UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

# 2024 Review of maritime transport

Navigating maritime chokepoints

OVERVIEW





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## Foreword



Maritime transport serves as the main artery of global trade. Intricate networks of shipping routes, ports and maritime chokepoints have enabled globalization and strengthened the interconnectedness of the world economy. However, the sector is facing numerous challenges that threaten the efficiency, reliability, resilience and sustainability of maritime transport.

A key feature of maritime transport is its reliance on chokepoints: strategic, narrow maritime passages such as the Suez Canal and the Panama Canal. These critical waterways provide shortcuts to lengthy intercontinental maritime journeys and reduce time and costs. Yet the essential role of these chokepoints makes them particularly vulnerable to disruptions—whether climatic, economic, geopolitical or operational—leading to severe consequences for global shipping.

As a case in point, the 2021 blockage of the Suez Canal by the Ever Given, a large container ship, underscored the grave implications of such disruptions for trade and the global economy. Delays, logistical hurdles, costs and financial losses arising from maritime disruptions are usually significant. Yet, just after recovering from the upheaval of the COVID-19 pandemic and having started to adjust to new shifts in trade patterns triggered by the war in Ukraine, global supply chains and trade are now grappling with an additional wave of disruptions.

Recent challenges faced since late 2023 in the Red Sea and the Suez Canal as a result of Houthi attacks on ships crossing the waterway have added more complexity to the maritime operating landscape. The attacks have caused vessels across most fleet segments to avoid the Red Sea and the Suez Canal and to navigate around the Cape of Good Hope. This has led to extended distances and transit times and higher operational costs for shipping companies, ports and trade. The attacks have compounded environmental challenges for the sector due to the additional carbon emissions generated from higher fuel consumption and the increased sailing speeds needed to maintain service schedules. Elsewhere, reduced water levels in the Panama Canal—a crucial connector of the Atlantic and Pacific Oceans—caused daily ship transits to be slashed and maritime trade to divert onto longer routes.

The escalating costs arising from maritime chokepoint disruptions translate into higher shipping rates that are inevitably passed on to consumers. In addition to uncertainty and volatility, this situation exacerbates inflation and undermines economic growth, with Small Island Developing States (SIDS) and Least Developed Countries (LDCs) hit the hardest.

Maritime transport is also facing the twin challenge of decarbonizing and the need to transition to cleaner energy sources. The urgency to reduce greenhouse gas (GHG) emissions and overhaul the industry's reliance on traditional fossil fuels has never been more critical. Swift action is needed, and this will require significant operational shifts, innovation, investments in a new and younger fleet, and crucially, a transition to cleaner technologies and ships equipped to run on alternative fuels. While the bill for this transformation will be considerable, shying away from the sector's decarbonization and sustainability goals is not an option. Failing to act would jeopardize the achievement of the global Sustainable Development Goals and threaten our collective climate targets.

Building sustainable and resilient maritime transport is not just an option—it is a strategic necessity. Future-proofing global supply chains depends on strengthening maritime chokepoints, which are vital to the resilience of maritime trade. Achieving more robust, reliable and resilient maritime chokepoints requires maritime transport and logistics to embrace green technologies, digitalization and greater international cooperation. It also demands significant investment, leveraging data and intelligence and ensuring that all stakeholders—shipping, ports, policymakers, Governments, trade entities and supply chain managers—work together.

As the sector navigates these complexities and, in a world, where disruption is becoming part of the "new normal", prioritizing the energy transition and fostering agile, resilient transport and logistics will go a long way to helping global trade and the world economy thrive, while withstanding and adapting to shocks and disruption.

The *Review of Maritime Transport 2024* discusses the multifaceted challenges facing maritime transport today. It provides insights into current trends and the outlook for maritime transport and trade. It discusses how maritime trade is being upended by disruptions including in maritime chokepoints. It examines the implications for the shipping fleet which delivers international trade and is at the front line of vessel rerouting. It analyses the implications of soaring shipping rates on consumer prices, and how this particularly affects the GDP of SIDS and LDCs. Additionally, it outlines how port performance monitoring, measurement and reporting can gauge the pulse of the maritime sector and support the Sustainable Development Goals, including those related to gender equality and women's empowerment. The importance of transport and trade facilitation across ports and hinterland connections for sustainability, efficiency and resilience is emphasized.

I am convinced that this edition of the *Review of Maritime Transport* will help foster a deeper understanding of key developments, inform debates and accelerate progress towards sustainability and resilience in maritime transport, with a sharp focus on the pivotal role of maritime chokepoints.

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Rebeca Grynspan Secretary-General of UNCTAD





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## Maritime trade flows recovered in 2023 with ton-mile trade growing at a faster pace

Global maritime trade rebounded in 2023, up from the marginal contraction in the previous year. Volumes reached 12,292 million tons in 2023, following an annual increase of 2.4 per cent. Trade in ton-miles (a measure of distance-adjusted maritime shipments), expanded at a faster rate than trade in tons. Total estimated ton-miles reached 62,037 billion in 2023, an increase of 4.2 per cent over 2022 (figure 1). Growth was driven by the recovery in the world economy, as well as increased demand caused by vessel rerouting. Together, the war in Ukraine, the disruption in the Red Sea and the reduced water levels in the Panama Canal have caused maritime shipping and trade to shift onto longer routes. Average distances travelled per ton of cargo continued to expand in 2023, part of a trend that began about two decades earlier, with distances increasing from an average of 4,675 miles in 2000 to 5,186 miles in 2024.

#### Figure 1

### Seaborne trade growth, tons and ton-miles, and average distance travelled per ton of cargo: Trade gets a boost in 2023 and 2024 by shifting to longer shipping routes

(Annual percentage change)



Source: UNCTAD calculations, based on Clarksons Research Shipping Intelligence Network (time series, July 2024).

Note: Figures for 2024 are forecasts.

## Steady growth is projected for maritime trade in 2024, but headwinds remain

UNCTAD projects total maritime trade to expand by 2 per cent in 2024, on the back of strong demand for major bulks such as iron ore, coal, grain, oil and containerized goods. UNCTAD also projects containerized trade to rebound by 3.5 per cent, up from 0.3 per cent growth in 2023. Projected growth is supported by trends in the world economy, some easing in economic headwinds such as inflation and a moderate rise in exports from a range of liquified natural gas suppliers, including the Russian Federation and the United States of America.

Looking beyond 2024, UNCTAD expects maritime trade to increase by an average annual rate of 2.4 per cent between 2025 and 2029, while containerized trade is projected to increase by 2.7 per cent. This growth will be further supported by technological advancements, the transition to cleaner energy and infrastructure developments. Medium-term projected growth will depend on how downside risks play out. These include the war in Ukraine, heightened geopolitical tensions and ongoing economic uncertainties.

On the upside, recovery in global merchandise trade is projected to continue, driven by the export performance of major Asian economies, particularly in the technology sector. Sectors such as green energy and artificial intelligence-related products are expanding, while supporting trade growth. Potential interest rate cuts in the United States and a depreciating dollar could enhance the competitiveness of United States exports, while a gradual moderation of global inflation and improving economic forecasts may contribute to a more stable environment.

There is a need to monitor the evolving relationship between global economic output and maritime trade. In 2023, maritime trade volumes grew at a slower pace than gross domestic product (GDP), a different pattern than the one observed since 2006, (figure 2). Both structural and cyclical factors influence this relationship, raising the question as to whether there could be a decoupling of maritime trade and GDP.

A change in the merchandise trade-to-GDP ratio, with trade growing at a relatively slower rate than GDP, was first observed in 2010. Since 2018, a weakening in the maritime trade-to-GDP ratio has become more apparent. Inflationary pressures, which negatively affected the consumption of trade-intensive goods, the coronavirus disease (COVID-19) pandemic, recent disruptions to global supply chains, a slower pace of globalization in goods trade in contrast with services trade, are also at play. The climate agenda is also driving a reduction in seaborne-intensive industries such as fossil fuels. Increasing trade protectionism and more localized supply chains could constrain maritime trade growth. However, some supply chain de-risking strategies might involve longer distances, while the increased trade in goods – linked to the transition to cleaner energy – could be an offsetting factor.

#### Figure 2

## International maritime trade and world gross domestic product evolve in tandem but at a diverging pace



(Annual percentage change)

Source: UNCTAD calculations. Seaborne trade figures based on data from Clarksons Research Shipping Intelligence Network (time series, July 2024). GDP figures projections based on UNCTADstat data and, for 2023 and 2024, on table I (world output growth, 1991–2024) from UNCTAD *Trade and Development Report Update*, April 2024.



## Shipping is the backbone of globalized trade, and smooth navigation through maritime chokepoints is crucial

Maritime trade has been significantly affected by the new wave of disruptions in the Red Sea, the Suez Canal and the Panama Canal. These disruptions have impacted the number of daily ship transits, the shipping routes and the distances travelled by ships and cargo. Climate change factors, conflicts and geopolitical tensions pose some of the most substantial risks currently facing global maritime trade. These factors have exposed the vulnerability of international maritime chokepoints and continue to threaten the reliability of these crucial routes, while exerting pressure on global supply chains.

Maritime chokepoints are critical points along transport routes. They facilitate the passage of substantial trade volumes and connect the world. Due to limited alternative routes, disruptions at chokepoints have negative impacts on supply chains and lead to systemic consequences affecting food security, energy supply and the global economy.

Disruptions to shipping routes and chokepoints also lead to shifts in network configurations and trade patterns. For instance, the war in Ukraine and constrained shipping in the Black Sea have led Egypt to source grain from Brazil or the United States instead of Ukraine and oil shipments from the Russian Federation have been directed towards China and India instead of Europe.

Since 2023, the Turkish Straits have experienced disruptions due to geopolitical tensions, increased maritime traffic, environmental concerns and infrastructural challenges. Türkiye implemented regulations in September 2023, including enhanced environmental standards and safety protocols, and delays and congestion have been experienced in the period of adaptation to these regulations.

The Suez Canal and the Panama Canal experienced new disruptions in 2023 and 2024 due to geopolitical tensions and reduced water levels, respectively. Meanwhile, ongoing conflict in the Middle East has heightened the risk of disruptions in the Strait of Hormuz, while piracy continues to affect the Strait of Malacca.

## Troubles in the Red Sea, Suez Canal and Panama Canal have upended global shipping networks and trade

Since late November 2023, attacks on vessels in the Red Sea have undermined shipping in the Mandeb Strait and the Suez Canal, prompting shipping lines to reroute around the Cape of Good Hope. At the same time, the Panama Canal has cut daily ship transits due to climate change-induced drought. About 10 per cent of world maritime trade by volume and 22 per cent of containerized trade cross the Suez Canal annually. The Panama Canal facilitates approximately 3 per cent of global maritime trade volume.

By June 2024, transits though the Panama Canal and the Suez Canal were down by over half compared to the peaks in December 2021 and May 2023 (figure 3). Most of the decline in the Suez Canal has happened since December 2023, with the onset of the disruptions in the Red Sea; ship transits through the Panama Canal have been decreasing over the last two years.

Rerouting vessels around Africa adds to the distance and extends transit times, while increasing global vessel demand by 3 per cent and container ship demand by 12 per cent. This reflects the uplift in ton-mile demand for global vessels and container ships in June 2024 compared to the demand if there had been no rerouting away from the Red Sea and the Suez Canal. Rerouting ships also causes operational shifts and market inefficiencies such as port congestion and higher costs. Longer routes raise costs for crew wages, chartering, insurance and fuel. Rerouting vessels also threatens seafarers' safety, increases exposure to piracy incidents, generates more greenhouse gas emissions, make it more difficult to comply with environmental rules and creates capacity management challenges.

Since January 2024, the Panama Canal situation has improved due to the onset of the rainy season, combined with water-saving measures implemented by the Panama Canal Authority

-



Source: UNCTAD calculations, based on data from Clarksons Research Shipping Intelligence Network.

In a highly disrupted operating environment, efforts should be directed towards building resilient and reliable maritime chokepoints and supply chains. This involves intervention by all relevant stakeholders including Governments, the maritime transport industry, infrastructure managers and authorities managing maritime passages. Key actions include the following:

- Using technology, data, demand forecasting and early warning systems to enhance preparedness and optimize capacity at chokepoints.
- Engaging in collaborative efforts among maritime chokepoint managers, operators and users, to manage risks and respond to disruptions.
- Expanding and combining transport modes, to reduce dependence on chokepoints and bypass disruptions.
- Enhancing infrastructure facilities, including port capacity, storage facilities, pipelines and bunkering facilities, to reduce congestion and build buffers that minimize fuel shortages or delays caused by disruptions.
- Ensuring that the role of supply chain workers is recognized and that workers are properly compensated; this can help avoid workforce shortages during critical times, which can exacerbate supply chain disruptions.
- Avoiding reliance on one single input source by diversifying sourcing and manufacturing locations or diversifying fuel sources and types.
- Increasing inventory levels, to enhance capacity to absorb supply chain shocks.
- Diversifying shipping routes to avoid over-reliance on a limited number of major hub ports; developing contingency plans that envisage using alternative routes and ports.
- Enhancing cooperation among maritime supply chain actors, to optimize supply chain efficiency, reduce transit times and decrease transport costs.
- Enhancing international collaboration.

## **Container freight rates have reached new peaks in 2024**

In 2023, container shipping freight rates stabilized after the exceptional highs in 2021 and 2022. The Shanghai Containerized Freight Index, a key metric used to track the spot rates for shipping containers from Shanghai, China, to various major ports around the world, remained relatively stable in 2023, averaging around 1,000 points (figure 4). This was in contrast to the peak of about 5,067 points in January 2022, although the Index spiked again in late 2023 due to the Red Sea and Suez Canal disruptions that extended average distances travelled by ships.



Source: UNCTAD calculations, based on data from Clarksons Research Shipping Intelligence Network.

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In January 2024, the Index averaged 2,130 points, more than double the level in December 2023, yet over 50 per cent below the high during the COVID-19 pandemic. Rates spiked again in May 2024, averaging approximately 2,644 points, due to general rate increases and coincidence with the peak season for container trade, together with various additional costs, including those related to the European Union Emissions Trading System, Panama Canal tolls and increased war risk insurance premiums. Spot freight rates on most routes were affected. Charter rates initially responded slowly to the disruption in the Red Sea but began to surge from January 2024 onwards.

From mid-December 2023 to June 2024, the demand for additional container ship capacity increased by around 12 per cent, to accommodate for the increased distances due to the disruptions. In addition to absorbing excess capacity, these diversions led to increased vessel speeds to meet delivery schedules (sailing speeds increased by approximately 25 per cent, from 16 to 20 knots) and the tripling of bunker consumption, which in turn increased freight rates and shipping costs.

By mid-June 2024, port congestion meant that vessel capacity of 2.5 million twenty-foot equivalent unit (TEU) waited at anchorages (deep water areas, usually off coasts). This represented 8.4 per cent of the global capacity and also contributed to the increase in freight rates.

At the start of the disruption in the Red Sea, there was sufficient container capacity in the market to handle the additional tonnage required to divert around the Cape of Good Hope. However, any further disruptions could severely strain supply chains, potentially leading to additional increases in freight rates.

UNCTAD analysis shows that between October 2023 and June 2024, disruptions in the Red Sea and the Suez Canal had a greater impact on the China Containerized Freight Index, a key indicator of freight rates for container shipping. This disruption contributed 148 percentage points to the cumulative increase of 120 per cent in the Index (figure 5). The disruption in the Panama Canal also contributed to an increase in the Index, but to a lesser extent, accounting for 9 percentage points. The impact on container freight rates caused by these disruptions was partly offset by the growth in container ship supply capacity; when rerouting vessels away from maritime chokepoints has boosted distances travelled and increased demand for ship capacity, the market absorbed this by using available extra ship capacity. Additional capacity mitigated the rise in the Index by about 30 per cent.

### Figure 5

#### **China Containerized Freight Index and breakdown**



Source: UNCTAD calculations, based on data provided by Clarksons Research Shipping Intelligence Network and Maritech Services Limited, Sea.

*Notes:* Cumulative changes from October 2023. Seasonally adjusted. The sum of the four presented components does not fully add up to the combined impact because "other" logistics shocks is not included in the figure.

# Dry bulk freight rates continue to fluctuate

The dry bulk freight market saw significant volatility in 2023, with rates generally lower than in previous years. The Baltic Exchange Dry Index, which measures shipping costs for commodities such as coal, iron ore and grain, averaged 1,398 in 2023. This is down from the 2022 average of 1,930 and is close to the 10-year average of 1,318 (figure 6). In the first half of 2024, the Index averaged 1,867, compared with 1,142 in the same period in 2023. The Index is projected to be over 34.5 per cent higher for the full year, compared with the average in 2023. These trends reflect ongoing disruptions in the two maritime chokepoints of the Red Sea and Panama Canal, as well as supply and demand factors such as dry bulk demand from China and potential weather-related disruptions affecting key exporters such as Australia, Brazil and Indonesia.

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Source: UNCTAD calculations, based on data from Clarksons Research Shipping Intelligence Network.

According to UNCTAD analysis, the impact of the Panama Canal disruption on dry bulk freight rates peaked in January 2024, contributing 49 percentage points to the cumulative 45 per cent increase in the Baltic Exchange Dry Index between November 2023 and January 2024 (figure 7). The rise in rates slowed significantly from April 2024 to June 2024, as restrictions in the Canal eased. The Red Sea disruption has had a lesser impact on dry bulk rates, contributing 26 percentage points to the Index increase by March 2024. The impact of the Panama Canal disruption on dry bulk freight rates was more pronounced, partly because containerized trade can use the North American landbridge, while dry bulk trade cannot be easily transported along this alternative route.



### Figure 7 Baltic Dry Index and breakdown



Source: UNCTAD calculations, based on data provided by Clarksons Research Shipping Intelligence Network, and Maritech Services Limited, Sea.

*Notes:* Cumulative changes from October 2023. Seasonally adjusted. The sum of the four presented components does not fully add up to the combined impact because "other" logistic shocks is not included in the figure.

# Tanker freight rates are stronger but highly volatile in 2024

In 2023, tanker freight rates declined but remained elevated and volatile. The effects of geopolitics, a redirection of cargo from the Russian Federation, increased distances, supply cuts by the Organization of the Petroleum Exporting Countries plus, Atlantic oil supply growth, environmental regulations, economic uncertainty and modest tanker fleet growth all shaped this trend.

Crude tanker spot earnings (payments earned by crude oil tankers per trip) outperformed those of product tankers (ships that transport refined petroleum products such as diesel fuel). Average spot earnings for crude tankers rose by 21 per cent to \$53,541 per day in 2023 compared with in 2022, while product tanker earnings decreased by 14 per cent to \$32,181 per day, still above the 10-year average due to longer travel distances and limited fleet growth (figure 8). Weaker spot earnings in June–August 2024 reflect seasonal factors, softer crude import demand in China and reduced oil product exports from the Russian Federation. Tanker markets remain strong, with earnings above long-term averages.





*Source*: UNCTAD, based on data from Clarksons Research Shipping Intelligence Network. *Note:* Average earnings across range of tanker sizes, weighted by the number of ships in each sector.

## If sustained, freight rate hikes can exacerbate inflation in small island developing States and the least developed countries and constrain economic growth

By the end of 2025, global consumer price levels are forecast to increase by 0.6 per cent due to the disruptions in the Red Sea and the Panama Canal (figure 9). UNCTAD assumes that the combined impact on freight rates of the two disruptions, namely, a contribution of 157 percentage points to the increase in the China Containerized Freight Index and of 33 percentage points to the increase in the Baltic Exchange Dry Index between October 2023 and June 2024, will be sustained over the period. This assumption is conservative, as freight rates have already continued to increase in June 2024. If freight rates rise beyond the current assumption, the impact on global consumer prices will be greater than projected in the present analysis.

The economies of small island developing States (SIDS) would be the most affected, with a simulated consumer price impact of 0.9 per cent, as they are reliant on maritime shipping. Processed food prices are expected to rise by 1.3 per cent in SIDS, contributing 0.26 percentage points to the overall consumer price increase, as SIDS are highly dependent on imports of processed food by sea. The least developed countries (LDCs) are expected to face a 0.8 per cent rise in consumer prices, higher than the world average. Of this increase, food prices alone will add 0.34 percentage points. This highlights the significant food security risk in SIDS and LDCs associated with global chokepoint disruptions. Real GDP is expected to decrease by 0.06 per cent globally, with the negative impact on SIDS twice as high as the world average. SIDS are dependent on seaborne trade and have limited ability to replace imported goods with domestic production.

#### Figure 9

Impact of increased shipping rates due to disruptions in the Red Sea and Panama Canal on consumer price levels and real gross domestic product





*Source:* UNCTAD calculations, based on the GTAP version 11 Data Base and other data provided by Clarksons Research Shipping Intelligence Network and Maritech Services Limited, Sea. *Notes:* Median of the impact across economies in respective economic group.

## Understanding the determinants of maritime transport costs is important for cost mitigation

UNCTAD data shows that, in 2016–2021, developed economies had the lowest maritime transport costs, at 8.1 per cent of the free on board (FOB) value (the cost of goods before they are loaded onto a ship). In contrast, LDCs faced the highest average costs, at 13.7 per cent of the FOB value. Developing economies, excluding SIDS and LDCs, had maritime transport costs of 10.6 per cent and SIDS experienced costs of 9.8 per cent (figure 10). If the initial level of transport costs in a country is 10.6 per cent of the FOB value (a typical figure among developing economies, excluding SIDS and LDCs), then increasing the ratio of maritime transport infrastructure investment to exports from the lowest percentile range (0–20) to a higher range (60–80) could reduce transport costs by 1.2 percentage points. Transport costs would thereby drop from 10.6 per cent of the FOB value to 9.4 per cent.



#### Figure 10

Median maritime transport costs for imported goods by economic group, 2016–2021: Least developed countries pay the most



Source: UNCTAD and the World Bank, Trade-and-Transport Dataset.

*Note:* Transport costs (percentage of free on board value and United States dollars per ton) are calculated by the following two steps: (a) transport costs for each destination economy in a specific year are calculated by weighted average across all commodities and all trading partners (origin economies); (b) transport costs are aggregated by taking medians across all years and destination economies within respective economic groups.

# Shipping fleet capacity expanded faster than maritime trade in 2023

The global fleet grew by 3.4 per cent in 2023, faster than maritime trade but below the average fleet growth in 2005–2023 (figure 11). Total cargo capacity reached 2.4 billion tons, driven by growth in container ships and liquified natural gas carriers. Bulk carriers and oil tankers continued to account for the largest share of the global shipping fleet capacity.

Rerouting vessels has caused distances travelled and demand for ship capacity to increase. This has helped to absorb the prevailing excess ship capacity and to postpone overcapacity management concerns. However, once vessel rerouting slows down, excess capacity issues are likely to return.



#### Figure 11





Source: UNCTAD calculations, based on data from Clarksons Research Shipping Intelligence Network.

## Global fleet capacity is predominantly owned by developed economies but mainly flies the flag of developing countries

In 2023, the top 35 flag registers accounted for 94 of the world fleet. Eighteen of the leading registers were from developing economies and accounted for 76 per cent of the ship capacity. The top 10 flags of registration accounted for over 78 per cent of the world capacity and featured both open (i.e. allowing the registration of foreign-owned ships) and national registers (figure 12). Global fleet ownership is concentrated in developed economies, although some developing economies are also in the top 10 list of ship-owning countries and territories (figure 13).



#### Figure 12

Top 10 flags of registration, dead weight tons, share of world total, as at 1 January 2024

(Percentage)



Source: UNCTAD calculations, based on data provided by Clarksons Research Services.





Source: UNCTAD calculations, based on data provided by Clarksons Research Services.

## The world fleet is ageing; environmental targets are hardening but progress towards fleet renewal remains slow

At the start of 2024, the global ship orderbook stood at a moderate 12 per cent of global active fleet capacity. Ordering of dual-fuel ships was a key feature, and uptake of energy-saving technologies continued. Around 50 per cent of gross tonnage ordered was alternative fuel-capable and over 14 per cent, alternative fuel-ready.

Ongoing uncertainty about future fuels and technology, global shipyard capacity constraints, high construction costs, low levels of ship-scrapping activity and increased distance-adjusted demand are delaying shipowners' decisions regarding fleet renewal. In 2023 and the first half of 2024, ship-scrapping activity remained low, as freight rates were high and new employment opportunities were found for older vessels, arising from vessel rerouting.

Trends in global shipbuilding capacity also influence fleet renewal patterns. Global shipyard capacity is currently unbalanced, with some yards overbooked and others underused. In 2023, China, Japan and the Republic of Korea continued to dominate the shipbuilding market and accounted for about 95 per cent of the global output. In 2023, for the first time, China delivered over 50 per cent of built tonnage.

# World container and tanker port calls reached record levels in 2023

In 2023 and early 2024, port calls and cargo-handling activity increased, and shipping connectivity improved. Port calls by container ships rebounded and reached record levels in 2023, following a decline in 2021 and in the first half of 2022. Calls surged to almost 250,000 during the second half of 2023 (figure 14). Calls by tankers also increased, while port visits by dry bulk carriers remained steady.



#### Figure 14



Source: UNCTAD calculations, based on data provided by MarineTraffic. Note: Ships of 1,000 gross tonnage and above. Abbreviation: Q, quarter.





## Asian countries are the best connected; Viet Nam has the largest long-term increase in connectivity

In the second quarter of 2024, countries in Asia continued to feature among the top 10 bestconnected countries on the Liner Shipping Connectivity Index, with China ranking first, followed by the Republic of Korea and Singapore (figure 15). The United States ranked fourth, while the most connected European countries were Spain, the United Kingdom and the Kingdom of the Netherlands. The highest increases among the top 10 economies were observed in Viet Nam (almost three-fold), China (66 per cent) and the Republic of Korea (50 per cent). In all three cases, the improved ranking was due to increases in ship sizes, deployed capacity, number of service providers and weekly calls.

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#### Figure 15 Top 10 economies in the Liner Shipping Connectivity Index





Top 6–10 economies

*Source*: UNCTAD calculations, based on data provided by MDS Transmodal. *Note:* Index is set at 100 for the average value of country connectivity in the first quarter of 2023.

The average connectivity of SIDS, excluding SIDS with hub port functions, such as the Dominican Republic, Jamaica, Mauritius and Singapore, is over 10 times less than the average connectivity of the rest of the world (non-SIDS, Dominican Republic, Jamaica, Mauritius and Singapore). In the last 10 years, the average Liner Shipping Connectivity Index of SIDS (excluding the Dominican Republic, Jamaica, Mauritius and Singapore) has decreased by 9 per cent and the average Index of the rest of the world (non-SIDS, Dominican Republic, Jamaica, Mauritius and Singapore) has decreased by 9 per cent and the average Index of the rest of the world (non-SIDS, Dominican Republic, Jamaica, Mauritius and Singapore) has risen by 7 per cent.

Containers are moved faster on larger vessels, particularly as bigger ports tend to handle transhipment activities and use parallel crane operations and automation (figure 16).



*Source*: UNCTAD calculations, based on data from S and P Global Port Performance Programme. *Note:* Nine call-size categories based on total number of containers moved during a port call, regardless of container size, ranging from <500 moves (first category) to >6,000 moves (last category).

## Key indicators are crucial for port performance monitoring, measurement and reporting

In 2023, TrainForTrade reviewed the range of indicators and measures used to evaluate port performance worldwide, adding three new categories on governance, resilience and environmental sustainability. Selected port performance indicators in 2016–2023 across all members of the port performance scorecard are featured in figure 17. With regard to the financial component, for example, some ports have shown unpredictable growth yet have maintained stable operating margins. In 2023, earnings before interest, tax, depreciation and amortization as a proportion of total revenue were at 51 per cent, with a median return per ton of 4.4 dollars. Port dues (cargo and vessel income from infrastructure charges) remained within a consistent range, at 45 per cent of total income, compared with 44 per cent in 2022.

### Figure 17

Selected port performance indicators of the Port Performance Scorecard, median value across all reporting entities









2016 2017 2018 2019 2020 2021 2022 2023

Gross revenue per ton

(United States dollars)

Volume and revenue

- Revenue - Volume

(Percentage change, median)



2016 2017 2018 2019 2020 2021 2022 2023

*Source*: UNCTAD calculations, based on data from port entities reporting to PPS. *Note:* Volume and revenue values calculated as median year-to-year percentage change across all ports,

to minimize bias due to data availability from reporting port entities. Data summarized without applying any methodologies for handling missing data.

Abbreviations: EBITDA = earnings before interest, taxes, depreciation and amortization.

# More efforts are needed to achieve gender parity in the port industry

In 2023, the average share of women employed in ports was 18 per cent (figure 18). In management and administrative roles, the share was 41 per cent. Many job categories still require improved strategies to attract more women into these roles.



### Figure 18

#### Women's participation in port workforces, median across all ports

Cargo handling Management, Administration, Corporate



*Source*: UNCTAD calculations, based on data from port entities reporting to PPS. *Note:* Data summarized without applying any methodology for handling missing data.





# Trade facilitation can improve port-hinterland connectivity

Trade and transit transport facilitation can improve port–hinterland connectivity and seaport performance. Efficiencies can be achieved by applying trade and transport facilitation measures, such as those outlined in the Agreement on Trade Facilitation of the World Trade Organisation.

Improvements can involve streamlining customs and trade compliance processes. These include automating customs and trade compliance procedures (e.g. through single windows), implementing an authorized operator programme, ensuring efficient transit systems, reducing cargo clearance time, enhancing public–private sector coordination and strengthening regional cooperation.

## Intermodal transport solutions need to be leveraged for port-hinterland efficiency

Integrating different modes of transport enables the seamless movement of cargo. The use of containers makes multimodal transport more fluid, reduces congestion at ports and minimizes transit times. However, long turnaround times for empty containers remain a concern, as they disrupt operations and increase costs.

Transport corridors can help address some of these concerns since they enhance transport connectivity and support market and supply chain integration, while generally focusing on the needs of landlocked countries.

Dry ports act as inland extensions of seaports, handling cargo, storage and regulatory inspections away from seaports. Such decentralization benefits landlocked countries. For example, the network of dry ports in China and inland container depots in India have been effective in improving trade (figure 19).



### Figure 19

Number of dry ports in Asia and the Pacific by subregion



*Source*: Economic and Social Commission for Asia and the Pacific (ESCAP), 2022, Strengthening Port– Hinterland Sustainable Transport Connectivity for Landlocked Developing Countries of the ESCAP Region (Bangkok).

Investing in transport corridor infrastructure and facilities such as dry ports, inland container depots and inland transport networks is crucial. Public–private partnerships can help ensure quality infrastructure development, bring private investment, leverage expertise and close infrastructure gaps. However, private sector participation brings challenges for regulators, who need to ensure competitive markets.

It is also important to minimize market structures that impede hinterland connectivity, such as cargo reservation regimes for trucking companies and quantitative restrictions and price schemes for inland transport.

## Commercial maritime law implications of climate- and weather-related risks need to be considered

Recent projections show that extreme weather events are likely to increase under climate change. These and other hazards, such as long waves and changes in wave energy and direction and swell, pose increased safety risks for port and ship operations.

Increasing climate- and weather-related risks and impacts may lead to greater incidences of cargo loss and/or damage, heightened risks in the carriage of deck cargo and particular challenges to the safety of berthing, loading and discharge operations, along with increased risks of delays and disruptions, maritime accidents, environmental pollution, groundings and bunker oil spills, with potential implications in all cases on contractual obligations, liability and compensation and related disputes.

Climate change impacts may also give rise to major commercial risks that need to be borne by commercial parties. Relevant risks are not new in nature, but have greater significance if they are likely to materialize to a greater extent or more frequently. With climate- and weather-related risks increasing, established commercial risk allocation between parties under a range of contracts that work in tandem (including the carriage of goods by sea under charterparties or bills of lading and the international sale of goods on shipment terms) may no longer be appropriate and may need to be adjusted.

To mitigate exposure to potentially extensive commercial losses arising from climate- and weather-related damage, delay and disruption, and to avoid lengthy and costly disputes and litigation, commercial parties are advised to review and adjust contracts. As appropriate, they should consider the inclusion of carefully worded specialist clauses that accommodate future risks and provide for a suitably balanced commercial risk allocation in the light of changing circumstances. Industry organizations can play an important role in this context, by developing suitable standard-form clauses for incorporation into commercial contracts; this process should involve all affected stakeholders, so that all respective legitimate interests are appropriately taken into account.

In addition, in the light of long infrastructure-planning horizons and lifespans, worsening climate projections and the cost of inaction, timely and effective adaptation action for ports should be an urgent priority for Governments, as well as for public and private entities with a stake in international transport and trade. In this context, targeted adaptation finance and capacity-building for ports in developing countries, as well as effective policy action, can play an important role in promoting and ensuring the climate-resilience of ports and reducing and mitigating related risks for port and ship operations and associated losses.

Extreme weather events posing a danger to vessels in port are increasingly likely to become more frequent or severe due to climate change than they have been in the past

# Fraudulent ship registration and registries need to be combated

Fraudulent ship registration is a significant global concern, impacting maritime safety, security, pollution control, seafarers' welfare and ocean governance. This issue has gained prominence given the increase in incidents and the emergence of a "dark fleet" that engages in clandestine operations to avoid sanctions and high insurance costs. The International Maritime Organization (IMO) has been working to address this problem and has urged member States and stakeholders to promote actions to prevent illegal operations in the maritime sector.

Since 2018, the IMO Legal Committee has focused on combating fraudulent ship registration and registries, including through the creation of a dedicated module in the Global Integrated Shipping Information System, to maintain and publicize registry information. In 2024, the IMO Legal Committee considered the final report of the study group on fraudulent registration and fraudulent registries of ships prepared by the World Maritime University, UNCTAD and IMO International Marine Law Institute.

In the report, the study group highlighted the absence of a dedicated international legal framework to address the issue of fraudulent ship registration or regulate the ship registration process itself. The group stressed the need for flag States to ensure compliance with international standards and the role of port State authorities in identifying fraudulent registrations. The group provided a number of recommendations, including on greater transparency in shipowner records and the use of technology to detect fraud, as well as stricter penalties to deter fraudulent practices. In addition, the study group highlighted the need for international collaboration, regular updates to regulations and the involvement of public and private sector stakeholders. The group recommended developing guidelines or best practices for ship registration, potentially leading to a treaty on the subject.

The IMO Legal Committee agreed to give further consideration to several of the recommendations, including enhancing existing tools such as port State control and the continuous synopsis record, improving communications on fraudulent registration cases, developing harmonized procedures and reinforcing inspections. The Committee noted the need for capacity-building, awareness campaigns and easier access to information in the Global Integrated Shipping Information System. The Committee agreed to develop guidelines or best practices for ship registration, addressing issues related to safety, security, environmental protection and seafarers' welfare. A correspondence group, led by the United Kingdom, will focus on this work, considering among other issues modern developments in the shipping industry and the need for a "genuine link between the State and the ship", as required under the United Nations Convention on the Law of the Sea.

Fraudulent registration practices not only endanger maritime safety and security and the marine environment but also the well-being of seafarers

## **Policy recommendations**

Intense and frequent disruptions in 2023 and 2024 have underscored the role of well-functioning maritime transportation networks for global trade. At the same time, volatile freight rates, delays and congestion, ongoing efforts to decarbonize shipping, geopolitical tensions and trade policy shifts continue to define the outlook for maritime transport and trade.

Shipping, ports and hinterland connections need to balance short-term concerns with long-term aspirations by promoting sustainable and resilient transport and logistics for future-proof global supply chains.

Priority actions include the following:

## 1. Build resilience to address chokepoint and supply chain disruptions

Develop adaptive strategies to manage risks, enhance preparedness and mitigate disruptions from geopolitical factors and climate change. Monitor market changes, establish contingency plans, conduct risk assessments and adopt proactive measures. Give special attention to mitigating climate- and weather-related risks impacting maritime and critical transport infrastructure, operations and contracts.

### 2. Monitor markets and control costs

Monitor trends and analyse data, to anticipate and minimize the impact of disruptions on shipping services and freight rates. Understanding the impact of disruption-induced surges in freight rates on transport costs and consumers is critical as soaring costs are found to drive up consumer prices and undermine economic growth. Monitor costs and market developments and assess related impacts on vulnerable economies such as SIDS and LDCs.

### 3. Promote active fleet renewal and greening

Enhance regulatory certainty and provide supportive policy frameworks to accelerate the transition to low-carbon and energy-efficient shipping technologies. Address constraints in shipbuilding and scrapping by investing in infrastructure, services, technology and workforces and fostering partnerships between Governments, shipbuilders, shipowners, suppliers and lenders. Promote green investments and research funding for sustainable shipping and maritime business practices.

### 4. Invest in port infrastructure and performance

Increase investments in port infrastructure, to reduce congestion and enhance sustainability and resilience, including climate-resilience, and promote efficiency. Leverage digitalization and automation, to streamline operations and improve cargo-handling. Encourage public–private partnerships, to bridge infrastructure gaps. Monitor port performance by adapting globally recommended indicators for ports, while maintaining international comparability.

### 5. Enhance port-hinterland connectivity

Streamline customs processes and enhance hinterland connectivity through improved digitalization, stakeholder platforms, competitive land-transport markets, transport and transit corridors, dry ports and enhanced trade and transport facilitation, to support intermodal transport connections.

### 6. Combat fraudulent ship registration

Strengthen international cooperation and develop robust guidelines to prevent and combat fraudulent ship registration practices, including by enhancing verification processes and sharing registry information. Encourage United Nations Member States to actively participate in relevant work under the auspices of the IMO Legal Committee and, in collaboration with all relevant stakeholders, take the necessary measures, individually and collectively, to promote effective actions for the prevention and suppression of fraudulent registration, fraudulent registries and other fraudulent acts in the maritime sector (UNCTAD continues to provide related advice, guidance and intergovernmental support to assist in this process).

## 7. Assess and address the implications of growing climate risks for maritime commercial contracts

Ensure that the wide-ranging commercial law implications of climate-related impacts on port and shipping operations are better understood and effectively addressed, to minimize related losses, avoid costly legal disputes and keep global trade flowing. Take measures in this regard (by commercial parties, industry associations and policymakers), including the development of appropriately balanced contractual risk-allocation clauses and the promotion of effective climaterisk assessments for ports. Ensure the provision of related advice, training and capacity-building, which is particularly important for small traders in developing countries (UNCTAD stands ready to provide technical assistance and guidance in this context).

# 8. Provide technical assistance and support for small island developing States and the least developed countries

Provide technical assistance and support, including financial aid and guarantees, to help SIDS and LDCs mitigate global logistics shocks and support decarbonization and the energy transition in shipping and ports (UNCTAD is collaborating with IMO on a comprehensive impact assessment of the basket of candidate midterm greenhouse gas reduction measures, including impacts on SIDS and LDCs). Focus efforts on resilience, adaptation, sustainability, connectivity, accessibility, energy, food security, digitalization, innovation, sustainable finance, capacity-building, partnerships and inclusivity, in accordance with the Ministerial Statement for Enhancing Transport and Logistics in SIDS adopted at the UNCTAD Global Supply Chain Forum in 2024.





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