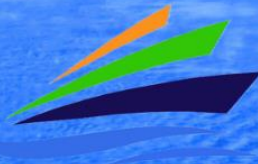




HELLENIC REPUBLIC
National and Kapodistrian
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Ports
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Q1 2025

SHIPPING

MARKET ANALYSIS

Ports Management & Shipping Department
National and Kapodistrian University of Athens

Dear Readers,

It is my pleasure to welcome you to the Q1 2025 edition of our **Shipping Market Analysis**. This quarter has brought significant developments across all major sectors—tankers, dry bulk, containers, and LNG/LPG—driven by geopolitical shifts, regulatory uncertainty, and evolving trade dynamics.

Amid these changes, a key feature of this edition is the newly introduced Sustainability Section, reflecting the accelerating transition of the maritime industry toward decarbonization. Alternative fuels, energy-efficient technologies, and data-driven fleet management are no longer optional—they are becoming central to investment and operational strategies. Regulatory initiatives such as the IMO's GHG reduction goals, the EU ETS, and the FuelEU Maritime Regulation are pushing the sector toward a greener future. From methanol-powered vessels to digital optimization platforms, the momentum is unmistakable.

This report is the result of a collective effort by our team at the Department of Ports Management and Shipping, National and Kapodistrian University of Athens. I extend my sincere thanks to the contributors, editors, and coordinators who brought this edition to life.

We trust that the insights provided will support professionals, researchers, and stakeholders in navigating the complexities of today's maritime landscape. Your feedback and collaboration are always welcome as we continue to monitor and analyze the evolving shipping industry.

Warm regards,

Dr. Michael Tsatsaronis
Asst. Professor
Dpt. of Ports Management and Shipping
National and Kapodistrian University of Athens

Writing Team

Head of Scientific Research:

Dr. Michael Tsatsaronis

Editor:

Dimopoulos Argyris

Tankers Analysis

Markopoulioti Panagiota

Mania Amalia

Vasileiadou Savvina

Dry Bulk Analysis

Zifkou Kalliopi

Doumani Panagiota

Polonyfi Stavriani

Containers Analysis

Katsavos George

Vitzilaiou Anastasia

Zacharopoulou Efthimia

LNG/LPG Analysis

Stratikopoulos Dimitris

Karasavvidis Theocharis

Skouli Maria Aikaterini

Sustainability

Spyraki Sofia

Karapanagou Aggeliki

Gaki Margarita

Editorial Coordinator

Gkorila Martha

Authors elaboration based on data from
Clarksons' Shipping Intelligence.

For inquiries or cooperation, please contact:
mtsatsaronis@pms.uoa.gr

Stay Connected:



Ports Management and Shipping, National and
Kapodistrian University of Athens



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@pms.uoa.gr

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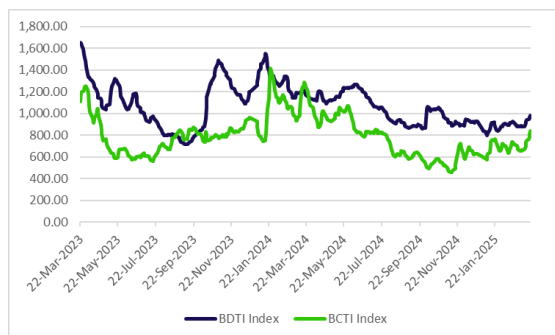
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TANKER MARKET

FREIGHT MARKET

The tanker market began January 2025 with mixed signals, influenced by geopolitical tensions, sanctions, and evolving trade flows. VLCC and MR Pacific Basket rates dropped sharply early in the month, while U.S. sanctions on 183 vessels led to a spike in Russian oil freight rates to China. The gradual reopening of Red Sea routes could support Suez Canal traffic, though persistent security concerns remain a limiting factor.

Potential new sanctions from the Trump administration targeting Russia, Iran, and Venezuela—along with proposed tariffs on Canada, Mexico, and the EU—have added further uncertainty to the market. Additionally, a decline in crude oil exports from Turkey has impacted shipments to the EU, while China’s SPG ban on vessels affected by U.S. sanctions has disrupted Iranian oil flows. The U.S. continues to maintain a strong export position, although 2024 export volumes remained flat. VLCC rates opened the year on a weak note but are expected to stabilize with increased loadings from the Middle East Gulf.



Graph 1: Baltic Dirty Tanker and Clean Tanker Index

In February 2025, the tanker recycling market remained under pressure due to ongoing geopolitical tensions, including U.S.-China trade disputes, sanctions on Iran and Russia, and instability in the Middle East. These factors have contributed to a shift in crude oil flows toward Asia, supporting demand for VLCCs. The market continues to benefit from a low orderbook and

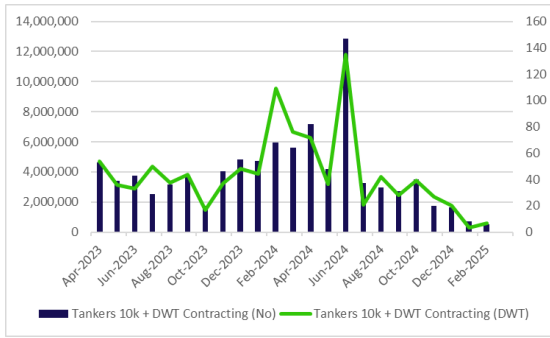
increasing U.S. crude exports, although global economic slowdowns and OPEC+ output cuts have limited growth. Offshore production in regions such as Brazil, Guyana, and the U.S. Gulf Coast has further boosted demand for VLCCs and Suezmaxes. However, weak demand in Europe and ongoing concerns about overcapacity remain challenges. Additionally, new regulatory requirements—particularly those related to environmental compliance—are adding complexity to tanker operations.

In March 2025, the U.S. Trade Representative proposed port entry fees of up to \$1.5 million for Chinese-built tankers. As Chinese-built vessels make up approximately 20–25% of the global fleet, such a measure is expected to disrupt trade flows and increase freight rates, especially for U.S.-bound cargoes. In Nigeria, the commissioning of the Dangote refinery, along with the restart of the Port Harcourt and Warri refineries, has significantly reduced imports of clean petroleum products. This has, in turn, lowered demand for LR1 and LR2 tankers in the region.

Despite ongoing volatility, profitability in 2025 is expected to remain high, supported by limited fleet growth and longer trade routes. However, the Suezmax and Aframax sectors may face pressure from a wave of new vessel deliveries.

NEWBUILDING - SALES & PURCHASE

The tanker Sale and Purchase (S&P) market remained strong in early 2025. Newbuilding orders continued at a robust pace, led by China, with total tanker orders projected to reach 60.8 million DWT this year. The VLCC sector saw a significant increase in orders, driven by strong demand on Middle East–Asia and America–Asia trade routes.

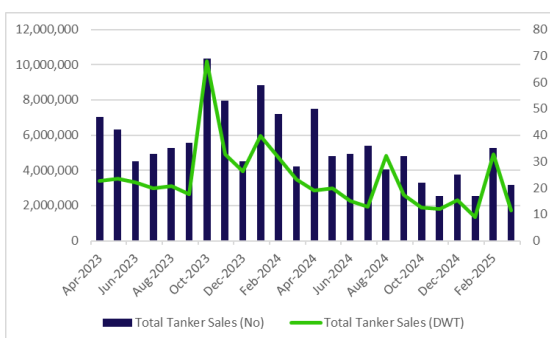


Graph 2: Tanker Newbuilding Contracts

In January 2025 alone, 30 new Suezmaxes and 6 VLCCs were scheduled for delivery. Fleet modernization—focused on fuel efficiency and environmentally friendly vessels—remains a top priority for owners and operators. However, a surge in MR and LR tanker orders raises concerns about potential oversupply in the product tanker segment. While Aframax and Suezmax demand has remained steady, VLCC orders saw a slight slowdown amid ongoing geopolitical uncertainty.

February saw steady activity in the tanker sale and purchase market. The newbuilding segment remained active, continuing the momentum from 2024’s surge, with Greek owners leading the orders—primarily for dual-fuel VLCCs and product tankers. However, compared to early 2024, ordering has slightly slowed as owners have grown more cautious amid ongoing geopolitical uncertainty.

Second-hand sales continued at a more balanced pace, reflecting a measured market sentiment. Meanwhile, scrapping activity remained limited, as shipowners held onto older tonnage despite rising regulatory pressure. Demand for existing vessels has been supported by longer trade routes, particularly due to the rerouting of Russian exports.



Graph 3: Total Tanker Sales

Despite ongoing trade tensions, both newbuilding and second-hand activity remained firm. Notable orders included nine Suezmax shuttle tankers by Tsakos, LNG bunkering tankers ordered by SeaKapital Holdings, and LPG carriers commissioned by MISC.

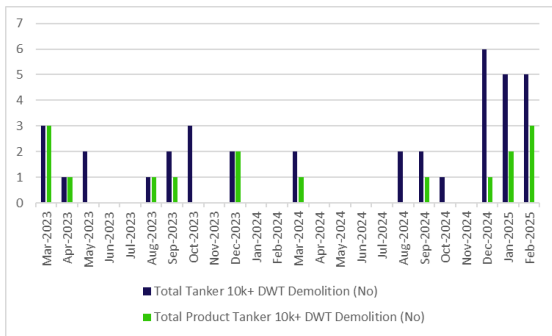
Key second-hand transactions featured the VLCC Yinghao Spirit, Aframax tankers Red Sun and Capricorn Sun, and the MR2 Marlin Amber. February passed without any reported tanker demolitions, signaling a stable outlook. However, upcoming new deliveries may exert slight downward pressure on freight rates.

DEMOLITIONS

Tanker recycling activity remained subdued in January 2025. Only 368 vessels were scrapped in 2024, marking a decline compared to previous years, as strong earnings continued to incentivize shipowners to delay demolition. Steel demand remained low amid ongoing economic instability, while the upcoming enforcement of the Hong Kong Convention (HKC) in June 2025 added further pressure to the sector.

Bangladesh and Pakistan continued to struggle with HKC compliance, while India performed better but faced growing competition from cheap imported steel. Turkey’s recycling market remained relatively stable, although recyclers contended with weak steel demand. Pakistan also faced additional challenges due to Iranian steel imports and currency depreciation. Meanwhile, policies under the Trump administration—particularly increased U.S. oil output—are expected to extend tanker lifespans. However, proposed tariffs on Canadian and Mexican crude may increase scrapping pressure for certain vessel classes. Overall, the market remains cautious, with steel prices, regulatory changes, and broader economic trends

playing a key role in shaping recycling decisions in the months ahead.



Graph 4: Total Tanker Demolition

The tanker recycling market remained muted throughout February, shaped by economic uncertainty, weak steel prices, and persistent volatility, which kept buyers hesitant. In South Asia, activity was limited across India, Bangladesh, and Pakistan, with widening price gaps between buyers and sellers stalling negotiations. Bangladeshi recyclers, in particular, struggled to close deals due to pricing disagreements, while Pakistan’s market

continued to face pressure from an influx of Iranian steel. In Turkey, low demand for scrap steel and domestic instability further curtailed transactions.

Despite looming regulatory deadlines—especially the enforcement of the Hong Kong Convention (HKC) in June 2025—shipowners opted to keep vessels trading rather than accept unfavorable scrapping prices. Overall, market sentiment remained cautious, with hopes of improvement later in the year.

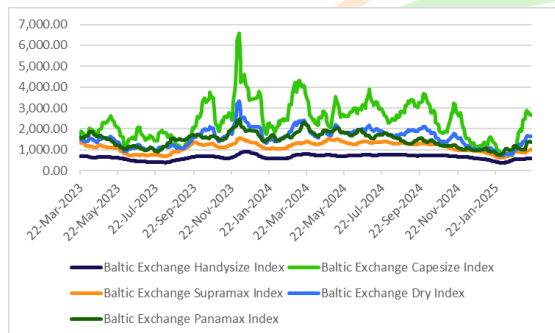
In March, the recycling market showed little change. Geopolitical uncertainty, a strong U.S. dollar, and liquidity constraints continued to suppress activity. Demand in Bangladesh remained subdued, with recyclers preparing for stricter regulations taking effect mid-year. Pakistan and Turkey saw no significant uptick in activity. Meanwhile, the broader demolition outlook was dampened by a decline in global crude steel production, notably a 5.6% drop in China, further weighing on sentiment.



DRY BULK MARKET

FREIGHT MARKET

In January, the reduction in Russian grain production for 2024–2025, along with export restrictions, negatively impacted the freight market for bulk carriers, particularly in the Black Sea region. Wheat production is forecast to be lower than in 2021, with projections for 2025–2026 estimated at 87.6 million tons, though this figure remains uncertain. Russia has allocated 10.6 million tons for domestic consumption, thereby reducing available exports and easing pressure on the charter rates for bulk carriers. Last December, Supramax bulk carriers identified China as the second-strongest driver of the dry bulk market. Of the top 10 trade routes, eight were inbound to China and one was outbound. A total of 25.6 million tons of goods were transported to China, accounting for 81.7 billion ton-miles. Overall, the top 10 routes handled nearly 30 million tons of cargo, with total ton-miles reaching 99 billion.



Graph 5: Baltic Indices

In February, despite the continued low freight rates for dry bulk carriers since November 2024, China's industrial activity appears poised to drive an increase. However, with U.S. President Donald Trump imposing duties on Chinese products, the dry bulk freight market may experience a period of weakness—particularly for both small and large bulkers.

In March, Africa has begun to emerge as a strong competitor in the nickel market, launching new projects that challenge Australia and drive increased demand for Capesize vessels. Meanwhile, a shortage of affordable green fuels is delaying the anticipated retrofitting of ships with cleaner

engines. This could result in future congestion at shipyards, according to a study by Lloyd's Register.

Additionally, the U.S. government plans to impose fees of up to \$1.5 million per port call on vessels built in China, in an effort to revitalize the domestic shipbuilding industry. This policy has raised concerns about the potential emergence of a divided freight market, where Chinese-built vessels could face competitive disadvantages compared to ships of other origins.

NEWBUILDING - SALES & PURCHASE

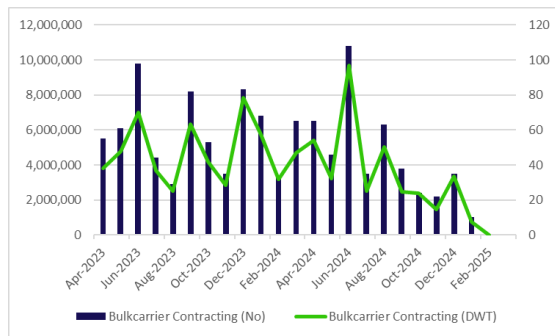
In January, Tsuneishi Shipbuilding Group celebrated the delivery of the 300th vessel from its Zhoushan subsidiary in China with a special ceremony. On January 7, the shipyard delivered an 82,300-ton Kamsarmax bulk carrier, measuring 229 meters in length and 32.26 meters in width. This event marked a significant milestone for the company's development, the Chinese shipbuilding industry, and workforce training.

TMS, led by Giorgos Oikonomou, announced the delivery of the newbuild Kamsarmax bulk carrier M/V TOINY, with a deadweight of 82,000 tons, from the Chinese shipyard Chengxi. The vessel is modern, environmentally friendly, and equipped with advanced scrubber technology, incorporating the latest advancements in energy efficiency. M/V TOINY is the first of two sister vessels being built for TMS by Chengxi Shipyard.

Pangaea Logistics Solutions has agreed to acquire 15 additional Handysize vessels from Strategic Shipping Inc. (SSI), with the transaction expected to be finalized by the end of 2024. The deal includes the issuance of 18 million common shares, representing 27.6% of Pangaea's shareholding. With this acquisition, Pangaea's fleet will grow by 60%, reaching a total of 41 ships.

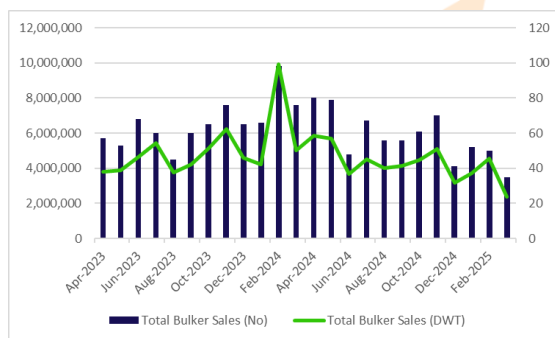
In February, Mitsui O.S.K. Lines (MOL) completed the acquisition of Gearbulk, making MOL the world's leading dry bulk shipping group. Despite this consolidation, demand for dry bulk carriers remained subdued, with a 67% decrease compared to early 2024. However, dry bulk carriers accounted

for the highest number of vessel ownership transfers, with 60 ships changing hands—more than any other vessel type.



Graph 6: Bulkcarrier Newbuilding Contracts

By the end of February 2025, the orderbook for dry bulk carriers remained low compared to 2024, with only 20 new orders placed. Overall, it appears that shipowners are hesitant to invest in newbuilds, given the ongoing uncertainty in the dry bulk market.



Graph 7: Total Bulkcarrier Sales

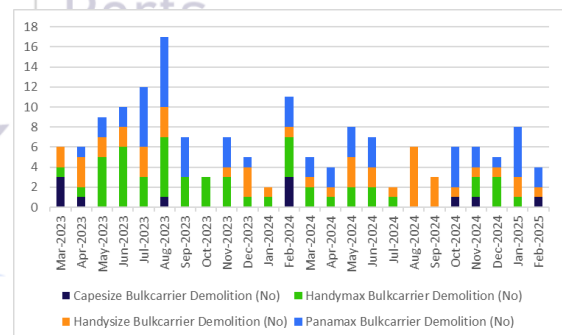
In the first quarter of 2025, ship orders declined sharply—by 84.4% in number and 84.7% in capacity—compared to the same period in 2024. Notably, in February 2025, no new orders were placed for bulk carriers, bringing dry cargo activity to its lowest level in at least 30 years.

Conversely, ship sales in the first quarter of 2025 fell by 47.7% year-over-year, totaling 266 transactions. The majority of these involved bulk

carriers (121 ships) and tankers (80 ships), together accounting for 75.5% of all purchases.

DEMOLITIONS

After 14 years of anticipation, the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships was ratified in June 2023 and will come into force in June 2025. The convention applies to ships over 500 gross tons flying the flag of ratifying states, mandating that scrapping facilities meet specific environmental and safety standards. It also requires the preparation and approval of a Ship Recycling Plan by certified shipyards. The implementation poses significant challenges, especially for countries such as Pakistan and Bangladesh, which must invest in upgrading their infrastructure to comply with the new regulations.



Graph 8: Total Bulkcarrier Demolition

With the average age of dry bulk carriers at 12.5 years, demolitions are expected to increase throughout the year. Lila Global has arranged for the recycling of its 25-year-old Capesize bulk carrier, Winnie, at a ship recycling facility in Chittagong, Bangladesh. This follows the earlier dismantling of the 27-year-old Lady Cedros by NYK Bulkship Korea at Alang, India, marking the second reported Capesize vessel recycling so far this year.

CONTAINER MARKET

FREIGHT MARKET

The freight market was shaken in the first month of the new year by news of a potential Israel–Hamas truce and the possible return of vessels to the Suez Canal. Although the situation remains highly volatile, analysts anticipate that the return of ships will be gradual and that freight rates may decline due to shorter sailing distances. Spot freight rates fell by 11% in January; however, charterers remain cautious, concerned both by ongoing instability in the Red Sea and the need to establish new pricing structures should regular transits through the Suez Canal resume.



Graph 9: Containers Freights and Earnings

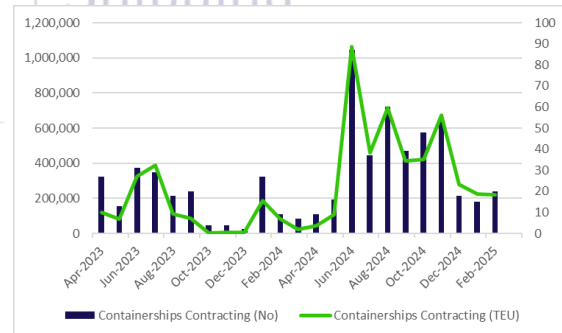
The containership freight market experienced a sharp downward trend in February, with freight rates gradually declining at an accelerating pace each week. The most significant drops were observed on major trade routes from Asia to Europe and North America, with losses mounting as the month progressed. Compared to the record highs of 2021, freight rates have plummeted by 73%. While they remain above pre-pandemic levels from 2019, the overall trend is clearly downward.

Since February, this decline has continued and even intensified in March, primarily due to persistently low transportation demand. Freight rates are significantly lower year-over-year, and the gap is even wider when compared to the peaks seen during the pandemic. The steepest declines have been recorded on routes between China and the U.S., as well as China and Europe. This ongoing correction in the market could impact the revenues of shipping companies and alter the broader dynamics of the global shipping industry.

NEWBUILDING - SALES & PURCHASE

In 2024, the newbuilding market experienced strong momentum, marked by a surge in both new orders and vessel deliveries. This positive trend has continued into the first month of 2025, with the global order book including 780 ships, totaling over 8.5 million TEUs in carrying capacity. Notably, by the end of January, HD KSOE shipyards secured their first major order of the year: 12 ultra-large containerships, each with a capacity of 18,000 TEUs and equipped with dual-fuel engines (conventional and LNG). These vessels are scheduled for delivery by the end of 2028.

The year 2024 also saw heightened activity in the containership sale and purchase market. Driven by movements in the freight market, the value of containerships surged, leading to 333 vessels changing hands—equivalent to 1.1 million TEUs. Looking ahead to 2025, analysts suggest that the trajectory of the sale and purchase market will largely depend on developments in the Red Sea and the potential oversupply that may arise if vessels return to the Suez Canal route.

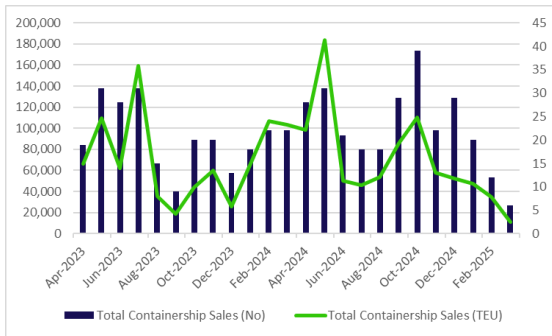


Graph 10: Containerships Newbuilding Contracts

February sustained the upward momentum in the containership newbuilding market. According to Alphaliner, Evergreen placed two major orders for a total of 11 ultra-large 24,000 TEU vessels—six with Hanwha Ocean and five with China’s CSSC—each costing around \$270–290 million and set for delivery after 2028 with dual-fuel (LNG and conventional) engines.

TMS followed suit, ordering ten 11,400 TEU dual-fuel vessels from Zhoushan Changhong, to be delivered between 2027 and 2029. Additionally, COSCO took delivery of the first Chinese-built,

16,000 TEU methanol dual-fuel ship—part of a 28-vessel series to be delivered by 2029.



Graph 11: Total Containership Sales

By the end of February 2025, only 21 containerships had been sold since the beginning of the year, trailing behind bulk carriers and tankers in transaction volume. This decline in containership sales is primarily attributed to persistently weak freight rates and the increasing trend in newbuilding orders, as outlined above.

The sale and purchase (S&P) market continued to move at a slower pace throughout March and the entire first quarter of 2025. Specifically, only 35 containerships changed hands during the first three months of the year. This low level of activity is largely due to the surge in newbuilding orders and the large number of vessels scheduled for delivery over the next few years.

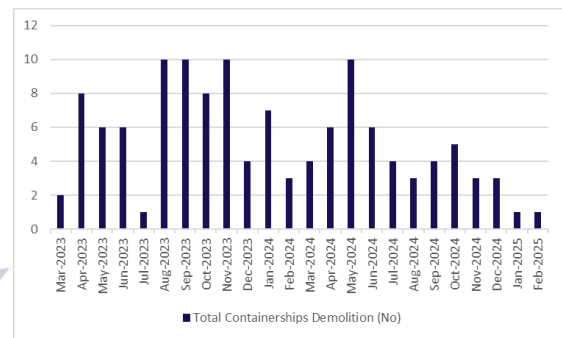
March, however, was notably active for the newbuilding sector. MSC placed an order for four ultra-large containerships, each with a capacity of 21,700 TEUs, at China's Zhoushan Changhong shipyard. These vessels will be equipped with dual-fuel engines (LNG and conventional) and are expected to be delivered between 2028 and 2029. The agreement also includes an option for MSC to order four additional sister ships.

CMA CGM has taken delivery of its first 13,000 TEU containership capable of running on both methanol and conventional fuel—the first of 12 sister ships, with two more already under construction.

As demand grows for environmentally friendly vessels to meet new regulations, shipbuilding slots are becoming limited, leading to expected delivery delays of at least two years.

DEMOLITIONS

The containership scrapping market remained flat in January, largely due to the upward trend in freight rates throughout 2024. Geopolitical events in the Middle East, which led to the closure of the Suez Canal, significantly increased demand for ton-miles as vessels were rerouted around the Cape of Good Hope. As a result, shipowners saw continued commercial value in keeping older vessels in operation, with little incentive to send them to scrapyards despite their age.



Graph 12: Recycling Market Price

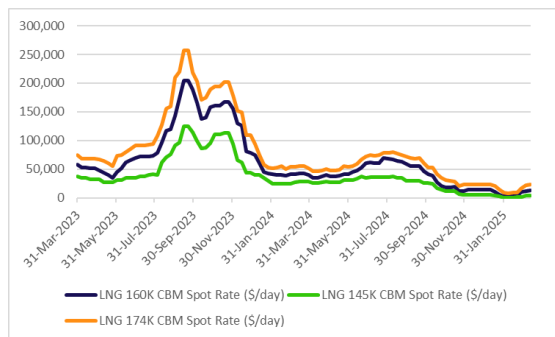
Considering the high levels of containership orders and the increasing average age of the global fleet, a significant rise in demolition activity is expected. However, by the end of February 2025, only one containership had been scrapped.

In March, scrapping activity remained low, despite the growing orderbook of new vessels. Looking ahead, the process of ship recycling is set to undergo substantial changes. Under the Hong Kong Convention on Ship Recycling and the EU List of Approved Recycling Facilities, scrapping practices will be subject to stricter environmental and safety standards, which are expected to reshape the market and influence future demolition trend

LNG/LPG MARKET

FREIGHT MARKET

As 2025 begins, LNG and LPG vessel rates are plummeting due to persistent market oversupply. Weakening demand continues to drive freight rates to record lows, severely compressing shipowners' profit margins. With rates declining daily, the sector faces one of its most challenging periods. However, with the end of the Biden administration in January, some market analysts predict a modest recovery, driven by expectations of a more pro-business approach under the returning Trump administration.



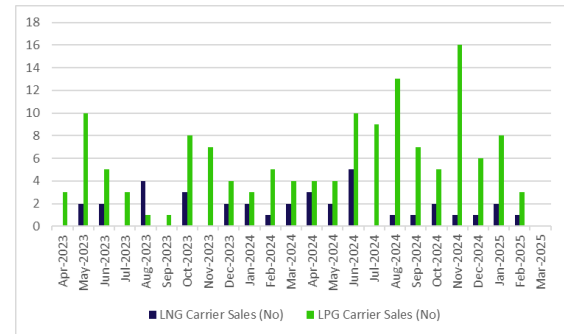
Graph 13: LNG Spot Rates

In February, the LNG and LPG markets continued to struggle with oversupply. The daily charter cost for a 174,000-cubic-meter LNG tanker dropped to \$9,750—a 59% decrease from December 2024—marking the lowest rate ever recorded for this vessel type. This sharp decline follows a surge in newbuilding activity and falling demand, which has driven freight rates down. Despite low demand, shipowners remain confident in the market's long-term prospects.

By early March, spot charter rates for LNG carriers saw a notable rebound. According to Intermodal, rates for 174,000-cubic-meter vessels rose to \$17,000 per day—59% above the monthly average—driven by limited vessel availability in the Atlantic and increased demand from Eastern markets. Looking ahead, the LNG fleet is projected to grow by 10% in 2025, offering a more optimistic outlook for the sector.

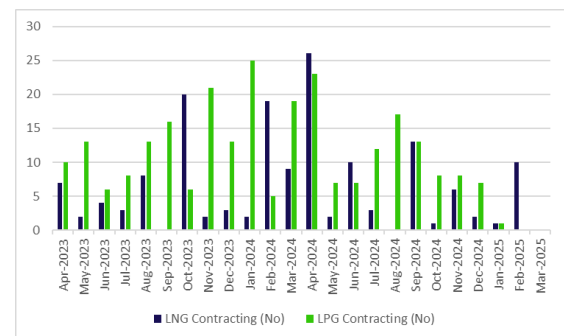
NEWBUILDING - SALES & PURCHASE

At the start of 2025, the newbuilding market for liquefied natural gas (LNG) and liquefied petroleum gas (LPG) carriers continues to expand. Despite the existing market oversupply, new vessel orders remain strong, with more ships steadily entering the pipeline. Both shipowners and shipyards appear largely unfazed by the prevailing imbalance between supply and demand.



Graph 14: LNG/LPG Sales

As February begins, the issue of oversupply in the LNG-LPG market remains unchanged. This year, 95 new vessels are scheduled for delivery, expanding the fleet by 11%. While the supply-demand imbalance continues to grow, experts and shipowners remain optimistic about the market's long-term prospects, anticipating a future rebound in demand.



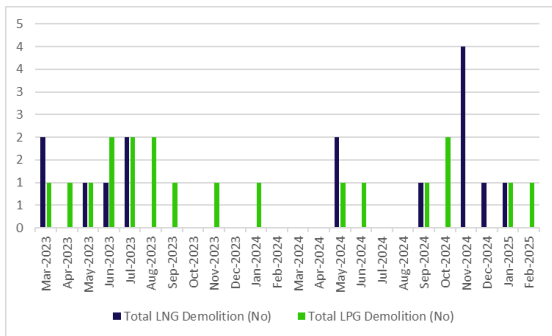
Graph 15: LNG & LPG Newbuilding Contracts

Following a surge in newbuilding orders throughout 2024, shipowners appear to be approaching the market more cautiously in the first quarter of 2025. Nevertheless, 96 new LNG carriers are scheduled for delivery this year, further expanding global fleet capacity. Shipowners and market analysts project that by 2029, more than 1,100 LNG-powered

vessels and 1,000 LNG carriers will be in operation—supporting expectations of sustained high demand for LNG as a fuel.

DEMOLITIONS

Scrapping activity for LNG and LPG vessels remained low in the first month of 2025, continuing the trend from the previous year. Most companies show little interest in recycling, largely due to the relatively young age of the fleet, which limits the incentive for demolition.



Graph 16: Total LNG Demolition

In February, recycling activity remained low, consistent with the previous month. Shipowners are reluctant to scrap vessels due to the long operational lifespan of ships and expectations of future market recovery.

This trend continued through March, with the recycling market showing little momentum. Ongoing low demand and high supply across the sector have further discouraged scrapping, prompting shipowners to keep vessels in service longer.

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SUSTAINABILITY

NEWS

The global shipping industry is taking steady strides toward sustainability, with a growing number of vessels adopting alternative fuels. January saw notable advancements, including Royal Caribbean's agreement with French shipyard Chantiers de l'Atlantique to construct a methanol-ready cruise ship—Edge 6. Maersk also introduced the methanol-ready tanker Maersk Eunapolis, while Hafnia took delivery of the methanol-fueled MR vessel Ecomar Gascogne from China.



Alternative fuel orders surged in early 2024, with LNG dual-fuel vessels dominating. According to Clarksons, green-fueled ships now include 390 LNG-powered, 118 methanol-powered, 25 ammonia-powered, 72 LPG, and 12 hydrogen-powered vessels. Projections suggest nearly one-fifth of global tonnage could run on alternative fuels by 2030, up from just 2% in 2017 and 8% in 2024.

About 21% of the 452 newbuilding orders in 2024 are "alternative-fuel ready." Additionally, Circular Yard Srl—a joint venture between Fincantieri and Hera Group—is investing €13 million to establish integrated waste management across Italian shipyards, aiming to cut inseparable waste by 15%.

On the regulatory front, the International Chamber of Shipping (ICS), backed by 47 countries, proposed a GHG pricing mechanism to the IMO. The initiative would fund decarbonization based on CO₂e emissions per tonne and help close the cost gap between zero-emission and conventional fuels. The proposal has wide support from maritime registries and nations, including Greece, South Korea, and several developing regions.

The EU's FuelEU Maritime Regulation, adopted in July 2023, complements the EU Emissions Trading System (ETS) and targets vessels over 5,000 GT. It mandates reductions in GHG intensity and encourages onshore power use. TMC Compressors is supporting Maersk's methanol-fueled fleet by supplying energy-efficient compressors, expected to help cut 450,000 tons of CO₂e annually. Deliveries are slated for 2026–2027, aligned with Maersk's net-zero goal by 2040.



Shipowners are also preparing for long-term decarbonization through measures such as speed reductions, advanced coatings, energy-saving systems, and wind-assisted propulsion like sails and kites. Although promising, these technologies are not yet capable of fully replacing fossil fuels, underscoring the need for scalable zero-carbon options.

Alternative fuels remain central to decarbonization strategies. LNG is widely used, though it requires specialized infrastructure. Methanol is gaining traction due to easier storage and handling, with over 200 methanol-capable container vessels ordered, according to DNV. Ammonia, while highly toxic, is emerging as a viable low-carbon option, with engine readiness expected by 2025. Hydrogen fuel cells and nuclear propulsion are also under exploration, but large-scale adoption remains distant.

Alternative-fueled vessel orders rose by 50% in 2024 to 600 ships, bringing the total to 1,737. The operating fleet grew by 18% to 1,860 vessels. However, to meet the IMO's 2030 targets, the order rate must accelerate further. E-fuel initiatives by MDH and the Zero Emission Maritime Buyers Alliance (ZEMBA) have also begun, with over 50

responses to a tender aimed at launching commercial e-fuel services between 2027 and 2028.

In February, the IMO Pollution Prevention and Response (PPR 12) sub-committee received broad support for defining cleaner “polar fuels,” but regulatory action is pending. The Clean Arctic Alliance criticized the lack of progress on banning scrubbers that pollute oceans.



Figure 1: First Indian “green shipyard” uses ABB solution (source: www.portstrategy.com)

Biomethane is being recognized for its low carbon intensity and logistical benefits, though emissions offsetting will remain necessary until greener fuels reach scale. NGOs and companies like Hapag-Lloyd are urging the IMO to exclude crop-based biofuels (e.g., palm and soy oil), citing deforestation and poor climate performance. The EU has already restricted such fuels, but no global ban exists.

A study by Transport & Environment (T&E) warned that promoting crop-based biofuels could result in 270 million extra tonnes of GHG emissions by 2030 and threaten food security. T&E and industry leaders advocate for hydrogen-based e-fuels as the most sustainable path forward.

BAR Technologies reported record growth in 2024 due to increasing global demand for wind-assisted propulsion systems, like its WindWings. The company is expanding rapidly, especially in Asia, and forming strategic partnerships to accelerate decarbonization in shipping.

The European Union has committed €78 million toward developing next-generation power systems, reinforcing its push for green shipping. In a significant milestone, Lloyd’s Register and Capital Ship Management completed the first compatibility

assessment for a tanker using shore-side electricity, reducing port emissions.



China launched its first methanol-powered containership with a 16,000 TEU capacity and is also implementing large-scale onboard carbon capture systems. Renewable energy sources such as wave and tidal power are gaining traction, with innovations like the AR1100 turbine producing 1.1 MW from ocean currents.

Meanwhile, the “Remora Concept”—a next-gen take on the LASH system—proposes using nuclear-powered motherships to transport electric or semi-autonomous barges over long distances. Developed by Shipnext and MBM Consultancy, the concept promises to reduce costs, congestion, and fossil fuel dependence.

Digital transformation is also reshaping maritime sustainability. AI-powered platforms and analytics now help companies optimize fleet performance, reduce emissions, and turn regulatory compliance into strategic advantage. Data ecosystems enable collaboration across the sector, improving transparency and accelerating the adoption of low-carbon technologies.

Lastly, Mitsui O.S.K. Lines (MOL) made an additional \$83 million investment in Twelve, a U.S.-based carbon transformation company producing e-fuels via CO₂ electrolysis. Their E-Marine product, designed for maritime use, cuts emissions by up to 90% and can be used in existing infrastructure. MOL is also backing HIF Global and other ventures to support synthetic fuel production and carbon capture.



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