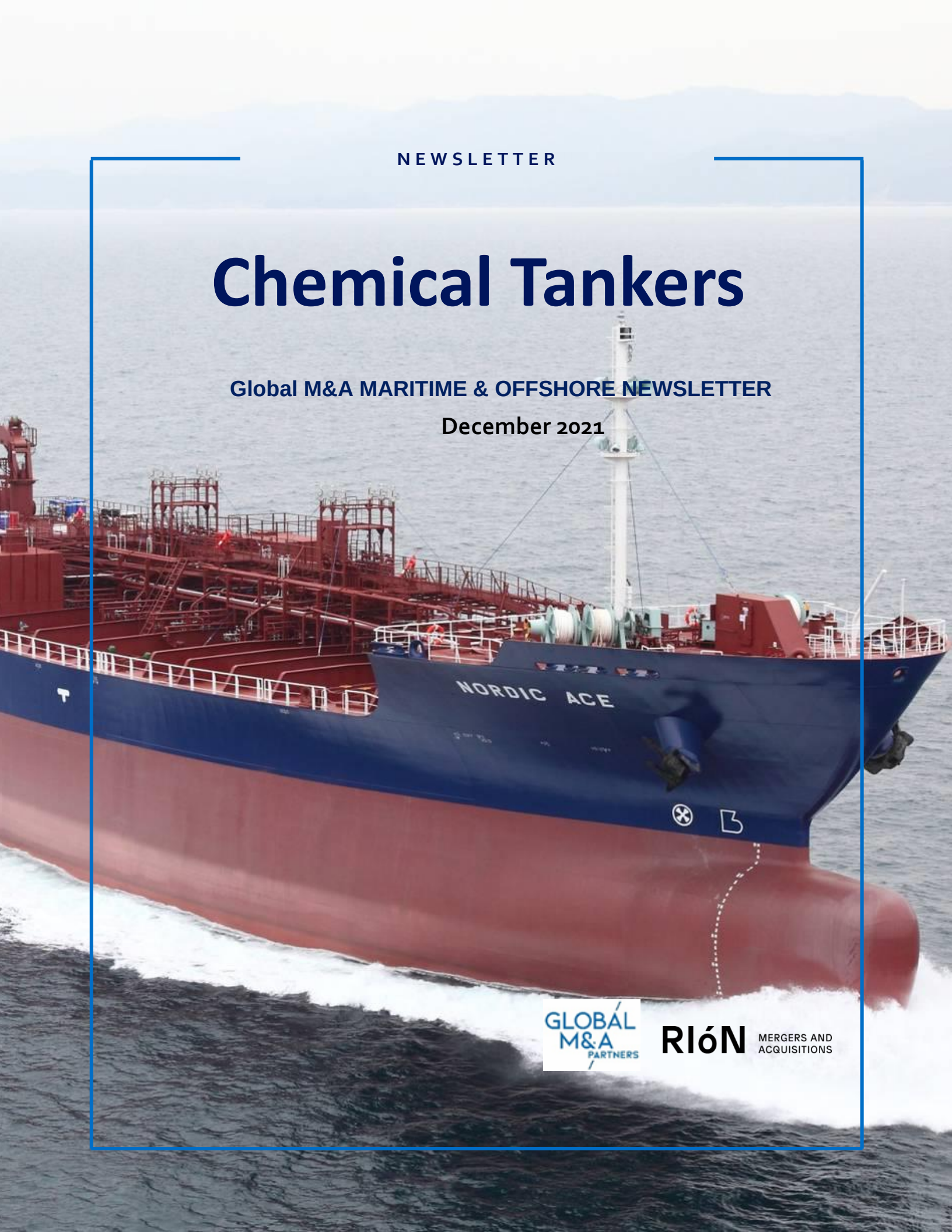
NEWSLETTER

Chemical Tankers

Global M&A MARITIME & OFFSHORE NEWSLETTER

December 2021



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Key Takeaways from the Newsletter

The international shipping industry has the ability to offer economic and efficient long-distance transportation for fluids, such as oil, chemical, LPG and CNG. The transportation of these products is very important in the global economy. Tanker shipping is one of the convenient and economical ways for carrying of fluids across the globe. The shipping industry transports near about 12 billion tonnes of goods each year. In the developed regions like European Union, shipping industry accounted for 80% of total import and export volume and 50% of its value in 2019.

The chemical tanker market is a very fragmented one, with over 600 companies operating in the sector. A few major companies dominate the market. Furthermore, pools are formed for a homogenous and commoditised service, while giving owners regular cashflow and long-term security.

Another characteristic of the chemical tanker market is the entrance of swing tonnage. Swing tonnage comprises vessels which are usually involved in the oil products trade but may also swing into parts of the chemical trade when this is economical. As chemicals are less volatile, usually MRs can swing across to chemicals if earnings get too low.

The chemical tankers also will have to adapt to stricter environmental regulations concerning greenhouse gas emissions. This will include substantial investments and compliance rules.

- Emergence of innovative technologies for tanker modification, and globalization are the major factors that fuel the demand for shipping tankers and ultimately drive the shipping market. The growing demand for fluids, gases and chemicals across the globe lead to an increase in demand for shipping tankers. However, government norms, irregular distribution channels, growing prices of customized tankers and oil prices are the major challenges in the tanker shipping industry.

- Globally, in the shipping industry, chemical tankers play an important role in transporting various organic chemicals (Methanol, Para-Xylene/, Xylenes, Ethlyene Glycol, Styrene and Benzene), inorganic chemicals (Sulphuric Acid, Caustic Soda and Phosphoric Acid) and vegetable oil. Such tankers are designed to maintain the consistency of the substances that are being shipped. Various types of tankers such as stainless steel and coated chemical tankers are used to ship bulk chemicals.

- The low shipping cost is the major reason for transporting the chemicals via sea. Moreover, the rising capacities of the chemical manufacturers and a growing chemical industry in the emerging economies demand efficient solutions for transportation. Increased production of chemicals in Asia-Pacific and growing demand for chemicals create opportunities for the chemical tanker industry.

Global Maritime Industry

Overview

The global maritime industry is undergoing through stiff challenges on the back of ongoing COVID-19 pandemic which has severely impacted the global demand and in-turn stalled the manufacturing activities (Exhibit 1).

Exhibit 1: Forecast for Main Shipping Markets

	Oil tanker shipping	Container shipping	Dry bulk shipping
Impact	• In 2020 oil production cuts were made, as a reaction on the destroyed global oil demand, caused by corona pandemic • 2021 OPEC+ deal will increase oil production; though not as much as asked by the US	• Container shipping is disrupted by box equipment shortages which are restricting available capacity and so forcing freight rates to record heigths	• The Dry Bulk market continues to show a robust recovery Strong trade for grain, nonferrous metals and coal, combined with low growth in the active fleet, is propelling freight rates
Demand	• EIA forecasted the 2021 oil demand at 97.4 million b/d, a 5 million b/d increase from 2020	Container volumes declined by 1% in 2020. In the first ten months of 2021, demand returned and volumes were up 10% compared to the same period in 2020, driven by strong US retail consumption.	• Seaborne trade volumes declined by 2% in 2020 • In the first ten months of 2021, demand returned and volumes were up 8% compared to the same period in 2020, driven by a rebound in coal and minor bulk
Supply	• Due to closures at Chinese yards, tanker deliveries are expected to be a bit lower than previously anticipated • Annual expected fleet growth: Crude oil tanker: 1.8% Product tanker: 2%	• Fleet growth looks manageable for the next 12-18 months • Extremely high contracting activity is setting the stage for massive fleet expansion in 2023 and 2024	• A small orderbook will keep fleet growth low in the next 12-18 months • A renewed appetite for investing in newbuildings could increase long-term fleet growth.
Outlook	• Though demand recovery will be slow, it is forecasted that demand will be at to pre-pandemic levels in 2022	• Demand for containerized goods should be strong in the coming months, driven by restocking, but China's weakening manufacturing sector threatens the positive outlook	The current strong market has the potential to continue in the short term. The inflow of new vessels is manageable, while the demand drivers appear strong

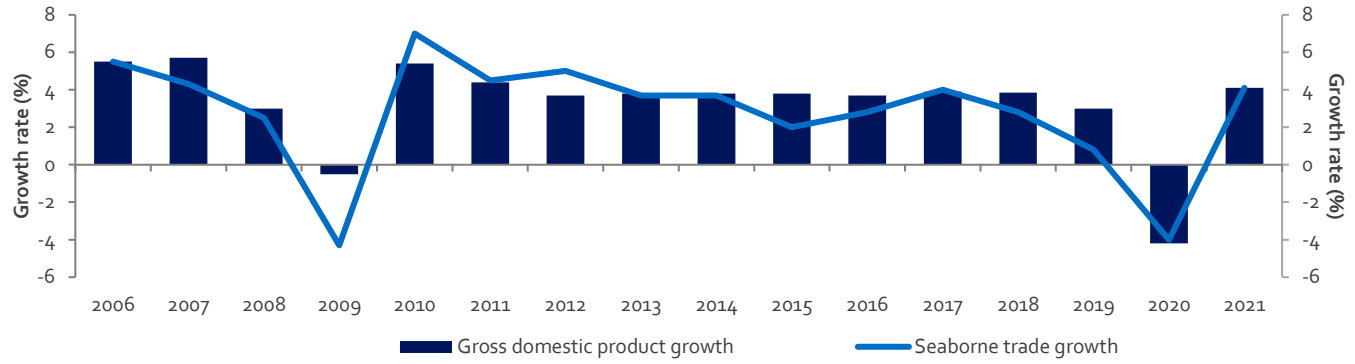
Source: BIMCO; Team analysis SG and JBR

The impact of COVID-19 is being witnessed largely on the Chinese manufacturing output that has exerted negative pressure on demand for coal and iron ore during the H1 2020 in line with decline in manufacturing activities. Such downward shift in the manufacturing and production activities have adverse ripple effects on the supply chain that is being translated in the global shipping industry. A global credit rating agency, Moody's has downgraded the outlook for the global shipping industry from 'stable' to 'negative' due to the coronavirus outbreak. Further, decline in demand for container and dry bulk shipping services is anticipated to exert downward pressure on the EBITDA of market participants in 2020. Oxford Economics predicts that "despite renewed restrictions in a number of economies in recent months, the growth rate of trade in 2021 will be strong". They expect world trade volumes to expand by around 9 per cent in 2021, after slumping by 7 per cent last year.

The outbreak of COVID-19 has disrupted the global trade creating sudden downward shift in the shipping industry. Charter rates of containers carriers and dry bulk have declined sharply due to the economic slowdown as demand dried up. The outlook of these segments remains bearish for the remaining time during 2020 and the dry bulk trade is expected to fall by 4-6% during 2020. The decline is anticipated to be driven by muted steel production and weak industrial demand that will impact coal and iron ore procurement. Additionally, container charter rates are expected to fall by 20-23% during the year in 2020 in line with a 10-12% decline in container trade. Oxford Economics estimates a world GDP growth forecast for 2021 slightly from 5.2% to

5.0%. UNCTAD estimates that global maritime trade (Figure 1) will fall by 4.1% in 2020 due to the unprecedented disruption caused by COVID-19. Nonetheless, UNCTAD expects maritime trade growth to return to a positive territory and expand by 4.8% in 2021, assuming world economic output recovers, and highlights the need for the maritime transport industry to prepare itself for a transformed post-COVID-19 world.

Figure 1: Development of International Maritime Trade and Global Output (2006–2021)



Source: UNCTAD

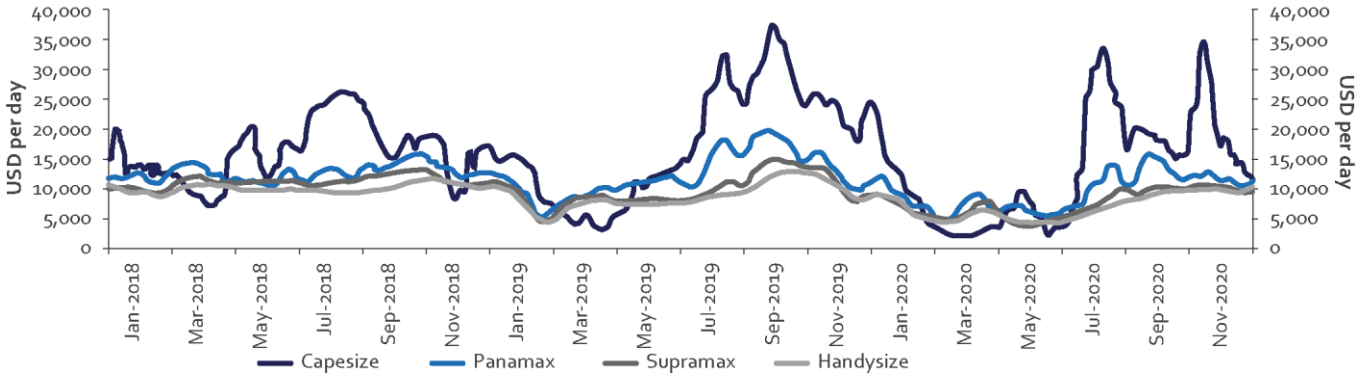
Dry-Bulk Sector

The Pandemic-hit 2020 has been a challenging year for the dry bulk sector. While the growth had started declining in 2019 and had touched loss-making levels, the beginning of 2020 has been severely hard on the dry bulk shipping market (Figure 2). Virtually all the sectors are witnessing record dip in volumes and rock-bottom freight rates due to COVID-19 induced lockdown. Smaller dry-bulk segments have fared better and have managed to keep earnings at around break-even level.

The biggest story in the dry bulk industry in recent months has been the strength of the recovery in major Chinese imports. These are up across the board, breaking previous records for monthly imports as well as imports accumulated year-till-date in 2020. Chinese recovery has been strong enough to make up for lower activity, with all ship sizes above their break-even levels.

The second half of 2020 has proven to be much stronger than the first with China pushing to make up for the lower demand in the rest of the world. Despite the strength of the past few months, average spot-market earnings in the year to date across all ship sizes are at loss-making levels, with time running out to turn this year around.

Figure 2: Dry Bulk Earnings and Break-Even Levels (2018–2020)



Source: BIMCO, Clarksons

In 2021 the dry bulk market continued to show recovery. Strong trade for grain, nonferrous metals and coal, combined with low growth in the active fleet, is propelling freight rates across segments. The market optimism is reflected in the fact that secondhand prices are at their highest level for years. While the tailwind looks set to continue in the short term, risks are building. The Capesize segment is exposed to changing demand dynamics, with little rebalancing potential. In contrast, the

future fleet growth seems manageable for the small and midsize vessels while trade of non-ferrous metals for renewable technologies provides demand growth opportunities. The expected decline in coal demand represents a significant risk to the outlook for midsize vessels.
The Baltic Dry Index passed index 3,500 in August, entering territory not seen since 2009. The growth in spot rates has been highest on coal trade routes. Timecharter rates have followed the same trajectory.

Coal volumes have returned, scrapping is low and second hand prices are high. Meanwhile, queuing lines in Chinese ports to discharge coal were piling up.

Since tariffs were imposed, China increased its imports of soya beans from Brazil to make up for lower imports from the US. Despite imports from the US growing considerably, Brazilian exports have not suffered and are up 23.7%. China has imported a total of 83.2 million tonnes of soya beans from both Brazil and the US, which is 168 more Panamax loads (75,000 tonnes) than in the first 10 months of the previous year. Increase in tonne-mile demand has also been considerable given the long sailing distances between Brazil and the US to China. As a result, other grain exporters in the northern hemisphere have provided extra demand. In the year to date, there has been a 25.4% increase in tonne-mile exports on Panamax and Supramax ships out of the Black Sea.

In volume terms, the most important commodity for shipping is iron ore and China's importance in this market is growing as well. It has already been the top importer since 2003 and has become more dominant this year with imports have rising to 975.2 million tonnes, an 11.2% increase on the first 10 months of 2019; providing great business for Capesize ships. When demand elsewhere has remained muted, the strength of these imports, especially in the second half of the year, kept Capesize earnings above the break-even point.

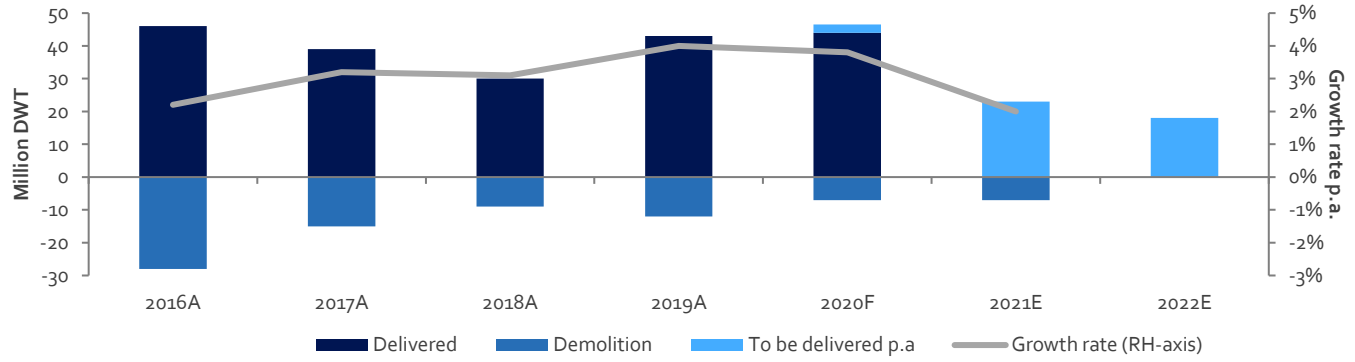
Fleet and Demolitions

Despite the disruption to shipyards in early 2020, deliveries of dry bulk ships reached a four-year high by mid-November, totalling 42.2 million DWT. BIMCO estimates full-year growth to reach 3.8%, with another 1.5m DWT to be delivered.

Drivers of fleet development were ore carriers, accounting for 54% of total demolitions, with 24 VLOCs with a capacity of 6.7m DWT. However, delivery of the 20 new VLOCs this year (~6.5m DWT) have been enough to replace all the capacity lost. Further four VLOCs are set to be launched in 2020, bringing total deliveries of these ships to 7.9m DWT.

BIMCO forecasts the pace of fleet growth to slow in 2021 to 2%, marking the lowest increase in capacity since the turn of the century, with a low order book signalling a dip in the number of ships that will be delivered. Currently 23.5m DWT is expected to be delivered in 2021.

Figure 3: Dry Bulk Ship Fleet Growth (2016A–2022E)



Source: BIMCO, Clarksons
Note: Growth rate for 2022E not available in source.

Outlook

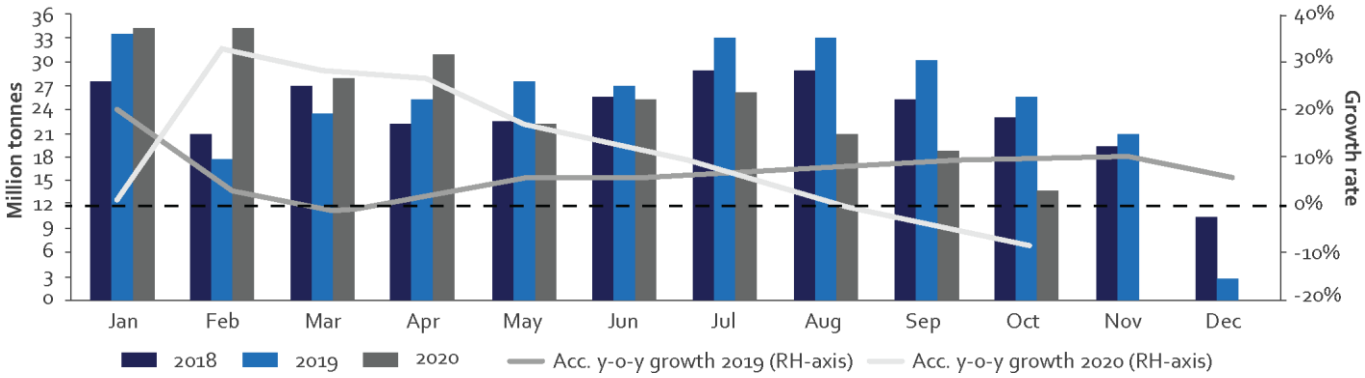
On the positive side, China, one of the biggest drivers for the dry bulk industry, is gradually recovering and the stimulus measures around housing and construction sectors are expected to boost the demand for raw materials. As the year end approaches, development of Chinese coal imports is the most talked about story in the dry bulk market (Figure 4). In Q3 2020, Chinese coal imports were 31.9% lower than Q3 2019 and October imports were down 46.6% compared to the previous year –

a loss of 60 Capesize loads (200,000 tonnes). The quota limits on coal exports will likely result in further decrease in imports in the final two months of 2020.

Loads arriving from Australia faced extended waits at Chinese ports and new orders were threatened by reconsiderations or cancellations. The political relationship between the two countries deteriorated severely at the end of 2020, when Australia called for an independent investigation into the origin of the coronavirus in China. This resulted in a Chinese embargo on a range of Australian products, including coal. Consequently, Australian dry bulk exports to China dropped by 14% in the first eight months of 2021 compared to the same period last year

While China has been a major contributor to dry bulk shipping through its focus on boosting industrial production, which was 6.9% higher in September 2020 compared to the previous year; advanced economies are falling behind. They are likely to measure up once the COVID-19 crisis passes, supporting dry bulk shipping with a slow recovery in 2021.

Figure 4: Chinese Coal Imports (2018–2020)



Source: BIMCO, General Administration of Customs PR China

Recent Developments

Some of the unusually high dry bulk earnings currently are being reinvested in newbuilding contracts. By October 2021, contracting activity was up 55% versus the same period last year, driven by the Capesize and Panamax segments. The orderbook will grow by approximately 2 percentage points if this trend continues until year-end, probably continuing in 2022. In contrast to the Capesize fleet, the inflow of new Panamax and Handymax vessels will remain stable over the coming 14 months. By 2022, 145 and 178 vessels (corresponding to 3% and 4% of the fleet) will enter the Panamax and Handymax fleets, respectively. The rebalancing potential is promising, but this is likely to be neutralised by 2-4% growth in the active fleet as waiting time in ports normalises. Thus, we expect the mid-sized fleet to continue expanding by 3-4% in the coming years.

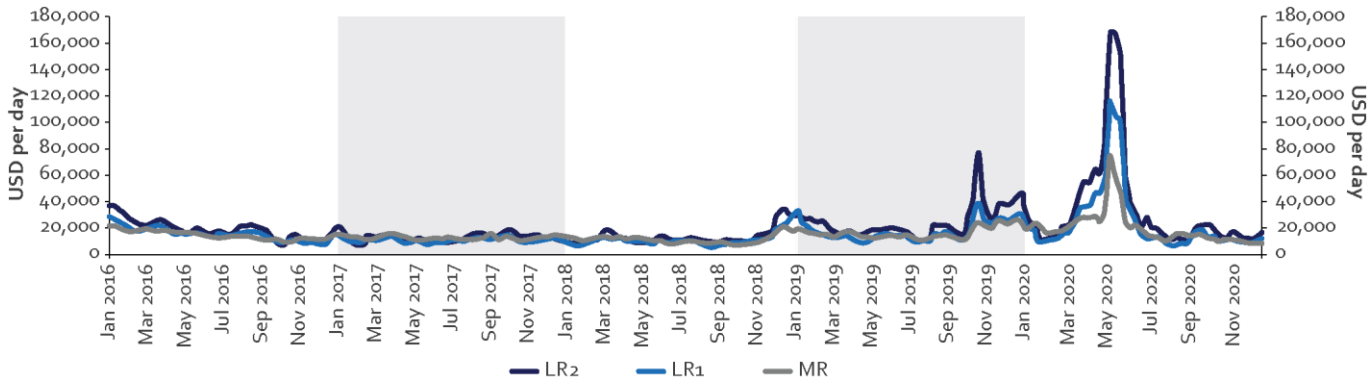
Iron ore and coking coal for steel production account for around 75-80% of Capesize demand – most is discharged in China. However, China is set to increase its use of scrap steel in the steel-making process, while the Chinese economy is becoming less steel-intensive and construction activity is slowing. This indicates that future growth in Chinese iron imports will level off in the coming years.

The current boom in coal volumes is likely to be short-lived and we expect growth rates to slow within the next six months. Volumes could increase slightly in the coming years, but closures of old coal-fired power plants in Europe and China's pledge to stop building new coal-fired plant will lead to a gradual reduction in coal demand by mid-20s. This long-term risk is largest for Panamaxes, where coal accounts for 50-60% of trades.

Tanker Shipping

The tanker shipping industry is facing hard times due to the escalating freight rates against poor market fundamentals. Mismatch between oil production and demand, shrinking tonnage availability, and growing freight rates have collectively led to an increase in floating storage.

Figure 5: Oil Product Tanker Earnings (Jan 2016 – Nov 2020)



Source: BIMCO, Clarksons

Geopolitical tensions have broken down the OPEC+ alliance and erupted the crude oil tanker spot freight market (Figure 5). In January 2021 within the OPEC+ alliance Saudi Arabia voluntary reduced its daily output with 1m barrels per day during February and March. Meanwhile Russia and Kazakhstan are upscaling their production with 75,000 b/d in both February and March. In In August 2021 OPEC+ will rollover its program to gradually increase oil production by 400,000 barrels per day each month. Still, requests from oil consumers like USA, India and Japan remain to increase production more, though OPEC+ doesn't listen to these requests.

In 2021 tanker demand has increased slightly, but growth has switched from Asian to OECD imports – increasing short-haul trade. Asian fuel demand has been low, for the fast spreading Covid-19 Delta variant. Vessel supply has risen despite a pick-up in demolitions.

Demand Improvement

Between November 2020 and October 2021, crude tanker demand showed signs of recovery. Growth has switched from Asian to OECD, because the negative consequences of the Covid-19 Delta variant. Also the USA oil trade was influenced by this Delta variant. USA crude oil imports reached the highest level in two years between May and June, but after a summer with few restrictions, only domestic holidays permitted and low oil production, the Delta variant took hold and many states reintroduced restrictions to curb mobility.

Despite demolition activity in the first six months topping the 2019 and 2020 levels combined, the vessel oversupply is still massive. Deliveries have declined but still outnumber scrapping by a factor of two in 2021. This led the fleet to grow by 2% in the first ten months of 2021.
In the first ten months of 2021, global oil demand was 4.5% lower than in the same period in 2019, still suppressed by cross-border travel restrictions and regional lockdowns. It is expected that demand is to increase steadily during the winter, but the increased vessel supply looks set to prevent any extended rise in prices.

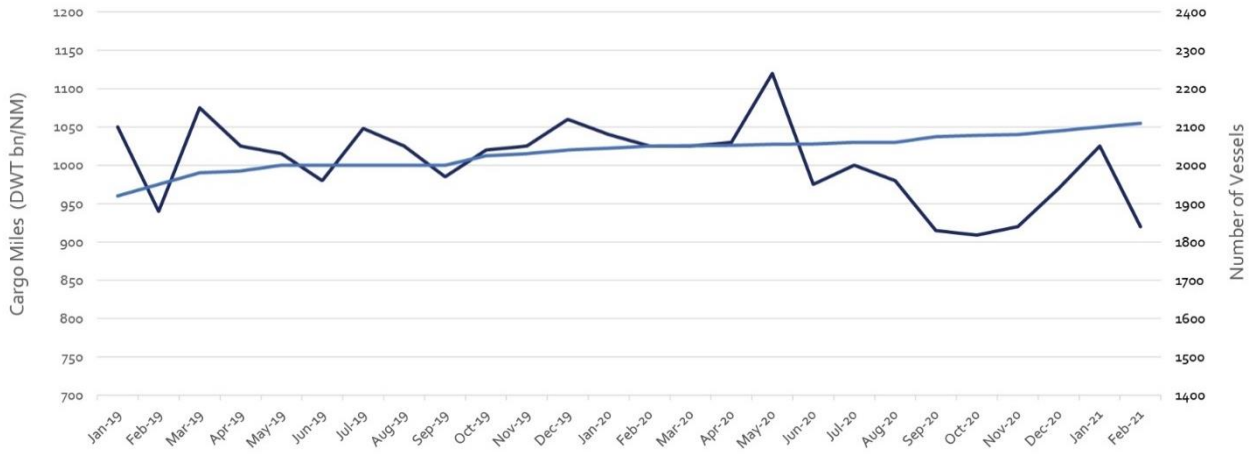
Supply

Extreme levels of ordering of Containerships and LNG Carriers has reduced available shipyard capacity at preferred Crude Tanker shipyards until late 2024.The orderbook is currently low, representing 9% of the fleet, but will add to the excess capacity in the market. The fleet is scheduled to expand by 6% by year-end 2022.

Fleet and Demolitions

Scrapping activity more than doubled in the first ten months compared to the level seen for the whole of 2020. Scrapping may increase further due to low earnings. Some of the identified scrapping candidates have been employed as floating storage and others to handle sanctioned oil, the remaining scrapping candidates travel less than half as much as young vessels in terms of tonne-miles. So the demolition of these vessels would provide little support for freight rates, since only half of them are actively trading. For freight rates to increase before the end of 2022, demand will have to outpace current expectations, or more (and younger) vessels will need to be scrapped.

Figure 6: Crude Tanker Demand vs Supply



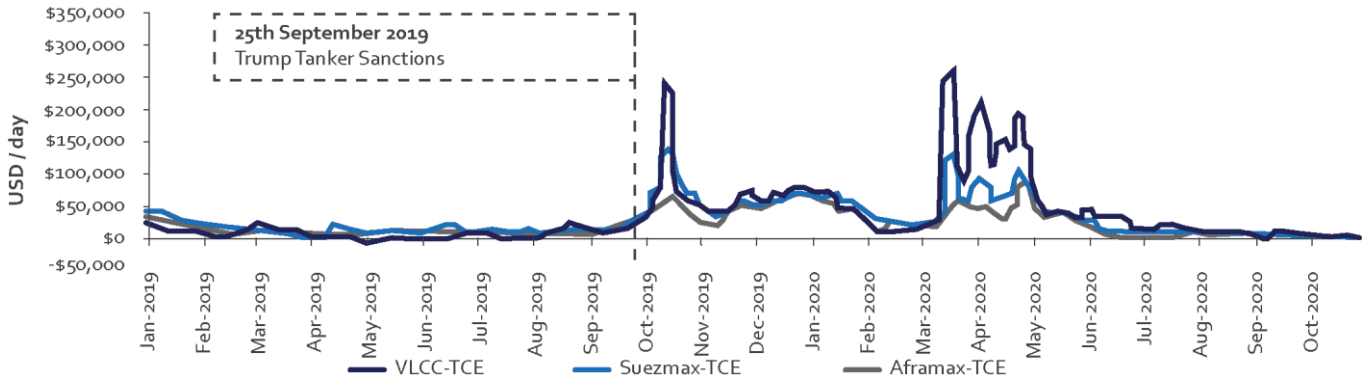
Source: VesselsValue March 2021

In 2020 along with poor demand, rates were rapidly collapsing. Between March and November 2020, VLCC earnings dropped significantly by 96%, from $264,000 per day to $8500 per day. In a year rates have recovered a bit, with in Q3 2021 rates reaching $19,000 per day. Though Suezmax rates fell by 95%, from around $94,000 per day in March 2020 to around $4,500 per day in November 2020, rates have recovered as well, amounting to $16,500 per day in Q3 2021.

VLCC average earnings were at $19,000 per day in time charter, replacement costs of a five-year-old vessel are $ 70 million

At $16,250 time charter rates for Suezmax, with replacement costs of a five-year-old vessel of $ 48 million, and for an Aframax, $14,900 per day time charter. with replacement costs of a five-year-old vessel of $ 40 million

Figure 7: Crude Oil Tanker Earnings (Jan 2019 – Oct 2020)

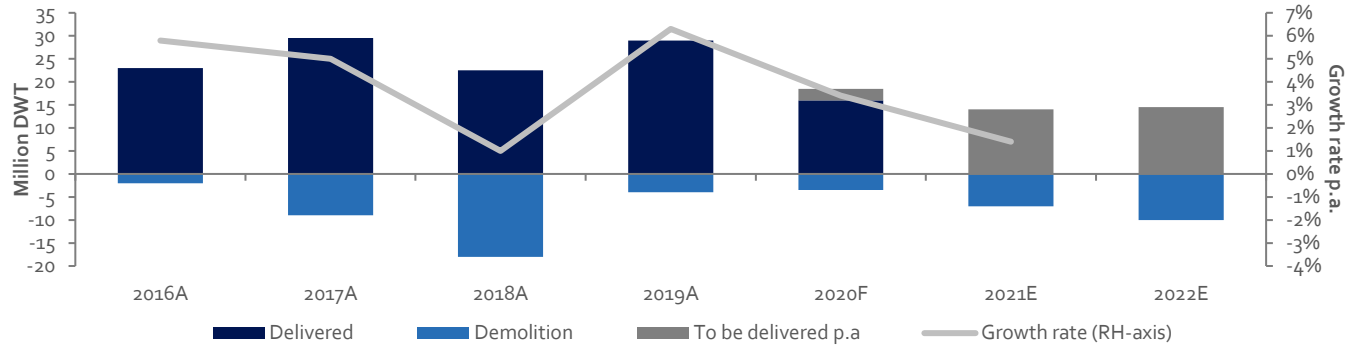


Source: VesselsValue

80% of oil demand comes from countries that have yet to achieve any kind of herd immunity. The vaccine rollout continues to accelerate in developing countries and countries unable to obtain herd immunity have found ways to return to a semblance of normal life. Still, uncertainty looms regarding further lockdowns as people spend more time inside.

Of the crude oil tankers, VLCCs experienced the highest fleet growth. The 32 VLCCs delivered with an average size of 304,371 DWT added 9.7m DWT. Additionally, no VLCC demolitions since June 2019 have contributed to unrestrained fleet growth.

Figure 8: Crude Oil Tanker Fleet Growth (2016A–2022E)



Source: BIMCO, Clarksons
Note: Growth rate for 2022E not available in source.

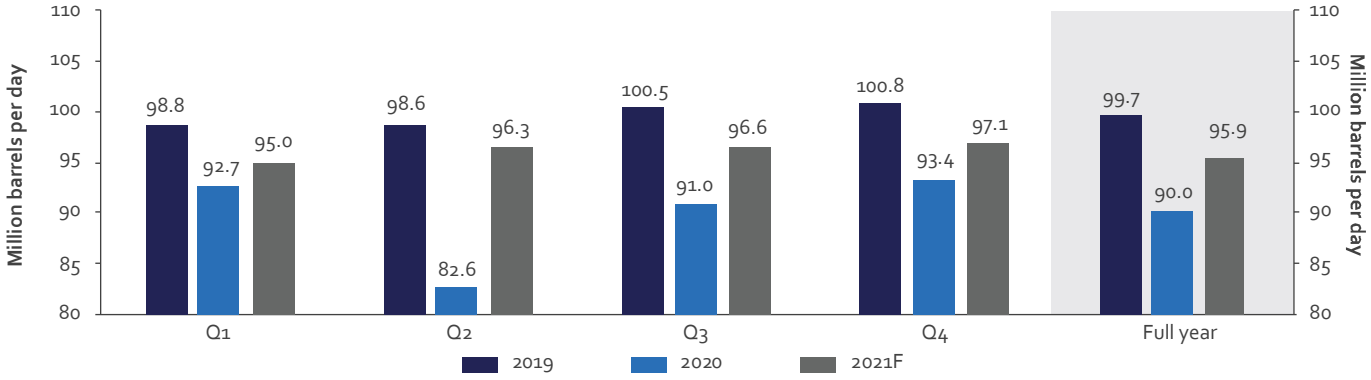
Outlook

Experts forecast a challenging 2021 for tanker shipping, attributed to lower global demand which will rise from 2020 levels but is expected to remain below 2019 levels (Figure 9). OPEC forecasts that global oil demand in 2021 will rise from the 90 m bpd in 2020 to 95.9m bpd, however, demand will remain depressed until at least the middle of 2021. Next, drawdown of stocks is also expected to be a challenge for tanker shipping by lowering actual demand for shipping and adding to overcapacity as ships engaged in floating since Q2 free up and return to market. The International Energy Agency (IEA) expects that it will take until 2023 before global oil demand exceeds pre-pandemic levels.

Global oil demand is expected to grow towards 2025, driven by non-OECD countries, but a reduction in OECD demand and the relocation of refinery capacity closer to crude production may limit the impact on Crude Tankers.

However, volatility as a result of geopolitics – oil price wars, ad hoc sanctions on certain tankers, and so on – may also present an opportunity for freight rates to soar on several occasions.

Figure 9: Global Oil Demand (2019–2021F)



Source: BIMCO, OPEC

Chemical Tankers

Chemical tankers are cargo ships constructed or adapted and used for the carriage of any liquid chemicals in bulk. Chemical tankers are required to comply with various safety aspects detailed in Part B of SOLAS Chapter VIII, but they are required to comply with the mandatory International Bulk Chemical Code (IBC Code).

The global chemical tanker market is anticipated to be difficult yet buoyant over the next few years with the rates remaining below reasonable profitable levels. Market conditions are expected to remain tough in the short to mid-term. Types of chemical tankers include basic chemical tankers and sophisticated super-segregated chemical tankers, which carry various types of cargoes at the same time, without having any common pipeline for loading, discharging and carrying.

The chemical industry is highly specialised and competitive. The size of dedicated chemical tankers has consistently increased since their inception in the 1950s. In recent times, very sophisticated ships, often bigger than 50k dwt-tonne parcel tankers, are sailing in international waters.

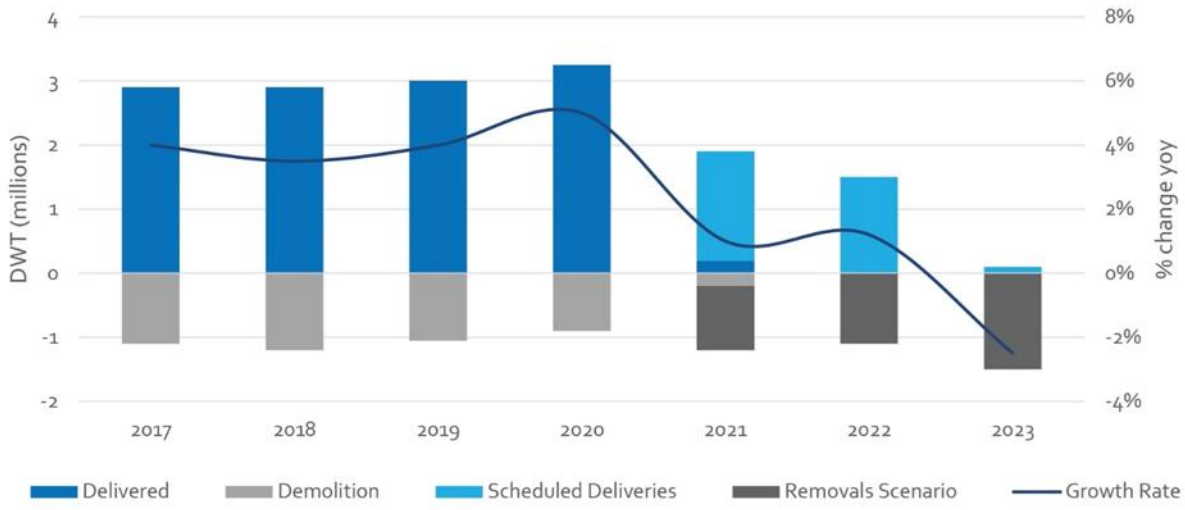
Fundamental shifts in logistics have risen within the chemical sector due to the global economic crisis altering the overall framework of the industry. The market threats have triggered massive structural changes in the chemical tanker industry, undoing years of work to stabilise the supply-demand curve in the maritime sector

Chemical Fleet Development

The chemical tanker order book has been strong over the recent years, with a high pace of newbuilds entering the trading pool and leading to the expansion of the fleet. However, in 2020, the situation changed when chemical tanker contracting activity plummeted in the wake of heightened uncertainty around the pace of global trade growth and current and potential environmental regulations. Chemical production in the US continues to grow, driven by the competitive edge afforded by shale gas. Meanwhile, the capacity in the Middle Eastern petrochemical sector continues to expand rapidly. However, as the global economy recovers from the effects of the pandemic, it will drive the demand for chemicals.

Throughout 2020, owners continued to explore methods to boost their balance sheets. Overcapacity pushed owners to consolidate and reduce their operating expenses, whilst allowing them to profit from improved economies of scale and optimization of the market share.

Figure 10: Chemical Fleet Development and Outlook (2017–2023)



Source: Clarkson Platou

Changes in Chemical Tanker Demand and Supply

Figure 10 gives an overview of the fleet development. New builds are hardly scheduled for the coming years, while demolition continues. This will result in a new balance between supply and demand. Since the demand for chemicals is healthy, the market outlook is bright, with demand expected to outgrow supply.

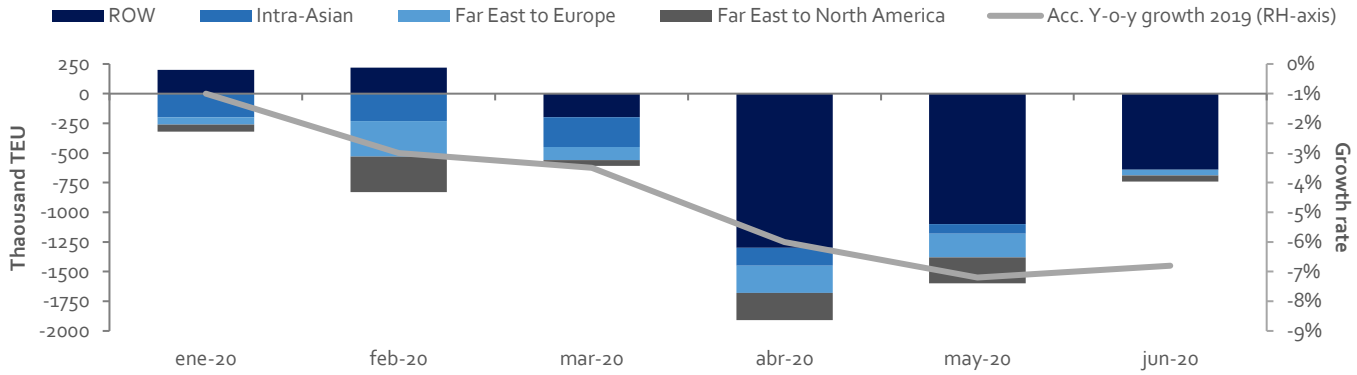
Outlook

Further consolidation is expected in the chemical tanker market in the months to come. There remains appetite from some companies to acquire small and medium-sized chemical tankers. Another factor that can drive consolidation is the need for owners to optimize and improve earnings in order to invest in new vessels that comply with new environmental regulations.

Container Shipping

The container shipping market is heavily dependent on consumer spending, which was severely impacted during lockdowns across the globe. The short-term outlook for the container market appears strong. The container market continues to break new records. Increased spending on retail goods combined with low fleet growth and port congestion has paved the way for an extremely positive environment, taking freight rates to new highs. The firm market has created an urgent need for vessels, propelling secondhand prices to levels not seen since before the financial crisis in 2008. The favourable conditions are set to continue in the coming months, due to restocking and further port congestion reducing the active fleet. The fleet will expand massively in 2023 and 2024, driven by an inflow of 15,000+ teu vessels, while we expect demand growth to level out. The need for scrapping will increase.

Figure 11: Change in Container Volumes from 2019
On main trade lanes and the rest of the world



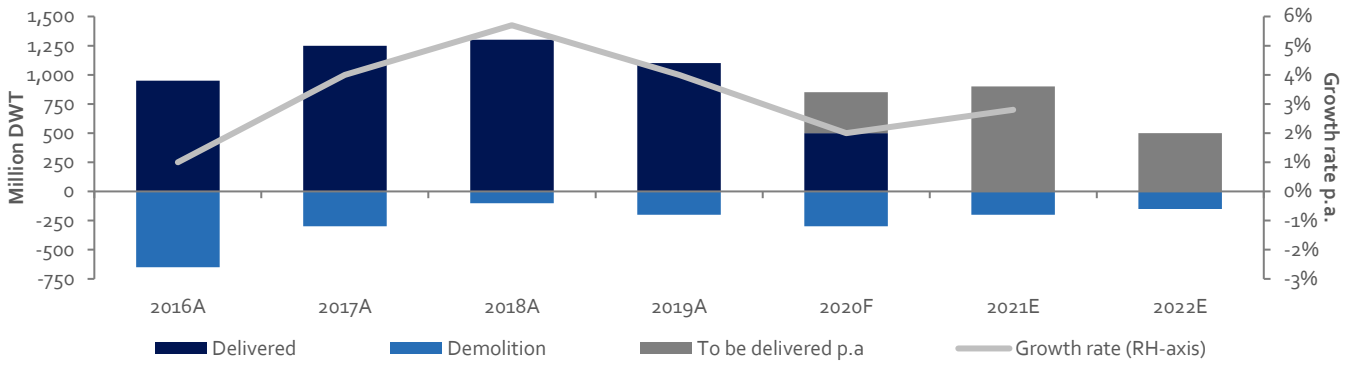
Source: BIMCO, CTS

For the rest of 2021, 40 new vessels will be added to the fleet, while 144 will join in 2022. This corresponds to 2% and 4% of the fleet, respectively. The inflow will be driven by 15,000 teu+ vessels, whose fleet is set to expand to the tune of 14% by the end of 2022. In contrast, the midsized fleet (3,000-12,000 teu vessel) will receive hardly any new vessels in the same period. Already by September, newbuilding orders in 2021 had surpassed the previously record for annual orders. Vessels equalling 3.9 million teu or 16% of the fleet have been contracted. We expect most of these vessels to be delivered in the second half of 2023 and in 2024. In this 18-month period, fleet capacity is set to grow by 12%, driven by an astonishing 40% expansion of the 15,000+ teu fleet. Investments in LNG as a transition fuel explain some of the orders, but the main driver of future capacity expansion seems to be shipowners' expectation of the current high demand for containerized goods continuing.

Strong retail consumption combined with supply chain disruptions has created extremely positive market conditions. On average, the box rates are up 112% in 2021. The threeyear time charter rate has followed the same trajectory and has increased by 123%, reaching USD 89,000 per day for a 9,000 teu vessel in October. The average time charter length has now passed four years. The five-year-old second-hand price for a 11,000 teu vessel rose 85% in the first three quarters of 2021, from $ 84 million to $ 155 million.
Regional trade has benefited from the redirection of trade caused by the supply chain disruptions, which has boosted the

segment. As of October, the three-year time charter rate stood at USD 73,200 per day, while the five-year-old second-hand price for a 6,800 teu vessel reached USD 135 million.

Figure 12: Container Ship Fleet Growth (2016A–2022E)

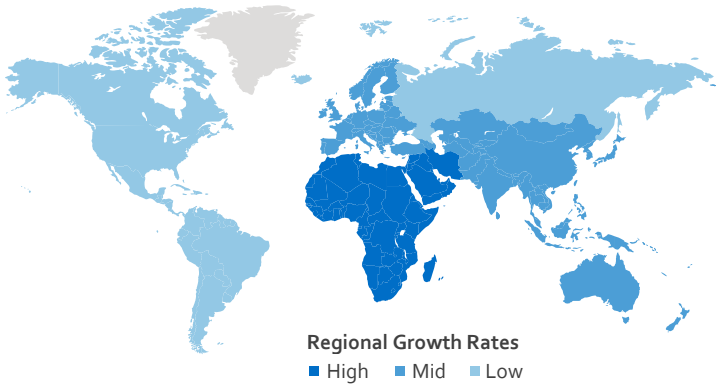


Source: BIMCO, Clarksons
Note: Growth rate for 2022E not available in source.

Offshore Supply Vessel

The Offshore Supply Vessel (OSV) market is oversupplied, and the demand outlook is weak. To balance the market, scrapping of laid-up and older tonnage is necessary. This entails owners (and their banks) writing off value of their fleets. Until now, many market participants have been unwilling to do so. All players hope that others will take the loss or that an unforeseen event will boost demand. If a large part of the fleet remains intact, the oversupply persists, causing low rates and utilisation. North America has been the dominant OSV market with increasing offshore exploration activities in the region including the Gulf of Mexico driving up demand for OSVs. Additionally, increasing offshore activity in Asian countries, especially India could potentially lead to long-term contracts for the OSV providers (Figure 13).

Figure 13: Vessels Market – Growth Rate by Region (2019–2024)



Source: Mordor Intelligence

Growth drivers include growing exploration activities, increasing number of offshore wind farm projects, and increasing offshore decommissioning activities.

Buoyed by decline in capex and opex for both offshore oil and gas projects, the demand for OSVs is expected to surge. Additionally, decline in costs has also led to increasing exploration activities in ultra-deep waters and Arctic regions. It could, in turn, further fuel demand for OSVs.

OSV operators are increasingly investing in more efficient and environment friendly battery-hybrid propulsion. Major companies including Tidewater, Atlantic Offshore, and Harvey Gulf International Marine are upgrading their vessels with battery-hybrid propulsion and US-based SEACOR Marine aims to have the largest battery-hybrid-powered OSVs fleet.

Recent Developments

The Glasgow Climate Pact agreed between governments at the recent COP26 conference in Scotland will accelerate the energy transition from fossil fuels to cleaner sources of energy. An accelerated transition to cleaner fuel sources could impact the oil and gas suppliers, still a 1.6-degree scenario still represents a descent level of oilfield service purchases out to 2030.

Between 2020 and 2030, the subsea product lines are the one that are likely to fare best, potentially even posting growth in a 1.6-degree scenario. With the major deep-water successes in Brazil and Guyana, subsea equipment and SURF will see major demand growth as these growing oil economies are heavily dependent on their fossil fuel resources in the current decade. The maintenance, modifications and operations (MMO) and engineering, procurement, construction and installation (EPCI) sectors are expected to grow, as greenfield projects being prioritized by exploration and production operators in the next five years. By contrast, there is a larger downside for well-related product lines such as drilling and well services.

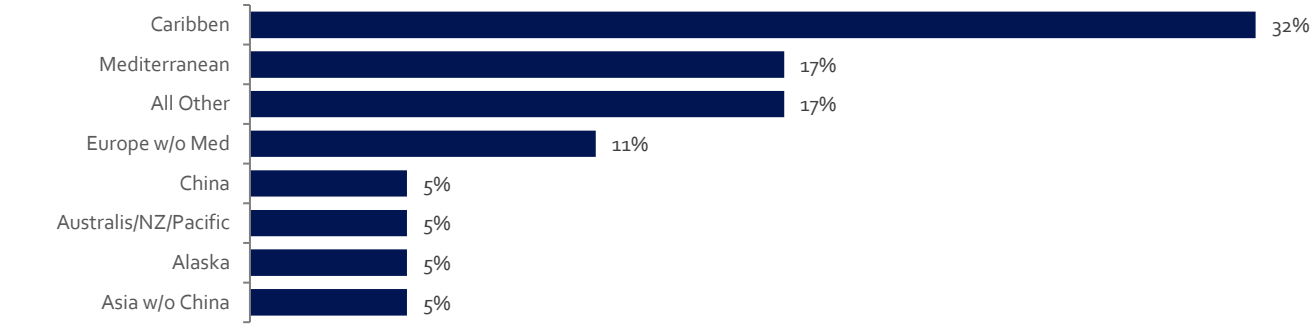
Impact of COVID-19

The offshore industry has adopted digital technologies to lessen the impact of COVID-19 mitigation measures. Since the pandemic, compulsory quarantine measures and social isolation practices have affected the way offshore vessels and drilling rigs operate, affecting the daily lives of offshore workers. Companies such as IEC Telecom is providing remote access facilities to give crew enhanced online connectivity while at the same time increasing the bandwidth speeds to cope with the escalating digital traffic.

Cruise Line

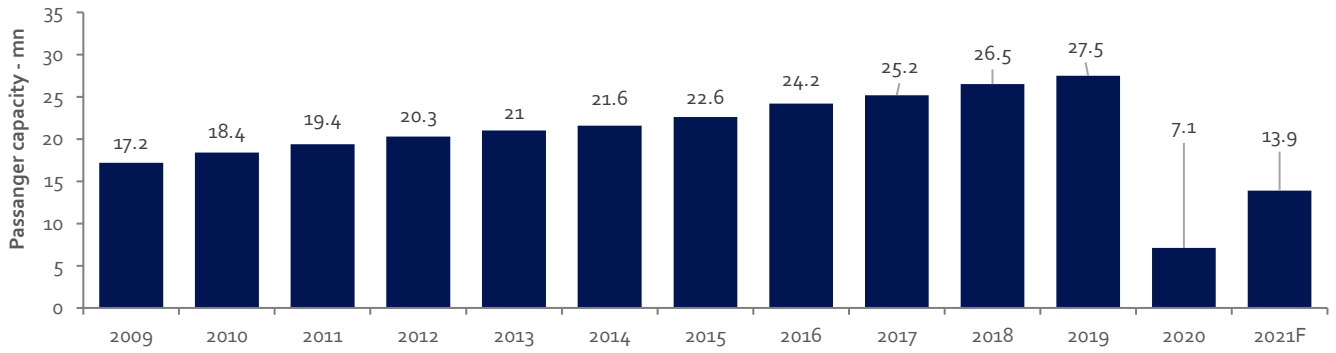
The 2021 total worldwide ocean cruise industry is estimated at $23.8 billion (a 81.8% increase over 2020 and a -52.9% decline from 2019) with 13.9 million annualized passengers carried (a 96.2% increase over 2020 and a -49.4% decline from 2019). Total worldwide ocean cruise capacity at the end of 2021 will be 581,200 passengers and 323 ships. This represents a -7.8% reduction from pre-COVID-19 (2019) levels.
The cruise industry growth will be driven by a record order book of over 117 new cruise ships with deliveries scheduled through 2027. The average cost of a new ship is $578 m, while the average tonnage is ~82,000, and the average capacity is 2,113 passengers. New ship deployment will be largely driven by the Caribbean region (32%), followed by the Mediterranean region (17%), and the European region (11%) (Figure 14). Key market participants have initiated their growth plans. For instance, MSC Cruises is planning for the biggest growth with 14 ships on order including 10 mega-ships, four smaller, and 1,000-guest luxury vessels since the company is focusing on dominating the high-end market. Additionally, Carnival Corporation has 20 ships on order from 2019, extending its order book through 2024. Further, Royal Caribbean Cruises has an order book of 15 ships with a delivery line through 2026.

Figure 14: Global Scenario of New Ship Deployment by % (2020)



Source: Cruise Line International Association

Figure 15: Worldwide passengers carried (2009-2021f)



Source: Cruise Lines International Association

The global passenger capacity was at 27.5 m in 2018 and is down to 7.1m in 2020 (Figure 15). In 2019 demand for cruise from North America accounted for almost 59% of the total number of cruise passengers. Other markets that largely contributed towards the cruise shipping industry included Europe (Germany, the UK, and Ireland being the three largest European source markets for cruises) and the rest of the world (especially Australia/New Zealand and Asia).

The coronavirus situation has severely impacted cruise demand for most of 2020 and seen many sailings cancelled well into 2021. According to the world tourism organization (UNWTO), international tourism has declined by 65% in the first quarter of 2020 and is forecasted to decline by 58% to 78% in 2020.

While cruising has tentatively restarted in Europe and new regulations are being formed for a potential return in the US, the industry still faces uncertainty. Hundreds of cruise ships have now been laid up at sea, forcing cruise companies to sell off the cruise ships. In September 2020, Carnival Corporation announced its plans to sell 18 cruise ships, resulting 12% decrease in the overall fleet.

Before the COVID-19 outbreak, the last decade showcased record growth for the cruise industry that was intended to continue during 2020 and later years. According to the CLIA, 32m passengers were expected to travel on cruise ships in 2020, growing from 27.5m in 2019. Since 2009, cruise ship passengers grew from 17.2m to 27.5m in 2019, growing at CAGR of 5.4% during 2009-2019. Additionally, cruise industry revenues were estimated to showcase faster growth from ~15.7 bn in 2010 to an estimated 31.5 bn in 2020, highlighting a CAGR of 7.2%. In 2019, there were 278 ocean cruise line ships operating across 55 cruise companies and over 500 river cruise ships. The ship operators were planning to add another 19 ships in 2020.

Impact of COVID-19 on the Cruise Line Industry

However, COVID-19 halted the ocean passenger cruise industry for what is currently estimated as a total of 11 months. It also accelerated the retirement of numerous ships as fleets become more modern and environmentally friendly. Between 2019 and 2021 a total of 31 ships are leaving worldwide ocean cruise operations, reducing passenger capacity by 49,105. These numbers are offset to a degree by 8 new ships with passenger capacity of 34,312 that will be added in 2021.

Ports / Terminals

The ports and terminals market is witnessing growing usage of Internet of Things (IoT) solutions to improve safety and enhance the operational efficiency at port terminals. IoT operations reduce human effort and increase the efficiency of the operations in the areas including real-time tracking of containers and ships, controlling and enabling access to Closed Circuit TV (CCTV) cameras for the entire port, and tracking and identifying assets and vehicles for complete traceability within the proximity of the port. Additionally, ports and terminals sector is giving a greater emphasis on investing into new technology such as AI and blockchain and transforming into 'Smart Ports', as there are growing threat of cyber-attacks due to having sensitive maritime data points on supply chain such as vessel navigation, cargo handling and container tracking.

Reduction in the workforce and fall in demands have pushed freight rates lower. Additionally, country-wise restrictions at ports, such as the ban on crew changes, and longer unloading periods are disrupting global supply chains.

Impact of COVID-19 on Ports/Terminals

The initial outbreak of the coronavirus pandemic brought a volume bloodbath to the container port sector in the first half of 2020, but as the world emerged from lockdown restrictions, the container business mounted a second-half recovery. By the end of the second quarter, manufacturing production in China was back up to 'normal' levels. The pace of the recovery not just in China but in other parts of Asia, Europe and North America in the second half of 2020 took many by surprise, not least container lines. They struggled throughout to deploy and reposition empty containers to match demand surges as countries and their economies came out of lockdown. As the issue escalated, port congestion became an all-too-common theme at ports globally in the second half of 2020 — a situation that persists today.

Container ports look set to post strong volume growth in 2021 (Exhibit 3), gaining back traffic from last year's coronavirus-induced shortfall. Yet a new strain of the virus could quickly turn fortunes, while supply chain disruption continues to plague ports. It is predicted that total global container port volumes will increase with over 10% in 2021. However, while the initial shock of the pandemic has subsided, coronavirus has not gone away. Further, if a new variant develops and the world proceeds back into lockdown, port traffic will inevitably suffer, and volume growth forecasts will be downgraded accordingly. Recently the closure of the Chinese hub of Yantian — part of the Shenzhen port complex — following a coronavirus outbreak, leading to widespread disruption in supply chains.

Exhibit 3: Global Top 10 Ports (H1 2021)

Ports	By Half Year Container Volumes (TEU)		% Change
	H12021	H12020	
Shanghai	22,940,000	20,060,000	14.4%
Singapore	18,730,000	17,837,000	5.0%
Ningbo-Zhoushan	16,070,000	13,250,000	21.3%
Shenzhen	13,760,000	11,070,000	24.3%
Guangzhou	11,770,000	10,760,000	9.4%
Qingdao	11,660,000	10,340,000	12.8%
Busan	10,740,000	10,746,000	-0.1%
Tianjin	10,300,000	8,580,000	20.0%
Busan	8,725,000	8,647,000	0.9%
Rotterdam	7,612,000	7,002,000	8.7%
Total	**132,307,000**	**118,292,800**	**11.8%**

Source: Lloyds List

Exhibit 4: Top 5 Global Terminal Operators by Equity-Adjusted Throughput (2019)

Ranking	1	2	3	4	5	
	PSA The World's Port of Call	COSCO SHIPPING	Lifting Global Trade. APM TERMINALS	HUTCHISONPORTS	DP WORLD	Total of Top 5 Operators
Equity-Adjusted Throughput (mteu)	60.4	48.6	46.8	45.7	44.3	245.8
Share of Global Port Throughput (%)	7.5	6.1	5.8	5.7	5.5	30.7

Source: Drewry - Global Container Terminal Operators Annual Review and Forecast 2020/21

PSA International handles a throughput of 60.4 mteu (Exhibit 4), followed by China Cosco Shipping (48.6 mteu).

Global container port capacity is likely to grow too slowly to meet increased volume demand, putting further pressure on supply chains, according to Drewry. In its latest annual review and forecast for the sector, Drewry said capacity was set to increase by 2.5% a year to reach 1.3bn teu in 2025. Container volumes, meanwhile, were likely to rise by 5% over the same period. This would see average utilisation at ports rise from its current level of 67% to more than 75%. "While 75% utilisation at a port or terminal level is not sufficiently high to be of significant concern, at a global level, this expectation of tightening port capacity in a market plagued by congestion due to supply chain imbalances is a cause for concern," Drewry said. Additional capacity would likely come from upgrading existing terminals rather than developing new ones and would be assisted by increased digitalisation to increase the speed of throughput. Platforms such as TradeLens and GSBN would also help streamline processes.

3 Global Tanker Industry

Overview

The tanker industry is a capital-intensive and human intensive sector that needs instinctive decision-making capabilities. Therefore, shipping companies are focusing on traditional as well as cutting-edge analytics techniques to enhance the performance of tankers in transportation. The tanker industry has been affected by some of the most severe changes such as decline in freight, import-export restrictions, and the COVID-19 pandemic. The industry is still bearing the impact caused. However, signs of recovery and the emergence of vaccines may dampen the impact of COVID-19 in the industry.

The tanker industry consists of all tankers that have tanks, pumps, and pipes. Some tankers can carry many different grades of cargoes simultaneously and have several cargo tanks and a complicated pumping and piping system to facilitate a separate handling process for each type of cargoes. Some of the widely used tankers are described below.

Tankers or tanker vessels are designed to carry liquid cargoes in bulk and are classified by the size and type of cargo.

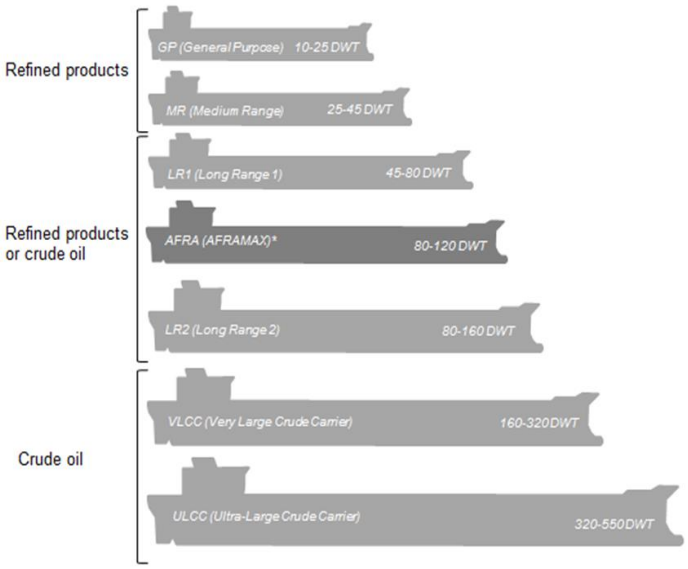
- In general, smaller tankers carry "clean" cargoes (refined products, such as gasoline, diesel fuel, or jet fuel)
- Large tankers generally carry "dirty" (black oil or crude oil) cargoes

Tankers of less than 100,000 dwt are referred to as either 'clean' or 'dirty'.

- Clean tankers carry refined petroleum products such as gasoline, kerosene, jet fuels and chemicals.
- The dirty tankers transport products such as heavy fuel oils or crude oil.

Larger tankers usually carry crude oil. A majority of tanker vessels carry oil, chemicals and gas
All tankers have tanks, pumps, and pipes. Some tankers can carry many different grades of cargoes simultaneously and have several cargo tanks and a complicated pumping and piping system to facilitate a separate handling process for each type of cargoes, so cargoes are not contaminated.

Exhibit 5: Cargo type, vessel class and capacity



Source: EIA

Fossil fuels accounts for 30% of cargo volumes carried by sea. The total fleet of tankers amount to ~10,000 vessels, of which:

- Crude tankers: 2,100 vessels, transporting 2 billion tonnes, being 16% of total seaborn trade volume
- Product tankers: 3,100 vessels, transporting 1 billion tonnes, being 8% of total seaborn trade volume
- Chemical tankers: 4,000 vessels, transporting 0.4 billion tonnes, being 3% of total seaborn trade volume
- LPG carriers: 1,500 vessels, transporting 125 million tonnes, being 1% of total seaborn trade volume
- LNG carriers: 600 vessels, transporting 0.4 billion tonnes, being 3% of total seaborn trade volume

Exhibit 6: Tanker Types and General Information

Tanker	Product	Vessel Class, Capacity ('000 DWT)	Tank Material
Crude Tankers	Crude oil, normally one cargo grade at a time	Very Large Crude Carrier (VLCC) - 160–320 DWT Ultra-Large Crude Carrier (ULCC) - 320–550 DWT	No coating
Dirty Tankers	Crude oil or other black oils such as residual fuel oil; heating required	*Long Range 1 (LR 1) - 45–80 DWT *Long Range 2 (LR 2) - 80–160 DWT	Heating coils in each tank; no coating
Clean Tankers	Light refined products such as gasoline and diesel, no heating required	General Purpose (GP) - 10–25 DWT Medium Range (MR) - 25–45 DWT	Epoxy coating Phenolic epoxy coating
Chemical Tankers	Liquid chemicals in bulk; usually in separated cargo tanks	5–59 DWT	Stainless steel Epoxy coating

**LR1 and LR2 can carry both dirty and clean cargo.*

Source: EIA, Maritime Optima

Crude Oil Tanker

Crude tankers are transport ships that move bulk volumes of crude oil from the oil extraction facility to the refinery. A crude oil tanker normally carries one cargo grade at a time. Crude oil has many different varieties (crude grades). As a natural raw material, crude oil comes from different fields and reservoirs and have very different properties. Examples of some well-known crude grades are Brent and WTI.

The most common characteristics used to identify the quality of crude are its API gravity and its sulphur content. The highest valued crude grades are typically those with high API gravity and low sulphur content.

Tanks must be cleaned from time to time for various reasons. One reason is to change the type of product carried inside a tank. Also, when tanks are to be inspected or maintenance must be performed within a tank, it must be not only cleaned, but made gas-free.

On most crude-oil tankers, a special crude oil washing (COW) system is part of the cleaning process. The COW system circulates part of the cargo through the fixed tank-cleaning system to remove wax and asphaltic deposits. Tanks that carry less viscous cargoes are washed with water. Fixed and portable automated tank cleaning machines, which clean tanks with high-pressure water jets, are widely used. Some systems use rotating high-pressure water jets to spray hot water on all the internal surfaces of the tank.[104] As the spraying takes place, the liquid is pumped out of the tank.

After a tank is cleaned, provided that it is going to be prepared for entry, it will be purged. Purging is accomplished by pumping inert gas into the tank until hydrocarbons have been sufficiently expelled. Next the tank is gas freed which is usually accomplished by blowing fresh air into the space with portable air powered or water powered air blowers. "Gas freeing" brings the oxygen content of the tank up to 20.8% O_2. The inert gas buffer between fuel and oxygen atmospheres ensures they are never capable of ignition. Specially trained personnel monitor the tank's atmosphere, often using hand-held gas indicators which measure the percentage of hydrocarbons present. After a tank is gas-free, it may be further hand-cleaned in a manual process known as mucking. Mucking requires protocols for entry into confined spaces, protective clothing, designated safety observers, and possibly the use of airline respirators.

Dirty Tanker

Dirty tankers carry refined products that need heating. The vessels have heating coils in each tank but the vessel's tanks are not coated. These vessels carry residual refined products such as residual fuel, but these vessels can also carry crude oil. Residual fuel oil is one of the lowest-value petroleum products from a refinery. It is a by-product of producing light products. Residual fuel oil is used in power plants and industrial boilers. It is also the primary fuel (called bunkers) for ocean-going ships. Residual fuel oil has some quality specifications for performance and environmental reasons, such as:

Viscosity: This is a measure of a fluid's tendency to resist flow. Lower viscosity is more desirable

Sulfur content: Fuel oil has a maximum sulfur content determined by environmental concerns. This is typically set as a maximum sulfur content in wt %.

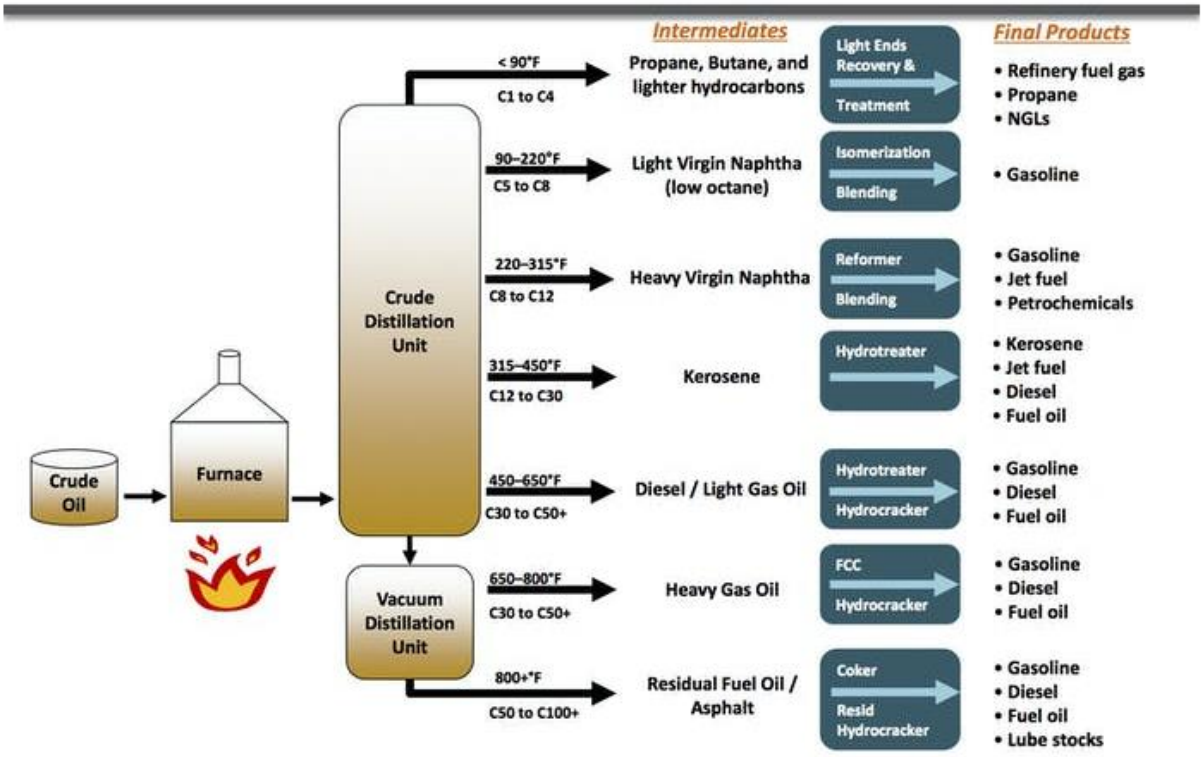
Tanker vessels in the size of 50 000 – 80 000 dwt are defined as Panamax (LR 2). These carry both dirty products and crude.

Tanker vessels in the size of 80 000 – 125 000 dwt are define as Suezmax, but these vessels are also very often defined as LR 2. These carry both dirty products and crude.

Tanker vessels bigger than 125 000 dwt normally only carry crude cargoes.

Exhibit 7 gives an overview of basic refined products.

Exhibit 7: Basic Refining Concepts



Source: Valero

A tanker carrying dirty cargoes will require about 2 weeks of manual labour to clean its tanks and piping before carrying clean cargo.

Clean Tanker

Clean tankers carry light refined petroleum products that don't need heating and have coated tanks. Most of the tanks are coated with conventional epoxy or phenolic epoxy coating and the tanks need to be cleaned very thoroughly when a vessel switch to carry a new cargo. The clean tankers do often have advanced cargo segregation systems and many tanks.

You will find many tanker vessels carrying both chemical (IMO 3 classified cargoes) and light refined petroleum products cargoes. Examples of light refined petroleum products are Gasoline, Kerosene, Jet fuel.

There is an overlap with the chemical sector, with a significant volume of "swing tonnage" that can operate in either

Clean tanker are defined in the size of 43 000 – 50 000 as Medium range (MR)

Chemical Tanker

Chemical tankers are cargo ships constructed or adapted and used for the carriage of any liquid chemicals in bulk. Chemical tankers are required to comply with various safety aspects detailed in Part B of SOLAS Chapter VIII, but they are required to comply with the mandatory International Bulk Chemical Code (IBC Code).

Chemical tankers usually ranging from 5,000 to 59,000 DWT in size, which is smaller than the average size of other tankers.

Chemical tankers have many separated cargo tanks that are either coated with phenolic epoxy or zinc paint or made from stainless steel. The coating or cargo tank material determines what types of cargo a particular tank can carry: stainless steel tanks are required for aggressive acid cargoes such as sulfuric and phosphoric acid, while 'easier' cargoes — such as vegetable oil — can be carried in epoxy coated tanks.

IMO 1 chemical tankers transport the most dangerous products, and very often these vessels have stainless steel tanks.

IMO 2 chemical tanker transport products requiring significant preventive measures.

IMO 3 chemical tanker transport products requiring a moderate degree of containment to increase survival capability in a damaged condition. Very often you will find these vessels trading in the clean market segment.

Chemical Tankers

Chemicals are important building blocks for a large amount of products, e.g. for personal care, digital communications, packaging or pharmaceuticals. A continuing flow of chemicals is necessary for the world's recovery of the pandemic. Meanwhile production of base chemicals and intermediates has become highly concentrated in some specific regions worldwide, making its imprint on the trade routes and the value chains (Exhibit 8).

Exhibit 8: Concentration of capacity for selected chemical product categories

		Global distribution of capacity (2020)								
Chemical	Global capacity (kt)	China	Rest of APAC	North America	Europe	Middle East	Russia Eastern Europe	South America	Africa	Main end products
Adiponitrile	1,896	0%	1%	66%	33%	0%	0%	0%	0%	Textiles, automotive parts, electric appliances
Chlorobenzenes	1,104	59%	21%	0%	18%	0%	0%	1%	0%	Solvents, herbicides, dyestuffs, rubber products
Ethyl Acetate	5,876	62%	18%	5%	7%	1%	1%	6%	1%	Solvents
HMDA	2,230	20%	3%	42%	33%	0%	0%	2%	0%	Textiles, automotive parts, electric appliances, consumer goods
Linear Olefins	5,484	2%	3%	56%	15%	12%	2%	0%	10%	Packaging, pipes, electrical cables
NB Copolymers	1,776	19%	60%	5%	13%	0%	3%	1%	0%	Pharmaceuticals, agricultural compounds, fragrances, rubber products
Polyester Fibres	87,237	74%	20%	2%	2%	0%	0%	1%	0%	Textiles
Polyester Polymer	135,626	61%	21%	6%	7%	2%	1%	2%	1%	Textiles, packaging, automotive parts, electric appliances, pipes, consumer goods
Polyisoprene	1,061	32%	8%	10%	0%	0%	49%	0%	0%	Rubber products, textiles
SAN	1,487	11%	56%	15%	15%	2%	0%	1%	0%	Packaging, electric appliances

High share of global capacity — Low share of global capacity

Source: World Economic Forum

The chemical tanker can be divided through several categories:

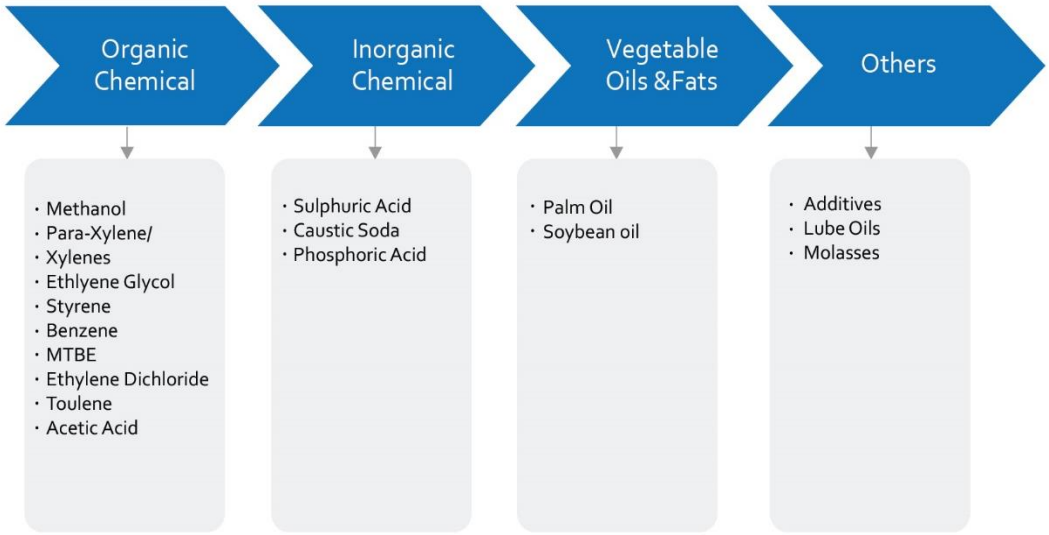
- By product type
- By tank material
- By fleet type
- By fleet size

Here under the specifics of the categories will be described.

Product Type

Chemical tankers carry several hundred different chemicals, divided into three main groups: organic chemicals/petrochemicals, vegetable oil/animal fats (vegoils) and inorganic chemicals. Organic chemicals are derived from crude oil and natural gas production and represent the largest group of chemicals traded. Vegoils are derived from plants and include (most importantly) palm oil and soybean oil. Inorganic chemicals are mineral-based and are comprised mostly of acids. IMO-class tankers are tankers with International Maritime Organisation (IMO) Certificate of Fitness (CoF), capable of carrying chemicals and vegoils. However, no such certification is required for transporting clean petroleum products (CPP) and all chemical tankers are thus capable of carrying CPP

Exhibit 9: Product Type



Organic Chemicals

In this category of chemical tankers, organic chemicals derived from hydrocarbon sources, such as oil and natural gas are transported. These chemicals are primarily used as feedstock to produce other chemicals/products including plastics, fibres, rubber and pesticides. In organic chemicals, the seaborne traded organic chemicals such as methanol, para-xylene, MTBE, styrene, benzene and toluene drive the market. The organic chemicals accounted for approximately 35% of the total seaborne trade of chemicals. Regionally, China is the largest consumer of the organic chemical because China's chemical industry is growing rapidly and the Chinese chemical industry participants depend on organic chemical imports.

Inorganic Chemicals

In this category of chemical tankers, inorganic chemicals consisting of acids, such as sulphuric acid, phosphoric acid, nitric acid and caustic soda are transported. Some of these acids are primarily used in the production of phosphate fertilizer and some of them are in industrial sector.

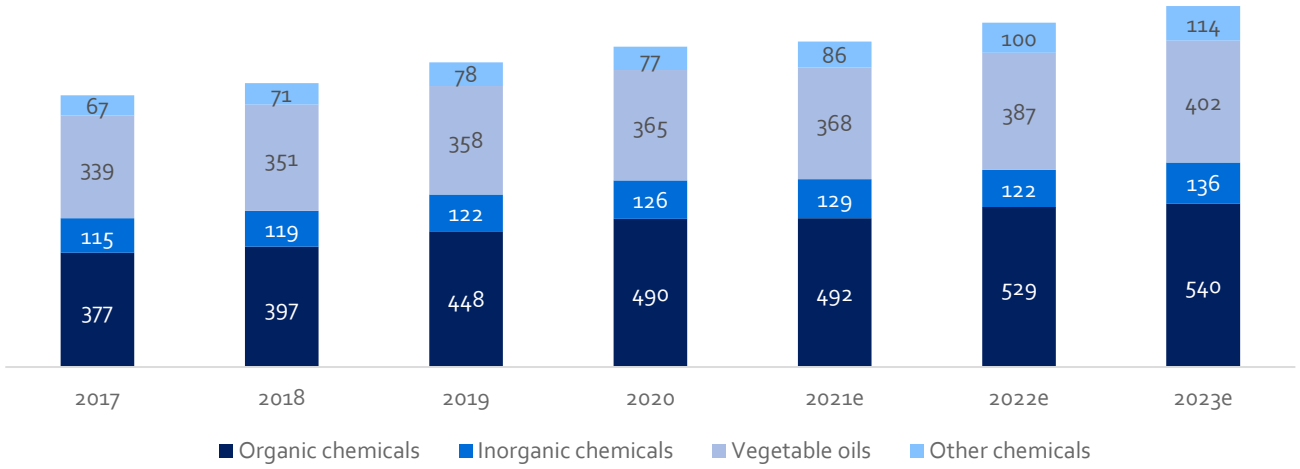
Vegetable Oils & Fats

Vegetable oils are products derived from plant matter, commonly seeds and nuts, and they include both edible and inedible oils. Vegetable oils and fats are primarily used for human consumption, medicinal purposes and in animal feed. Vegetable oils represent more than 20% of the total chemical seaborne trade.

Other Chemicals

Other chemicals consist of additives, lube oils and molasses, which are transported using chemical tankers.

Figure 16: Chemical Tanker Tonne Mile Demand (2017–2023e) (Billion Tonne Miles)



Source: Presentation Odfjell Capital Markets Day 2021

Figure 8 depicts the chemical tanker tonne-mile demand across the world. Chemical tankers for organic chemicals accounted for more than 46% of the overall chemical tanker demand. Chemical tankers for inorganic chemicals accounted for more 11% of the overall demand. In the coming future, the demand for organic chemicals will drive the overall market.

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Tanker Material

Depending on the sophistication of the ship, it will be able to carry the more hazardous cargoes. To minimize the risks to ships, their crews and the environment, the IBC Code prescribes the design and construction standards of ships and the equipment they should carry, with due regard to the nature of the products involved. In compliance with the more onerous requirements, the ship will be more sophisticated and will, therefore, be able to carry the more hazardous cargoes. Chemical tankers normally have a series of separate cargo tanks that are either coated with specialized coatings such as phenolic epoxy or zinc paint or made from stainless steel. The coating or cargo tank material determines what types of cargo a particular tank can carry: stainless steel tanks are required for aggressive acid cargoes such as sulfuric and phosphoric acid, while 'easier' cargoes — such as vegetable oil — can be carried in epoxy coated tanks.

Tank cleaning is an essential part of chemical tanker operation., directly affecting both product quality and operating cost. Many owners consider it the most important operating cost, because it is the one over which they have the most control. Stringent design codes and operating regulations tend to equalize capital and most operating costs for all operators across a given tanker size, so efficient cleaning practices can provide a competitive edge. The tank material and its coating, if present, control the particular cleaning practice.

- Parcel tankers are relatively large vessels with multiple separate tanks carrying high-grade chemicals, often in stainless steel tanks
- Product tankers are also large, but they carry less difficult cargoes, frequently in coated-steel tanks
- Specialized tankers are small to medium size, carry a limited number of chemicals in a dedicated trade and use either coated-steel or stainless steel tanks, depending on their cargo

Stainless Steel Chemical Tankers

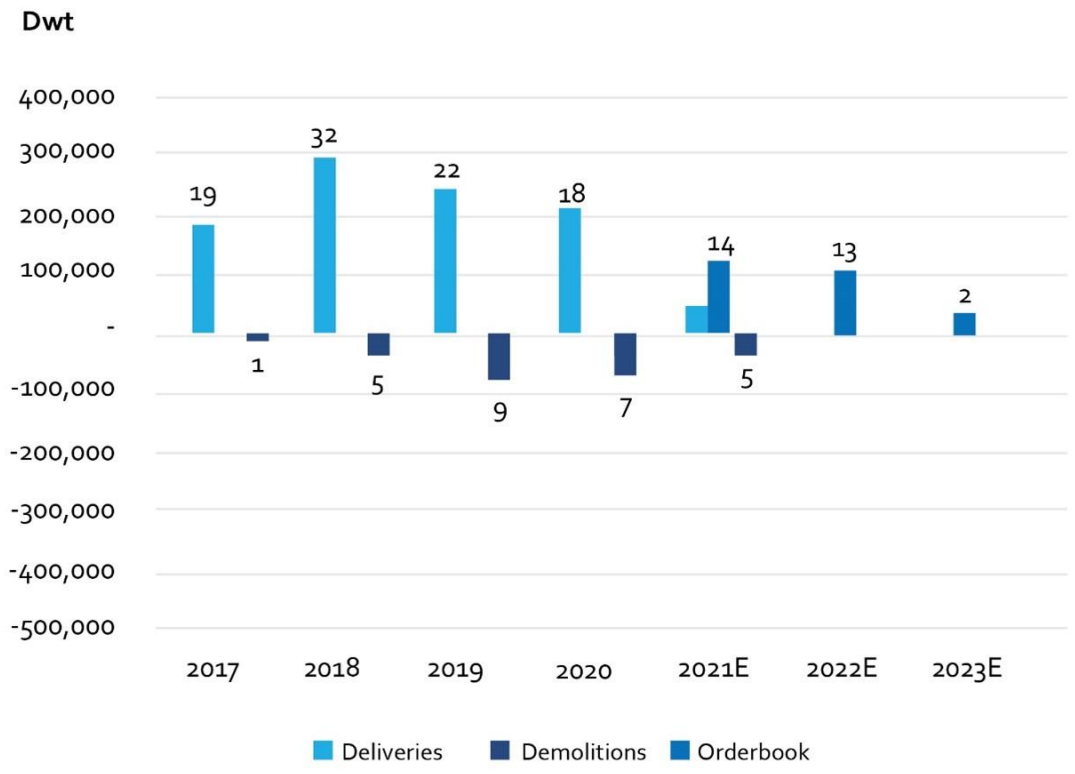
Stainless steel chemical tankers are known for their strength, reliability, durability, storage capacities, cost-effectiveness, versatile applications and corrosion resistance. Stainless steel does not absorb liquids like epoxy coatings on carbon steel tanks and they are not porous like zinc silicate coatings. Because they are corrosion resistant, they are compatible with a great variety of cleaning methods and products, thereby offering owners a significant operating cost advantage. The stainless-steel chemical tankers account for more than 20% of the all-chemical tankers of 1,000 dwt and above.

Properties & Composition of Stainless Steel for Chemical Tankers

- Iron, steel, mild steel and high-tensile steel are the important materials used to build chemical tankers and their cargo tanks
- Stainless steel chemical tankers are primarily used to carry high-grade chemicals.
- Product tankers are large vessels that carry less difficult cargoes
- Specialized tankers are of small and medium sizes that carry a limited number of chemicals
- Parcel tankers are large vessels with multiple separate tanks that carry high-grade chemicals

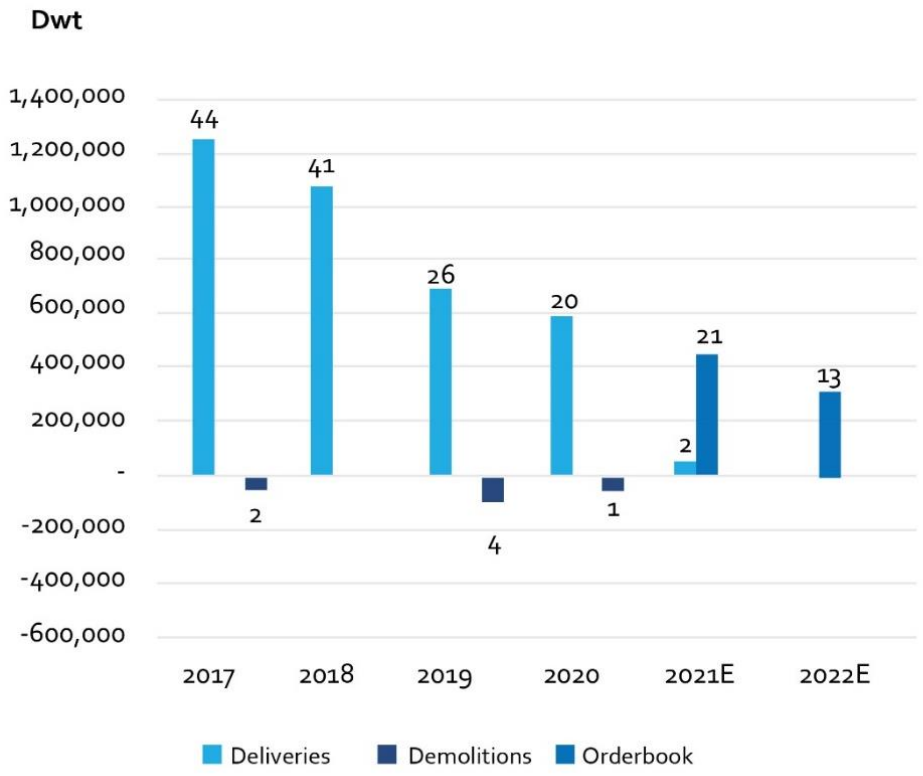
Strategic Initiative: *In April 2021, IMC's Aurora Tankers formed a partnership with Golden Stena Baycrest (GSB) tankers. The partnership enhances the global presence of the IMC shipping group. It also enables GSB tankers to develop stainless steel fleet to serve the customers with greater flexibility.*

Figure 17: Stainless Steel and partial Stainless Steel Chemical Tankers Fleet (up to 19,000 DWT)



Source: BRS Group, Annual Review 2021

Figure 18: Stainless Steel and partial Stainless Steel Chemical Tankers Fleet (19,000–45,000 dwt)



Source: BRS Group, Annual Review 2021

As per the above charts, the stainless-steel chemical tanker order book has been strong over recent years due to the high pace of newbuilding entering the trading pool. However, in 2020, the condition has changed and chemical tanker contracting activities decreased due to high uncertainty and present and future environmental regulations. The stainless-steel chemical tankers segment "**between 19,000 dwt and 45,000 dwt**" only 20 vessels were delivered in 2020 and 23 are estimated for 2021. In the US, the chemical production demand is growing due to the competitive advantages of shale gas. The key driver for the chemical demand growth will be the recovery in economic growth from the ravages of COVID-19.

Coated Chemical Tankers

Chemical tankers are coated with various types of materials to improve their quality. The cargo tanks of modern chemical tankers are coated with epoxy and phenolic epoxy, and zinc coating unless they are made of stainless steel. The major reasons for the use of coating are easier cleaning and reduced risk for cargo contamination. A properly applied and maintained coating has 10 years of durability.

Based on the coating, the chemical tankers are classified into three categories.

Epoxy and Phenolic Coated Chemical Tankers

The conventional epoxy and phenolic epoxy-coated chemical tankers carry various types of materials including organic acids, alcohols, edible oils, fats and solvents. However, these tankers are unsuitable for very corrosive liquids, and they represent more than 55% of the chemical tankers market.

Zinc-Coated Chemical Tankers

- The zinc-coated chemical tankers are durable, heat and abrasion resistant as well as mechanically strong.
- Such type of chemical tankers provide resistance for chemicals with pH values between 6 and 9, exceeding which a chemical may severely damage the coating.

Fleet Type

Chemical cargoes can be very dangerous, most of them being flammable and/or toxic, some of them extremely so. The International Bulk Chemical Code (IBC Code) lists, in its fourteen chapters, the requirements that must be satisfied by a ship prior to it being certified as a chemical tanker regardless of the specific cargoes it is intended to carry. Within each chapter, the designer is given an option of the level of compliance required. In compliance with the more onerous requirements is chosen, the ship will be more sophisticated and will, therefore, be able to carry the more hazardous cargoes.

Chapter 15 of the Code contains 'Special Requirements' which are cargo-specific and which must be complied with only if that specific cargo is to be carried. Chapter 16 addresses aspects, which are the responsibility of the operator, whilst Chapter 17 lists all chemicals considered being suitable for transportation by sea.

The IBC Code defines three ship types of chemical tankers: IMO 1, IMO 2 and IMO 3

- A type 1 ship is a chemical tanker intended to transport chapter 17 products with very severe environmental and safety hazards which require maximum preventive measures to preclude an escape of such cargo
- A type 2 ship is a chemical tanker intended to transport chapter 17 products with appreciably severe environmental and safety hazards which require significant preventive measures to preclude an escape of such cargo
- A type 3 ship is a chemical tanker intended to transport chapter 17 products with sufficiently severe environmental and safety hazards which require a moderate degree of containment to increase survival capability in a damaged condition.

Thus, a type 1 ship is a chemical tanker intended for the transportation of products considered to present the greatest overall hazard and type 2 and type 3 for products of progressively lesser hazards. Accordingly, a type 1 ship shall survive the most severe standard of damage and its cargo tanks shall be located at the maximum prescribed distance inboard from the shell plating.

Exhibit 9: Chemical Tankers by Fleet Type

Category	Hazards	Preventive Measure
IMO 1	Most Environmental and Safety Hazards	Maximum preventive measures to avoid any leakage of the cargo
IMO 2	Severe Environmental and Safety Hazards	Significant preventive measures to forestall any leakage of cargo
IMO 3	Amply Severe Environmental and Safety Hazards	Moderate level of containment in case of damage

Fleet Size

Oceangoing chemical tankers ranging from 5,000 to 59,000 DWT in size, which is smaller than the average size of other tanker types due to the specialized nature of their cargo and the size restrictions of the port terminals where they call to load and discharge.

Exhibit 10: Chemical Tankers by Tank Size

Category by Size	Description
Inland Chemical Tankers (1,000–4,999 DWT)	The inland chemical tankers are self-propelled barges that are commonly used in the river systems of north-western Europe. These tankers help to load cargo tankers or coastal terminals and transport materials to inland industrial facilities.
Coastal Chemical Tankers (5,000–9,999 DWT)	These are small tankers also known as short sea tankers. The coastal chemical tankers are primarily used to transport chemicals coastwise and transmit cargoes into ports and terminals. Moreover, these small tankers are used to load or discharge cargo from a shore terminal or directly from a larger vessel. These vessels are usually available in Europe, intra-Southeast Asia, and the North American markets.
Deep-Sea Chemical Tankers (10,000–50,000 DWT)	These vessels have a large number segregation and have either stainless steel or coated tanks. They are run in Europe, Asia and the Middle East.

5

Chemical Tankers Market

Global Overview: Chemical Tanker Market

Chemical tanker contracting activity witnessed a slump during the pandemic because of slow global trade growth and changing environmental regulations. Driven by the post-pandemic economic recovery, the global chemical demand is expected to grow at a CAGR of 5% during 2021–25 and the fleet is projected to grow at a CAGR of 2.5% during the same period.

Driven by the need to optimize operating expenditure and increase profit margins, fleet owners resorted to mergers and the formation of pools to invest in new vessels in compliance with new environmental regulations.

For instance, Odfjell established a coated vessel pool with Navig8 and TRF in Q3 2020 to increase their market share in the coated chemical tankers market. The pool comprised of six vessels from Odfjell, six Navig8 vessels and 7 TRF vessels.

Global situation

On a global scale, supply chain issues created further bottlenecks in chemical production and downstream industries. Logistic issues became much more complexed. Meanwhile, recovery form COVID-19 disruptions on the different continents each follow their own path, not being simultaneously. This restricted normal activity of chemical plants, making the global chemical tanker market very challenging.

Regional Updates:

Asia

Asia-Pacific dominates the chemical tankers market due to the significant expansion of the petrochemical and refinery market and the focus on advancement in sea transportation infrastructure in the region. Furthermore, the reduced exports from USA led to increased demand for replacement cargoes from alternative source, being largely Asia- Increasing capacity surplus for some chemicals enabled producers in the Far East to redirect volumes to the West.

The Northeast Asian market began to recover in the mid of 2020 due to relaxations in lockdown and irregular shipments of ethanol and isopropyl alcohol from China to Korea, Japan, Southeast Asia and Europe. However, in Q4-2020 there was an increase in congestion at Northeast Asian ports due to the Changjiangkou accident in mid-China and extremely cold weather in North Chinese and Korean ports. And there are more congestions in the mid- China river ports, due to pilot shortage and COVID restrictions.

On 17 August 2021 China has issued the dual-control policy, which targets industries with high energy consumption and high emissions. The strict control introduced by this policy has reduced operation rates of upstream and downstream plants in the country. This dual- control policy will certainly have its effect on chemical shipping demand. Methanol plants in the Yulin district are cutting operations by at least 50%, caustic soda producers will likely reduce operations to comply with energy restrictions. Only the vegetable oil market seems to remain unaffected, due to high seasonal demand in winter.

Increasing capacity surplus for some chemicals enabled producers in the Far East to redirect volumes to the West.

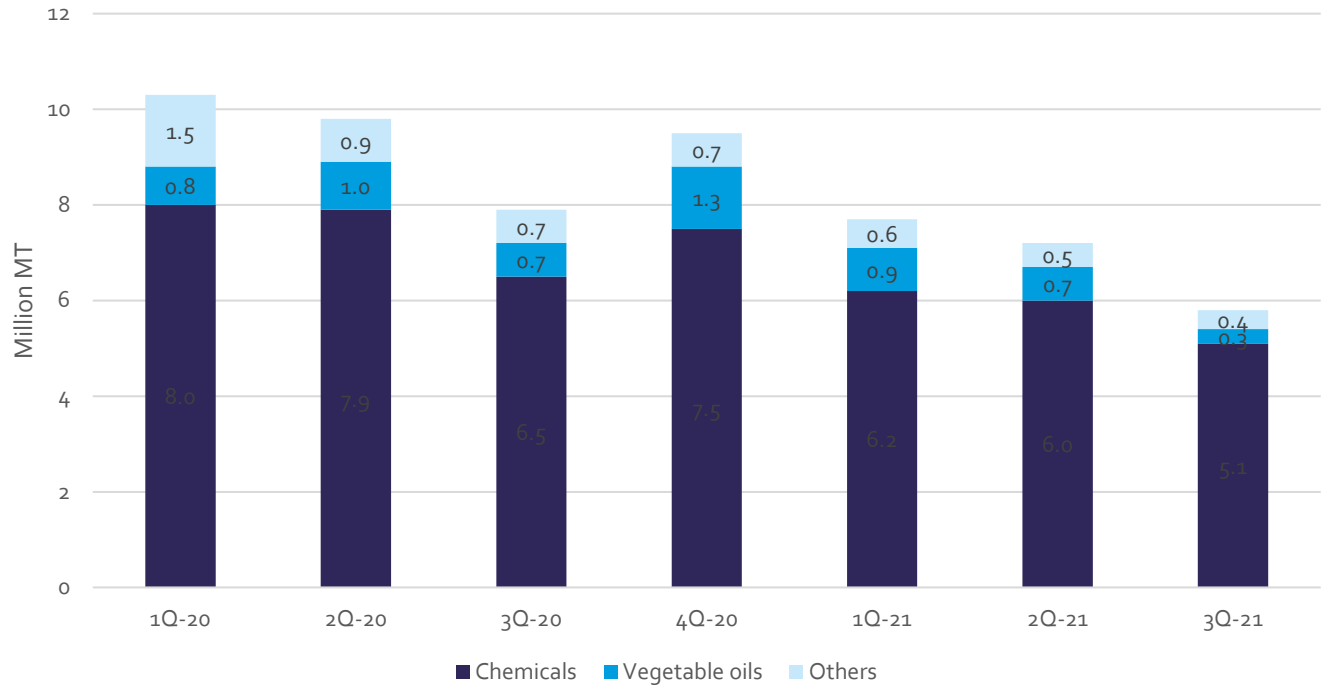
In 2020 China imported 67.1 million tonnes of liquid chemicals, including vegetable oils. The increasing domestic production capacity might lead to a decline in import. According to Drewry this may add up to 5% less import volume in 2021.

The vegetable oil market is growing at a fast pace in Indonesia, South-East Asia and Malaysia due to a rise in the number of vegetable oil processing companies. The largest importers of vegetable oil are China, Europe and India.

USA

The USA chemical production was severely disrupted in 2020 and 2021. First of all, fall 2020 was marked by hurricanes. Furthermore an extreme cold in Texas disrupted chemical production and of course, COVID related disruptions continued. More extreme weather overall in the USA made the third quarter of 2021 to shut down several plants. These developments alone should give its pressure on chemical international trade with the USA, but more pressure on the international trade came from the strong internal USA market. The domestic demand recovered quicker than expected, driving inventories to low levels, which in turn pushed prices up. Most incentives to export chemical products out of the USA were reduced.

Figure 19: USA exports of chemicals



Source: Odfjell

The above graph shows that the global chemical tankers fleets growth. These fleets are growing at steady phase for the past few years. Most governments are focusing on methanol production due to an increase in carbon emissions and petrol prices. Furthermore, the growing methanol production in the US supports the market growth. The vegetable oil market is growing at a fast pace in Indonesia, South-East Asia and Malaysia due to a rise in the number of vegetable oil processing companies. The largest importers of vegetable oil are China, Europe and India.

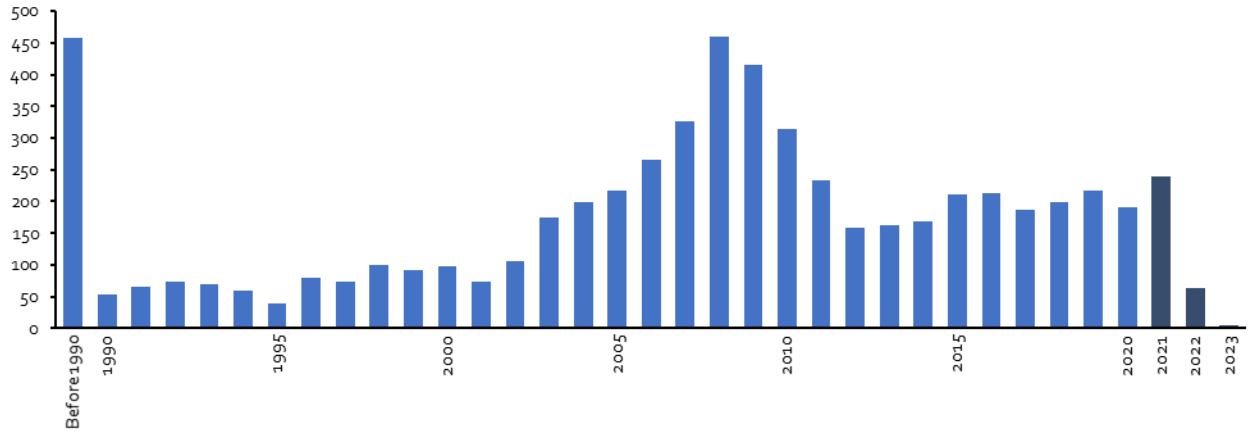
Europe

The European market was hard hit in 2020 as movement restrictions affected the shipping of gasoline, diesel and jet fuel. Amidst falling freight rates and competition in Baltic/UK continent market, owners leveraged their tonnage by trading to the Mediterranean and back.

Major Chemical Tanker Operators

The present fleet of chemical tankers consists of about 5,700 vessels, with a total of 123m DWT (Figure x). The average age of the fleet is 15 years and the average tonnage is 21,000 DWT. At the start of 2021 a total of 307 vessels are on order, with a total of 8.7m DWT. The average tonnage of the newbuilds is with over 28,000 DWT higher than the average tonnage of the current fleet. Main orders are from the Japanese company Nisshin and Bahri of Saudi Arabia.

Figure 20: World chemical tanker fleet by building year



Source: IHS

The chemical tanker market is extremely fragmented: according to IHS these 5,700 vessels and 307 newbuilds are operated by more than 1,600 companies with a fleet of five vessels or less and about 235 companies with a fleet of more than five chemical tankers. So it is not strange that consolidation is taking place as well in vessel acquisition as in company mergers. Some examples are Stolt Nielsen, which acquired five chemical tankers from Chemical Transportation Group, built in 2016 and 2017. The tankers are 26,000 DWT and with stainless steel tanks. In November Team Tankers sold its European fleet of seven chemical tanker vessels to Dutch De Poli Tankers Group. In 2019 Maersk acquired seven chemical tankers from Malaysian AET, BW Group sold 13 chemical tankers to the Israelian Ace-Quantum Chemical Tankers and Nordic Tankers was sold to Japan's MOL.
By the end of 2021 rumours concerning the creation of a new Danisch shipping giant on the oil market emerged, concerning the merger of Torm, Hafnia and Norden. Hafnia has acquired Chemical Tankers in Q4 2021.

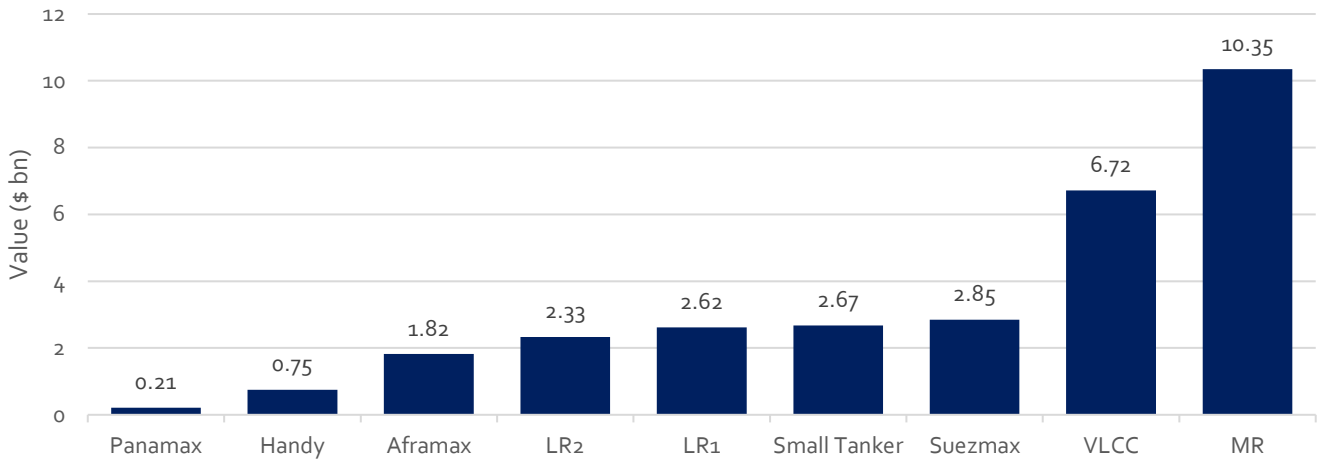
Pools

Pooling is a popular form of commercial operation in the tanker sector. Tankers in pools account for 17% of the total tanker fleet by value. In the product tanker sector, 42% of LR1 vessels and 26% of both LR2 and MR vessels operate in pools.

Main criteria for the customers of tankers for choosing the service providers are the availability, the speed an the quality of service. With a tanker pool the clients can be supported globally – even, in the most ideal situation with a large enough tanker pool, clients can be supported anywhere and anytime. Furthermore, tanker clients do not wish to deal with hundreds of different entities. Although the tanker is controlled by an owner or group of investors, the client is dealing with one entity, the pool. And within the pool the same standards are used.
On the other side, by combining fleets and forces, tanker operators increase their negotiating forces. The economies of scale favour their contact with the customers, but also on the purchasing side A pool is purchasing bunkers on behalf of a number of tankers, and if a pool is large enough, even a department can be set up for hedging bunker costs, trade FFA's or to trade carbon credits.

So, the benefit of pooling is a homogenous and commoditised service, while giving owners regular cashflow and long-term security.

Figure 21: Tankers (not only chemical) in pools, by value



Source: Vessels Value as of March 2021

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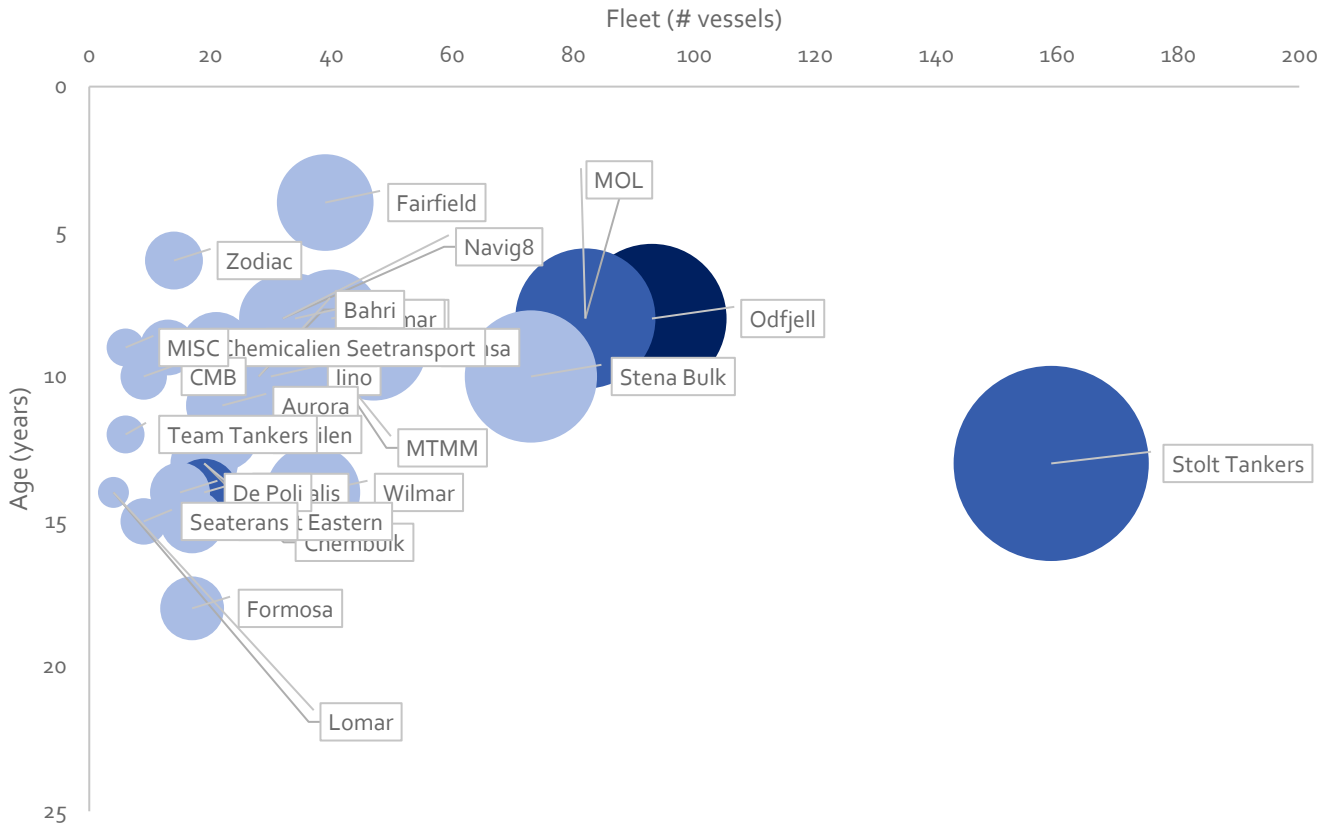
So, the benefit of pooling is a homogenous and commoditised service, while giving owners regular cashflow and long-term security.

In the last months of 2020 a number of new pools have been created, while several existing pools have increased in size. Some examples of pooling include Chembulk turning the management of their fleet of 19 chemical tankers over to Singapore-based chemical tanker pool specialist Womar and Team Tankers' decision to entrust the commercial management of its 27 tankers to Maersk Tankers. At the end of the year, Odfjell launched two new MR pools using six of its vessels plus six Navig8 MRs and even from TRF. This pool's strategy is to increase their share in the coated chemical market with its flexible cost structure having lower risk than integrating TC vessels. Another announcement followed with Stolt-Nielsen and Essberger's new joint venture "E&S Tankers" which, as of 1st January 2021, operates 48 units between 2,800 dwt and 11,300 dwt. The intention is to renew the fleet with more efficient ships with the combined investment totalling upwards of $200 million in fuel efficient ships.

Overview of main chemical tanker operators

The main chemical tanker operators are Stolt Nielsen, Odfjell and MOL. They operate a fleet, including owned, time chartered, leased, bareboat and vessels in pool of over 80 vessels. Other main operators include amongst others Stena Bulk, Hansa, Ace, Fairfield and Wilmar. Some tanker operators, like Wilmar and Formosa, are dedicated operators for their sister companies within the group holding, usually production companies.

Figure 22: Major Chemical Tanker Operators Operated Fleet



Source: JBR Research
Note: fleets include owned, time chartered, leased, bareboat and vessels in pool

Stolt-Nielsen

Business Overview:

Stolt-Nielsen Limited (SNL) offers transportation and for liquid chemicals. With its Stolt Tankers, Stolt Terminals, and Stolt Tank Containers, the company provides transportation of bulk liquids, such as chemicals, edible oils, acids and petroleum products. The company generates more than 90% of its revenue from global-bulk liquid, chemical logistics, transportation and storage services. Furthermore, the company offers services such as fleet leasing, fleet management and tailor-made tank solutions tolt-Nielsen has a fleet of 159 ships with about 3 million DWT. Out of which, around 70 deep-sea ships sailing in Europe, Asia, and the Caribbean seas.

Headquarters	Founded	Revenue	Fleet	Employees	Offices
London	1959	$1,955.1 million	159 (incl. pools)	6,402	30

Recent Developments:

- In June 2021, Stolt Tankers and UK's shipping fund manager Tufton Investment Limited have teamed up to create a chemical carrier pool and cooperate in the field of decarbonization and sustainability. The pooling agreement includes seven of Tufton's 19,000-21,999 dwt chemical tankers to join the Stolt Tankers Joint Service (STJS) deep-sea fleet
- In November 2020, Stolt Tankers B.V. and John T. Essberger Group formed a European joint venture E&S Tankers, to offer a combined fleet of 48 parcel tankers in Baltic, Mediterranean and Europe
- In August 2020, Stolt Tankers B.V. acquired five chemical tankers of Chemical Transportation Group (CTG) in order to trade them in Stolt Tankers Joint Service.
- In December 2020, the company launched Avenir Aspiration, the third 7,500-cbm capacity LBV from Sinopacific Offshore & Engineering (SOE).

- As of November 2020, the joint venture between Shanghai SC-Stolt Shipping Ltd and Shanghai Junzheng Logistics Co. Ltd has allowed Stolt Shipping and Shanghai Junzheng Logistics Co to operate 11 chemical tankers in the Chinese coast cabotage market.
- In August 2020, the company agreed for a joint venture with NYK Stolt Tankers S.A. in order to purchase two stainless steel chemical tankers, which were priced at $27.2 Mn per ship.

ODFJELL

Business Overview:

Odfjell SE is one of the leading players in specialised fleet services, such as storage of chemicals and other variety of bulk liquids including fleet transportation. Currently, the company serves more than 600 customers regularly with approximately 90 chemical tankers serving 400 different ports for transporting 14 million tonnes of chemicals every year. The company operates through its three segments – Chemical Tankers, Tank Terminals and Gas Carriers. It has total 470 tanks that operates across the US, Korea, China and Belgium.

Headquarters	Founded	Revenue	Employees	Offices	Chemical Tankers	Capacity	Port Calls	Cargo Operations
Bergen, Norway	1914	$939 Mn	2,294	14	93,	3.2 Mn dwt	3,830	11,654

Recent Developments:

- In August 2021, Odfjell Gas Shipowning AS, a subsidiary 100% owned by Odfjell SE, entered into a transaction agreement with BW Epic Kosan Ltd. (BWEK) for the sale of two LPG/Ethylene carriers. The transaction concludes Odfjell SE's exit from the gas segment
- In November 2020, the company announced partnership with Navig8 and TRF. The partnership increased the availability of commercial tonnage including the coated chemical tankers.
- In October 2020, the company launched a fuel cell project by partnering with Prototech, Wartsilia and Lundin Energy Norway, in order to develop fuel-solution for ships and offshore. It would decrease 40% to 100% of emissions from the chemical tankers fleet.
- In 2020, the company completed the largest fleet renewal programme and now it controls the world's largest deep-sea chemical tanker fleet.
- In Q1-2021, the company established a new pool of 33,000 dwt large stainless steel chemical tankers with EGD Shipholding a EGD Holding company where it would contribute four vessels and EGD Shipholding would contribute three vessels.

MOL Chemical Tankers Pte. Ltd

Business Overview:

MOL Chemical Tankers was established in 1972. With an acquisition, the company became a member of Mitsui O.S.K. Lines Group in 1996. Headquarters in Singapore. MOL Chemical Tankers is specialised in marine tanker services for the transportation of bulk-liquid chemicals, vegetable oil and animal fats. The company is vertically integrated with the chemical logistics supply chain. Its major initiatives consist of investments in liquid bulk terminals, and ISO certification. The company offers total logistic solutions across the globe by focusing on safety and long-term operational expertise. Its training programme ensures detailed knowledge for the crew on the issues related to chemical cargo and tankers with respect to the regulations of the tradeMOL Chemical Tankers has acquired some tanker companies to expand their presence in the market. The acquisition of Tokyo Marine Asia Pte Ltd tankers in 2016 was one of the major acquisitions. MOL Chemical Tankers became strong in the Atlantic Ocean with the acquisition of Danish chemical tanker operator, Nordic Tankers, in January 2019. Out of the total capacity of the country, 54% is dedicated to transport organic chemicals and 15% is for Inorganic chemicals while the balance is used to carry other commodities like vegetable oil.Together with Den Hartogh, a leading Dutch tank container company and a local company Sea-tank, MOL Chemical Tankers is developing a tank terminal in Antwerp Port to secure and strengthen their presence in the market .

Headquarters	Founded	Revenue	Employees	Fleet	Organic Chemical	Inorganic Chemical	Vegetable oils, Animal fat and Molasses	Bio Products	Others
Singapore	1972	$34 million	170	82 (incl pool)	54%	15%	19%	3%	10%

Recent Developments:

- In February 2021, the company built and delivered Hakuba Galaxy (25,300 MT) a chemical tanker at Kitanihon shipbuilding.
- In December 2020, the company delivered Rhapsody (34,766 MT) a chemical tanker at Kit Shin Kurushima Shipyard.
- In October 2020, the company delivered Prelude (34,843 MT) chemical tanker at Kit Shin Kurushima Shipyard.
- In September 2020, the company delivered Niseko Galaxy (25,289MT) chemical tanker at Kitanihon Shipbuilding Dockyard.
- In August 2020, the company delivered Furano Galaxy (25,357MT) chemical tanker at Kitanihon Shipbuilding Dockyard.
- In May 2020, the company delivered Opera (37,245MT) chemical tanker at Kitanihon Shipbuilding Dockyard.
- In January 2020, the company delivered a Nocturne (37,246 MT) chemical tanker at Kitanihon Shipbuilding Dockyard.

Hansa Tankers Management AS

Business Overview:

Hansa Tankers Management AS is a Bergen-based tanker company established in 2010. They have vessels with stainless tankers with an average of 6 years of age to carry all IMO II/III liquid chemicals. The total stainless steel capacity of the HANSA Tankers could be read as 1,029,661 DWT .Hansa Tankers Management commercial operations were built on independent pool operations for stainless steel tonnage, where the company has currently about 47 vessels with sizes ranging between 19,000 dwt and 33,000 dwt. The company operates both on its own and with third-party vessels in transporting bulk chemical-based products across the globe.

Headquarters	Founded	Revenue	Employees	Fleet	Average age of fleet	Stainless steel capacity
Bergen, Norway	2010	$150 Million	25	47	9 years	1,029,661 dwt

Recent Developments:

- n June 2019, the company bought a 2009-built 33,600 dwt chemical tanker Bow Tonne, which was built at Japan's Kitanihon Zosen. It has paid around $18.5 million to Japan's JX Ocean for the vessel, and this transaction has come off with a 10-year agreement with Odfjell.
- In May 2019, the company bought 2009-built Chemroad Fuji 33,000-dwt chemical tanker, which was built by Shin Kurushima. The company paid around $15.3 million for it.

Fairfield Chemical Carriers

Business Overview

The company operates a fleet of chemical tankers with five international offices across the world. Its fleet includes more than 40 stainless steel vessels that travel to 450 ports around the world with more than 600 cargo grades. All the chemical tankers are equipped with 100% stainless steel tanks. Another 6 ships are under construction with 20,000 to 25,000 MT capacity. With the merger of Iino Kaiun Kaisha Ltd., a Tokyo stock listed company Fairfield could increase its chemical fleet as well as the market presence. The company offers customised logistic solutions to suit the customers' requirements. It offers its fleet for sea route transportation of vegetable oils, organic and inorganic liquid chemicals, fats, acids, molasses and other chemicals. The company maintains the highest standards for safety and efficiency in the operation of its chemical tankers.

Headquarters	Founded	Revenue	Funding April 2020	Active Fleets	Average Years	Total DWT	Stainless Steel
Wilton,Connecticut	1996	$5.0 Mn	$350K	39	4 Years	8,47,143	100%

Recent Developments

- In 2020, the company continued to take deliveries of new eco class vessels, even during of COVID-19 pandemic.
- In 2020, the company launched three chemical carriers, namely Fairchem Fortitude, Fairchem Angel and Fairchem Endurance.
- In June 2021, the company announced that it has completed a multi-vessel newbuilding programme with Fukuoka Shipbuilding Co., Ltd for the construction of 2*26,300 DWT stainless steel.
- In June 2021, the company announced its partnership with Fukuoka Shipbuilding Co., Ltd. for dual-fuel/LNG high specification next generation chemical tanker vessels. It plans to put these tankers with the existing stainless-steel fleet into operations in 2023.
- The company's association with Fairfield Maxwell Ltd will allow it to make significant investments in new vessel technologies in the next few years. Moreover, it would reduce the company's carbon footprint, as it is mandated under IMO2030.

Navig8 Chemical Tankers Inc.

Business Overview:

Navig8 Chemical Tankers Inc. established Navig8 Chemical Tankers Inc. in order to capitalise on the substantial changes in the petrochemical industry in regard to the continuous development of long-haul chemical trades across the globe. Navig8 Chemical Tankers was established as a joint venture between Navig8 Group and funds managed by Oaktree Capital Management. The company has a fleet of 26 vessels contracted to operate in various chemical tanker pools managed by Navig8 group and Odfjell Tankers, and on time-charters with third-party charterers . The company's strategy is to serve spot-market oriented Commercial Pools of Navig8 Group & Odfjell. This is to recover high freight rates and full utilization of vessel capacity.

Headquarters	Founded	Revenue	Coated Chemical Tankers	Stainless Steel Chemical Tankers
London, UK	2013	$159.1 million	18	8

Recent Developments:

- In August 2021, Navig8 Chemical Tankers is changing its name to Chemical Tankers Inc. (CTI). The change will be implemented with a view to better reflect the company's standing as an independent owner and manager of chemical tankers and follows the recent sale of Navig8's stake in CTI to funds managed by Oaktree Capital Management, who now control around 95% of the company's outstanding common shares.
- In July 2021, the company entered into Sale and Leaseback Agreements with Jiangsu Financial Leasing Co., Ltd. for two chemical tankers of 49,000 DWT IMO2 and two stainless steel chemical tankers of 25,000 DWT.
- In February 2021, the company entered into Sale and Leaseback Agreements with CSSC (Hong Kong) Shipping Company Limited for three chemical tankers of 37,500 DWT and two chemical tankers of 49,000 DWT IMO2.
- In July 2020, the company entered into Sale and Leaseback Agreements with SPDB Financial Leasing Co., Ltd for four product oil/chemical tankers of 37,000 DWT.
- The company's main strategy is to assist spot-market oriented commercial pools of Navig8 Group and Odfjell for recovery of huge freight rates and fuller utilization of vessel capacity of the chemical tankers.

Bahri

Business Overview:

Bahri specialises in delivering chemicals transportation through its joint venture (80:20) with Saudi Arabian Basic Industries Corporation (SABIC) by maintaining excellent standards. The company is one of the largest operators of chemical tankers in the Middle East, as it relentlessly focuses on innovation and its commitment to deliver technology-driven, value-added onshore and offshore services. It offers its services under five business units including oil, chemicals, logistics, dry bulk, and ship management.

Headquarters	Founded	Revenue	Employees	Chemicals & Product Tankers	VLCC's and Product Tankers	Multipurpose Vessels
Riyadh, Saudi Arabia	1978	$2,238.1 Mn	3,000	28	46	6

Conversion rate: SAR/USD= 0.266667

Recent Developments:

- In January 2021, National Shipping Company of Saudi Arabia's (Bahri) subsidiary National Chemical Carriers Co., National Chemical Carriers Co. signed a SAR 1.23 billion Murabaha financing agreement with Samba Financial Group for building 10 chemical tankers, with a capacity of 49,999 deadweight tonnage (DWT) each.
- In August 2020, Bahri's subsidiary National Chemical Carriers Co., Ltd. signed a contract with Hyundai MIPO Dockyard Co., Ltd. in order to build 10 chemical tankers.
- In February 2021, Bahri Ship Management entered a partnership with Alpha Ori Technologies, a maritime digital solutions provider, to deploy the SMARTShip platform on Bahri's fleet of 40 ships. The platform provides intelligent alerts, advanced analytics and insights in real time for vessel management, fuel savings and predictive maintenance.
- In March 2021, the company completed its long-term time-charter contract with United Arab Chemical Carriers Limited (UACC) for 9 IMO2 MR chemical tankers.
- In August 2020, the company signed a $410 million agreement with Hyundai Mipo Dockyard, in order to receive 10 new chemical tankers.

Womar Pools Pte Ltd.

Business Overview:

Womar Pools Pte Ltd operates with three partners – Marida Tanker Pool (coated IMO II chemical tankers), Stainless Tanker Pool (stainless IMO II chemical tankers) and Orca Tankers Inc (Stainless IMO II chemical tankers). Womar's pool partners uphold stringent standards of vessel management, and they enable the company to deliver first-rate solutions. It focuses on commercial asset management of chemical and oil tankers. The company trades in delivering chemicals, vegetable oils, clean and dirty petroleum products and crude oil.

Headquarters	Founded	Revenue	Fleet	Vessel Days Every Year	Ports Called Annually	Tonnes of Cargo
Singapore	2009	$28.1 million	34 (pool)	10,000	1,000	6 MMT

Recent Developments:

- In July 2021, the Womar Pools and Braemar jointly launched chemical tanker index, which is the industry's first online earnings index for J19 vessels of stainless-steel chemical tankers between 19,000 dwt and 22,500 dwt.
- In March 2020, the company collaborated with Chembulk Tankers LLC. It has allowed Womar in commercial management of Chembulk fleet and the launch of Orca Pool- IMO II chemical tankers with a capacity of 32–37k dwt.

Ace Tankers

Business Overview:

Ace tankers is an Amsterdam, Netherlands-based parcel chemical tanker operator. The company was established in 2008 out of the joint venture formerly known as Chem-Tankers. Chem-Tankers was formed with the Joint venture of Istanbul-based, Askay Shipping Company in 2004 with a chemical fleet of 12 vessels and the Chem fleet. Ace Tankers is operator and manager of a fleet of 40 tankers. The company is the leading operator of a fleet of 40 tankers globally with a mixture of long-term COAs and spot business. It focuses on multi-grade stainless-steel chemical tankers. The company's fleets are categorised into three categories, namely stainless-steel chemical tankers, product tankers and coated chemical tankers. The company is now acting as a manager partner in the Ace Quantum Chemical Tankers pool (AQCT), a pool between Ace Tankers and Eastern Pacific Shipping

Headquarters	Founded	Revenue	Fleet	Employees	Yearly Cargo Shipped	Different Ports Served	Different Cargo shipped
Amsterdam, Netherlands	2008	$6 million	40	30	50,00,000 (MT)	250	270

Recent Developments:

- In December 2020, the company developed CHEM JUPITER to its fleet; it is a modern ECO well equipped to better and efficient services to its clients.
- In January 2020, the company developed CHEM SILICON to its fleet, which is amongst the last of the 13-ships deal signed over a year ago.
- In October 2019, the company developed Chem Gallium at Hong Kong waters; it was headed to China in order to load a COA cargo.
- In September 2019, the company brought in the CHEM LITHIUM-19, 981 DWT chemical tanker, which was built in 2017 at Kaohsiung Taiwan. This move has strengthened the company's capacity growth and its ability to meet the demands of customers by offering customised quality services.
- In January 2019, Ace Tankers bought a fleet of 13 chemical tankers from the BW Group. The ships are intended to join the Ace-Quantum Chemical Tankers (AQCT) Pool, a joint venture between Ace Tankers and Eastern Pacific Shipping.

MISC Berhad Corporation

Business Overview:

MISC, which was formerly known as Malaysia International Shipping Corporation , is a provider of energy related maritime solutions and services. The pricinipal businesses of the Group comprise energy shipping and its related activities. MISC operates a fleet of more than 100 vessels, including over LNG carriers, petroleum tankers, chemical tankers, and containershipsMalaysian national oil company Petronas owns 62% of..

Headquarters	Founded	Revenue	Employees	Fleet
Kuala Lumpur, Malaysia	1968	$22.3 billion	8,600	4 chemical tankers, 2 clean product tankers, 29 LNG carriers, 74 other vessels

Recent Developments:

- In November 2021, MISC Berhad makes it debut on the Dow Jones Sustainability Emerging Markets Index 2021
- In April 2021, MISC takes the delivery of Seri Elbert, the sixth very large ethane carrier
- In February 2021, MISC Berhad (MISC), Lloyd's Register (LR), Samsung Heavy Industries (SHI) and MAN Energy Solutions (MAN), partners in the ammonia fuelled tanker Joined Development Project (JDP), announced the entry of two new partners – the Maritime and Port Authority of Singapore (MPA) and Yara International ASA (Yara). The JDP partners also went on to announce a name for the expanded coalition - The Castor Initiative
- In January 2021,. MISC takes the delivery of Seri Erlang, the second very large ethane carrier
- In October 2020, MISC takes the delivery of Seri Everest, the first very large ethane carrier
- In July 2020, MISC enters into purchase agreements and time charter parties for six VLEC's.

Team Tankers

Business Overview:

Team Tankers was first incorporated in Norway in 1968. In 2014 Team Tankers International Ltd was incorporated in Bermuda for the purpose of relocating the parent company. The new Team Tankers International is established based on the business platform and operations of Eitzen Chemical. On 25 February 2015 the stock listing application of Team Tankers International Ltd. on the Oslo Stock Exchange was approved, and the Company was stock listed on 9 March 2015 following a successful exchange offer where shares in Eitzen Chemical ASA was exchanged into shares in Team Tankers International Ltd.

Headquarters	Founded	Employees	Fleet
Hamilton, Bermuda	1968	30	6

Recent Developments:

- In March 2021, TORM purchases eight MR product tankers with chemical trading capabilities from Team Tankers in partly share-based transaction
- In November 2020, De Poli Tankers acquired the European chemical tanker business from Team Tankers
- In January 2020, the company developed CHEM SILICON to its fleet, which is amongst the last of the 13-ships deal signed over a year ago.
- In September 2019, the company brought in the CHEM LITHIUM-19, 981 DWT chemical tanker, which was built in 2017 at Kaohsiung Taiwan. This move has strengthened the company's capacity growth and its ability to meet the demands of customers by offering customised quality services.

Wilmar International

Business Overview:

Wilmar International Limited is one of Asia's leading agribusiness companies. At the core of Wilmar's strategy is an integrated agribusiness model that encompasses the entire value chain of the agricultural commodity business, from cultivation and milling of palm oil and sugarcane, to processing, branding and distribution of a wide range of edible food products. It has over 500 manufacturing plants and an extensive distribution network covering China, India, Indonesia and some 50 other countries and regions. The company owns a fleet of liquid and dry bulk carriers to support its shipping requirements. As at 31 December 2020, the Group owned and controlled tankers / dry bulk vessels with a total tonnage of about 2.8 million MT. The fleet includes 37 chemical tankers, and ten 10 on order

Headquarters	Founded	Revenue	Employees	Fleet
Singapore, SIngapore	1991	$50.5 billion (total business)	100,000 (total business)	37 chemical tankers, 10 tankers on order, total fleet consists of 142 vessels, including orders

Recent Developments:

- In January 2020, Wilmar International orders 4 new MR tankers for $136 million

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De Poli

Business Overview:

De Poli Tankers Holding is an integrated ship-owner, owning and operating a modern fleet of stainless steel chemical tankers and semi-ref gas carriers. It has focus on transatlantic seaborne logistics for high grade chemicals, with a preference for parcel trade rather than full shipload based on Contracts of Affreightment and spot charters, using own and chartered-in tonnage. Gas Carriers are commercially and technically managed in-house. De Poli shareholders are French company Sogestran and Arcoin

Headquarters	Founded	Fleet
Barendrecht, Netherlands	1989	15

Recent Developments:

- In October 2021, Sogestran and Arcoin, both shareholders of De Poli are engaged in a legal conflict 2020
- In November 2020, Sogestran Group acquired a majority participation in De Poli Tankers Holding B.V
- In November 2020, De Poli Tankers acquired the European chemical tanker business from Team Tankers

Iino Kaiun Kaisha

Business Overview:

The IINO Group maintains an industry-leading fleet of chemical tankers, most with stainless-steel tanks, that includes dedicated methanol tankers. The fleet transports worldwide, carrying liquid cargoes such as petrochemical products, methanol, vegetable oil, ethanol, and lubricating oils. The company operates close to 30 chemical tankers on routes from the Middle East to the Far East and Europe. From the total capacity, chemical tankers carry 69.7%, of petrochemical products and 30.3% of non-petrochemical products.

Headquarters	Founded	Revenue	Employees	Total fleet
Tokyo, Japan; Headquarters chemical tanker operations: Singapore	1899	$845 million	166 (shipping division), 659 (total)	109 vessels, of which 30 chemical tankers

Recent Developments:

- In October 2021, Iino Kaun Kaisha sealed a time charter deal with Mitsui & Co for a newbuild 23,000 cu m ammonia charter. The vessel will be built by Hyundai Mipo and delivered in December 2023. According to a joint statement, the vessel is the world's first ammonia carrier to be designed and built based on the basic certification for ammonia-fuel-ready ship by the American Bureau of Shipping (ABS) and will be a next-generation ship that can also transport LPG and switch to LPG as well as ammonia fuel. For Iino, which has been engaged in domestic and overseas transportation of liquefied gases, the charter marks a re-entry into the ammonia shipping business for the first time since 2017

Stena Bulk Company

Business Overview:

Stena Bulk is a tanker operator, offering transportation of crude oil and refined petroleum products by sea. The customers are major oil and chemical companies. Stena Bulk has offices in six countries and it is part of the Stena Sphere, which has around 20 000 employees in Sweden and abroad. Stena is one of the largest family-owned business groups in Sweden and operates worldwide within different businesses such as Ferry Operations, Offshore Drilling, Shipping, Property, Finance, New Businesses and Recycling. Head office is in Gothenburg, Sweden The Stena Bulk fleet consists of about 100 vessels.

Headquarters	Founded	Revenue	Employees	Fleet
Gothenburg, Sweden	1982	$6 billion (Stena family holding	395	73

Recent Developments:

- In December 2021, Stena Bulk and Oil and Gas Climate Initiative (OGCI) partner to study and explore the potential of capturing carbon at the point of exhaust from large commercial vessels
- In November 2021, Proman Stena Bulk launches its first methanol vessel, the Stena Pro Patria. Over the next two years, she will be joined by another five methanol-powered newbuilds: Stena Pro Mare and Stena Prosperous, which will be Proman Stena Bulk JV vessels, and the Proman-owned Provident, Progressive and Promise. All vessels will be constructed at Guangzhou Shipyard International and delivered by the end of 2023.
- In July 2021, GSB Tankers and Aurora Tankers joined forces and established a partnership to manage and operate stainless steel tankers trading worldwide, with a focus on servicing Asia. This partnership will see GSB Tankers and Aurora Tankers expand their joint operating platform by growing their fleet in the stainless steel segment
- In January 2019, the Golden Stena Baycrest Tankers Pte. Ltd joint venture between Golden Agri-Resources, Stena Bulk and Bay Crest Management, was established. GSB Tankers has been set up to undertake the operation and commercial management of chemical tankers. Apart from its headquarters in Singapore, GSB Tankers has offices in both Dubai and Japan. As a commercial ship manager, GSB Tankers works closely with owners through "alignment of interest", maximising profit for each vessel by improving chartering returns and championing operational prudence.

Aurora Tankers

Business Overview:

Aurora Tankers Management Pte Ltd has more than 25 years of experience in liquid bulk shipping. It provides worldwide transportation of bulk liquid intermediate chemicals, clean petroleum products (CPP) and vegetable oils. Aurora Tankers' core business include Contract of Affreightment (COA), time and voyage charters for chemicals from Middle East Gulf to Far East and return, as well as US Gulf to Far East and return. Aurora Tankers is a company in the IMC Shipping Group, part of IMC Industrial Group

Headquarters	Owner	Founded	Fleet
Singapore, Singapore	IMC Industrial Group	1949	22 chemical tankers

Recent Developments:

- In September 2021, Aurora Tankers received the last in a series of eight ships that were commissioned in 2017 to Aurora Tankers in a joint venture with CSSC Shipping. .The new vessels feature 22 cargo tanks each and are installed with Exhaust Gas Cleaning Systems
- In July 2021, GSB Tankers and Aurora Tankers joined forces and established a partnership to manage and operate stainless steel tankers trading worldwide, with a focus on servicing Asia. This partnership will see GSB Tankers and Aurora Tankers expand their joint operating platform by growing their fleet in the stainless steel segment

Ultratank

Business Overview:

Ultratank operates a modern fleet of chemical tankers, trading between North, Central and South America. Ultratank is a subsidiary of Ultranav, a privately owned shipping company with offices in 15 countries. Through eleven business units, it operates in five market segments: Oil, gas, dry bulk, coastal trades, and towage & offshore.

Headquarters	Founded	Fleet	Different Ports Served	Tons shipped 2020
Santiago, Chile	1960	21 chemical tankers	130	3,75 million

Recent Developments:

- In August 2021, Navigator Holdings entered into the previously announced transaction with Naviera Ultranav Limitada ("Ultranav") to acquire the Ultragas ApS ("Ultragas") fleet and business activities.

Utkilen

Business Overview:

Utkilen AS is a fully integrated shipping. The company owns and operates 22 chemical tankers ranging from around 6 000 to 20 000 dwt. in size. Utkilen is one of the major seaway transporting companies of chemicals and other bulk liquid cargoes in Northern-Europe. Four of the modern 20,000 dwt. stainless steel vessels built in 2018 and 2019 is operating in global trade under the Stream brand

Headquarters	Founded	Employees	Fleet
Bergen, Noway	1967	550	22 tankers and 2 on order

Recent Developments:

- In August 2020, the last of the four highly advanced and environmentally friendly 10,500 dwt. newbuildings with stainless steel cargo tanks was delivered
- In June 2019, the fourth newbuilding from Fukuoka, M/T Stream Pacific was delivered to subsidiary Stream Shipping AS. The vessel is the last in a series of four newbuildings from Fukuoka Shipbuilding in Japan.

CMB

Business Overview:

CMB, Compagnie Maritime Belge, is a maritime group with its registered offices in Antwerp. The company's subsidiary Bochem is focused on the chemical tanker market and controls 9 full stainless steel, parcel chemical tankers. Although part of the Bochem fleet is chartered, Bochem has vessels built to customised designs that respond to environmental factors as well as innovations developed by CMB.TECH.

Headquarters	Founded	Fleet	Tons shipped
Antwerp, Belgium	1895	9	1.7 million

Recent Developments:

- In April 2021, CMB and TSUNEISHI launched Japanese hydrogen joint venture. The companies want to develop the hydrogen internal combustion engine (H2ICE) technology for the Japanese industrial and marine market. CMB's subsidiary CMB.TECH has built up extensive knowhow over the years and has successfully developed concrete applications with dual fuel and monofuel hydrogen engines

Great Eastern

Business Overview:

The Great Eastern Shipping Company Limited is India's largest private sector shipping company which mainly transports liquid, gas and solid bulk products. The company has three main business: shipping, offshore and telecom.

Headquarters	Founded	Revenue	Fleet	Tons shipped
Mumbai, India	1948	$552 million	17 product carriers, 5 gas carriers, 11 crude carriers and 13 dry bulk carriers	1.7 million

Recent Developments:

- na

Zodiac

Business Overview:

Zodiac Maritime Ltd. is an international ship management company, headquartered in London with representative offices in Shanghai, Tokyo and Mumbai. Zodiac Maritime Ltd. specialise in the management of VLOCs, Capesize, Panamax, Handymax and Handysize Bulk Carriers, Container Ships, Crude Tankers, Product Tankers, Chemical Tankers, LPG Tankers and Pure Car (Truck) Carriers. Zodiac is part of the Ofer Group .The total Zodiac group operates 160 vessels

Headquarters	Founded	Fleet
London, UK	1970	14 chemical tankers

Recent Developments:

- na

MTMM

Business Overview:

Ship owners and operators involved in Chemical and product tankers marketed under MTM Trading LLC. Ship owners and operators of handy size bulk carriers marketed under Strategic Bulk Carriers Inc. Third party ship managers providing both technical and crew management with Offices in Singapore (http://www.mtmshipmanagement.com), Mumbai, Manila and Yangon. Sponsors of the Northern Shipping Fund which offers structured finance products to ship owners and offshore equipment principals. Ship agency managers via MTMM Hong Kong offering husbanding service to owners calling Hong Kong and all Chinese mainland ports. Global marketing offices for controlled vessels in the USA, Holland and Singapore.

Headquarters	Founded	Fleet
London, UK	1970	30 chemical tankers, 8 product tankers

Recent Developments:

- In July 2021, MT Maritime buys Maersk Product Tankers MR duo

Formosa

Business Overview:

Formosa Chemicals & Fibre Corporation Plastics Division produces ABS, PS, PP, PC, ASA and compounding plastics.. Formosa Plastics Marine Corp, FPMC is the shipping arm of conglomerate Formosa Plastics Group.

Headquarters	Founded	Fleet
Taipei, Taiwan	1981	17 chemical tankers, 2 LPG carriers, 12 tankers and 19 bulk vessels

Recent Developments:

- In 2021, a series of four of newbuild stainless-steel chemical tankers are delivered
- In October 2018, Formosa Plastics Marine mulls sale of entire LR1 tanker fleet, because it believes the vessels too old for scrubber installation to be an economical option

Seatrans Group

Business Overview:

The Seatrans group is a fully integrated shipowning and shipmanagement company. Seatrans Chemical Tankers manages all aspect of the Seatrans controlled chemical tankers including commercial, operational and accounting. Seatrans Group is an integrated ship-owning company with in-house chartering and operations, ship management, and crewing functions established in Norway in 1971. The company was founded by two seafarers, Wollert Hvide and Bjarne Kyrkjebø. Seatrans has started its chemical tanker operating business in 1968. The company engages in transporting of chemicals in the North Sea and the

Mediterranean with stainless steel parcel tankers. Seatrans has started its chemical tanker operation with a 200 tons vessel that transported sulphuric acid. Currently, Seatrans owns 9 tanker vessels and has their presence in Europe chemical cargo parcel trade. Its customers are the worlds major chemical producers who require in depth knowledge of cargo handling, optimized trading patterns and ship designs which ensures delivery of their products on time.

Headquarters	Founded	Revenue	Employees	Fleet	Different Ports Served	Different Cargo shipped
Bergen, Norway	1971	$6 million	30	9	250	270

Recent Developments:

- In May 2021, Seatrans AS and Columbia Shipmanagement announced the formation of a ship management joint venture. The company will be named Stödig Ship Management AS

Lomar Group

Business Overview:

Lomar is a ship-owning and management group with a diversified fleet of over 65 container vessels, bulk carriers, and chemical and product tankers. Lomar is a principal subsidiary of the Libra Group, a diverse international business group that is active in 35 countries across six continents. It focuses on six business areas: aviation, energy, hospitality, real estate, shipping and diversified investments

Headquarters	Founded	Fleet
London, UK	1976	4 chemical tankers, 65 bulk carriers and container vessels

Recent Developments:

- na

Borealis Tankers

Business Overview:

Borealis Maritime GmbH & Co. KG provides integrated services associated with the management of maritime assets. Three business units serve their specific markets: Hanseatic Unity s the joint chartering and marketing platform of Asiatic/Atlantic Lloyd, Borealis Maritime, Leonhardt & Blumberg, Reederei NORD GMBH and Bernhard Schulte for container and dry bulk tonnage, Aurora Offshore focuses on the commercial management of Offshore Supply Vessels within the PSV and AHTS segments for the Borealis controlled fleet and third party owners, and Borealis Tankers focuses on commercial management of modern chemical tankers. The company is currently serving part of the Borealis Maritime Ltd – managed fleet, as well as third-party owners.

Headquarters	Founded	Fleet
Istanbul, Turkey (Borealis Tankers)	2018	19 tankers

Recent Developments:

- na

Chemikalien Seetransport

Business Overview:

Chemikalien Seetransport has been providing technical and commercial ship management as well as crew management for crude oil tankers, product tankers, chemical tankers, LNG/LPG vessels, bulk carriers and other ships. It is a family-owned company, as part of the Krämer Group. This group includes the engineering and consulting company Marine Service GmbH. CST´s subsidiary Chemikalien Seetransport Cyprus Limited based in Limassol was founded in 2003 and acts primarily as a commercial ship manager. In 2004, CST founded Chemikalien Seetransport Singapore Pte Ltd that provides technical management services. Chemtrans Crewmanagement GmbH, a 100 % subsidiary of CST, is handling crewing services since 2009. Belchem Philippines Inc. was incorporated in 2006 as a joint venture for crew management in the Philippines. In 2018, the tanker shipping company Rigel was acquired and renamed as CST Schifffahrts GmbH & Co. KG. In 2021 the joint venture CST/DS Shipmanagement GmbH was founded as another technical management company.

Headquarters	Founded	Employees	Fleet
Hamburg, Germany	1969	1,200	13 chemical tankers, 26 dirty product tankers and one bulker

Recent Developments:

- In July 2021, Scorpio Group acquired five vessels from Chemicalien Seetransport
- In February 2021, Chemikalien Seetransport and Dr. Peters Group formed a shipmanagement joint venture called CST/DS Shipmanagement to conduct the ship management activities of DPG subsidiaries DS Tankers and DS Schiffahrt.

BW Group

Business Overview:

BW Group is a leading global maritime company involved in shipping, floating infrastructure, deep-water oil & gas production, and new sustainable technologies. BW controls a fleet of over 420 vessels transporting oil, gas and dry commodities, with its 190 LNG and LPG ships constituting the largest gas fleet in the world. In the renewables space, the group has investments in solar, wind, batteries, biofuels and water treatment. Subsidiary BW Epic Kosan owns and operates the world's largest fleet of gas carriers providing seaborne services for the transportation of liquefied petroleum gas and petrochemicals. The Company is headquartered in Singapore, with Copenhagen as a regional office alongside offices in London, Manila, and Tokyo. . It is listed on Euronext Growth Oslo. BW Group owns 58% of the shares in the company. Subsidiary Hafnia provides transportation of oil and oil products to leading national and international oil companies, major chemical companies, as well as trading and utility companies. Hafnia is the result of a merger between Hafnia Tankers and BW Tankers The company is listed on the Oslo Stock Exchange. BW Group owns 67% of the shares in the company.

Company	Headquarters	Founded	Revenue	Fleet	Different Ports Served	Cargo operations
BW Epic Kosan	Singapore, Singapore	1955	$183.5 million	76	400	>26.000 /year
Hafnia	Singapore, Singapore	2010	$874 million	180		

Recent Developments:

- In November 2021, Hafnia entered into a share purchase agreement to acquire all outstanding shares in Chemical Tankers Inc, hereby taking over control of CTI's fleet of 32 modern and fuel-efficient IMO II product/chemical tankers. This brings the total fleet owned by Hafnia to 133 vessels and the number of tankers under Hafnia's commercial control to 233
- In January 2019, BW sold its chemical tanker fleet to Eastern Pacific Shipping

Sinochem

Business Overview:

Sinochem Holdings Corporation Ltd. is formed through the restructuring of Sinochem Group Co., Ltd. and China National Chemical Corporation Ltd. It is a leading state-owned enterprise. With a wide array of businesses covering life science, materials science, petrochemicals, environmental science, rubber & tire, machinery & equipment, city operation, and industrial finance, Sinochem Holdings rises as world's largest chemical conglomerate. The chemical logistics business of Sinochem Group led by Sinochem International, involves shipping, IOS tank containers multimodal transport, freight forwarding and terminal storage tanks. The company partnered up with Dorval SC Tankers Inc to set up a joint venture Sinochem Dorval. (2012)

Headquarters	Founded	Employees	Revenue	Fleet	Shipping capacity
Beijing, China	1950	220,000	$ 8.7 billion	70 chemical tankers	900,000 ton

Recent Developments:

- In April 2019, Junzheng Energy & Chemical Group, a chemical manufacturer, is expected to complete the takeover of the entire equity interest of Sinochem International Logistics (SIL), the logistics unit of China's state-run chemical giant Sinochem. The new company was named Gentco

Shanghai Gentco Logistics

Business Overview:

Shanghai GENTCO Logistics Co. Limited is a global chemical and LNG logistics service provider which operates: Tank containers, Chemical Tankers and Tank Terminals.

Headquarters	Founded	Revenue	Employees	Fleet	Different Ports Served	Different Cargo shipped
Shanghai, China	2019	$5.8 billion (Junzheng Energy & Chemical Group)	4,700 (Junzheng Energy & Chemical Group)	85, of which ~30 chartered	250	270

Recent Developments:

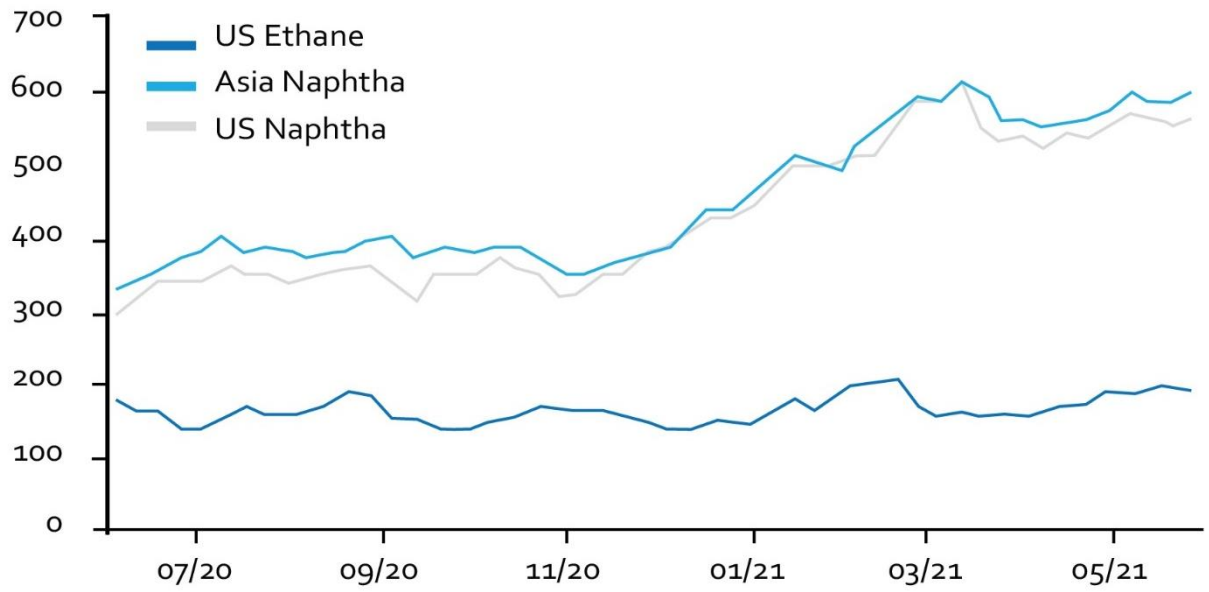
- In August 2019, Windward Holding B.V. and JZ Logistics Holding (overseas) Co. Ltd acquired a majority interest in North Sea Tankers B.V. from Windward. NST operates a fleet of chemical tankers serving the chemical market in North West Europe and the Mediterranean. Under the new ownership structure, NST is set to strengthen its fleet composition and market presence
- In July 2019, Shanghai Gentco Logistics acquired Albatross Tank Leasing
- In April 2019, Junzheng Energy & Chemical Group, a chemical manufacturer, is expected to complete the takeover of the entire equity interest of Sinochem International Logistics (SIL), the logistics unit of China's state-run chemical giant Sinochem. The new company was named Gentco.

Market Drivers and Trends

Market Drivers

- Recently, the growing feedstock and chemical prices along with low inventories should lead to the increased shipping of feedstock and chemicals in the coming future, driving the chemical tanker market growth.
- The growing oil prices create scope for players to introduce low-cost solutions in the US and the Middle East to increase their market shares in the high-cost market. Such solutions would support cost-effective chemical transportation and drive the chemical tanker market.
- In the coming future, new chemical plant development in the US and the MEA is expected to drive the chemical shipping industry, which would drive the growth of the chemical tanker market.
- Too many small and medium-sized tanker companies, generally not earning enough to renew the fleet of ships and thus accommodate the increasing environmental requirements for ship tonnage, will lead to consolidation
- The stronger chemical prices reduce the freight cost margin of the logistics and create room for rate hike in chemical shipping, which will support the chemical tankers demand.

Figure 23: Chemical Feedstock Price Development ($ TONNE)



Source: Presentation Odfjell Capital Markets Day 2021

Swing volume

Clean product tankers trading at the most sophisticated end of the fleet have an overlap with the chemical sector, with a significant volume of "swing tonnage" that can operate in either. Swing tonnage comprises vessels which are usually involved in the oil products trade but may also swing into parts of the chemical trade when this is economical. As chemicals are less volatile, usually MRs can swing across to chemicals if earnings get too low. So when the CPP market is doing well, the chemical trade is not disturbed by product tankers entering the chemical routes. However, when the MR market is weakening the risk of swing tonnage entering the market is rises.

Usually, CPP enters the chemical trade. However, when in March 2020 crude oil prices plunged the use of tankers as floating storage increased. This led to an upsurge of the product tanker freight rates, which in turn attracted high swing tonnage from the chemical fleet: 79 vessels, together about 2.9m DWT, mainly MR-sized tankers switched from the chemical trade into the CPP trade.

Market Trends

Advanced Technologies Driving Chemical Tankers Market

Advanced technologies such as big data and artificial intelligence (AI) are transforming the chemical tanker industry. Some of the leading chemical tanker operators are integrating advanced technologies to improve their operations. A few instances are mentioned below.

- Stolt Tankers signed an agreement with the HSO international Advanced Analytics & AI team to implement big data and & AI in its operations.

The growing adoption of advanced technologies reveals innovative ways to manage the chemical tankers fleet and improve the overall performance with high accuracy.

Efficiency Retrofits and Zero-carbon R&D

Many of the companies are involved in technological advancements by modifying their outdated existing systems in order to improve the efficiency of the chemical tankers. Most of the chemical tanker operators are required to abide by rules and regulations that are passed by the IMO. New regulations being passed at IMO in 2021 require indices to lower carbon intensity and emissions, which will potentially result in retrofitting the present equipment and operational changes. Chemical tanker companies are planning to focus on zero-carbon R&D by investing in alternative fuels and the necessary infrastructure for R&D activities to reduce carbon emissions.

New fuels

Over the years, there has been growing interest in green ammonia as marine fuel because of its zero-carbon and sulphur content. However, it must pass prerequisite factors to be preferred over hydrogen and LNG. The first factor is affordability. The second requirement is the commodity's supply security. Shipowners require a secure and uninterrupted supply of marine fuel, which influences its wider adoption. Ample production and robust distribution infrastructure are crucial to make a case for ammonia as a bunker fuel. In this respect its production is projected to reach 150 million tonnes by 2050. However, will the rise in production capacity of green ammonia be insufficient? Shipowners will be forced to compete with other industries such as fertilizer to source the commodity. Several green ammonia projects have been announced (likely to come online between 2025 and 2040) in renewable resource-rich countries such as Australia, Germany, Oman, Saudi Arabia and the US. However, widespread adoption of green ammonia as marine fuel would require planned production capacity to ramp up at a much larger scale. So, though green ammonia is expected to be used as marine fuel due to its favourable environmental features, ramping up of its production may be difficult curbing its widespread use.

Methanol is expected to play a key role as marine fuel, even though it is not a zero-emission fuel such as hydrogen and ammonia. The use of methanol is likely to gather momentum as a transition fuel since it is a commodity that shippers are familiar with and

therefore offers handling and cost advantages while there is a long wait for the zero-emission options which lack even the basic infrastructure at present. However, in the long term, renewable methanol, hydrogen, green ammonia and solar power will be the options for zero-emission.

Methanol is readily available and easily accessible on a global scale with existing infrastructure that supports its use as marine fuel. Bunker ships and storage tanks can easily be converted to carry and store methanol. Existing methanol carriers can easily be converted into methanol dual-fuel vessels with bunkering and storage becoming less of a challenge.

In the near future a substantial part of the vessels ordered are expected to have dual-fuel engines, with a large percentage using methanol as marine fuel.

Paraxylene

Paraxylene is the second-largest organic chemical carried by chemical tankers. In 2020, paraxylene comprised 17.1% in the total organics seaborne trade. However, trade volumes have been declining since 2018 due to the expansion of Chinese domestic capacity. China is the world's largest importer of paraxylene, it imported 13.9 million tonnes of paraxylene in 2020, accounting for 69% of the total global paraxylene seaborne trade. However, the country's imports declined by 7.5% YoY as domestic capacity has been expanding since 2019. By the end of 2020, China's total paraxylene capacity reached 25.4 million tonnes per year. With additional 9.8 million tonnes and 6 million tonnes new paraxylene capacity to start up in 2021 and 2022 respectively, this declining trend is expected to continue in the next five years.

(Paraxylene is a feedstock for the basic polymers for the production of polyester fibres. Polyester is vital for China's textile industry).

Biofuels / Soybean oil

With the Biden promise of a "Clean Energy Revolution", the demand for biofuel in the USA increased substantially. The most popular feedstock here for the biofuel is soybean. Also Brazil has a focus on biofuel, and the country was allowed to use imported soybean for blending (domestic soybean prices were very high). Brazil, normally a major exporter, the global number 2 after Argentina, imported the first half year of 2021 a mere 86,000 tonnes. Compared to the same period in 2020 (21,000 tonnes) an increase of about 300%. Meanwhile, Argentina, the biggest global soybean exporter, is also expected to lower its exports until 2022 on accounts of higher biodiesel use. The domestic consumption of soybean oil is expected to increase substantially.

With increasing tightness of a product on the market, prices also increase. Therefor, a search for cheaper alternatives started. The alternatives were found in palm oil and sunflower oil. Palm oil is mainly used in hospitality and catering sectors, while sunflower oil (like soybean oil) is used as a home-cooking oil.

So, while the USA, Brazil and Argentina use soybean oil as the main feedstock to produce biodiesel, squeezing its availability as an edible oil for major importers like India and China. Meanwhile, the edible oil demand of these Asian countries is expected to rise due to economic recovery from Covid as consumption will normalize. While the supply concerns of soybean oil are likely to persist until 2022, additional vegetable oil demand in countries like India and China are likely to be met with increased sunflower oil trade from Ukraine and Russia.

Operational and Environmental Regulations

Regulations governing the carriage of chemicals by ships are contained in the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Marine Pollution from Ships, as modified by the Protocol of 1978 relating thereto (MARPOL). 2020 marked the implementation of the much anticipated global 0.5% m/m sulphur cap

regulation, commonly referred to as IMO-2020. However, the potential consequences from the fallout of IMO-2020 were overshadowed by the impact of COVID-19.

Operational Regulations

Below is an overview of some of the operational regulations that entered into force by the end of 2020.

Exhibit 11: Operational Regulations

Regulation	Entered into force on	Brief description
Maritime Cyber Risk Management in Safety Management Systems (SMS) – MSC.428(98) & MSC-FAL.1/Circ.3	1 January 2021	The IMO has encouraged Flag States to ensure that cyber risks in safety management systems are appropriately addressed no later than the first annual verification of the company's Document of Compliance (DOC). Shipping companies are recommended to understand the threats, identify vulnerabilities, assess their risk exposure, develop protection and detection measures, establish contingency plans and know how to respond and recover in case of a cyber-incident.
Amendments to the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC code) –MSC.460(101) &MEPC.318(74) and Amendments to the Code for the Construction Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH code) –MSC.463(101) & MEPC.319 (74)	1 January 2021	Chemical tankers constructed on or after 1 July 1986 are subject to the IBC code, whilst chemical tankers constructed before 1 July 1986 need to comply with the requirements of the BCH code. Some amendments include: • Requirement of hydrogen sulphide (H_2S) detection equipment on board ships carrying bulk liquids prone to H_2S formation. • Introduction of pre-wash requirements in line with MARPOL Annex II amendment for substances designated as persistent floaters. • Revision of the standard format of Procedures & Arrangements (P&A) Manual.

Source: IMO

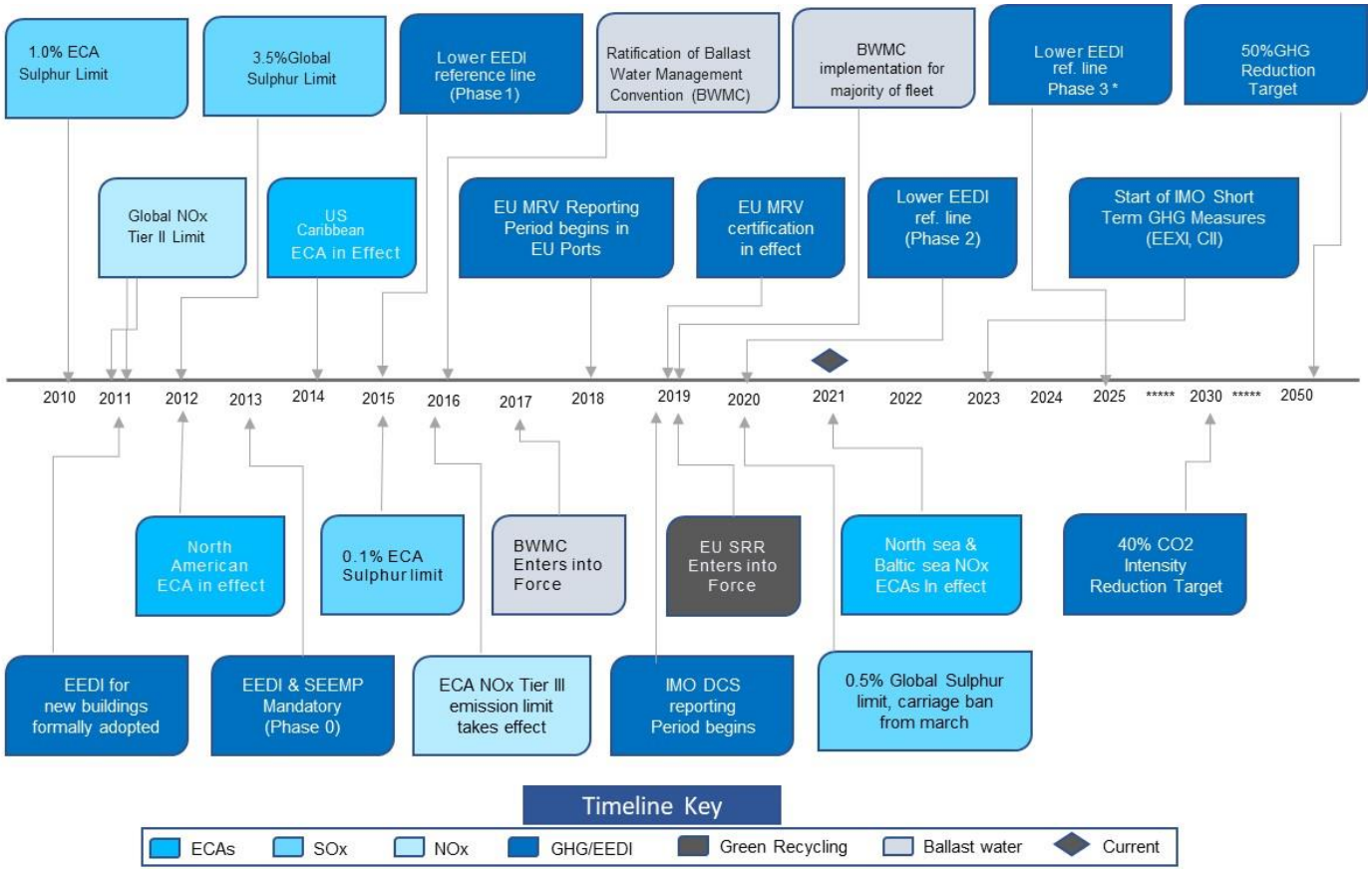
Environmental Regulations

Green initiatives are being setup and implemented across the shipping industry in an attempt to minimise the impact of shipping activities on the environment, with IMO targeting a 50% CO_2 reduction by 2050, relative to 2008.

Figure 24 depicts the environmental regulation and its timeline.

Shipping accounts for 2.4% of global CO_2 emissions, but remains the most carbon efficient mode of transport. Major regulations are being put into place by regulating authorities aiming for a net zero-emission future. The below diagram shows the emission target timeline in shipping industry.

Figure 24: Environmental Regulations: Projected Timeline



Source: Clarkson Research

Recent Developments in Carbon Emissions:

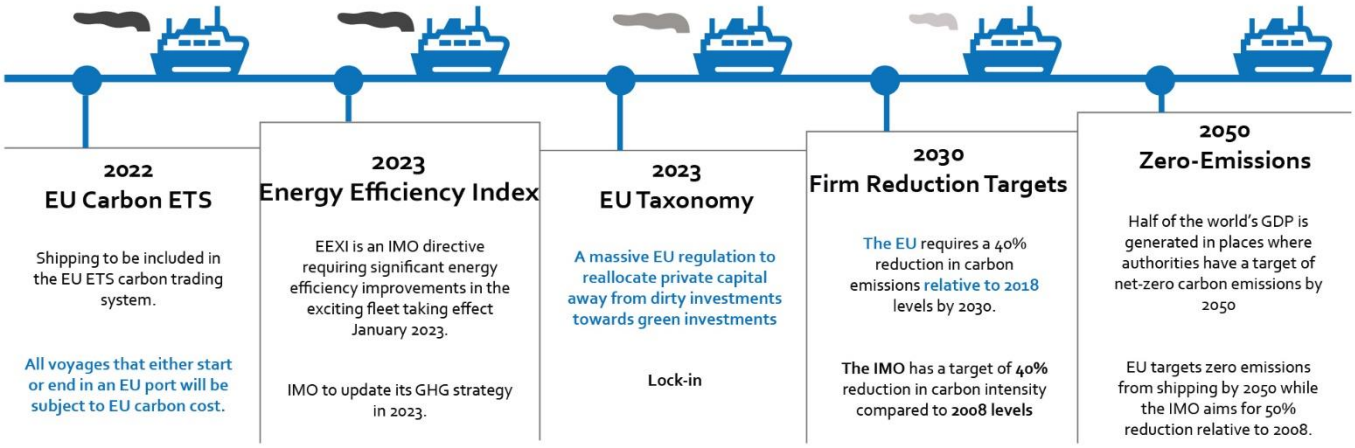
In June 2021, Marine Environment Protection Committee (MEPC 76) adopted technical and operational measures to reduce the carbon intensity of international shipping, taking effect from 2023. The measures include the **Energy Efficiency Existing Ship Index (EEXI)**, the enhanced **Ship Energy Efficiency Management Plan (SEEMP)** and the **Carbon Intensity Indicator (CII)** rating scheme.

Energy Efficiency Existing Ship Index (EEXI): EEXI is a technical or design-efficiency index, which requires a vessel to achieve a required level of technical efficiency under specified reference conditions. Compliance is determined by the vessel's design and arrangements; an attained EEXI can only be changed through alterations to the vessel's design or machinery and not day–to-day operational functions, such as speed reduction or cargo reduction.

Ship Energy Efficiency Management Plan (SEEMP): SEEMP aims to optimise the ship's operational and technical management processes for energy saving. Efficiency can be implemented in various ways, such as by optimizing the speed of the vessel, making a course change to tackle rough weather, hull cleaning in dry dock and installing heat recovery methods. All these methods help in improving the ship's efficiency and optimizing its operations.

An important parameter of SEEMP is the use of Carbon Intensity Indicator (CII). The CII measures grams of CO_2 per dwt mile. IMO defines a mandatory CII target per ship type. Ships must document that their CIIs are compliant with reduction trajectory towards 2030, based on which vessels will obtain a rating from A to E, every year. A ship rated D or E for three consecutive years will have to submit a corrective action plan, to show how the required index will be achieved.

Figure 25: Emission Targets Timeline



Source: Clarkson Research

Impact of COVID-19 on Chemical Tankers Market

All the primary segments of commercial shipping were impacted by the pandemic in 2020. The chemical tanker industry could be considered in the front line for impact from COVID-19, given the widespread disruption in economic activity and manufacturing. However, the diverse nature of the cargoes carried ensured the situation wasn't as bad as might be expected.

When COVID-19 outbreak hit China in February and March last year, the country's production and demand for chemicals slowed as plants shut down or reduced operating rates to reduce oversupply. However, some recently commissioned plants continued to operate, boosting domestic organic chemical supply.

The pandemic continues to ravage various industries around the world including the tanker industry. The recent rise in cases fuelled by more contagious strains including the Delta and Omicron variants are expected to impact the tanker shipping industry.

Future Outlook

The rise in sustainable chemical trade regulations and agreements and growing innovation in manufacturing activities across the world will drive the future demand for chemical tankers. The chemical operators are in agreement with the policies that support a digital transformation to expand the flexibility of supply chains. Maritime transport has to play its role in linking global economies and supply chains in order to mitigate the crisis by investing in advanced technology and adopting AI-based solutions. The advanced solutions help to meet the future demand of the Maritime supply chains.

The chemical tanker operators are looking to harness data by using fast-evolving data capabilities that help them in forecasting growth and monitoring recovery trends. It allows them to get access to new sources of data and enhanced possibilities, and it would provide the operators with plenty of opportunities to analyse and improve in adapting to new policies. The pandemic has revealed the actual potential of real-time data on tank ship movement, port traffic and information related to shipping schedules. The data helps in order to generate early warning systems for the operators. It shows the reliance of digitalization on economic growth and seaborne trade.

The order book is contracting, which indicates that fundamentals should improve in the near future. The two main factors might have an impact on this positive trend in the chemical tankers market. Firstly, there will be a supply of swing tonnage, which will be later determined by CPP market conditions. Secondly, the current situation in chemical tanker contracting activities has decreased due to the uncertainty of the pace of global trade growth amidst the potential environmental regulations related to chemical tankers.

In June 2021, IMO's Marine Environment Protection Committee (MEPC 76) has held to introduce certain regulations for fleet operations. MEPC 76 approved technical and operational measures to reduce the carbon intensity of international shipping, which will go into effect in 2023.

MEPC 76 adopted technical and operational measures to reduce carbon intensity of international shipping, taking effect from 2023.

MARPOL Annex VI is a technical and operational measures meant to reduce carbon intensity of international shipping. Some of measures include:

- The Energy Efficiency Existing Ship Index (EEXI), which will be applicable beginning with the first annual, intermediate or renewal IAPP survey after January 2023
- The improved Ship Energy Efficiency Management Plan (SEEMP), which would require an approved SEEMP onboard, beginning January 2023
- The Carbon Intensity Indicator (CII) rating scheme that will be operational in January 2023

The use of a CII is one of the mandatory elements added to the SEEMP (CII). The CII measures CO_2 emissions in grams per dwt mile. The IMO has established a mandatory CII target for each ship type.

Reduction of GHG emissions is an important aspect in the global trade that would impact the chemical production and its trade. Technical guidelines for the EEXI and CII were adopted based on the outcomes of ISWG-GHG 8 held at MEPC.

The establishment of reduction factors for the CII was a critical decision. The reduction factors define the mid-point of the C-rating band for each year, using 2019 as the base year for the reference lines. The CII reduction rates were set to rise by one percentage point (pp) per year from 2020 to 2022, then by two pp per year from 2023 to 2026.

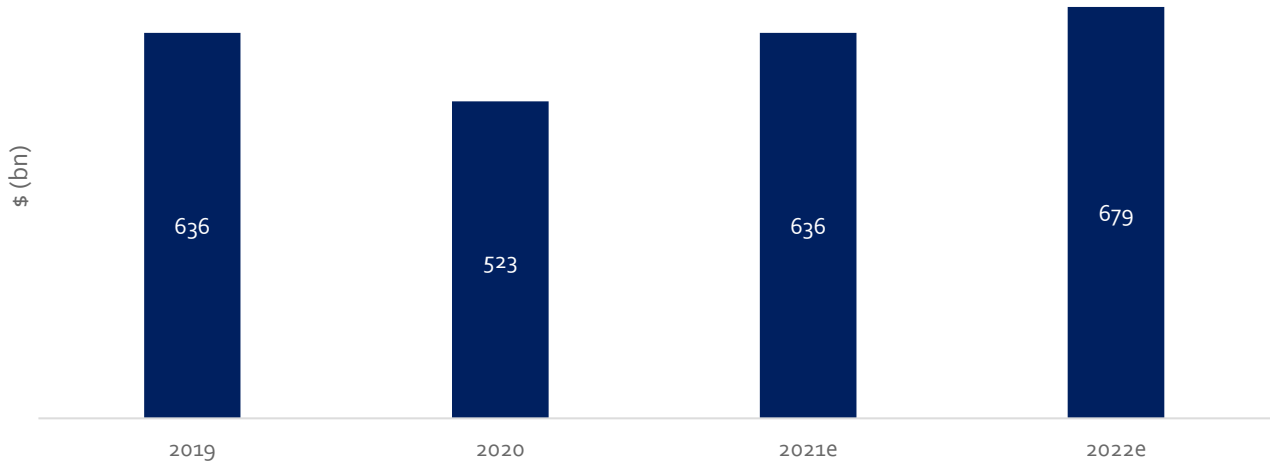
Future Demand of Chemicals in Industrial Sector post COVID-19

- Figure 26 depicts the top ten chemical producers' revenue from 2019 to 2023. As per the chart in 2019 the companies have earned $636 bn revenue in 2019 and estimated to reach $679 bn by 2023 – an increase of 30% compared to 2020

- There is a slight rise in the demand for the chemical products, especially in the field of automotive, construction, and pharmaceutical industries. Post the pandemic, there has been an increase in demand for personal care and packaging products will show modest growth chemical-based products in the coming years.

- The high demand for petrochemicals has been leading to certain supply constraints in the petrochemical value chain and substantial shortage in the inventories after being exhausted during the pandemic. Thus, many chemical tanker operators will witness a rise in the trade in the future. The various issues related to the weather and COVID-19 have led to miss-allocations in the shipping demand across the globe.

Figure 26: Sales Forecast for Top-10 Chemical Producers (2019–2022)

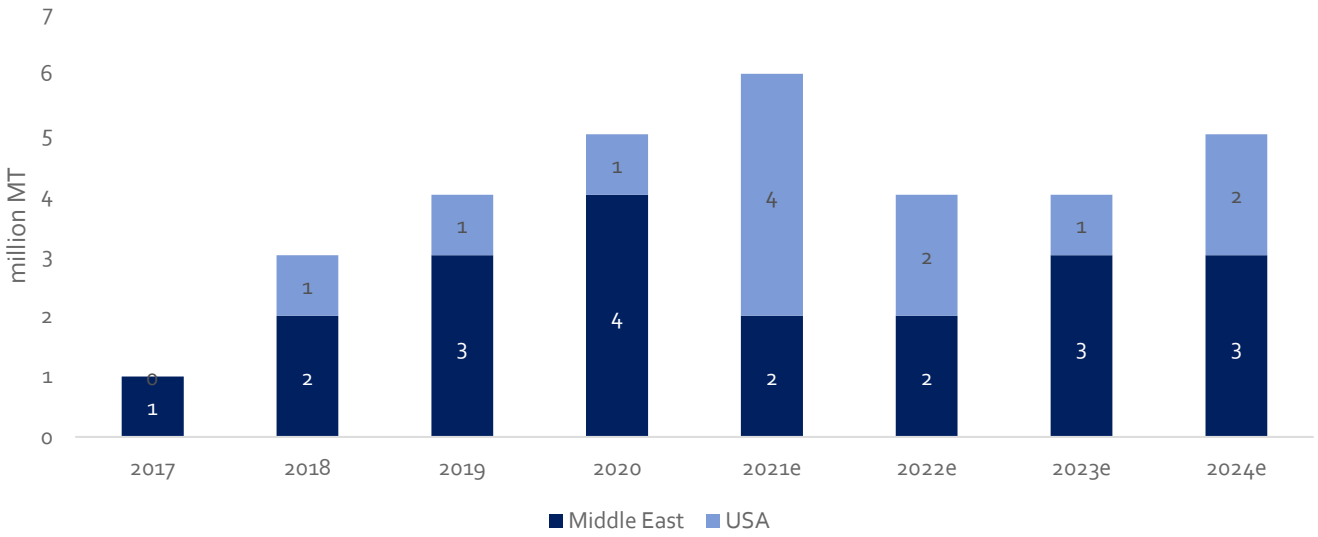


Source: Presentation Odfjell Capital Markets Day 20

Figure 27 depicts the regional chemical sales across the world for the period 2019–2030. The growth of chemical demand and production in emerging regions is a trend that will continue in the future. Globally, chemical sales are expected to reach above $8 Tn by 2030. China leads in the sale of chemicals due to an increase in demand for chemical-based products. Thus, many chemical tankers operations have been focusing on the China market.

Higher technological capabilities and innovative products of European and North American chemical producers lead to robust chemical products. Thus, it would create investing opportunity for many chemical tankers in these regions. In Asia, many chemical producers are relying on various sectors such as consumer chemicals, automotive, electronics, food & beverages, nutrition, plastic and paint & coating. Therefore, the diversifying demand for chemical and chemical-based product provides huge opportunities for chemical tanker operators for the transportation.

Figure 27: Liquid Chemical Plant Development (2017–2024)



6

M&A Activity in the Chemical Tanker

Chemical Tankers M&A Transactions (2019-YTD)

Mitsui O.S.K. Lines acquired 40% stake in Waterfront Shipping Company

In Jul'21, Mitsui O.S.K. Lines has agreed to acquire a 40% stake in Waterfront Shipping Company (WFS), a Canada-based marine transportation company specializing in the transport of bulk chemicals and clean petroleum products, from Methanex Corporation, for a consideration of $145m.

CSX Corporation acquired Quality Carriers

In May'21, CSX Corporation has agreed to acquire Quality Carriers, Inc., the US-based transportation company specializing in transport of bulk liquid chemicals, from Quality Distribution Inc., for an undisclosed consideration.

TORM acquired Team Tankers International (eight MR product tankers vessels)

In Mar'21, TORM plc has agreed to acquire eight MR product tankers vessels of Team Tankers International Limited, for a consideration of $132m. The consideration will be payable via $82.5m cash and the issuance of 5.97m TORM shares.

United Overseas Group acquired United Arab Chemical Carriers

In Jan'21, United Overseas Group Ltd has agreed to acquire United Arab Chemical Carriers Limited, the UAE-based provider of transportation of chemical services, for an undisclosed consideration.

De Poli Tankers acquired Team Tankers Management

In Nov'20, De Poli Tankers Holding B.V. has acquired Team Tankers Management SA, the Spain-based European business of Team Tankers International Limited, for an undisclosed consideration. Poli will fund the acquisition from proceeds received by Sogestran. The acquisition will complement synergies and additionally enhance service levels of both De Poli and TTI. Post-acquisition, De Poli will also commercially manage three chemical tankers for TTI for a limited period.

Sogestran acquired De Poli Tankers

In Nov'20, Sogestran S.A. has acquired a majority stake in De Poli Tankers Holding B.V., a Netherlands-based owner and operator of chemical tankers, from De Poli Family, for an undisclosed consideration. De Poli Tankers Group has used the proceeds of this transaction to complete the acquisition of the European-based chemical tanker business from Team Tankers International Ltd.

FDX Offshore acquired Womar Logistics

In Sep'19, FDX Offshore, LLC, the US-based merchant bank focused on Maritime, commodity and specialty finance sectors, has acquired Womar Logistics Pte. Ltd., the Singapore-based tanks operator, from BW Group Limited, a Bermuda-based provider of maritime transportation services for energy and other commodities, for an undisclosed consideration. The acquisition will assist Womar Logistics in its growth. FDX plans to utilize its financial resources and Womar's expertise to Womar's chemical tanker pools as well as grow other independent ship fleet.

J.P. Morgan Asset Management acquired 49.99% stake in Koole Tank Transport

In Aug'19, J.P. Morgan Asset Management, the US-based asset management company has acquired 49.99% Koole Tank transport BV, the Netherlands-based operator of terminals for storage and transportation of edible oils and fats, paraffin Ontario Teachers' Pension Plan, the Canada-based pension fund engaged in managing equity, fixed income and alternative investment portfolios and Investment Management Corporation of Ontario, the Canada-based investment manager, for an undisclosed consideration.

SEACOR acquired 49% stake in SEA-Vista

In Aug'19, SEACOR, the listed US-based company engaged in the operation of a diversified fleet of offshore support vessels that serve the oil and gas exploration industry, has acquired 49 % stake in SEA-Vista, the US-based operator of petroleum and chemical carriers, from Avista Capital Partners, the US-based private equity firm, for a consideration of $174.4m.

JZ Logistics acquired North Sea Tankers

In Aug'19, JZ Logistics, the Netherlands-based holding company, has acquired North Sea Tankers, the Netherland-based company providing transportation services for chemicals, from Windward Holding, the Netherlands-based holding company, for an undisclosed consideration. Through the transaction, North Sea Tankers plans to expand its fleet composition and geographical presence.

Express Holding acquired Finbeta

In Aug'19, Express Holding Fund, the Italy-based fund, through Chemtank, its special purpose vehicle, has acquired an undisclosed majority stake in Finbeta SpA, the Italy-based company engaged in shipping of chemical tankers, from the Bertani and Finbeta families, for an undisclosed consideration.

MOL Chemical Tankers acquired MOL Nordic Tankers

In Jan'19, MOL Chemical Tankers Pte. Ltd., a Singapore-based company engaged in chemical tanker activities, has agreed to acquire Nordic Tankers Trading A/S (NT), a Denmark-based company engaged in marine transportation of bulk liquid chemicals and oil, from Triton Partners, the UK-based private equity firm, for an undisclosed consideration.

International Seaways acquired Diamond S Shipping

In Mar'21, International Seaways, Inc has agreed to acquire Diamond S Shipping Inc from First Reserve and WL Ross & Co. Diamond S Shipping Inc (DSSI) is a listed US-based company engaged in the provision of marine transportation services, headquartered in Greenwich, Connecticut.

MPC Muenchmeyer Petersen Capital acquired Albis Shipping & Transport

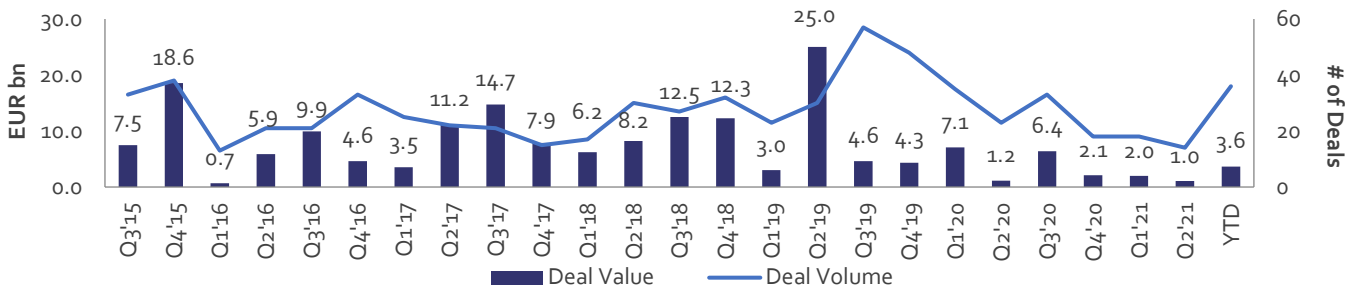
In Nov'19, MPC Capital AG, an international asset and investment manager of real assets, has acquired a strategic stake of 50 percent in Albis Shipping & Transport GmbH & Co. KG ("Albis"), Hamburg. Albis, led by Kim Moeller, operates a market-leading commercial platform for tankers of various sizes. Albis offers its customers tailor-made solutions for the chartering and operations of tankers.

FSL Holdings acquires First Ship Lease Trust (FSL)

In Jun'19, FSL Holdings Pte. Ltd has launched a mandatory takeover offer for a 44.91% stake in First Ship Lease Trust (FSL). First Ship Lease Trust (FSL) is the listed Singapore-based shipping trust that owns and invests in a diversified lease portfolio of vessels which are leased to international shipping companies on long-term bareboat charter basis, headquartered in Suntec City.

M&A Activity in the Maritime & Offshore Industry

Figure 35: M&A Deal Value and Volume



Source: Merger Market

Recent M&A Transactions

Ann. Date	Target	Country Code	Target Description	Buyer	Deal Value (€ mn)	EV (€ mn)	EV/ Rev (x)	EV/ EBITDA (x)
15-Jul-21	Compagnia Portuale Monfalcone (CPM)	IT	Italy-based provider of terminal services and manages cargo traffic through Monfalcone port	F2i SGR SpA	-	-	-	-
15-Jul-21	Waterfront Shipping Company Ltd (40% Stake)	CA	Canada-based Marine transportation company specializing in the transport of bulk chemicals and clean petroleum products	Mitsui O.S.K. Lines, Ltd.	123	-	-	-
15-Jul-21	Compania Trasmediterranea, S.A.	ES	Spain-based assets of Compania Trasmediterranea, S.A. including five ships, the two terminals in the ports of Valencia and Barcelona, as well as offices and warehouses	Grimaldi Group SpA	375	375	-	-
1-Jul-21	Gemini Shipholdings Corporation (51% Stake)	GR	Greece-based ship fleet operator	Danaos Corporation	99	169	-	-
30-Jun-21	HMM Company Limited (14.8% Stake)	KR	Listed South Korea-based marine transportation and logistics company operated via container segment and bulk segment	Korea Development Bank	223	5,125	1.0x	4.2x
29-Jun-21	Ningbo Beilun Shipping Co., Ltd. (54.89% Stake)	CN	China-based company engaged in shipping business	Nanjing Iron and Steel Co., Ltd.	25	-	-	-
22-Jun-21	Songa Container AS	NO	Norway-based company engaged in owning and operating a fleet of container vessels	MPC Container Ships AS	176	176	6.1x	49.5x
18-Jun-21	Vesterhavet A/S	NO	Norway-based holding company engaged in providing shipping services	Oddvar Nes AS	40	40	-	-
27-May-21	Taumar AS (49% Stake)	NO	Norway- based company which owns and operates the aquaculture service vessel "Taumar"	Hofseth International AS	-	-	-	-
19-May-21	Datang Qingdao Port Affairs Co., Ltd. (49% Stake)	CN	China-based port operator	Undisclosed bidder	13	-	-	-
19-May-21	Danube Logistics SRL	MD	Moldova-based logistics company	The European Bank for Reconstruction and Development	-	-	-	-
18-May-21	Suezmax Filikon	BE	Belgium-based shipping vessel of 149,989 dwt capacity	Undisclosed bidder	13	13	-	-
11-May-21	Qingdao Haiye Oil Terminal Co., Ltd. (40.8% Stake)	CN	China-based company engaged in providing terminal facilities for ships, cargo handling and warehousing services in port area and port dangerous goods operations	Qingdao Port International Co., Ltd.	134	-	-	-
10-May-21	UP Offshore S.A.	UY	Uruguay-based company having interest in shipping vessels and in providing ship transportation services	OceanPact Servicos Maritimos S.A.	25	25	-	-
10-May-21	APM Terminals Rotterdam B.V.	NL	Netherlands-based operator of port, terminal and inland service network	Hutchison Port Holdings Limited	-	-	-	-
16-Apr-21	Imperial Logistics Limited	PR	Shipping business of Imperial Logistics	Hidrovias do Brasil	73	73	2.4x	9.3x
12-Apr-21	Geest Line Limited	UK	Provider of shipping services	Jamaica Producers Group	-	-	-	-
05-Apr-21	Krishnapatnam Port Company Ltd	IN	Engaged in the business of handling containers, coal, break bulk and other bulk cargo including liquid cargo.	Adani Ports and Special Economic Zone Ltd	316	1,543	-	-

31-Mar-21	Shanghai Port Chemical Logistic Co., Ltd.	CN	China-based company engaged in shipping and air freight services	Milkway Chemical Supply Chain Service Co., Ltd.	11	-	-	-
23-Mar-21	Gangavaram Port Limited	IN	India based company handling various types of Dry bulk and Break bulk cargo	Adani Ports and Special Economic Zone Ltd	365	662	5.3x	9.1x
19-Mar-21	Boustead Cruise Centre Sdn Bhd	MA	Malaysia-based provider of port facilities and services to cruise and navy vessels	MMC Corporation Berhad; Westports Holdings Berhad	46	46	-	-
9-Mar-21	Zhejiang Port Shipping Co Ltd	CN	China based shipping company	Ningbo Zhoushan Port	51	-	-	-
2-Feb-21	Thessaloniki Port Authority	GR	Operation and management of port	Belterra Investments Limited	77	187	-	-
7-Dec-20	SEACOR Holdings Inc.	US	US-based company in operation of a diversified fleet of offshore support vessels that serve the oil and gas exploration industry	American Industrial Partners, LLC	-	-	-	-
4-Dec-20	Odfjell Terminals Korea (24.5% Stake)	KR	South Korea-based terminal for storage and distribution of petrochemicals	Odfjell SE	32	81	4.9x	22.0x
1-Dec-20	Norspan LNG 21 AS	NO	Norway-based company in shipping business	CapeOmega AS	-	-	-	-
28-Nov-20	Wenzhou Port Group Co., Ltd.; Jiaxing Port Holdings Group Co., Ltd.; Zhejiang Haigang Jiaxing Port Co., Ltd.; Zhejiang Yiwu Port Co., Ltd.; Zhejiang Toumengang Port Co., Ltd.	CN	China based port operator; China based port operator; China based port operator; China-based port operator	Ningbo Zhoushan Port Company Limited	720	-	-	-
18-Nov-20	Chettinad Builders Pvt Ltd	IN	Coal and bulk commodity ports business	JSW Infrastructure Limited	114	114	-	-
17-Nov-20	Cont-Service Oy / Ab	FI	Company offers sea container transports	SMC Service Oy	-	-	-	-
11-Nov-20	East Anglia ONE Limited (20% Stake)	GB	UK-based company operating an offshore wind farm	InfraRed Capital Partners Limited; The Renewables Infrastructure Group Limited	-	-	-	-
11-Nov-20	Wagle Chartering AS (50% Stake)	NO	Short sea shipping company acting as broker, agent and commercial manager	Longship Group BV	-	-	-	-
9-Nov-20	Viking Cruises	US	US-based provider of river and small ship ocean cruises. It provides city-to-city itineraries that offer a range of cultural locales, destinations, shore excursions	TPG Capital LP; Canada Pension Plan Investment Board	422	-	-	-
1-Nov-20	De Keizer Marine Engineering B.V.	NL	Netherlands-based company engaged in designing, building and installing electrical installations and computer-controlled alarm, monitoring and operating systems for the luxurious yacht and shipbuilding industry	Eekels Technology B.V.	-	-	-	-
29-Oct-20	MHI Vestas Offshore Wind A/S (50% Stake)	DK	Denmark-based JV between Mitsubishi Heavy Industries and Vestas Wind Systems engaged in offshore wind turbines business	Vestas Wind Systems A/S	709	-	-	-
23-Oct-20	BSE Maritime Solutions	AU	Australian company providing ship repair and supporting services to defense, commercial, tourism, and luxury vessel customers	Austal Limited	17	17	-	-
21-Oct-20	Chongqing Chemical Harbour Co., Ltd. (35% Stake)	CN	China-based company engaged in providing terminal services for ships	China National Aviation Fuel Group Logistics Co., Ltd.	12	-	-	-
17-Oct-20	Baodarun (Xiamen) Investment Co., Ltd.	CN	State-owned investment holding firm which owns bulk carriers and dry bulk shipping	Xiamen ITG Group Corp., Ltd.	63	63	-	-
12-Oct-20	BBL Transport SA	FR	Company providing road, marine freight transport services along with inventory management and warehousing facilities	Geneo Capital Entrepreneur	15	-	-	-
11-Oct-20	R & M Ship Technologies Group	DE	Germany-based provider of interior outfitting for ships and marine installations, such as cruise ships, ferries and offshore platforms	China State Shipbuilding Corporation Limited	-	-	-	-
5-Oct-20	Euronav NV (Concord Vessel)	BE	Belgium-based ship owned by Euronav NV	Seven Islands Shipping Ltd	17	-	-	-
5-Oct-20	Grammer Logistics, Inc. (Dry Bulk business)	US	Dry Bulk business of Grammer Logistics	TFI International, Inc.	-	-	-	-
2-Oct-20	PostNord AB (Swedish Air & Ocean activities)	SE	Sweden-based air & ocean activities of PostNord AB	Scan Global Logistics A/S	-	-	-	-
2-Oct-20	Paul's Hauling Ltd.	CA	Canada-based provider of bulk transport services in Western Canada	RTL-Westcan Group of Companies	-	-	-	-
29-Sep-20	Safe Harbor Marinas	US	Operates more than 100 marinas in US and also provides other marine services	Sun Communities	1,719	1,719	7.2x	31.4x
28-Sep-20	Nordic Bulk Carriers (33.7%)	DK	Operates as a dru bulk shipping company specialising in provision of ice class bulk carrier services	Pangaea Logistics Solutions	19	-	-	-
24-Sep-20	Zhejiang Shipping Group	CN	Engaged in coastal and inland river freight transportation and international ocean shipping transportation	Zheshang Development Group	214	214	1.2x	1.7x
14-Sep-20	The Plaquemine Terminal, The Freeport Terminal	US	Comprises of industrial terminal for marine operations and chemical storage.	Vopak Industrial Infrastructure Americas	523	523	-	-
11-Sep-20	Bestway Marine and Energy Technology (44.4%)	CN	Provider of marine and offshore engineering technological services	Xiamen Longhai Investment Management, Shanghai Dingguo Enterprise Development	150	361	-	-
28-Aug-20	PT Kiat Ananda Cold Storage, PT Ananda Solusindo, PT	ID	Comprises of freight forwarder and ship freight business	K.R.S. Corporation	52	52	-	-

	Manggala Kiat Ananda, PT Trans Kontainer Solusindo							
27-Aug-20	Rizhao Lanshan Wansheng Harbour Company	CN	Engaged in port handling, loading and unloading of iron ore, and logistics services	Rizhao Port	36	-	-	-
19-Aug-20	Avana Logistek	IN	Operates as a multi-modal logistics services company, providing strategic and operational logistics support services	Unifeeder ISC FZCO	25	25	-	-
10-Aug-20	Total Terminal International Algeciras	ES	Operates container terminal and manages ships, shore cranes, automatic stacking cranes, and shuttle carriers	CMA CGM, DIF Capital Partners	43	-	-	-
6-Aug-20	China Shipping Port (Laizhou)	CN	Engaged in port business at Laizhou port	Yantai Port Group	144	-	-	-
15-Jul-20	Deutsche Binnenreederei (81.1%)	DE	Provider of inland shipping transport and logistics services, focusing on container transports and dry bulk and heavy lift freight	Rhenus PartnerShip	18	-	-	-
10-Jul-20	GOI Travel (50.0%)	ES	Operates as a logistics operator focused on the transport, assembly and installation of bulky goods	Moira Capital Partners	17	-	-	-
9-Jul-20	Silversea Cruises (33.3%)	MC	Operates a fleet of luxury cruises and smaller cruise ships	Royal Caribbean Cruises	230	-	-	-
7-Jul-20	Yingkou Port Liability	CN	Engaged in providing of cargo loading, unloading, storage and transportation services.	Dalian Port (PDA) Company	1,883	1,883	-	-
12-Jun-20	Trust Energy Resources (3 dry bulk vessels)	SG	Comprises of dry bulk carrier vessels of Trust Energy Resources	Oldendorff Carriers	189	189	-	-
5-Jun-20	Zhoushan Tianqi Shipping	CN	Engaged in providing shipping services	Undisclosed bidder	11	-	-	-
11-May-20	Teekay LNG Partners	US	Engaged in ship transport of gas, oil and other utilities	Teekay	111	3,456	6.2x	8.6x
11-May-20	Odfjell Terminals (Dalian) (50.0%)	CN	Comprises of tank terminal for hazardous and non-hazardous liquid products	VTTI	55	-	-	-
4-May-20	Imperial Shipping Services	DE	Provider of shipping services for European inland waterway	Haefen und Gueterverkehr Koeln	225	225	0.6x	-
Mean							**3.9x**	**17.0x**
Median							**4.9x**	**9.2x**

Source: Merger Market

The M&A deals in the global maritime and offshore industry witnessed after-effects of the pandemic with a 46.9% decline in deal value 22.2% decline in deal volume in the second quarter performance of 2021. There was a significant decline in value and volume for 2021's second quarter when compared to beginning of the pandemic in 2020's second quarter. The deal values have fallen 9.5% amplified by 39.1% decline in deal volume.

Key M&A Transactions (Jan'19-YTD)

Mitsui O.S.K. Lines acquired 40% stake in Waterfront Shipping Company for $145mn

In Jul'21, Mitsui O.S.K. Lines has agreed to acquire a 40% stake in Waterfront Shipping Company (WFS), a Canada-based marine transportation company specializing in the transport of bulk chemicals and clean petroleum products, from Methanex Corporation, for a consideration of $145mn.

Grimaldi Group acquired the Spain-based assets of Compania Trasmediterranea for EUR 375mn

In Jul'21, Grimaldi Group acquired the Spain-based assets of Compania Trasmediterranea, S.A., for an estimated consideration of EUR 375m. The assets included five ships, the two terminals in the ports of Valencia and Barcelona, as well as offices and warehouses located on the islands of Mallorca, Menorca and Ibiza.

Danaos Corporation acquired the remaining 51% stake in Gemini Shipholdings for $86.7mn

In Jul'21, Danaos Corporation acquired the remaining 51% stake in Gemini Shipholdings, the Greece-based ship fleet operator, for a consideration of $86.7mn. Gemini will increase Danaos contracted revenue by approximately $160mn and its contracted EBITDA by approximately $117mn in total.

Korea Development Bank (KDB) acquired a 14.8% stake in HMM Company for $265mn

In Jun'21, Korea Development Bank (KDB) acquired a 14.8% stake in HMM Company, a listed South Korea-based marine transportation and logistics company, total consideration of KRW 300bn ($265mn). Upon completion of the transaction, KDB will hold a 24.96% stake in the target, up from a 10.16% stake.

MPC Container Ships (MPCC) acquired Songa Container for $210mn

In Jun'21, MPC Container Ships AS (MPCC) acquired Songa Container, a Norway-based company engaged in owning and operating a fleet of container vessels, for a consideration of $210mn. Songa comprises of 11 container vessels with an average size of 2,250 TEU.

Qingdao Port acquired 40.8% stake in Haiye Oil Terminal for $163mn

In May'21, Qingdao Port acquired 40.8% stake in Haiye Oil Terminal, the China-based company engaged in providing terminal facilities for ships, cargo handling and warehousing services in port area and port dangerous goods operation, for a cash consideration of $163mn.

Hidrovias do Brasil acquired South American Shipping business of Imperial Logistics for $90mn

In Apr'21, Hidrovias do Brasil acquired the Paraguay-based South American Shipping business of Imperial Logistics. The agreed maximum enterprise value for the interest in the South American Operations was $90mn, which equates to a multiple of 9.6x FY2020 reported EBITDA. The shipping business transferred includes a 100% stake in Imperial Shipping Paraguay SA and Imperial South America BV, a 50% stake in Baden SA as well as employees, other navigation assets, 7 trunk pushers and 84 barges with cover. Hidrovias do Brasil is an independent integrated logistics provider focused on waterways logistics services in Latin America.

Adani Ports acquires remaining 25% stake in Krishnapatnam Port Company for $381 mn

In April'21, Adani Ports acquired 25% stake in Krishnapatnam Port for $281 mn from Vishwa Samudra Holdings. With this investment, Adani group now has 100% stake in Krishnapatnam Port. The company has invested at an EV/ FY21 EBITDA multiple of 10.3x. The port is an all-weather, deep-water port and has a multi-cargo facility with a current capacity of 64 MMTPA. With a waterfront of 20 km and 6,800 acres of land.

Jumbo Shipping and SAL Heavy Lift

In April'21, Jumbo Shipping and SAL Heavy Lift completed their previously announced joint venture. Jumbo Shipping is a Dutch heavy lift transport company while SAL Heavy lift is a German breakbulk and project cargo specialist. The two companies' combined their fleets and commercial activities into a single operation and will be known as Jumbo-SAL-Alliance.

Rhenus acquired 60% stake in Arkon Shipping & Projects from MD – Torsten Westphal

In April'21, Rhenus Maritime Services acquired 60% stake in Arkon Shipping & Projects. Rhenus Maritime Services is a Germany-based short-sea shipping company and Arkon Shipping & Projects specializes in commercial ship management and maritime consultancy with a special focus on the bulk, project and heavy-lift market segments. RMS Projects will function as the commercial manager for a fleet of 20 multi-purpose heavy-lift cargo vessels from Arkon.

Milkway Chemical Supply Chain Service acquires Shanghai Port Chemical Logistic

In March'21, Milkway Chemical Supply Chain Service acquired Shanghai Port Chemical Logistic, a China-based company engaged in chemical supply chain service provision. The acquisition will expand Shanghai Port reach to mainland China region. As per Merger market the deal was closed at $12. 76 mn.

Adani Ports to Acquire Controlling Interest Of additional 58.1% In Gangavaram Port

In Mar'21, The Adani Ports and Special Economic Zone (APSEZ) Ltd., India's largest private Ports & Logistics Company, has acquired the 58.1% stake held by DVS Raju and family in Gangavaram Port Limited (GPL). GPL is an all-weather, deep water, multipurpose port capable of handling fully laden super cape size vessels of up to 200,000 DWT. GPL is the gateway port for a hinterland spread over 8 states across eastern, southern and central India.

Boustead Cruise acquired by MMC Corporation Berhad & Westports Holdings for $56 mn

In Mar'21, MMC Corp. acquired 100% stake in Boustead Cruise, the Malaysia based company offering cruise and port facility to commercial and naval vessels. The sale of port will allow Boustead to focus on core business activities of the firm. Westport acquisition provides the group with opportunity to expand to cruise terminal business.

Belterra investments Limited acquires significant minority stake in Thessaloniki Port

In Feb'21, Belterra Investments Limited acquired ~32% stake in Thessaloniki Port Authority S.A. from Deutsche Invest Equity Partners GmbH. Thessaloniki Port Authority S.A, is the listed Greece-based company engaged in operation and management of port, headquartered in Thessaloniki. The new owners inherit the second biggest container port in Greece and the major dry bulk and break bulk port of the country inherits an operating port with six piers, 6.150 m. of docks, 1,55 million square meters of port land and several buildings and warehouses along.

Crestline and Blue Ocean Capital Partners acquire Rotterdam Short Sea Terminals

In Jan'21, Blue Ocean Capital Partners Limited and Crestline Investors, Inc. acquired Rotterdam Short Sea Terminals B.V. (RST), a Netherlands-based container terminal for short sea shipping, from C. Steinweg Handelsveem B.V., for an undisclosed consideration. The transaction is in line with Steinweg's strategy to focus on core business of global forwarding and warehousing for commodities. It will also help RST to upgrade the terminal and continue growing business. Rotterdam Short Sea Terminal has direct services to Western Europe, Scandinavia, Southern Europe and North Africa. From its location at the Port of Rotterdam, RST processes around 1.3 million TEU per year via its tri-modal connections.

JT Perle raises stake to majority stakeholder in Discovery World

In Oct'20, JT Perle invested $6.3 mn in Discovery World, the listed Philippines-based owner and operator of cruise lines, beachfront resorts, hotels and restaurants. Discovery World's expansion plans this year include investments in Balay Holdings (for the purchase of Boracay properties to be used for staff housing) and investments in Cay Islands. Discovery World's aims to expand it hotel brands with new cash influx

QTerminals acquires Akdeniz Liman Ports for $140 mn

In Oct'20, QTerminals acquired Akdeniz Liman Ports, the Turkish operator of ports from Global Ports Holdings for $140 mn. This allows Global Ports to focus time and resources on continued investment into further growth opportunities in the global cruise port market. With this acquisition the Qatar based company gets expansion opportunities around the Middle East

NMT Shipping Services acquires Hansen Shipping for undisclosed value

In Oct'20, NMT Shipping Services invested in Hansen shipping, Provider of shipping services for construction and mining industries. The company offers various services including international freight, trucking heavy haul services, dismantling and packing, cargo insurance, cleaning and fumigation, consular services, helping its customers to move their cargo from one place to another efficiently. The transaction will enable NMT to grow and expand its operation in mining and construction equipment shipping segment.

Zhuhai Port Co, Ltd acquired Xinghua Port Holdings, or $271 mn

In July'20, Zhuhai Port Co., Ltd., a China-listed state-controlled port operator, acquired Xinghua Port Holdings Pte. Ltd., a Singapore-based Hong Kong-listed port operator. Zhuhai Port reckons the acquisition of Xinghua Port would help the company complete its logistics network on the Yangtze River and Xi River.

Rhenus Signs Contract to Acquire Controlling Interest in Deutsche Binnenreederei

In July'20, Rhenus Partnership GmbH & Co. acquired an ~81% stake in Deutsche Binnenreederei AG, a Germany-based provider of inland shipping transport and logistics services, from OT Logistics S.A for $20.6 mn. The transaction will reinforce Rhenus presence in the eastern German canal network and in Poland, France and along the Danube. It will allow OT Logistics to focus primarily on developing its port activities and forwarding services.

Royal Caribbean Cruises raised stake in Silversea Cruises to 100%

In July'20, Royal Caribbean Cruises Ltd. acquired the remaining 33.33% stake in Silversea Cruises Ltd, a Monaco-based cruise company, from Mr. Manfredi Lefebvre D'Ovidio, for a consideration of $260.4m. The Royal Caribbean Group now owns and operates four major brands: Azamara, Celebrity Cruises, Royal Caribbean International and Silversea Cruises.

Tata Power subsidiary – Trust Energy Resources sells 3 ships to German firm Oldendorff Carriers

In June'20, Singapore based TERPL sold its 3 ships to Oldendorff Carriers. TERPL is a fully owned subsidiary of TATA Power, an Indian company. The move helped TERPL to achieve its objective of an asset-light approach to its shipping requirements. The proceeds from the sale will also go towards reducing Tata Power's debt as part of its company-wide restructuring process.

Hafen Und Guteverkehr Koln AG (HGK) acquired Imperial Logistics Limited for $246 mn

In June'20, Imperial Logistics Limited (IPL), listed on the South African stock exchange, sold its European inland shipping activities (Shipping Group) to Häfen und Güterverkehr Köln AG (HGK). The business in Paraguay is not part of the agreement, but is also to be sold. The purchase price is stated at EUR 176m with a company valuation of EUR 225m. The sale concerns 400 ships and a good 900 FTEs.

Rand Logistics, Inc. Completes Purchase of American Steamship Company from GATX Corporation

In Feb'20, Rand Logistics, Inc., acquired American Steamship Company (ASC), the US-based transportation company operating a fleet of self-unloading vessels, from GATX Corporation, for a consideration of $260 mn. The acquisition enables GATX to condense its new debt issuance in 2020 and emphasize on its franchises in global railcar and aircraft spare engine leasing. The combination will create growth opportunities for both Rand Logistics and ASC and result in improving customer service and shipping capacity.

Intertug acquired by Sociedad Matriz SAAM for $49.7 mn

In Feb'20, Sociedad Matriz SAAM S.A., through its subsidiary SAAM S.A., acquired Intertug Investment Holding S.A. ("Intertug"), a towage services company operating in Colombia, Mexico and Central America, to acquire 70% of the company. The acquisition will be a combined capital increase and share purchase. Intertug has more than 25 years' experience providing harbor towage, offshore and special services in Colombia, Mexico and Central America.

Private Investments in Ultramar LLC and Ultramar Terminal by Maxim Vorobyov

In Aug'19, Mr. Maxim Vorobyov, acquired 40% in Ultramar LLC, a Russia-based company engaged in the field of stuffing, transportation and logistics of mineral fertilizers and Ultramar Terminal LLC, a Russia-based marine dry bulk terminal engaged in handling mineral fertilizers, from Mr. Andrey Bonch-Bruevich, for an approximate consideration of $60.54mn. The acquisition will enable Mr. Maxim Vorobyov in expanding its existing portfolio of companies and venture into its first logistics project. The transaction will facilitate Mr. Andrey Bonch-Bruevich to mitigate his risk and exposure in Ultramar.

Global Ports Holding's JV completes acquisition of Goulette Shipping Cruise

In Aug'19, Global Ports Holding Plc and MSC Cruises S.A. together acquired Goulette Shipping Cruise, the Tunisia-based operator of cruise terminal in La Goulette, from Al Karama Holding, for a total consideration of $ 13.31 mn. The acquisition is in line with Global Ports and MSC's growth strategy. Goulette Shipping Cruise is in charge of modernizing, managing and developing the cruise port and/or traffic in la Goulette Cruise port since 2007 under a BOTcontract with the Tunisian Port authorities for a period of 30 years.

Chongqing Gangjiu Co., Ltd. Acquires SDIC Chongqing Guoyuangang Port Co.

In July'19, Chongqing Gangjiu Co., Ltd. acquired SDIC Chongqing Guoyuangang Port Co., Ltd., a ~50% stake in Chongqing Luohuang Port Co., Ltd. and a ~67% stake in Chongqing Yuwu Civil Explosive Material Co., Ltd. from SDIC Communications Holding Co., Ltd. and Chongqing Port Logistics Group Co., Ltd. Chongqing Gangjiu Co., Ltd., a China-based SHSE-listed company headquartered in Chongqing, engaged in distribution of commodities and cargo handling services.

Vietnam National Shipping Lines Acquires Quy Nhon Port Joint stock Company for $11.74 mn

In May'19, Vietnam National Shipping Lines (Vinalines), a Vietnam-based state-owned company engaged in shipping, port operation and maritime businesses, acquired 75% stake in Quy Nhon Port Joint Stock Company, a Vietnam-based operator of port and provider of port services, from Hop Thanh Investment & Mineral JSC, a Vietnam-based investment and mineral group, for a consideration $11.74 mn. Quy Nhon Port is a major port in the central coast with almost 21,000 warehouses and a 48,000 square meter area for containers.

Moby SPO, Vincenzo Oncanto & Marinvest acquire Porto di Livorno for $12 mn

In May'19, a group of bidders acquired a 66% stake in Porto di Livorno 2000 s.r.l. from Livorno Camera di Commercio and Livorno Port Authority. Porto di Livorno 2000 s.r.l., an Italy-based company engaged in the management of the Cruise Terminal, the Maritime Passenger Station, information service, car parks and transportation within the Port of Livorno, is headquartered in Livorno.

Maruzen acquires Kokusai for $66 mn

In Apr'19, Maruzen Showa Unyu Co., Ltd., the listed Japan-based company engaged in provision of logistics services, acquired ~50% stake of Kokusai Bulk Terminal Co., Ltd., the Japan-based company engaged in operation of port facilities and provision of logistic services, from Mitsubishi Corporation, the listed Japan-based conglomerate engaged in general trading business, for a consideration of $66.6mn

Vopak reached agreement with First State Investments on sale of terminals in 3 cities

In May'19, First State Investments (UK) Limited acquired Vopak Dupeg Terminal Hamburg GmbH, Vopak Terminal Amsterdam Westport B.V., and Vopak Terminal Algeciras S.A. from Vopak N.V. Royal Vopak is the world's leading independent tank storage company. Vopak operates a global network of terminals located at strategic locations along major trade routes. First State is a leading manager of infrastructure investments with over €8.0 billion of unlisted infrastructure capital under management and has been actively investing in long-life infrastructure businesses since 1994

Government of India sales stake ~74% in Dredging Corporation to 4 port trusts for $230 mn

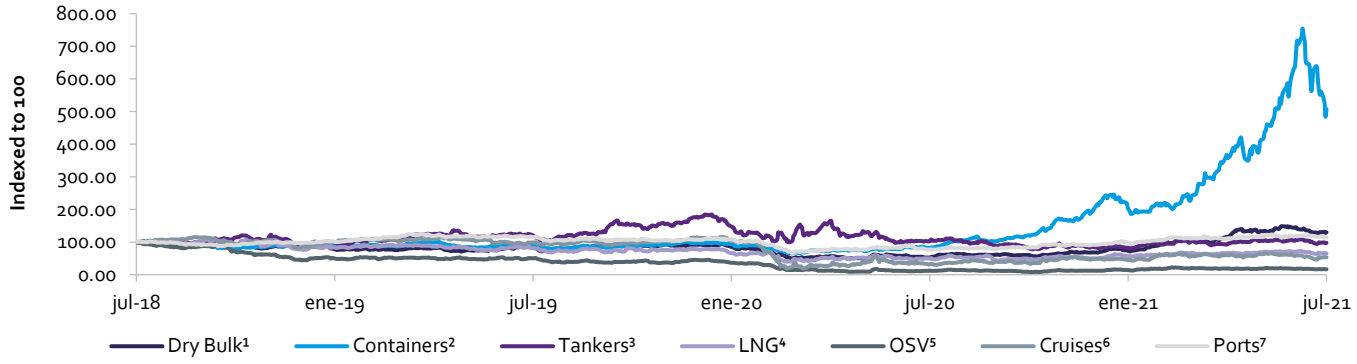
In March'19, Deendayal Port Trust, Paradip Port Trust, Visakhapatnam Port Trust, and Jawaharlal Nehru Port Trust acquired a 73.47% stake in Dredging Corporation of India Ltd, from Government of India. Dredging Corporation of India Ltd (DCI), the listed India-based company, is engaged in providing dredging services to various ports, Indian navy, fishing harbors, and other maritime organizations in India and internationally, headquartered in Visakhapatnam. JNPT is an India-based company engaged in providing marine and shipping services including container terminals, general cargo and liquid cargo terminals, headquartered in Navi Mumbai.

Port Invest B.V. has agreed to acquire a 76.03% stake in Nature Group Plc.

In Jan'19, Port Invest B.V. acquired a 76% stake in Nature Group Plc. Port Invest B.V., the Netherlands-based provider of maritime and oil logistic services to seagoing vessels, oil majors, inland navigation, offshore industries and tank storage facilities, is headquartered in Rotterdam. Nature Group Plc, the listed UK-based provider of wastewater reception and environmental treatment solutions for the shipping and oil industries, is headquartered in Jersey.

Share Price Performance

(% Change)	Dry Bulk	Containers	Tankers	LNG	OSV	Cruises	Ports
3Y	30.0%	407.3%	(2.2%)	(34.5%)	(83.2%)	(46.6%)	14.5%
1Y	147.5%	520.3%	(6.0%)	33.7%	36.9%	63.3%	47.7%
6m	82.7%	163.3%	21.3%	14.7%	22.8%	15.5%	18.8%



Source: FactSet as of 28 Jul'21

Notes:
1. Includes Pacific Basin Shipping, Star Bulk Carriers and Great Eastern Shipping
2. Includes A.P. Moller – Maersk, Evergreen Marine, Cosco Shipping and Orient Overseas
3. Includes Frontline, Euronav and Tsakos Energy Navigation
4. Includes Teekay LNG Partners and Golar LNG
5. Includes Solstad Offshore, Tidewater and SEACOR Marine Holdings
6. Includes Royal Caribbean Cruises, Carnival Corp and Norwegian Cruise Line Holdings
7. Includes Shanghai International Port, China Merchants Port Holdings, Adani Ports & SEZ, Dalian Port and International Container Terminal Services

The overall maritime segment witnessed a choppy second quarter in 2021 despite relaxation in lockdown restrictions paving the way for free movement of goods. The container industry has been the best performer in the whole market in the past year.

In the past six months, the tanker industry suffered its worst six months in three decades. This extreme weakness has certainly given the tanker market some hope to be optimistic that the worst is now behind. Tanker stocks, both the crude and product segments, began the year on strong footing, with investors looking to get in ahead an expected rate recovery when vaccines allowed more travel. However, several tanker stocks lost a large portion of their 2021 gains since then.

In early July, prices to ship containers from Asia to the U.S. and Europe rose at a historic pace as cargo owners bid up rates in a search for ocean transportation capacity. The average price world-wide to ship a 40-foot container more than quadrupled from a year ago, to $8,399 as of July 1. The rising ocean rates were the result of disruptions across supply chains that triggered delays at ports and inland distribution networks as Western retailers and manufacturers rush to restock inventories that were depleted during the Covid-19 pandemic. The Container stocks benefitted immensely and have outperformed the remaining market.

The share prices of Cruise line stocks have underperformed over the last three years. In 1H 2021, the industry has been shut down due to government regulations regarding the CoVID-19 pandemic, further stunting its performance.

Peer Analysis

Company Names	Country	Country	Share Price (€)	% of 52-Week High	Market Cap (€m)	EV (€m)	LTM Enterprise Value/ Rev(x)	LTM Enterprise Value/ EBITDA (x)	Net Debt/ EBITDA (x)
Dry bulk									
Star Bulk Carriers	Greece	GR	15.86	78.9	1,621	2,489	4.0x	11.0x	5.4x
Pacific Basin Shipping	Hong Kong	HK	0.33	89.5	1,548	2,062	1.6x	12.2x	3.4x
Great Eastern Shipping	India	IN	4.09	84.0	602	714	1.9x	4.1x	0.6x
Mean							**2.5x**	**9.1x**	**3.2x**
Median							**1.9x**	**11.0x**	**3.4x**
Containers									
A.P. Moller - Maersk A/S	Denmark	DK	2,230.58	93.0	41,502	42,774	1.2x	4.8x	0.8x
COSCO SHIPPING Holdings	China	CN	1.33	69.7	34,437	36,452	1.7x	10.8x	3.3x
Orient Overseas	Hong Kong	HK	15.17	75.3	9,663	7,772	1.1x	6.4x	Net Cash
Evergreen Marine	Taiwan	TW	3.98	58.7	21,072	23,687	3.2x	8.1x	1.0x
Mean							**1.8x**	**7.5x**	**1.7x**
Median							**1.4x**	**7.2x**	**1.0x**
Tankers									
Euronav	Belgium	BE	7.37	84.7	1,486	2,475	3.1x	5.5x	2.4x
Frontline	Bermuda	BM	6.75	88.9	1,334	3,006	3.6x	8.0x	4.6x
Tsakos Energy Navigation	Greece	GR	6.43	72.3	117	1,596	3.1x	8.5x	6.1x
Mean							**3.3x**	**7.3x**	**4.4x**
Median							**3.1x**	**8.0x**	**4.6x**
LNG									
Golar LNG	Bermuda	BM	9.60	81.9	1,056	3,193	8.4x	13.4x	nm
Teekay LNG Partners	Bermuda	BM	12.31	93.6	1,070	1,561	3.0x	4.4x	6.3x
Mean							**5.7x**	**8.9x**	**6.3x**
Median							**5.7x**	**8.9x**	**6.3x**
OSV									
SEACOR Marine Holdings	United States	US	3.39	66.9	82	356	3.0x	nm	589.7x
Tidewater	United States	US	9.68	73.9	395	466	1.5x	12.1x	0.6x
Solstad Offshore	Norway	NO	0.61	6.9	46	1,887	3.9x	11.5x	11.3x
Mean							**2.8x**	**11.8x**	**200.5x**
Median							**3.0x**	**11.8x**	**11.3x**
Cruises									
Carnival Corporation	United States	US	19.34	75.4	21,870	39,633	nm	nm	nm
Royal Caribbean Cruises	United States	US	67.88	85.1	17,279	30,385	nm	nm	nm
Norwegian Cruise Line Holdings	United States	US	21.63	78.2	8,001	15,587	nm	nm	nm
Mean							**nm**	**nm**	**nm**
Median							**nm**	**nm**	**nm**
Ports									
Shanghai International Port (Group)	China	CN	0.65	92.3	14,949	11,615	3.3x	na	na
Adani Ports & SEZ	India	IN	7.58	76.6	15,475	18,966	13.1x	20.3x	3.7x
China Merchants Port Holdings	Hong Kong	HK	1.19	85.6	4,453	1,385	1.4x	3.1x	8.4x
International Container Terminal Services	Philippines	PH	2.72	96.1	5,554	7,072	5.0x	8.9x	4.4x
Dalian Port	China	CN	0.08	82.4	4,228	4,091	4.1x	na	na
Mean							**5.4x**	**10.8x**	**5.5x**
Median							**4.1x**	**8.9x**	**4.4x**
Overall Mean							**3.5x**	**9.0x**	**40.7x**
Overall Median							**3.1x**	**8.5x**	**4.0x**

Source: FactSet as of 28 Jul'2

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RIóN MERGERS AND ACQUISITIONS

GLOBAL M&A PARTNERS

Global M&A Partners– Maritime and Offshore Team

Highlighted Transactions

Saga advised the shareholders of Libra-Plast in the majority sale to Lagercrantz Group

- Saga Corporate Finance has assisted the shareholders of Libra-Plast AS in the sale of 75% of the shares to the listed Lagercrantz Group AB. Together with the founders, family Lillebø and the management team, remaining as shareholders of 25%, the business will continue its growth path both in Norway and internationally
- Libra is a Norwegian manufacturer of high-quality marine doors, hatches, and storage units. The Company's headquarters is located in Hareid, in the maritime cluster on the Møre coast. The Company has production facilities in Norway, Latvia, and Vietnam and delivers products worldwide to various marine segments.
- The Company reported revenues of MNOK 177 in 2020.
- Libra was established in 1954 by Albert Lillebø and was prior to the transaction controlled by the second and third generation of the family. Arne Lillebø has been the chairman of Libra, while the third generation, Anders and Kim, have held operational roles in the Company. The management team, also being shareholders in the Company, has been actively involved in finding a new partner that could support Libra's future development.

Libra™ | Lagercrantz Group

Norwegian provider of marine doors, hatches and storage units

Sweden
Norway

GLOBAL M&A PARTNERS

Saga Corporate Finance

Advisor to the seller

Blue Ocean Terminals acquired 100% of the shares of Rotterdam Short Sea Terminals

- JBR assisted C. Steinweg Group as M&A advisor during the entire sales process of 100% of the shares in RST
- Rotterdam Short Sea Terminals, founded in 1997, is Europe's largest container hub for short sea shipping with direct services to Western Europe, Scandinavia, Southern Europe and North Africa. From its central location in the Port of Rotterdam, RST processes c. 1.3m TEU per year via its tri-modal connections
- Two companies have agreed in principle to acquire Rotterdam Short Sea Terminals (RST) from C. Steinweg Group.
- Crestline Investors, Inc., a global institutional private capital investment management firm, and Blue Ocean Capital (BOC), a European port infrastructure specialist investment firm, are set to purchase RST.
- For the purpose of the RST acquisition and further roll up acquisition opportunities, Crestline and BOC have formed Blue Ocean Terminals Limited
- The vision is to become the partner of choice for maritime supply-chain solutions and develop a network of terminals and multi-modal logistics platforms.

RST | Crestline

Blue Ocean Terminals acquired 100% of the shares in Rotterdam Short Sea Terminals

United Kingdom
Netherlands

GLOBAL M&A PARTNERS

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Ambassador Maritime and Offshore

Within the GMAP M&O Sector members work together to achieve premium results. Each transaction requires specific cooperation between members to combine in-depth knowledge with the specialist's network within the maritime and offshore sector.

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GLOBAL M&A PARTNERS

RIóN MERGERS AND ACQUISITIONS

ABOUT Global M&A Partners

Established in 1999, Global M&A Partners is a partnership of independent investment banking firms gathered together to offer to their respective client's premium services for their goals completion. Operating through over 200 M&A advisors, the company serves sectors including Consumer Products, Business Services, Energy & Mining, Healthcare & Pharmaceuticals, Industrials, Packaging, Leisure & Retail and IT. The company operates in over 50 countries and has completed over 1,500 transactions with a combined value in excess of €4.2bn over the last 5 years