Global Shippers Forum/ MDS Transmodal

Container Shipping Market

Quarterly Review

2022: Quarter 2

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MDS Transmodal Ltd.

GLOBAL SHIPPERS FORUM

GSF/MDST Container Shipping Market Quarterly Review
MDS Transmodal overview

In association with Global Shippers Forum, MDS Transmodal produces a quarterly review of the trends and performance of the global container shipping market for four main reasons:

1. We have over nearly 40 years been developing a wide range of databases that describe global liner shipping; on the fleet and its deployment, on demand, performance, costs and revenues. Over the last 15 years we have brought these together using standard coding systems so that the industry could be readily described and modelled, largely to support our consultancy work. We felt it was time to now share these resources with a wider market so that decision making can be based on sound evidence.

2. Over the last 13 years, since the decision that was made by the EU to effectively bring an end to the conference system, the liner shipping sector, its suppliers and clients have been in flux as the size of ships, performance and levels of integration and consolidation have changed radically while its market has grown remorselessly. The need for sound regulation and informed investment has never been greater and is attracting the concern of global authorities such as OECD, UNCTAD and trade associations such as GSF, CLECAT and FEPORT.

3. The urgency for the liner shipping sector, its suppliers and clients to address the issue of climate change. The process whereby sustainable solutions are agreed upon and invested in will be complex and require a collaborative approach if global connectivity and prosperity are to be maintained.

4. Global Shippers Forum represents an ideal partner for our initiative because of its reach and membership. However, GSF will have its own perspectives and arguments which MDST will remain independent of. MDST's commentary will be limited to noting statistical change (comments in blue) while GSF will focus on the implications for its members (comments in brown).

GSF/MDST Container Shipping Market Quarterly Review
GSF Overview

The Global Shippers' Forum represents the interests of importers and exporters as cargo owners in international supply chains. As such global shippers are the customers of the container shipping industry. The trends and performance of the container shipping market are crucial to the interests of shippers around the world who are reliant upon services for the safe, timely, cost-effective and sustainable movement of unitised world trade.

GSF's partnership with MDS Transmodal arose from a common interest in understanding better this fast-changing market and how it is responding to the multiple factors shaping its future. GSF's focus is on five key measures that monitor the outputs of the sector:

1. **Competitiveness**: is the regulatory environment and the ownership structure contributing to an open and responsive market where the benefits of scale are experienced fairly by customers?

2. **Capacity**: how is the availability and utilisation of shipping capacity responding to the external factors given the market structure and the legal permissions granted to competing entities to co-ordinate sailings and services?

3. **Costs**: how are the underlying and incidental costs of the industry affecting advertised spot rates and the high levels of surcharging experienced by customers?

4. **Service performance**: is the predictability, reliability and connectivity of services providing an offer that shippers can depend on in their supply chain planning and forecasting and in the commitments they make to their customers?

5. **Carbon emissions**: how is the response of the shipping industry to climate change affecting the greenhouse gas emissions attributable to the cargo that it carries?

The distinctive feature of these indicators is that they assess the market from a shipper's (customer's) perspective and offer a description based on experience of service rather than advertised performance. Over time these data will build into comprehensive and authoritative evidence bank to support our representations and advocacy. in support of global shippers

As well as Quarter-on-Quarter fluctuations, MDST's extensive data holdings also permit longer term trends to be observed. These will be presented to provide context for short-term changes and to assess the overall direction of the industry.

The GSF/MDST Container Shipping Market Review Indicators

Global Shippers' Dashboard
Quarter 2 2022

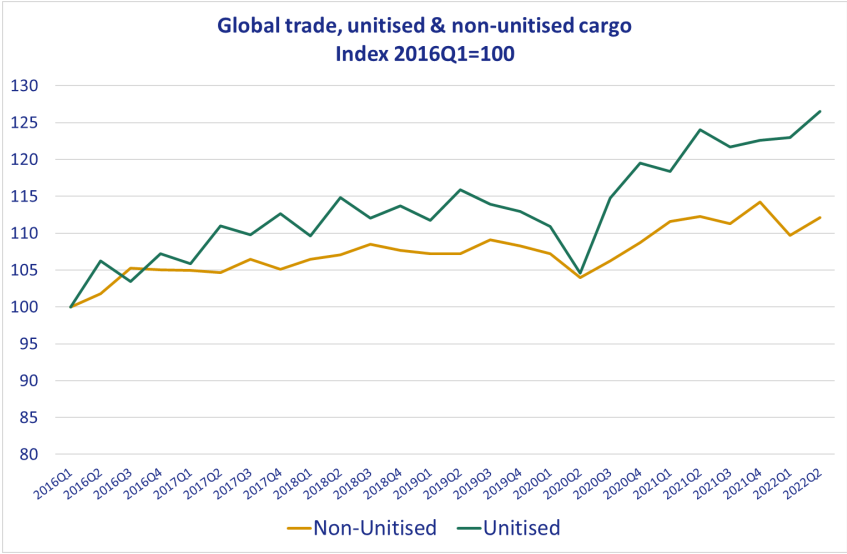
KPI	Indicator	Status & Overview
1	Trade volumes	Total global cargo tonnages remained flat overall in Q2 compared to Q1. Containerised freight tonnages grew nearly 3%. But shipping lines continued to carry a declining share of total container movements, with the balance carried by other modes and non-liner carriers.
2	Shipping capacity	A shift in service patterns from multi-country string sailings to 'shuttle' services between just two regions continued. The capacity deployed to serve just two regions on FE-Europe grew by nearly 30% in Q2. This is affecting the services by requiring more transhipment at hub ports to reach the same destinations previously served direct.
3	Capacity utilisation	Capacity utilization recovered to levels recorded at the end of 2021.
4	Carrier costs & revenues	A turn in the market is evidenced by a decline in carriers' unit revenues (earnings/teu) in Q2, the first since the beginning of 2020. Unit costs reflected increases in fuel price
5	Market competitiveness	The total market shares of shipping lines operating in consortia between Far East and North American, and to EU+UK ports shows 5 consortia whose market shares exceed the 30% threshold above which anti-trust immunity/Block Exemption for vessel sharing agreements do not apply.
6	Port connectivity	The capacity lost to intermediate and non-hub ports due to skipped port calls continued to rise in Q2 further evidencing a change in deployment patterns from multi-port strings to hub & spoke operations
7	Service performance	Consistency and reliability of port arrivals continued to improve in Q2 but the 6 percentage point decline in the number of port calls made suggests this is was achieved by scheduling fewer port calls at intermediate ports. Many ports are seeing only two-thirds of their expected capacity arrive.
8	Carbon emissions	Emissions per container dropped back to Q4 2021 levels, a pattern consistent with improved fuel efficiency from a reduction in the number of port calls made.

Status colour code:
Red = adverse development or trend (from shippers' perspective); **Amber** = neutral or concerning trend (from shippers' perspective)
Green = improving development or trend (from shippers' perspective)

1. Trade Volumes

1.1 Total trade, global (mTonnes)

	2022Q2	Year To Date (YTD)	Previous Quarter (PQ)	Previous Year (PY)
Agricultural	202	410	-3.4%	1.3%
Metals	13	26	0.2%	2.6%
Oils & fats	22	44	-1.8%	-1.5%
Chemicals	170	338	1.1%	-0.1%
Ores	492	979	1.1%	-3.0%
Forest products	107	211	3.8%	-5.2%
Energy:				
- Coal	295	579	3.8%	0.2%
- Oil & gas	1,115	2,252	-1.9%	1.4%
Other	503	935	16.4%	-0.4%
Total Non-Unitised	**2,919**	**5,775**	**2.2%**	**-0.2%**
Unitised	**653**	**1,287**	**2.9%**	**2.0%**
TOTAL Tonnes	**3,572**	**7,062**	**2.3%**	**0.2%**



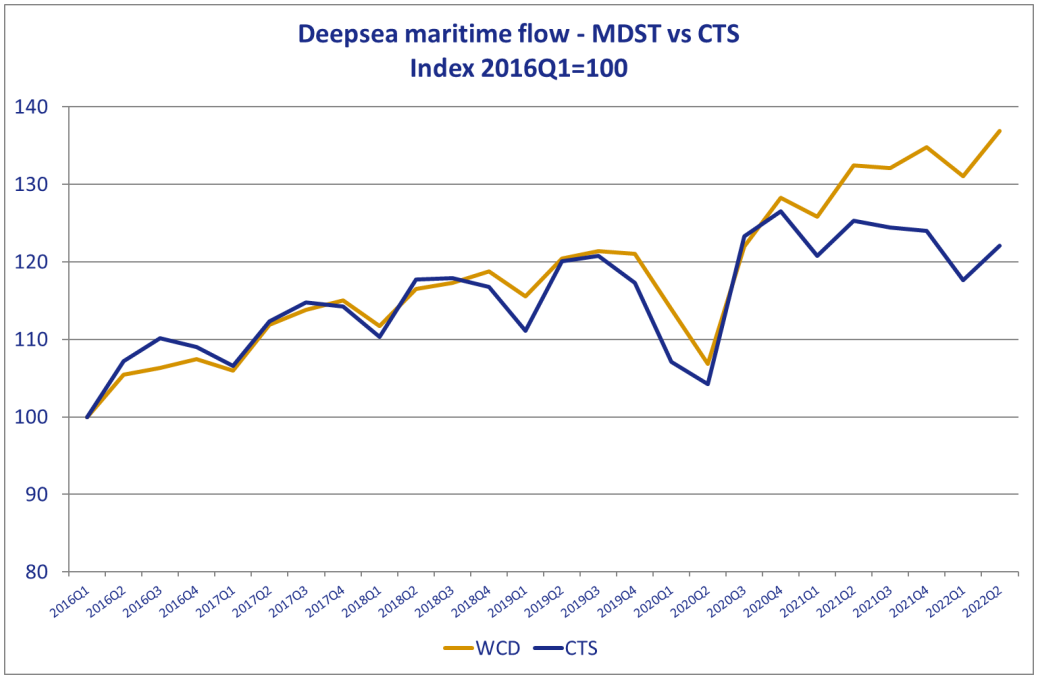
Note: Unitisable traffic is estimated on the basis of long run ratios of unitization based on country x country x commodity flows and the scale of traffic available and explains long-run trends in unit load volumes derived from other sources.
Source: MDS Transmodal, World Cargo Database May 2022

Conclusions & Commentary

- Measured on the basis of when goods are received at the importing country, global trade overall remained substantially flat in 2022Q2 compared to same quarter in 2021. Compared to 2022Q1, total tonnages increased by 2.3%
- Unitisable traffic increased compared to both previous quarter and to same quarter last year
  - some hitherto unitisable trade appears to have diverted to non-unitised modes or non-liner shipping as a consequence of rising freight rates and falling reliability (see graph in the following slide)

1. Trade Volumes

1.2 World Cargo Database (MDST) compared with Container Trades Statistics (CTS)



Source: MDS Transmodal, World Cargo Database August 2022 & Container Trades Statistics

Conclusions & Commentary

- WCD (generally recorded at time of import) and CTS (recorded when cargo shipped by data supplied by the lines) track each other closely to 2020Q4 but then deviate. WCD is based on trade data assuming a consistent rate of unitisation based mainly on commodity. CTS is based on containers carried by the major lines. The gap between the two schedules expanded during 2021.
- Explanations include a reaction to much higher freight rates, falling reliability and lack of capacity leading to non-liner tonnage, to overland (rail) routes and minor bulk flows switching from to conventional shipping.

2. Capacity

2.1 Deployed capacity*, global

		2022Q2	QoQ	PY	% of 2022Q2	% of 2021Q2	share 2022Q2 minus share 2022Q1 (% points)
Overall total		**53.9**	**0.7%**	**2.5%**			
Major three E/W trade lanes		**18.7**	**3.0%**	**10.9%**	**34.7%**	**32.0%**	***2.6***
Far East - N America routes	*Two regions*	*6.1*	*5.5%*	*23.7%*	*11.3%*	*9.3%*	*1.9*
	More than two regions	*3.6*	*-1.0%*	*2.5%*	*6.7%*	*6.7%*	*0.0*
	Total Far East - N America routes	***9.7***	***3.0%***	***14.8%***			
Far East - Europe routes	*Two regions*	*3.4*	*3.0%*	*31.7%*	*6.4%*	*5.0%*	*1.4*
	More than two regions	*3.0*	*1.0%*	*-10.5%*	*5.6%*	*6.4%*	*-0.8*
	Total Far East - Europe routes	***6.5***	***2.0%***	***7.9%***			
Europe - N America routes	*Two regions*	*1.6*	*14.6%*	*14.8%*	*3.0%*	*2.7%*	*0.3*
	More than two regions	*1.7*	*-4.1%*	*8.9%*	*3.2%*	*3.0%*	*0.2*
	Total Europe - N America routes	***3.4***	***4.2%***	***11.7%***			
Other routes	Intra	21.9	-1.2%	-4.5%	40.6%	43.6%	-3.0
	Two regions	12.6	1.0%	6.1%	23.5%	22.7%	0.8
	More than two regions	0.7	-3.4%	-25.8%	1.2%	1.7%	-0.5
	Total Other routes	**35.2**	**-0.5%**	**-1.5%**	**65.3%**	**68.0%**	**-2.6**

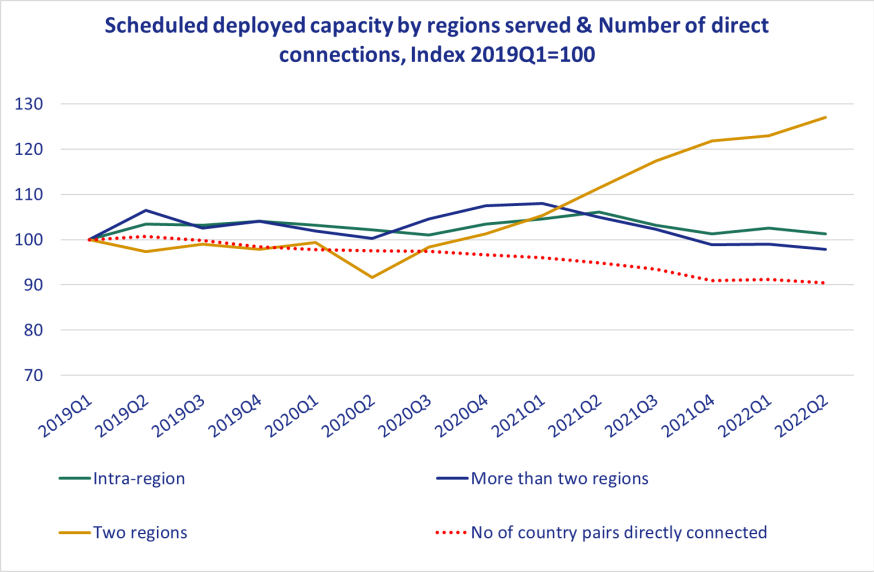
** Note: analysis carried out on individual IMOs.*
Source: MDS Transmodal, Containership Databank August 2022

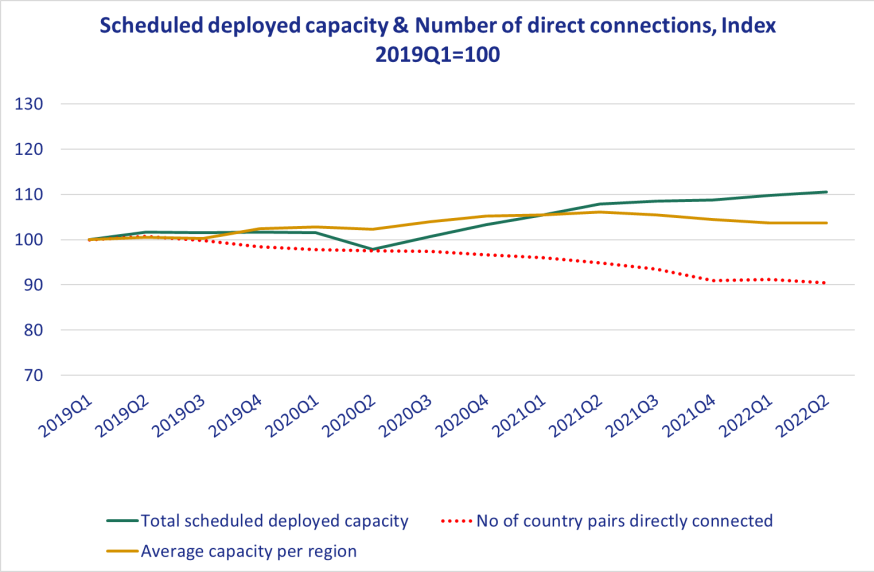
Conclusions & Commentary

- In 2022Q2, scheduled deployed capacity grew by 0.7% to 2022Q1 while on an annual basis there was a growth of 2.5%.
- The increase has been driven mainly be re-allocated:
  - 1. from 'minor' routes to the 'major' E/W ones;
  - 2. from intra and services covering more than two regions to direct services;
  - 3. from cutting intermediate calls on the FE-Europe trade lane.

2. Capacity

2.2 Deployed capacity by markets served, global





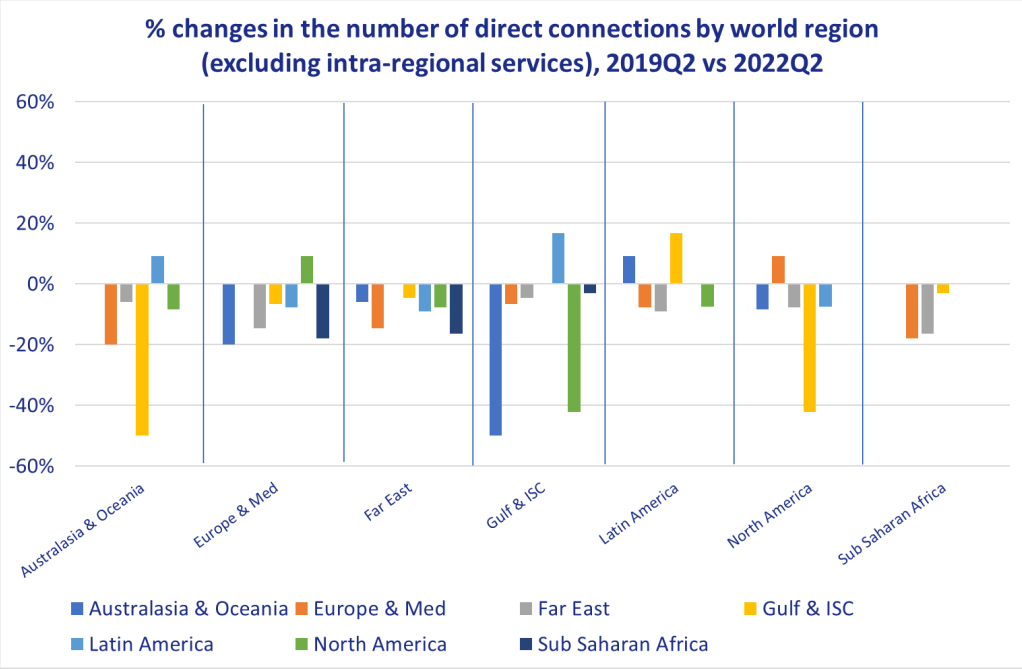
Source: MDS Transmodal, Containership Databank August 2022

Conclusions & Commentary

- Since 2020Q3, shipping lines have been adjusting their networks, shifting capacity from services serving more than two regions in favor of services serving only two regions.
- Based on capacity scheduled to be deployed in 2022Q2, we estimate that the number of countries directly connected has now reached its lowest level since the start of our dataset (2006Q1). As shown in the charts above, the deterioration in direct connectivity has only been accelerated by the Covid-19: with the exception of a few quarters, the downward trend started in 2016.
- Available capacity has been increased by existing ships making more frequent 'shuttle' voyages between port pairs over the period, at the expense of longer, loop sailings offering more port calls. This has resulted in a reduction in deployed capacity available to shippers, reducing the opportunity to move cargoes on a predictable basis.

2. Capacity

2.3 Changes in number of direct connections, global



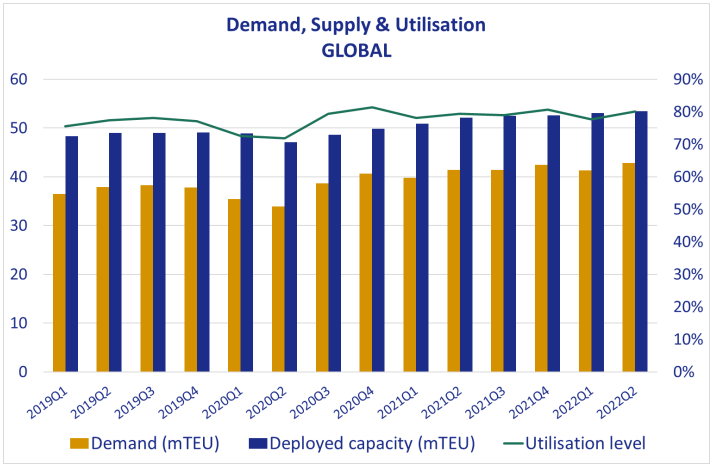
*Note: for this the analysis, we have e*excluded intra-regional services
Source: MDS Transmodal, Containership Databank August 2022

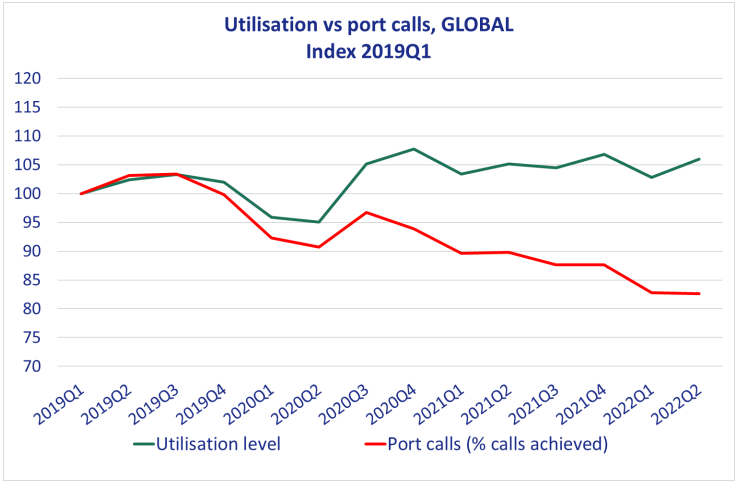
Conclusions & Commentary

- On the deepsea routes, the number of countries directly connected has declined by circa 9.5% in 2022Q2 compared to 2019Q2; the capacity lost due to this reduction accounted for some 5% of the total capacity scheduled in 2019Q2.
- Different world regions have been affected differently by this reduction, with for example European countries estimated to have lost almost circa 15% of their direct connections with the Far East, equating to 2.4% of the capacity offered in 2019Q2 between these two world regions.

2. Capacity

2.4 Deployed capacity, routes (mTEU)





	2022Q2	PQ	PY
East-West	24.2	2.4%	9.0%
North-South	4.1	3.1%	-1.1%
South-South	3.7	-1.1%	10.9%
Intra	21.9	-1.2%	-4.5%
Grand Total	**53.9**	**0.7%**	**2.5%**

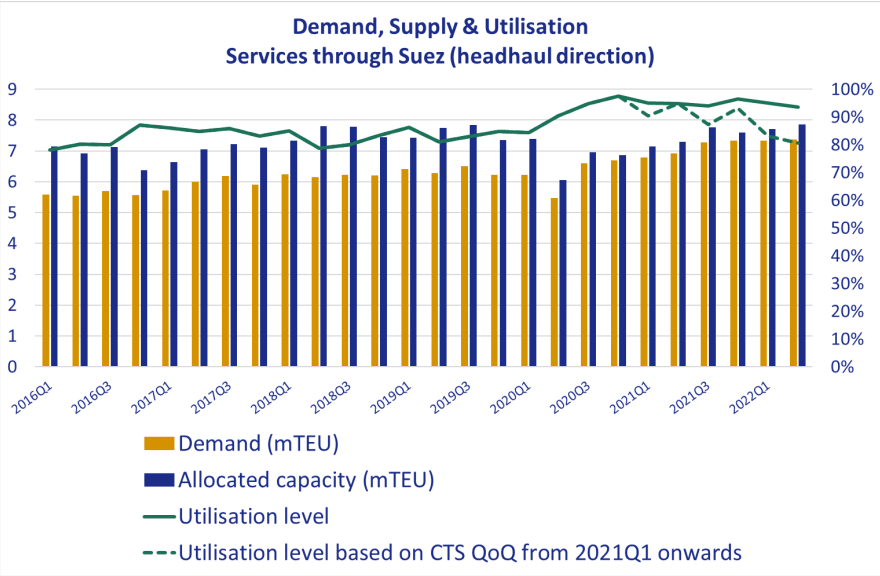
Source: MDS Transmodal, World Cargo Database & Containership Databank May 2022

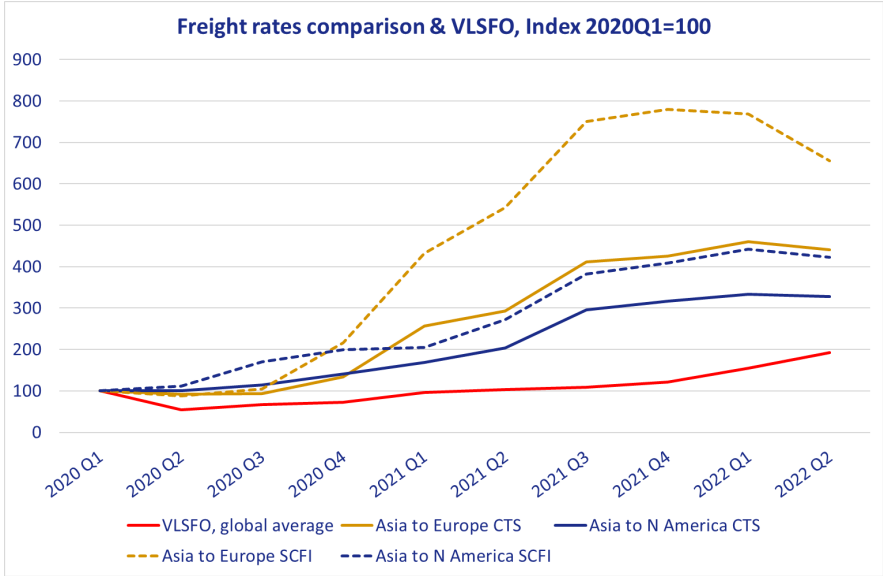
Conclusions & Commentary

- Capacity scheduled on the EW and SS routes increased much faster than those on other markets.
- The increase in utilisation levels from 2020Q3 has been accompanied by a continued deterioration in the number of calls actually made – as illustrated in the following sections.

3. Supply, demand and utilisation

3.1 Utilisation* through Suez & Far East - North Europe & Med





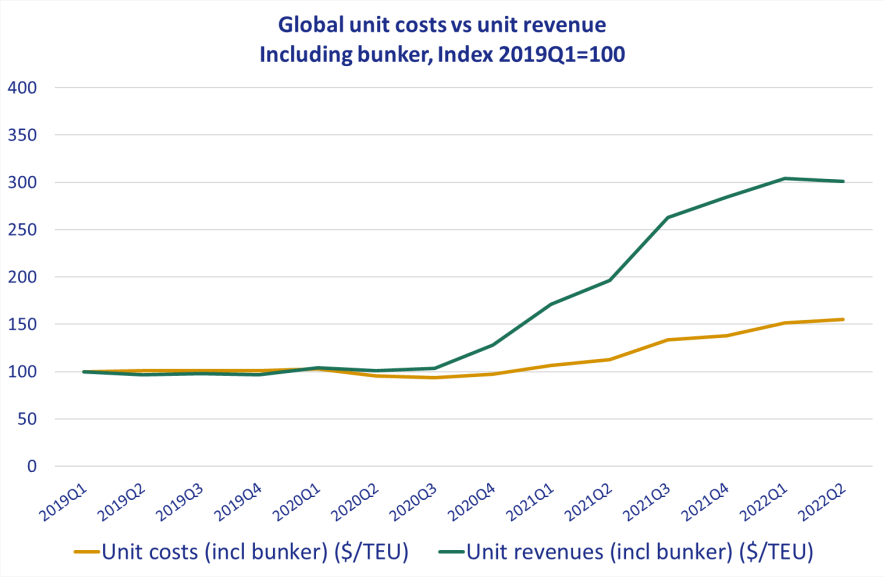
**Note: from 2021Q1, MDST utilisation level shows a ratio between potential demand and scheduled capacity*
Source: MDS Transmodal, Container Business Model August 2022

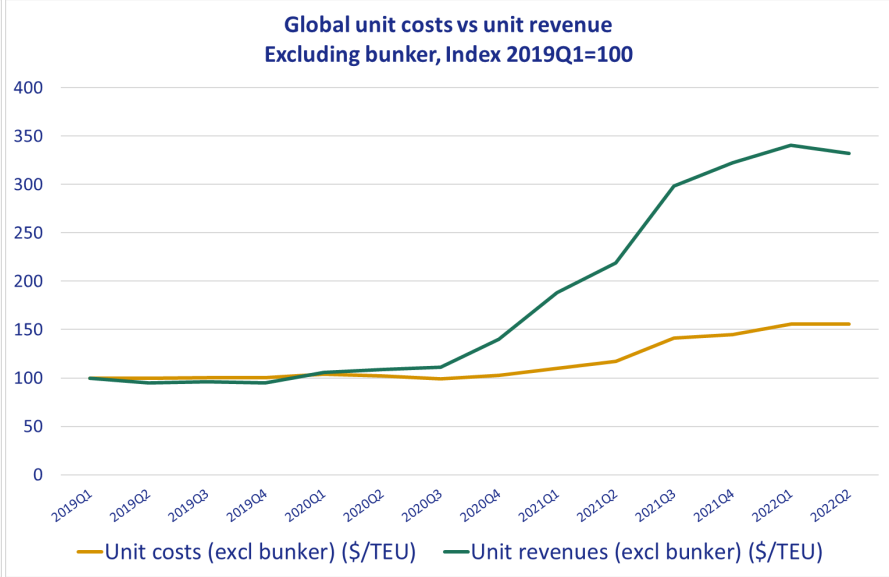
Conclusions & Commentary

- Demand levels measured in trade and for the vessels passing through the Suez Canal WB (busiest point for the shipping routes), reached its highest level for several years in 2021Q4 but declined marginally since but still in the region of 90%.
- A lower level of utilisation (in the region of 80%) is estimated if we based our calculation on the volumes reported to have been moved by the shipping lines members of CTS
  - the difference is manly due to some cargo now being moved by non container vessels in response to the significant increase in freight rates
- The contraction on demand side is prompting shipping lines to reduce their freight rates, however
  - the decline in contract rates is still marginal
  - both spot and contract rates are still well above the pre-pandemic level

4. Costs & Revenues (Index 2019Q1=100)

4.1 Unit costs & unit revenue, Global





Source: MDS Transmodal, Container Business Model August 2022

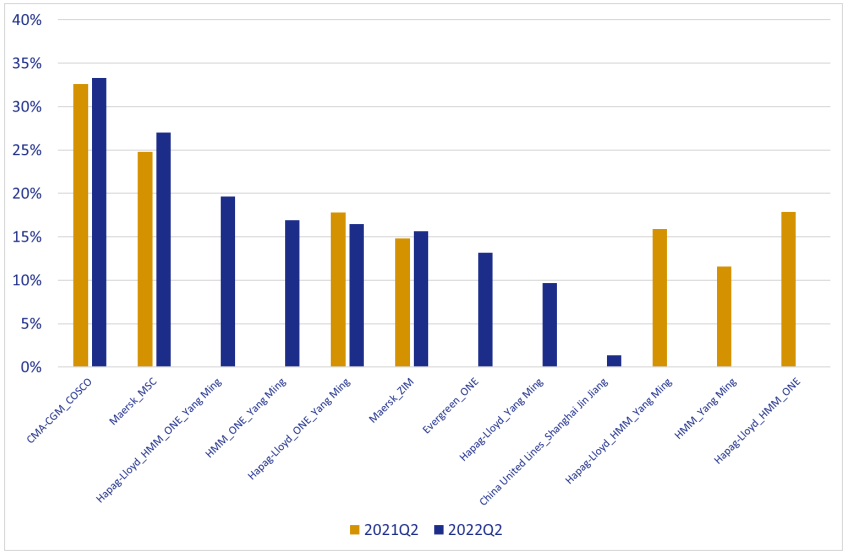
Conclusions & Commentary

- With 2019Q1 equal to 100, global unit costs fell during the first half of 2020, as bunker costs declined, and started to increase from 2020Q3.
- 2020Q3 is the quarter where we start observing an increase in the divergence between unit costs and unit revenue, with the gap wider when bunker cost is subtracted from both unit revenues and unit costs. That divergence has increased with every quarter, modelled costs have grown by 50% between 2019Q1 and 2022Q1 but unit revenue has grown by 200%.
- Unit revenues are showing sign of decline, however the gap with costs is still significant.

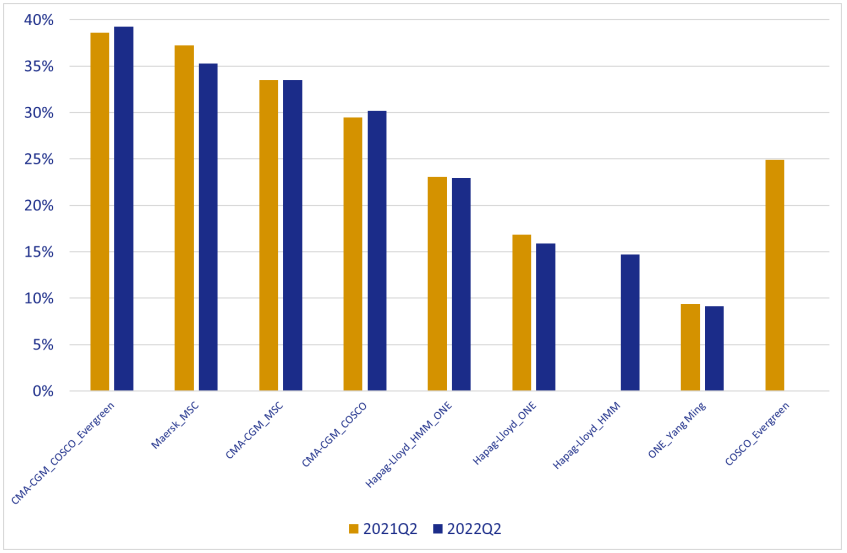
5. Market Competitiveness (MDST/OECD-ITF)

5.1 Market concentration, Consortia' combined market shares

Far East - North America (direct services only)



Far East - North Europe & Mediterranean*



** For this analysis we have focused only on capacity offered on the EU + UK, which is currently (2022Q2) estimated to account for circa 97% of the capacity offered on whole Far East - North European & Mediterranean market.*

Source: MDS Transmodal Consortia & Alliances Database May 2021 (https://link.springer.com/article/10.1057/s41278-022-00225-x)

Conclusions & Commentary

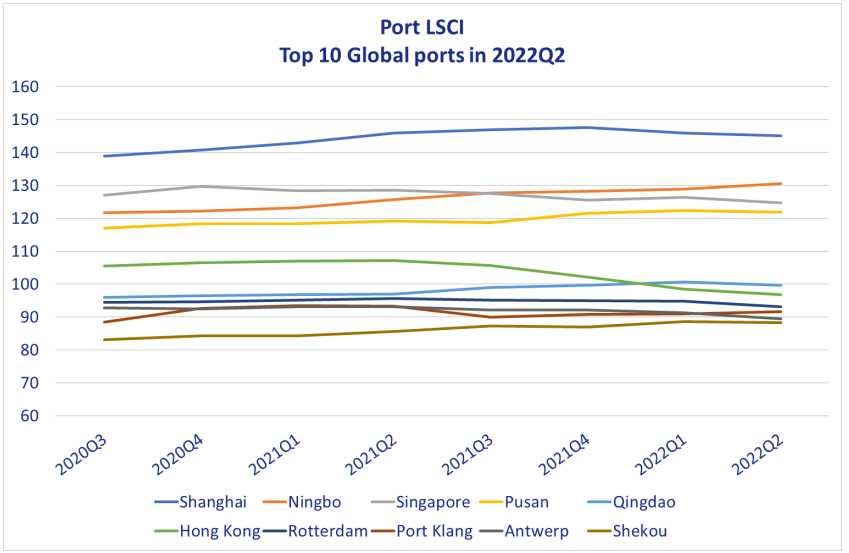
- On the Far East – North America trade lane, the number of consortia has increased from 7 to 9, one of which estimated to have a combined market share above 30%.
- On the Far East – North Europe & Mediterranean, in the last 12 month the number of consortia has remained stable to 8, however there are now 4 consortia estimated to have a combined market share above 30% (up from 3 in 2021Q2).

6. Port Connectivity (MDST/UNCTAD LSCI)

6.1 Top 10 container ports, global

Liner Shipping Connectivity Index, Hong Kong 2006Q1=100

	2022Q2	PQ	PY
Shanghai	145.1	-0.7	-0.7
Ningbo	130.5	1.6	4.8
Singapore	124.8	-1.6	-3.8
Pusan	122.0	-0.4	2.8
Qingdao	99.6	-1.0	2.6
Hong Kong	96.9	-1.6	-10.3
Rotterdam	93.2	-1.6	-2.5
Port Klang	91.6	0.6	-1.7
Antwerp	89.5	-1.8	-3.7
Shekou	88.3	-0.3	2.7



Source: MDS Transmodal, Containership Databank August 2022 (www.portlsci.com)

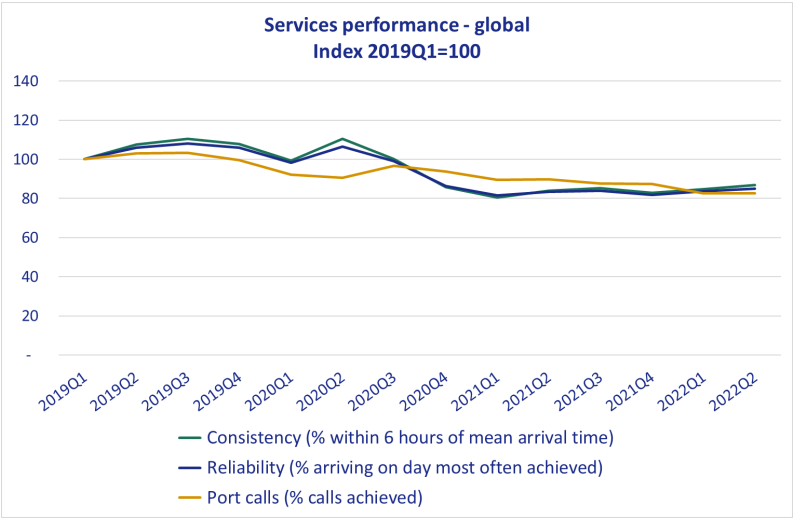
Conclusions & Commentary

- Compared to 2021Q2, in 2022Q2 we observe a deterioration in the level of connectivity for 6 of the Top 10 ports, with Hong Kong reporting the biggest drop.
- The deterioration is generally speaking driven by the drop in the number of direct connections.

7. Services performance

7.1 Consistency, reliability & port calls, global

	2022Q2	YTD	PQ (% points)	PY (% points)
Consistency (% within 6 hours of mean arrival time)	45%	44%	1.1	1.5
Reliability (% arriving on day most often achieved)	52%	52%	0.9	1.0
Port calls (% calls achieved)	68%	68%	-0.2	-6.0



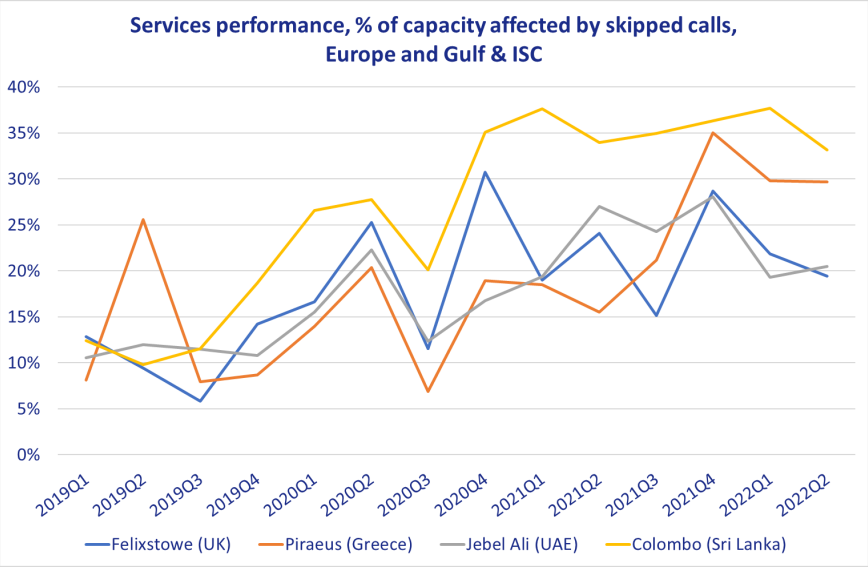
Source: MDS Transmodal based on AIS (Automatic Identification System) data

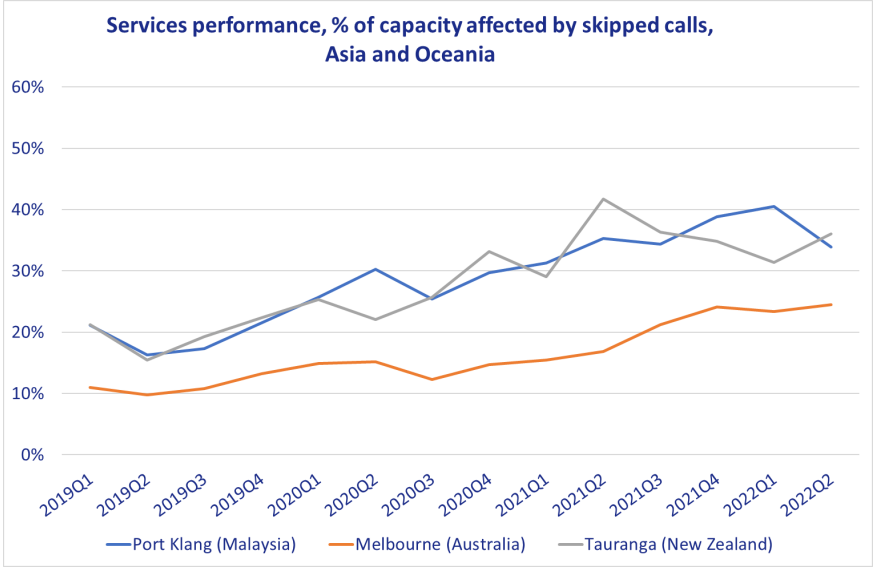
Conclusions & Commentary

- Despite some marginal improvement estimated in consistency and reliability, the port calls actually made (by comparison with being scheduled) in 2022Q2 is estimated to have declined further compared to both previous quarter and same quarter last year.

7. Services performance

7.2 % of capacity affected by skipped calls, selected ports





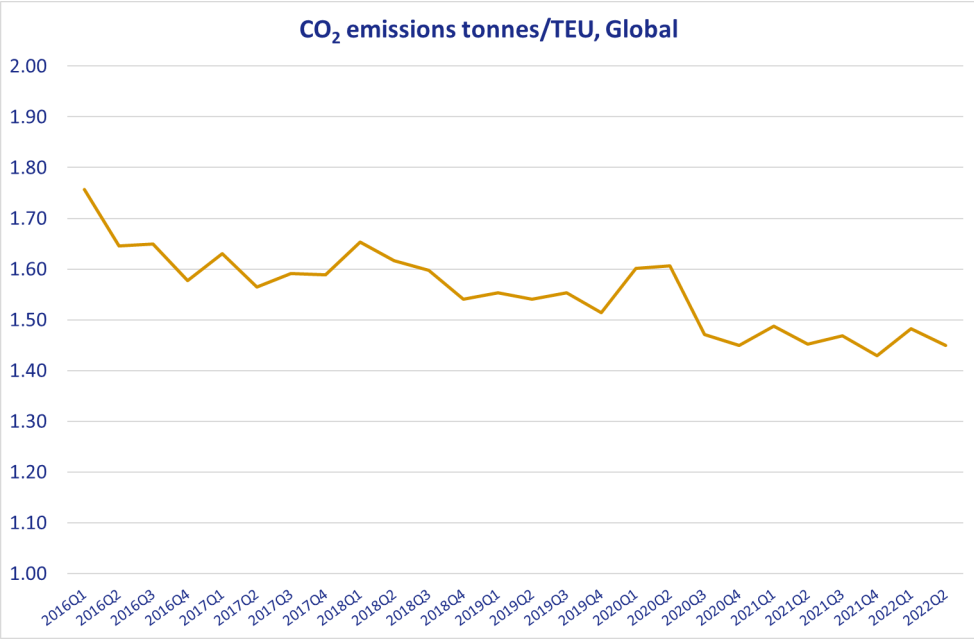
Source: MDS Transmodal based on AIS (Automatic Identification System) data

Conclusions & Commentary

- This analysis shows the effect of 'skipped' port calls on the shipping capacity lost to shippers, over the past few years.
- The graphs show the percentage of shipping capacity expected to call but lost as port calls are 'skipped'.
- This was caused by ships failing to call at ports as scheduled making their capacity unavailable to shippers at that port.

8. Carbon Emission Factors

8.1 CO_2 emission tonnes/TEU, global



Note: demand from 2021Q1 based on CTS volumes
Source: MDS Transmodal, Container Business Model August 2022

Conclusions & Commentary

- Emissions per unit of cargo (tonnes/TEU) fell over time as the twin policies of slower vessel speeds ('slow steaming') and the introduction of larger vessels (VLCCs) continued to take effect. The decreases were most marked on the Far East- North Europe route where these policies had greatest impact.
- Emissions per unit fell in 2022Q2 as port calls were dropped and time between port calls rose, reducing implied speeds; however that trend has now come to an end.

The indicators explained (1)

1.1 **Total trade**: Total goods exported and imported by all countries measured in millions of tonnes and distinguished between 'not unitised' and 'unitised'.

1.1 **Unitised trade**: Cargo moved in units, measured in TEU and distinguished between Maritime containers (loaded containers shipped by sea, excluding RoRo) and Other (RoRo containers by sea, containers and road trailers across land borders).
Unitised maritime trade represents the total demand for container shipping services by cargo owners (shippers).

2.1 **Deployed capacity**: Capacity offered on container-carrying vessels (containerships) deployed on services as scheduled by the shipping lines (mTEU).
Deployed capacity is the total supply of scheduled container-carrying capacity made available to shippers to meet the demand for unitised freight.

3.1 **Allocated capacity**: Capacity estimated in the MDST model to calculate the level of utilisation; it represents, effectively, the available TEU capacity modelled on a global basis but taking each string and its precise port calls into account. MDST then allocates this capacity by taking into account the demand (region-to-region) making assumptions on direct services versus transhipment. In effect this is acknowledging the fact of way-port cargoes but at a region-to-region level rather than port-to-port level.

3.1 **Utilisation**: Ratio of estimated cargo moved on identified routes to capacity allocated to those routes (e.g. services transiting the Suez Canal northbound – busiest location for the global container shipping industry)

Numbers refer to sections in which the term is used

The indicators explained (2)

4.2 **Costs & Revenues**: Estimated operating costs and estimated revenues measured with and without fuel

5.1 **Market competitiveness:** this analysis has been carried out using the MDST Consortia & Alliances Database, a subproduct of the MDST Containership Databank, which contains detailed information of the world's container carrying fleet also used by UNCTAD for the Liner Shipping Connectivity Index (LSCI) and by the World Bank for the Logistics Performance Index (LPI). The MDST Consortia & Alliances Database, developed in collaboration with ITF/OECD, is a dataset in which we have grouped the port pairs into trade corridors (e.g. a service calling, amongst other, at the port of Shanghai and at the port of Rotterdam, has been allocated to the East China Sea-North Europe trade corridor) and identified, for each vessel deployed on any given service, the shipping lines that operate them. This information has allowed us to identify the services operated by consortia and their members, by alliances and their members, by independent carriers.

6.1 **Port LCSI**: Liner Shipping Connectivity Index produced in collaboration with UNCTAD and generated from the following 6 components: number of scheduled ship calls/week in the port; total scheduled container shipping capacity calling at the port; number of regular services calling at the port; number of carriers that provide services to/from the port; maximum average size of the ships deployed by the scheduled service; number of other ports that are connected to the port through direct services (more on www.portlsci.com) The LSCI is a proxy for the frequency, reliability and direct access to markets experienced by shippers of cargo through each named port and a measure of the quality of service experienced by users of the ports services.

Numbers refer to sections in which the term is used

The indicators explained (3)

7.1 **Services' performance indicators**: **Consistency** (% within 6 hours of mean arrival time); **Reliability** (% arriving on day most often achieved); **Port calls** (% calls achieved after allowing for blanked sailings and ports skipped).
For shippers, Consistency is a measure of on-time arrival of vessels (will goods become available when they have normally been in the past?); Reliability is a measure of the regularity of service (same day of the week); Port Calls is a measure of whether the vessel arrives at all or the cargo is 'rolled' on to the next service. These are key factors in determining on-time delivery of exports to customers or availability of imports for domestic distribution.

8.1 **Carbon Emission factors**: Average amount of CO_2 emitted by each loaded container shipped by sea measured for the whole deep-sea shipping industry and selected trade lane (tonnes CO_2 /TEU).
Carbon emissions per cargo unit moved are the required inputs for manufacturers, retailers and other shippers to calculate the contributions that third parties make to the carbon footprint of their products and businesses (Scope 3 emissions). The shipping industry is under public pressure to deliver meaningful reductions in greenhouse gas emissions in the short and medium term. Current proposals target improvements through better ship design and maintenance and more efficient operation. Other actions include Emissions Trading Schemes, carbon taxes and the use of low-carbon fuels. Regardless of the means employed, this measure will track their net effectiveness on the carbon footprint of container shipping as experienced by users of its services.

Numbers refer to sections in which the term is used

More about MDS Transmodal & contacts

MDS Transmodal (MDST, www.mdst.co.uk) is a firm of transport economists based in Chester (UK) which specialises in maritime and all other modes of freight transport. MDST works with senior management in the public and private sectors to provide strategic advice based on quantitative analysis, modelling and sectoral expertise. MDST's approach is based on being:

- Innovative – Constantly developing new ways to analyse strategic issues and opportunities
- Quantitative – Analysis based on best in class maritime databases and models
- Independent – More than 35-year track record of providing objective advice
- Expert – Consultants with an average of 20 years' consultancy experience
- Specialist – Focused on the economics of maritime transport and other freight modes.

MDST data, modelling and industry expertise can be applied to analyse strategic issues and opportunities wherever the client is based in the world. Clients include UNCTAD, the World Bank, the European Commission, government at all levels, ports and terminal operators, developers of distribution parks, financial institutions, global shippers and shipping lines and a wide range of professional services companies.

All of the data presented in tables and graphs can be provided at a more detailed level, e.g. trade data by country pairs as well as individual commodities, capacity and services performances by service and operator, etc.

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More about Global Shippers Forum & contacts

Global Shippers Forum (GSF) is the international business organisation speaking up for exporters and importers as cargo owners in international supply chains and trade procedures. Its members are national and regional shippers' associations representing manufacturing, wholesaling and retailing businesses in over 20 countries across five continents.

Shippers own the goods that others carry, and ultimately pay the costs they incur. GSF works to achieve safe, competitively efficient and environmentally sustainable global trade and logistics on behalf of its members.

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