (EBITDA). The Index is weighted on throughput, with Drewry estimates of teu:box ratio used to convert AP Moller-Maersk and Santos Brasil reported moves into teu.

* 4Q22 index value is preliminary.

Source: Drewry Maritime Research

Capital expenditures

The cumulative capex of APMT and Westports increased 45.3% in 2022 driven by a significant jump in APMT's capex to \$516 million (vs 2021: \$304 million). The company invested mainly in expanding and modernising its existing portfolio of terminals, highlighted by the terminal modernisation project in Los Angeles, US, where 62 additional automated hybrid straddle carriers were ordered in 2022.

In contrast, Westports capex declined to \$57 million (vs 2021: \$90 million). The expenditure was mainly for replacing port equipment as well as making the initial payment for a new liquid bulk terminal (LBT 4A). The company pegs its 2023 capex at approximately \$46 million.

APMT capex is focused on expanding the existing portfolio

Table 7.3 Capex of selected terminal operators (\$ million)

| Parent Company | Division | Capital expenditure (YTD) | | |
|------------------|--------------------|---------------------------|------|--------|
| | | 2021 | 2022 | % |
| AP Moller-Maersk | Terminals & Towage | 304 | 516 | 69.7% |
| Westports | | 90 | 56 | -37.5% |

Notes:

Local currency numbers were converted into US dollars using the average exchange rate for the relevant financial period

Source: Drewry Maritime Financial Research, Company filings

Port sector financial analyses

Financing and debt

As interest rates have increased rapidly in 2022, port and terminal operators have refrained from raising money via debt issuances, which was the preferred mode during 2020-21. Thus, the amount of the total debt balance of the sampled companies remained relatively stable (3Q22: \$20.4 billion vs 4Q21: \$20.9 billion). Steady debt balance along with higher equities, on the back of the profit generated by the sector, resulted in continuous improvement in the leverage profile of the industry. For 2023, we expect the debt activity to remain muted given the higher interest rate which should prevail throughout 2023.

Port and terminal operators refrained from raising money via debt issuances in 2022

Figure 7.6 Total gearing



Note: Total gearing = total debt/total equity. Data comprises of constituents of Drewry Equity Port Index.

Source: Refinitiv, Drewry Maritime Financial Research

Equity market performance

The Drewry Port Equity Index has rebounded strongly since our last edition wherein we had highlighted that the index was trading at a significant discount to its historical average, hinting that the market participants have already accounted for most of the weaknesses. However, the near-to-mid-term outlook (of equity valuation) seemed vulnerable to the deteriorating macroeconomic outlook, restrictive monetary policy, persistently high inflation and ongoing Russia-Ukraine war.

Equity market participants are convinced that the worst is behind us

The Drewry Port Equity index, which is a market capitalisation weighted index, comprises nine companies including COSCO SHIPPING Ports Holding, China Merchants Port Holdings, Hutchison Port Holdings Trust, Liaoning Port Co. Ltd (previously known as Dalian Port (PDA) Co Ltd.), Tianjin Port Development Holdings Limited, International Container Terminal Services, Inc, Hamburger Hafen und Logistik Aktiengesellschaft, Santos Brasil Participações S.A. and Westports Holdings Berhad.

Port sector financial analyses

Even though these risks persist, equity market participants are convinced that the worst is behind us, barring any further escalation of the Russia-Ukraine conflict. After seeing several downgrades, the prospects of 2023 world GDP growth have stabilised and with inflation peaking in most of the world – investors across asset classes (equity, bonds and precious metals) have started betting on the various trajectories of disinflation. This, in turn, has resulted in investors predicting lesser magnitude of interest rate hikes in the near future. It is important to note that despite the recent disinflationary trend, inflation remains above the central banks’ target range in most of the large economies. The only risk which has persisted is the conflict between Russia and Ukraine, but the recent decline in energy prices highlights that the industry has adapted to the changes caused by the war.

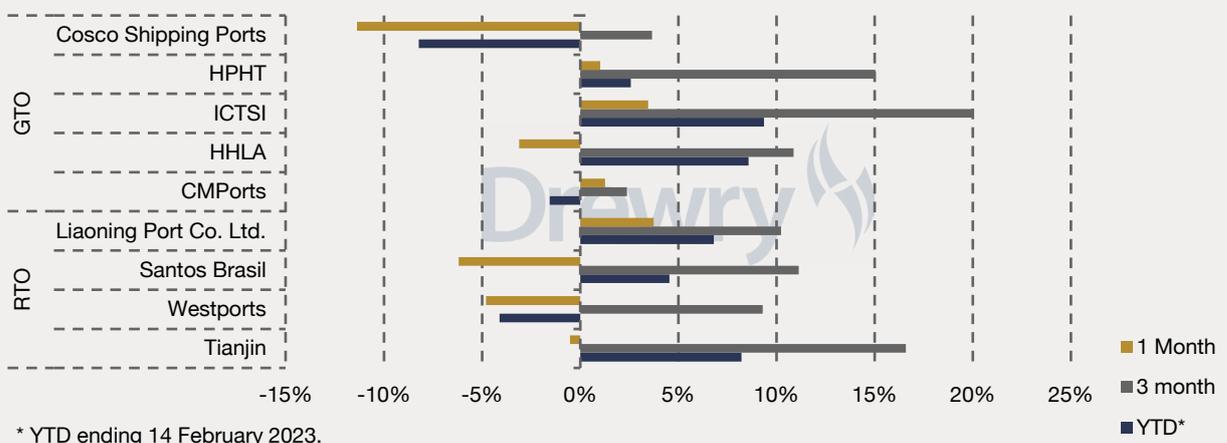
Inflation remains above the central banks’ target range in most of the large economies

Figure 7.7 Drewry Port Equity Index



Source: Drewry Maritime Financial Research

Figure 7.8 Share price performances of listed port / terminal operators



Source: Refinitiv, Drewry Maritime Financial Research

Port sector financial analyses

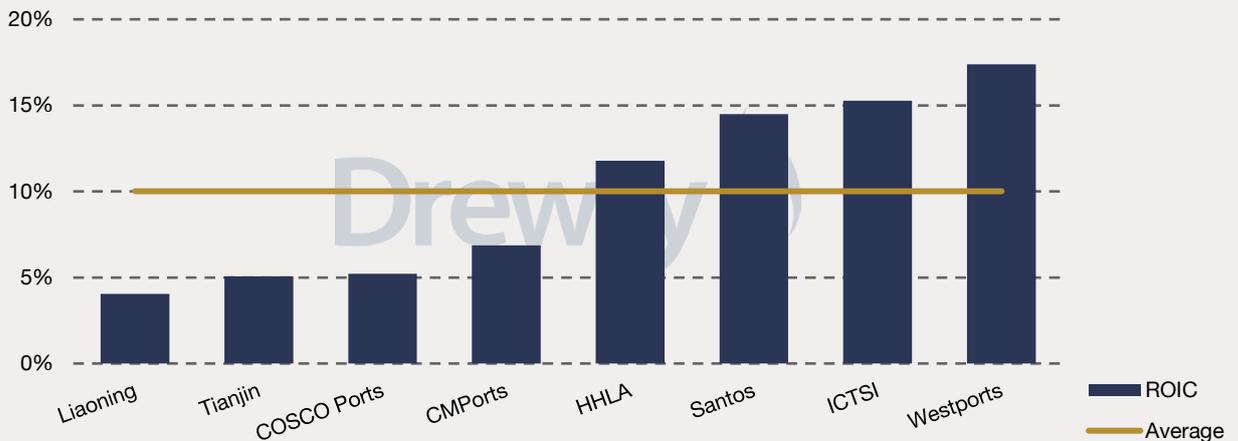
Since our last edition, the Drewry Port Equity Index has gained 12.7%. Quarterly, the index posted a strong 4Q22 with a total valuation gain of 19.7%. This came in after two consecutive quarters of double-digit declines of 17.3% and 12.8% in 3Q22 and 2Q22, respectively. Cumulatively, the index ended 2022 with a valuation decline of 12.2% vis-à-vis an upsurge of 37.5% in 2021. Moving further into 2023, we believe we have surpassed the worst but the near-term performance is still vulnerable to high inflation levels and lower consumer confidence.

Drewry Port Equity Index fell 12.2% in 2022

Looking at the Return on Invested Capital, we find that non-Chinese port operators continue to outperform their China-based counterparts. Analysing the sequence, all China-based operators remained below the industry average, generating approximately half the ROIC generated by the industry on average, whereas the non-Chinese operators generated an alpha (higher than industry ROIC) of 4.7 percentage points.

Based on ROIC, non-Chinese port operators continue to outperform their China-based counterparts

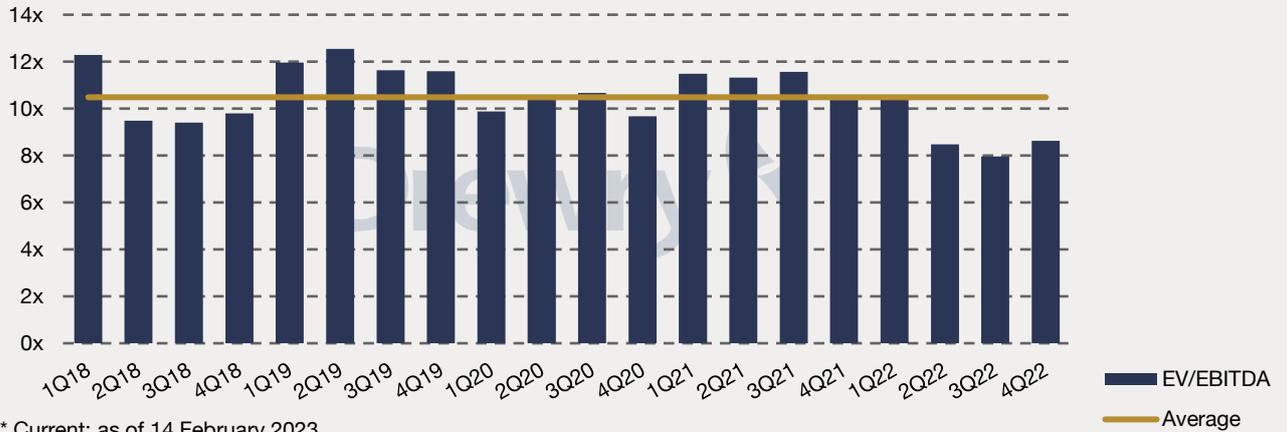
Figure 7.9 ROIC of selected port operators (LTM)



Source: Refinitiv, Drewry Maritime Financial Research

Port sector financial analyses

Figure 7.10 EV/EBITDA trend of Drewry port equity index*



Source: Refinitiv, Drewry Maritime Financial Research

Despite the sequential improvement in the EV/EBITDA multiple, the industry still trades at a significant discount to its historical average, highlighting that the upside potential continues to be higher than the downside risk. We believe 2H23 will be stronger and thus change our stance from being cautious to upward biased for the upcoming quarters. It should be noted that equity markets front-run the industry’s financials as investors are prompt to discount the underlying sentiments. Even though the mood is relatively optimistic, we continue to believe that investors should analyse individual companies when scouting for investment opportunities.

We change our stance from being cautious to upward biased for the upcoming quarters

More information and expert analysis of the financial performance of listed port companies is available from Drewry Maritime Financial Research (<https://www.drewry.co.uk/maritime-financial-research>)

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While research is in our DNA, we do not stop there. We are passionate about applying this insight to provide actionable, practical and timely advice. The combination of understanding and expertise in the markets we serve allows our clients, whether shippers, carriers and port operators, banks, investors and financial intermediaries, to make the right commercial decisions at the right time.

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