

Maritime Climate Technology

Global Market Estimates and the Competitive Position of Norwegian Suppliers



Photo: KVIADIMIRV/istock

About the Report

This report was prepared by Menon Economics as part of Norway's national effort to promote green maritime exports. The analysis was initiated and funded by Innovation Norway and conducted at the request of Maritime CleanTech in their role as a strategic partner.

This report presents an analysis of the global market for maritime climate technology and Norwegian suppliers' market shares. The analysis estimates the size of the global market and assesses the position of Norwegian suppliers in these markets.

This report is an extract from a broader study conducted by Menon Economics, which also includes a mapping of Norwegian suppliers of maritime climate technology.

Erik W. Jakobsen served as Project Director. The work was led by Kaja Haug, with Aria Khosravi and Sophie Emilie Sundt as project team members. Jonas Erraia provided quality assurance. Menon thanks Innovation Norway and Maritime CleanTech for an engaging and valuable project.

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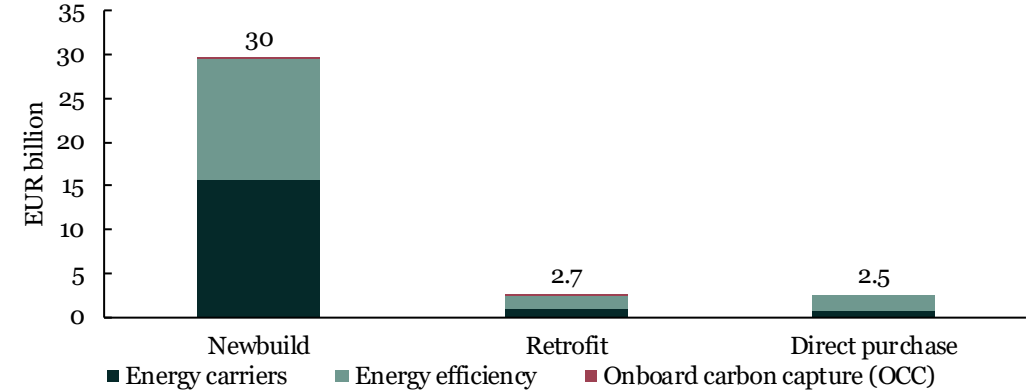
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Executive Summary

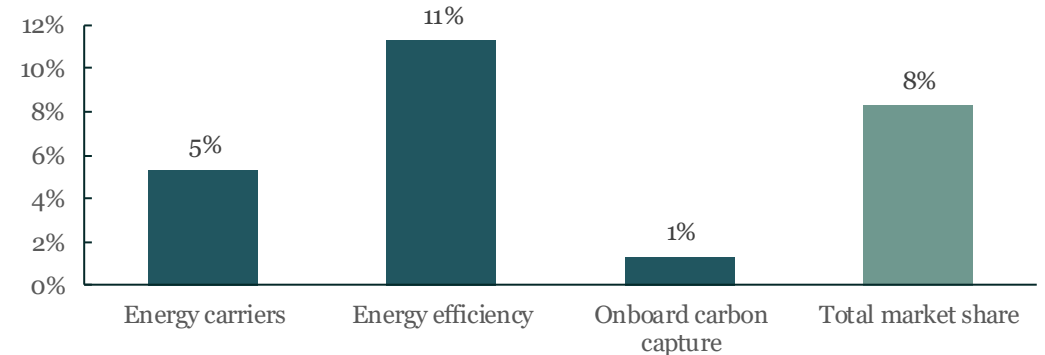
The global maritime climate technology market is estimated at approximately EUR 34.9 billion and is predominantly driven by newbuild investments, which account for roughly 85 percent of the market. Retrofit upgrades and shipowners' direct equipment purchases represent EUR 2.7 billion and EUR 2.5 billion, respectively. The market is roughly equally divided between energy efficiency solutions and alternative energy carrier technologies, at approximately EUR 17.1 billion each. Asia represents the largest geographic market at 44 percent, followed by Europe at 42 percent and North America at 5 percent. The deepsea freight segment dominates, followed by passenger vessel segments.

Norwegian suppliers collectively hold approximately 8 percent global market share in maritime climate technology. However, this position varies significantly across technology areas and vessel segments. Norway is particularly strong in energy efficiency, with around 11 percent market share, and holds an exceptionally strong position in the offshore segment, estimated at 65 percent market share. Market shares are lower in the largest global volume segments, especially in deepsea freight, where the share is approximately 2 percent.

Market value for maritime climate technology across the three market segments. Source: Menon Economics/Clarksons



Norwegian market shares in the maritime climate technology market, by vessel type. Source: Menon Economics/Clarksons



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Introduction

Green maritime has been identified as a critical national export priority. Norway possesses strong maritime supplier ecosystems, and the transition to low- and zero-emission solutions creates significant international market opportunities. However, a comprehensive knowledge base to assess global market sizes and Norway’s position in these markets has remained limited.

This report estimates the global maritime climate technology market across newbuild, retrofit, and shipowner direct purchase channels. It also assesses Norwegian suppliers’ market shares and competitive positioning in these markets.

This report is an extract from a broader study conducted by Menon Economics, which also includes a detailed mapping of Norwegian maritime climate technology suppliers, as well as estimates of their revenues and exports.

Methodology and data sources for the analyses presented are described in the relevant chapters.

This report contributes to closing an important knowledge gap by providing a structured framework for assessing global market opportunities and Norway’s position in a rapidly evolving market.



Definitions and Key Terms

Definition of the Industry—The Maritime Value Chain: The maritime industry encompasses "all enterprises that own, operate, design, build, supply equipment to, or provide specialized services for all types of vessels and other floating units."

Definition of Maritime Climate Technology Suppliers: Equipment manufacturers and service providers delivering maritime climate technology as individual components, system-level solutions, or integrated offerings.

Technology Scope: In this analysis, *maritime climate technology* encompasses technologies that constitute or contribute to low- and zero-emissions solutions in the maritime sector. We distinguish between three categories affecting vessel greenhouse gas emissions: 1) choice of energy carrier and fuel, including battery-electric, LNG, ammonia, methanol, and hydrogen solutions, 2) reduced energy consumption through energy efficiency measures, and 3) onboard carbon capture and storage. Other supplies not attributable to these three areas are classified as "other vessel equipment."

Market Scope—Delivery Channels: Demand, cost structures, and data availability differ across maritime climate technology delivery channels. Our market analysis therefore distinguishes three delivery channels:

- i) **Newbuild** includes equipment supplies for vessels delivered or scheduled for delivery in 2026.
- ii) **Shipyard Retrofit** covers equipment supplies for upgrades and retrofit installations on existing vessels executed at shipyards in 2025.
- iii) **Shipowner Direct Purchases (OPEX)** covers shipowners' ongoing operational expenses for maintaining, servicing, and upgrading climate technology equipment on the existing fleet in 2025. This includes replacement of components and installation of equipment carried out *outside* the shipyard.

For geographic market distribution, we use the shipowner's headquarters location as the primary reference point. Markets are allocated based on ownership, independent of where vessels are built, where they operate, or where equipment is manufactured.

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Methodology | Estimating the Global Market for Maritime Climate Technology

Global market estimates are grounded in Clarksons Research data on the world fleet and global shipbuilding. The dataset encompasses propulsion systems, fuels, climate technology equipment, and timing of orders, deliveries, and retrofit installations.

The market divides into three channels: newbuild, shipyard retrofit, and shipowner direct purchases (OPEX) (see figure on right). Estimates are developed separately for each channel using vessel-level data.

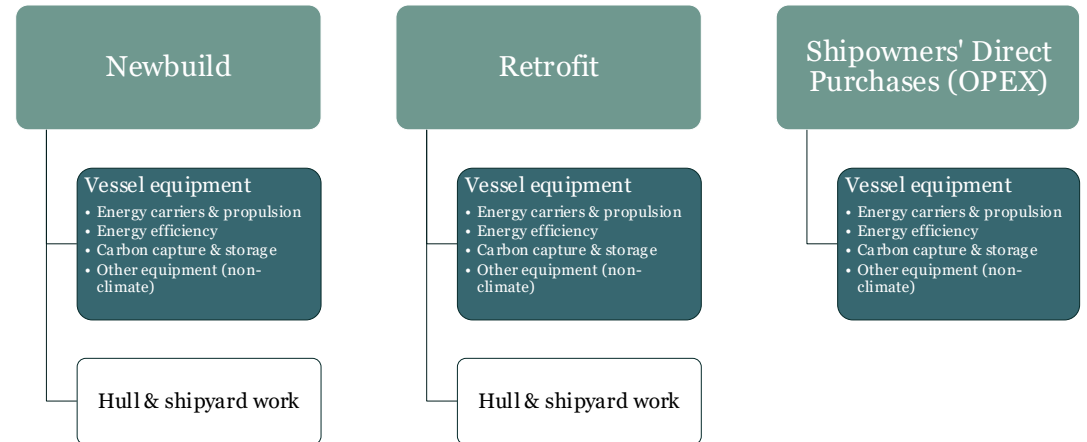
- For newbuild and retrofit markets, we estimate market value by calculating each vessel's newbuild value and then determining the proportion attributable to climate technology equipment by combining ship type, size, technology fit, and cost profiles.
- The shipowner direct purchase (OPEX) market is estimated indirectly by calculating operating costs for the active fleet using Clarksons' OPEX index, vessel size, and segment, then determining the proportion attributable to climate technology equipment by combining equipment OPEX shares with cost profiles and fleet technology adoption rates.

Detailed methodology and assumptions for estimates across market segments are provided in Appendix A.

Uncertainty in Estimates

Global market estimates carry inherent uncertainty. For certain vessel types, we use proxies for equipment shares, which may overestimate or underestimate actual proportions. Additionally, estimates rest on assumptions about the proportion of equipment value attributable to maritime climate technology. Both factors contribute to estimation uncertainty.

Illustration of the three market channels through which suppliers can deliver equipment and services.



The Global Market for Maritime Climate Technology is Estimated at over EUR 34.1 billion in 2026*

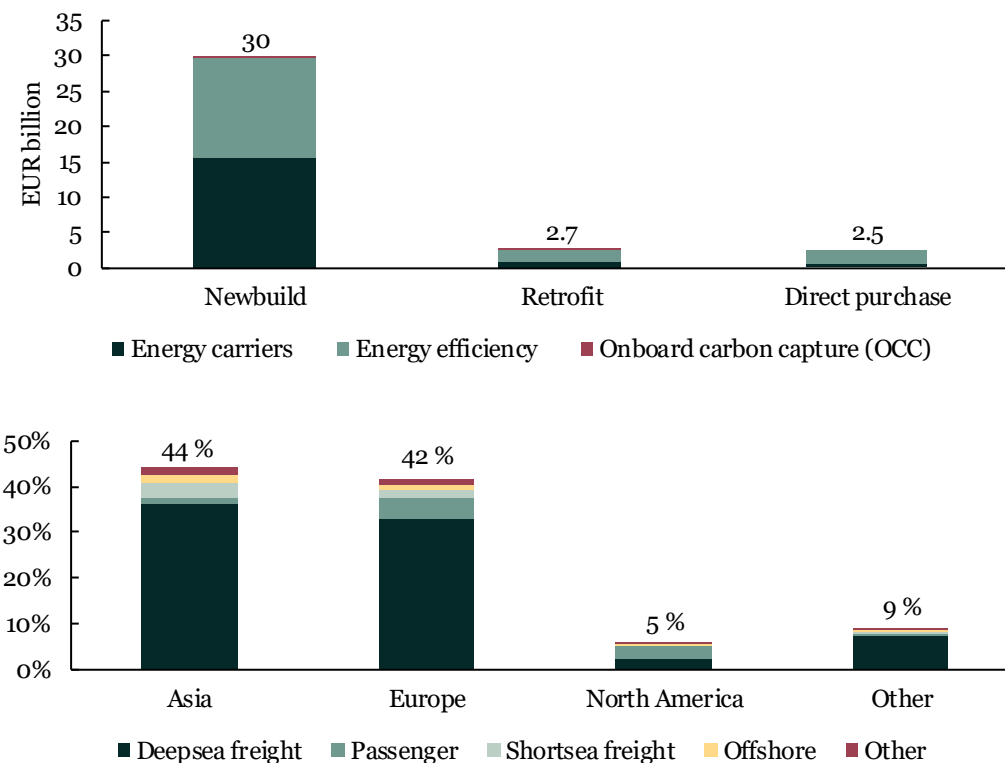
This chapter estimates the global maritime climate technology market size across three delivery channels: newbuild, shipyard retrofit, and shipowner direct purchases (OPEX). The following sections present each market separately.

The global maritime climate technology market is estimated at EUR 34.9 billion. The newbuild market clearly dominates at EUR 29.6 billion, followed by the retrofit market at EUR 2.7 billion and shipowner direct purchases (OPEX) at EUR 2.5 billion. Across channels, energy carriers and energy efficiency are the dominant technology categories, while onboard carbon capture (OCC) currently represents a limited share.

In the newbuild market, climate technology represents approximately 38 percent of total equipment value and 18 percent of aggregate newbuild value (see page 12). Comparable share calculations are not feasible for other markets. Since newbuild comprises roughly 85 percent of the global market, these shares provide a representative indication of climate technology's relative significance.

By shipowner headquarters geography, the market is predominantly concentrated in Asia and Europe, which together account for nearly 90 percent of market value. Asia leads at 44 percent, followed by Europe at 42 percent and North America at 5 percent. Investments are heavily concentrated in deepsea freight segment, which comprises just under 80 percent of the total market. This segment dominates in Asia and Europe, while investments in North America are more concentrated in the passenger vessel segment.

Top: Market value for maritime climate technology across the three market segments. **Bottom:** Distribution of aggregate market value across the three market segments by continent (shipowner location) and vessel type. Source: Menon Economics/Clarksons



Newbuild



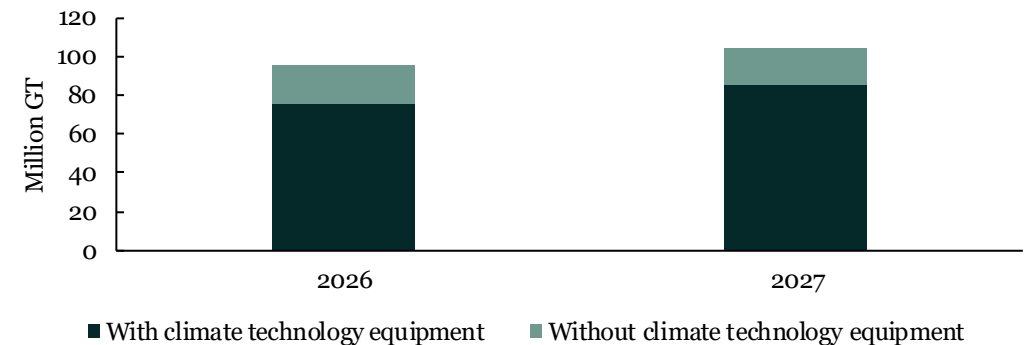
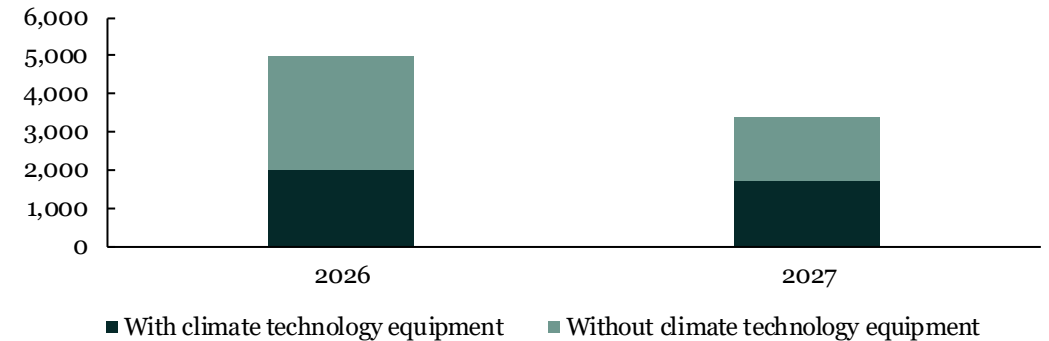
The Largest Newbuilds Are Increasingly Delivered with Climate Technology Equipment

To estimate the newbuild market for maritime climate technology, we analyze vessels delivered or scheduled for delivery in 2026. First, we assess what share of these vessels are delivered with climate technology equipment, measured by both vessel count and tonnage. This illustrates technology penetration. We then estimate market value by technology type, vessel segment, and geography.

We forecast that approximately 5,000 vessels will be delivered in 2026 based on recorded deliveries and existing order books. Of these, roughly 40% – about 2,000 vessels – are expected to be delivered with at least one form of climate technology equipment. By tonnage, this represents approximately 75.7 million gross tons (GT), or roughly 80% of total delivered tonnage.

Looking forward, technology adoption is expected to accelerate, particularly among larger vessels. For 2027, current order books show approximately 2,750 vessels with total tonnage of around 104 million GT. By vessel count, roughly 62% are planned for delivery with climate technology equipment, rising to approximately 82% by tonnage. Additional orders are likely to be placed in 2027.

Top: Number of vessels delivered with and without climate technology equipment in 2026.
Bottom: GT delivered with and without climate technology equipment in 2026. Source: Menon



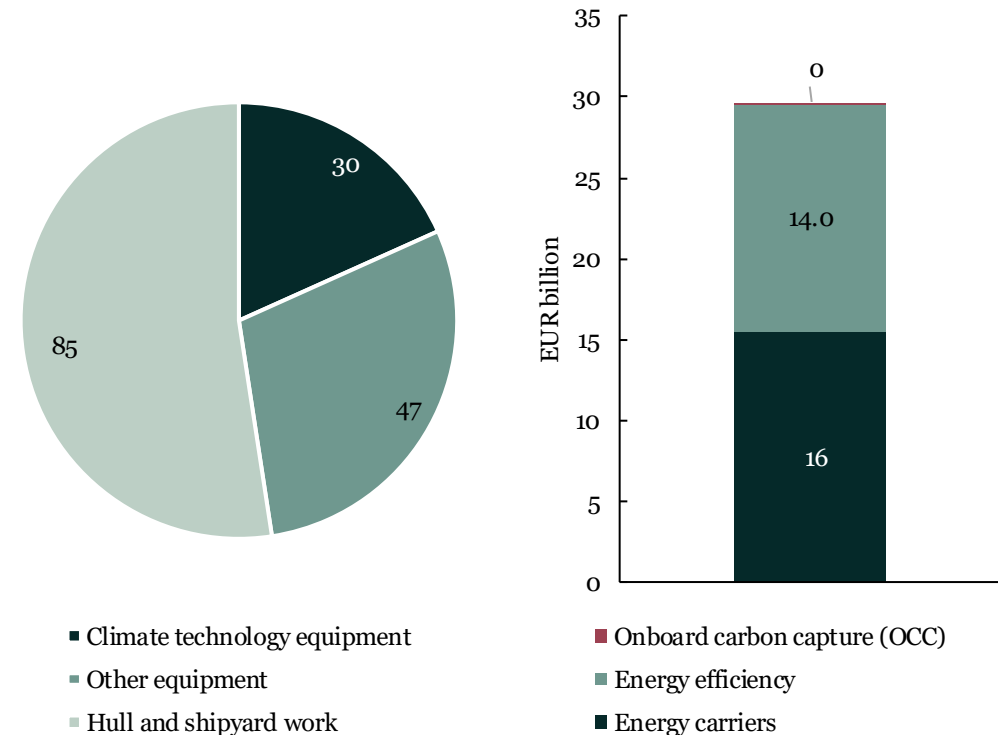
The Newbuild Market for Maritime Climate Technology Is Estimated at EUR 29.6 billion

Based on recorded and planned deliveries in 2026, we estimate the total global newbuild market value at over EUR 162 billion. Equipment accounts for approximately EUR 77.1 billion, representing 48% of total newbuild value.

Climate technology equipment represents EUR 29.6 billion, or approximately 38% of total equipment value and roughly 18% of aggregate newbuild value. Non-climate equipment is valued at EUR 47.4 billion, while hull and shipyard work accounts for just under EUR 85.3 billion.

Energy carriers and propulsion systems represent the largest segment at EUR 15.5 billion, approximately 53% of the market. Energy efficiency equipment accounts for EUR 14.0 billion (47%), while onboard carbon capture (OCC) represents less than EUR 0.1 billion (under 1%).

Left: Total market value in the newbuild market in 2026, by climate technology equipment, other equipment, and hull and shipyard work. **Right:** Value of climate technology equipment in the newbuild market in 2026, by equipment type. Source: Menon Economics/Clarksons



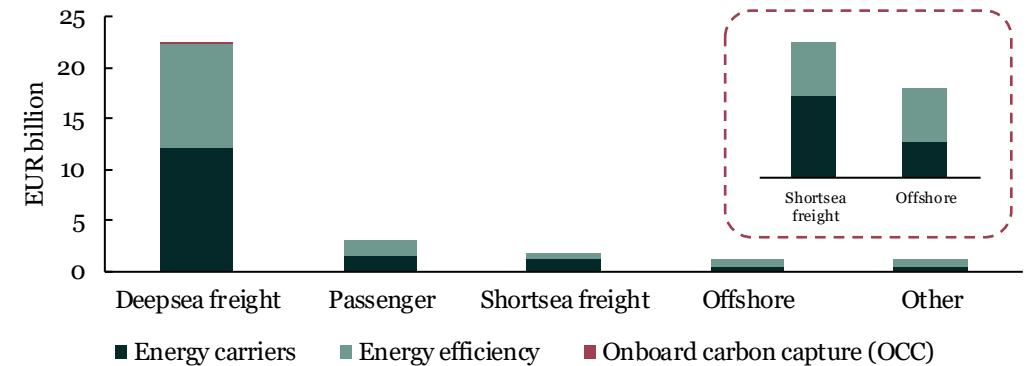
The Maritime Climate Technology Market Is Largest in Deepsea Freight, but Climate Technology Represents a Higher Share of Newbuild Investment in the Passenger Segment

Deepsea freight dominates global newbuild activity and represents the largest climate technology market at approximately EUR 22.4 billion, or 76% of the total. This primarily comprises bulk carriers, container ships, chemical tankers, and LNG vessels. The passenger segment is second at EUR 3.0 billion (10%), followed by shortsea freight at EUR 1.8 billion (6%). The remainder comprises offshore and other segments.

Across deepsea, shortsea, and passenger segments, over half the market value reflects energy carriers, with the remainder in energy efficiency technologies. Deepsea freight is the only segment with onboard carbon capture (OCC) systems. The offshore segment is dominated by energy efficiency at 61% of value versus 29% for energy carriers, a pattern that extends to other segments.

As a share of each segment's total newbuild value, climate technology represents approximately 21% in passenger versus 17% in deepsea freight. Shortsea freight, offshore, and other segments show considerably lower shares at 9–10%.

Top: Market value for maritime climate technology in the newbuild market by vessel segment in 2026. **Bottom:** Market value for maritime climate technology as a share of total newbuild value per vessel segment in 2026. Source: Menon Economics/Clarksons



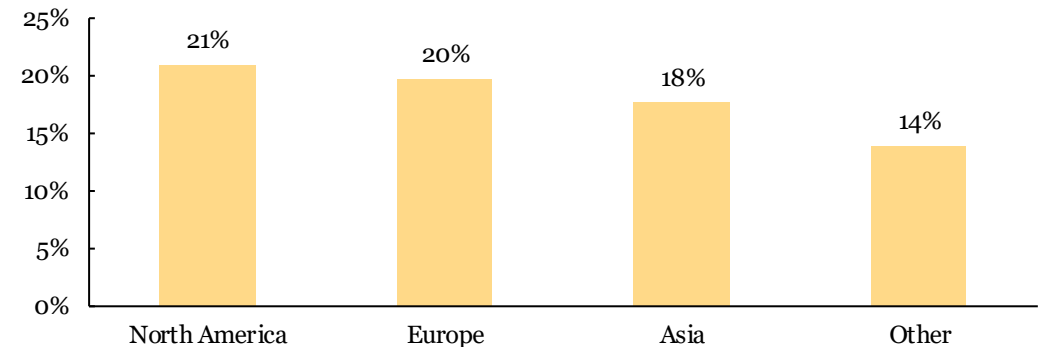
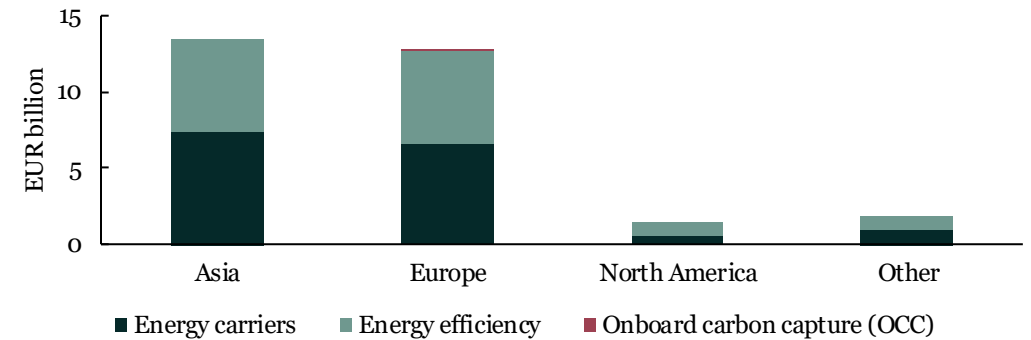
Asia and Europe Account for Nearly 90% of the Maritime Climate Technology Market, but Climate Technology Represents a Higher Share of Newbuild Investment in North America

Asia and Europe dominate the maritime climate technology market by vessel owner geography. In 2026, vessels with climate technology equipment delivered to Asian owners are estimated at approximately EUR 13.5 billion (45%), versus EUR 12.8 billion (43%) for Europe. North America represents 5% of the market at EUR 1.5 billion.

Across regions, energy carrier technology represents nearly half the market value, with energy efficiency comprising the bulk of the remainder. Within each region, the market is concentrated in a few countries. In Asia, over 80% of deliveries go to owners in China, Japan, Singapore, and Taiwan. In Europe, Italy, Greece, United Kingdom, Germany, and Norway account for 88%, while the United States dominates North America.

When measured as a share of total newbuild value, climate technology accounts for approximately 21% of newbuild value for North American-owned vessels, compared with 20% for Europe and 18% for Asia. This reflects the higher concentration of North American orders in the passenger segment, where climate technology represents a larger share of newbuild investment relative to other segments.

Top: Market value for maritime climate technology in the newbuild market by vessel owner continent in 2026. **Bottom:** Market value for maritime climate technology as a share of total newbuild value per continent in 2026. Source: Menon Economics/Clarksons



Retrofit



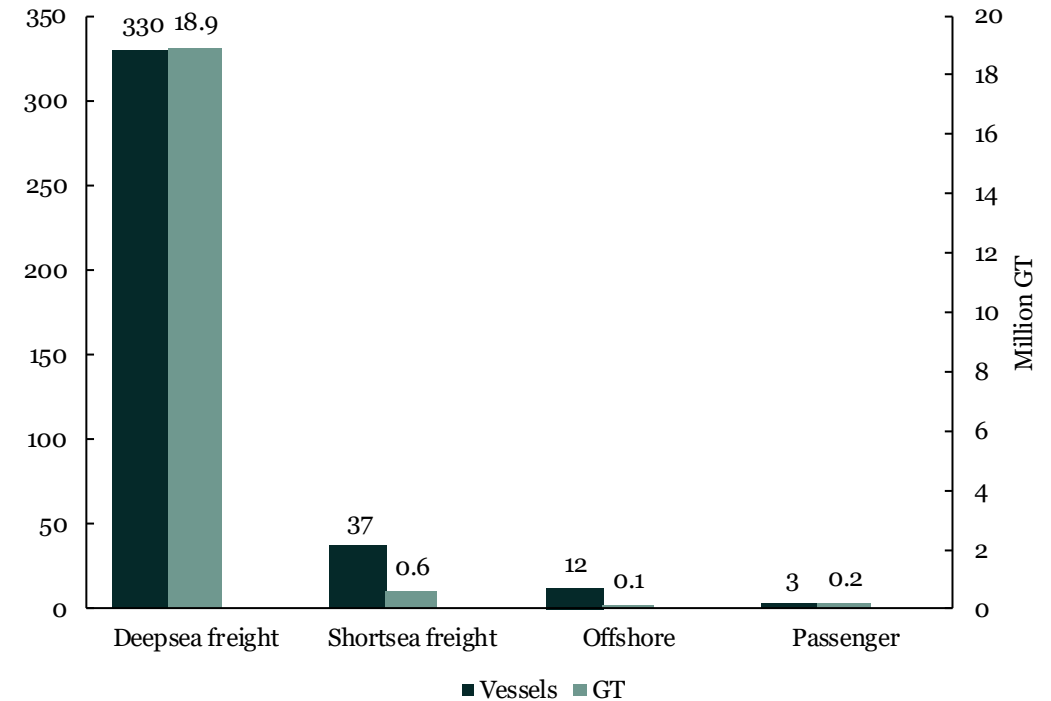
Climate Technology Upgrades to Existing Vessels Are Concentrated in the Deepsea Freight Segment

To estimate the retrofit market for maritime climate technology, we analyze *upgrades and retrofit installations* on existing vessels. Both are collectively referred to as *retrofit*. We first assess vessel count and tonnage (GT) upgraded with climate technology in 2025. This illustrates technology adoption in the market. We then estimate market value by technology type, vessel segment, and geography.

In 2025, over 380 vessels were upgraded with climate technology, representing 19.9 million gross tons (GT). The chart shows upgrades by segment in vessel count and tonnage. Upgrades are heavily concentrated in deepsea freight, with 330 vessels totaling 18.9 million GT. Within this segment, container ships, bulk carriers, chemical tankers, and crude tankers show the highest upgrade activity.

Other segments show significantly lower upgrade activity. Shortsea freight saw 37 vessel upgrades in 2025, totaling 0.6 million GT, primarily container and break-bulk ships. Offshore recorded 12 upgrades at 0.1 million GT, while passenger had 3 upgrades at 0.2 million GT. Preliminary 2026 data indicate that deepsea freight will continue to lead climate technology retrofit activity.

Number of vessels and gross tons (GT) per vessel segment upgraded with climate technology in 2025. Source: Menon Economics / Clarksons



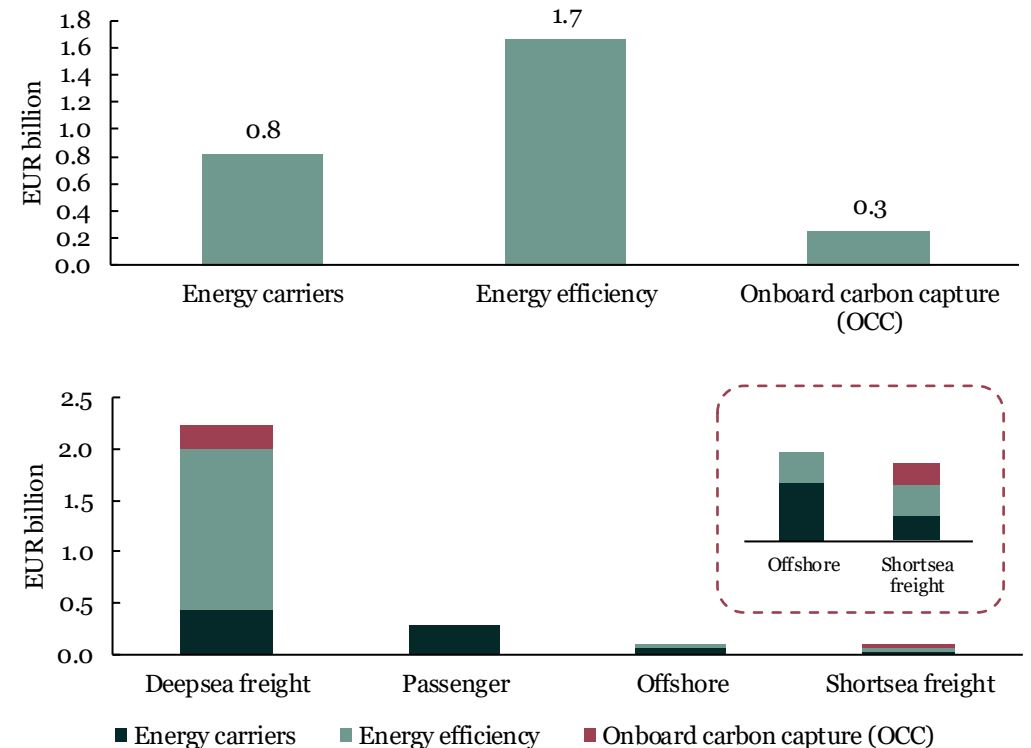
The Retrofit Market for Maritime Climate Technology Is Estimated at EUR 2.7 billion

Based on recorded retrofit upgrades and installations on existing vessels in 2025, we estimate the retrofit market for maritime climate technology at over EUR 2.7 billion. Energy efficiency technology is the largest category at approximately EUR 1.7 billion, or 61% of the total. Energy carriers and propulsion systems represent about EUR 0.8 billion (30%), while onboard carbon capture (OCC) accounts for roughly EUR 0.3 billion (9%).

In the retrofit market, deepsea freight also dominates, representing approximately EUR 2.2 billion of total value. By comparison, passenger segment retrofits total roughly EUR 0.3 billion, while offshore and shortsea freight each account for about EUR 0.1 billion.

Technology mix varies significantly across segments. Deepsea freight retrofits are primarily energy efficiency focused, while passenger retrofits concentrate on energy carriers and propulsion. Offshore is dominated by energy carriers at 65% of investment, with the balance in efficiency. Shortsea freight shows a more balanced distribution across technology types.

Top: Value of climate technology equipment in the retrofit market in 2025, by equipment type.
Bottom: Value of climate technology equipment in the retrofit market in 2025, by vessel segment and equipment type. Source: Menon Economics/Clarksons



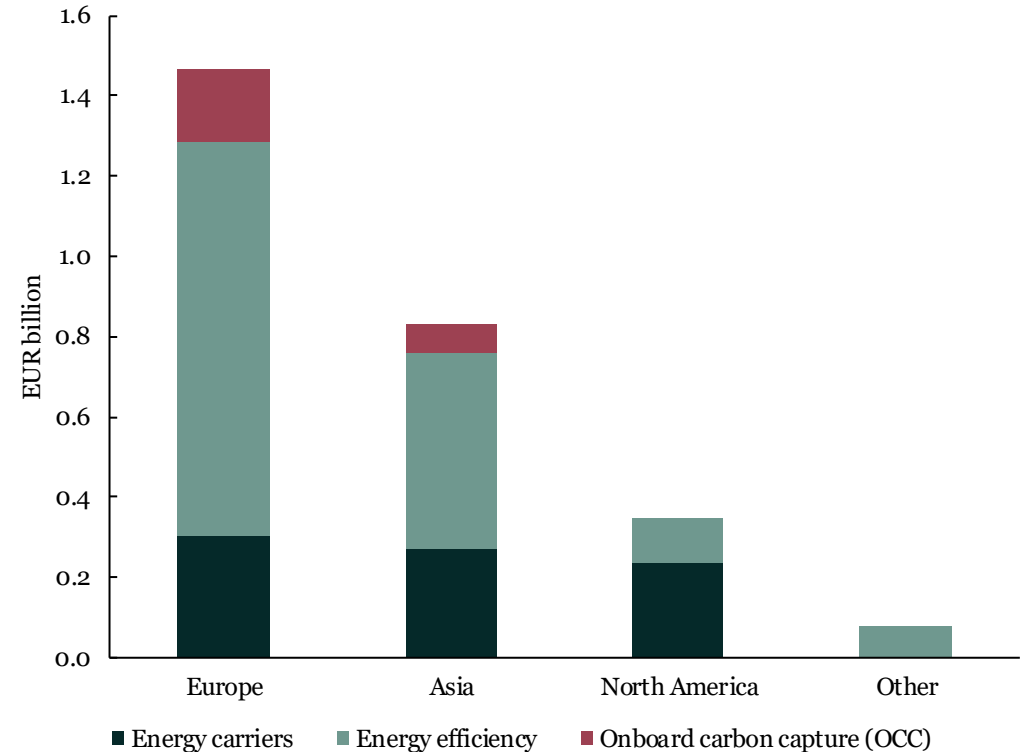
European Shipowners Represent the Largest Market for Climate Technology Retrofits

European shipowners lead retrofit investment at approximately EUR 1.5 billion, representing roughly half the market. Asia accounts for about EUR 0.9 billion (30%), while North America represents approximately EUR 0.3 billion (13%). The remaining EUR 0.1 billion (7%) reflects retrofits by shipowners in other regions.

In both Europe and Asia, energy efficiency investment dominates at roughly 67% and 59% of regional value, respectively. All onboard carbon capture (OCC) investment occurs in these two regions. North America shows a different pattern, with energy carriers and propulsion systems representing the largest investment category.

The market is also geographically concentrated within each region. In Europe, Greece, Italy, Denmark, Germany, and Norway account for approximately three-quarters of market value. In Asia, China, Malaysia, Singapore, and Saudi Arabia together represent roughly 74% of the market. The United States dominates North America at approximately 88% of value, with Canada comprising the balance.

Market value for maritime climate technology in the retrofit market by vessel owner continent in 2025. Source: Menon Economics/Clarksons



Shipowners' Direct Purchases (OPEX)



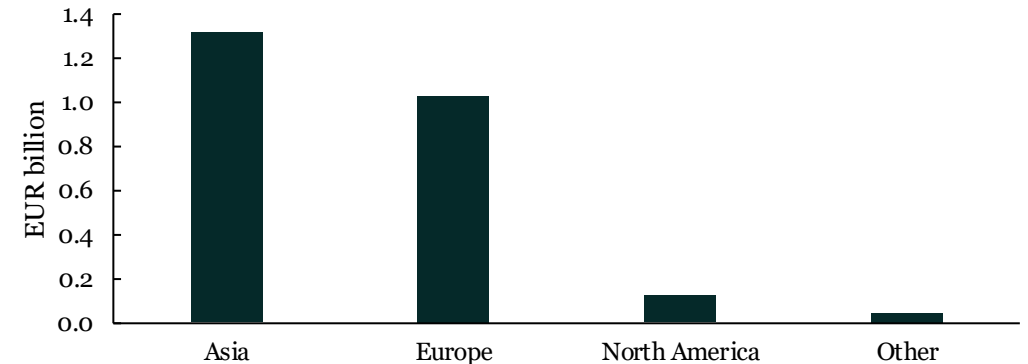
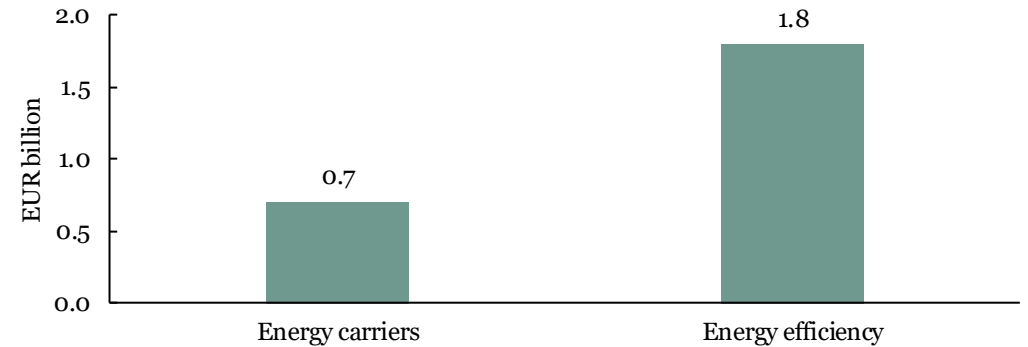
The Direct Purchase Market for Maritime Climate Technology Is Estimated at EUR 2.5 billion

To estimate the direct purchase market for maritime climate technology, we base our analysis on shipowners' ongoing operational expenses for maintaining climate technology equipment on the existing fleet in 2025. This covers replacement and upgrade of existing equipment, as well as installation of new equipment undertaken outside shipyards by the shipowners themselves.

The global market for maritime climate technology in the direct purchase segment is estimated at EUR 2.5 billion in 2025. Energy efficiency technologies represent the largest share of the market, valued at approximately EUR 1.8 billion, while climate technology energy carriers account for around EUR 0.7 billion. This reflects that investments are primarily directed toward measures reducing energy consumption on existing vessels.

Geographically, the market is heavily concentrated among shipowners with affiliations in Asia and Europe. Asia represents the largest market, valued at approximately EUR 1.3 billion (52 percent), followed by Europe with EUR 1.0 billion (41 percent). North America accounts for approximately EUR 0.1 billion (5 percent), while remaining regions together represent about 2 percent of the market. This geographic pattern broadly aligns with newbuild and retrofit markets.

Top: Value of climate technology equipment in the direct purchase market in 2025, by equipment type. **Bottom:** Value of climate technology equipment in the direct purchase market in 2025, by continent. Source: Menon Economics



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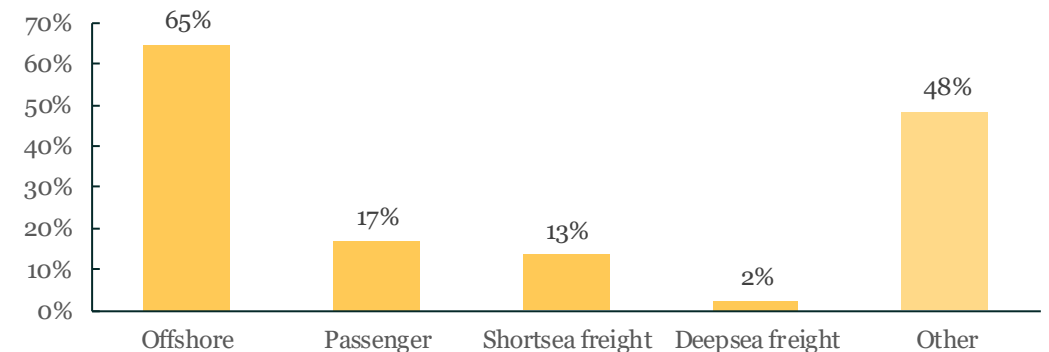
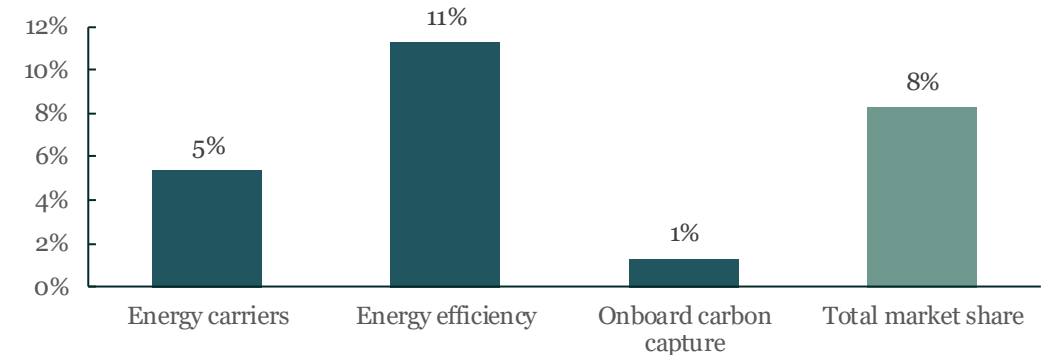
Norwegian Suppliers Hold an 8% Global Market Share — Highest in Energy Efficiency

Norwegian suppliers' combined market share in maritime climate technology is estimated at 8 percent. Market share is calculated as the combined revenue of Norwegian suppliers divided by the global market, and thus includes both sales in the Norwegian market and exports.

Market share varies across technology areas. Norwegian suppliers are strongest in energy efficiency, where market share is estimated at 11 percent. For energy carriers and fuels, the market share is lower at 5 percent, while the share in onboard carbon capture currently stands at 1 percent.

Norway's position also varies considerably across vessel segments. Norwegian suppliers are particularly strong in the offshore market, where market share is estimated at 65 percent. Market share is also relatively high in the passenger segment (17 percent) and shortsea freight (13 percent), while significantly lower in deepsea freight (2 percent). For other vessel types, market share is 48 percent.

Top: Norwegian market shares in the maritime climate technology market, by technology type and total. **Bottom:** Norwegian market shares in the maritime climate technology market, by vessel type. Source: Menon Economics



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Appendix A | Methodology for Estimating the Global Market for Maritime Climate Technology (1)

Overall Methodology

Our estimates of the global market size for maritime climate technology are based on Clarksons Research data on the global fleet and shipbuilding industry. The dataset includes information on propulsion systems, fuels, climate technology equipment, and timing of orders, deliveries, and retrofit installations. The methodology was developed to ensure consistent and comparable estimates across delivery channels and vessel segments.

The market is divided into three delivery channels, estimated separately:

- i) Newbuild - climate technology equipment for vessels delivered or scheduled for delivery in 2026
- ii) Retrofit - climate technology equipment for upgrades of vessels in the existing fleet, registered in 2025
- iii) Shipowners' Direct Purchases (OPEX) - ongoing operational expenses for maintaining and minor upgrades to climate technology equipment on the existing fleet in 2025. This includes component replacement and installation of climate technology equipment undertaken *outside* shipyards

In the following sections of this appendix, we present the methodology and assumptions underlying our market value estimates for the various submarkets.

The Newbuild Market

To estimate the newbuild market for maritime climate technology, we use Clarksons Research data to identify vessels delivered or scheduled for delivery in 2026.

In the first step, we estimate the newbuild value for the relevant vessels based on vessel type and tonnage, combined with segment-specific newbuild prices for 2026 from Clarksons. This provides an estimate of the total newbuild market value. The value is then decomposed into two main components:

- Equipment - the proportion of newbuild value comprising equipment. This proportion varies across segments and is partly based on an earlier study of Norwegian shipyards conducted as part of a survey of the Norwegian shipbuilding industry.¹ For certain vessel segments, the proportion was adjusted to better reflect global shipbuilding conditions, based on industry sources and supplementary analyses.
- Hull and shipyard labor – the remaining portion of newbuild value.

In the next step, we allocate the equipment value across cost components in shipbuilding, based on an earlier OECD report.² The allocation is based on cost profiles for selected vessel types, with the analyzed segments assigned to the most representative profile based on expert judgment.

Appendix A | Methodology for Estimating the Global Market for Maritime Climate Technology (2)

For technology-intensive components such as energy carriers, electrical systems, and auxiliary systems, climate technology value is determined based on registered technology equipment in Clarksons. Only vessels registered with relevant climate technologies within these components are assigned climate technology value. This means the entire component value is assigned as climate technology value if the technology is registered, otherwise it is set to zero. For other components (coatings, cargo handling, interior, and vessel operations), climate technology value is estimated as a fixed proportion of equipment value, since such information is not available in Clarksons.

Onboard carbon capture (OCC) is treated separately, with a dedicated capital cost share of newbuild value per vessel type, based on a report from Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping (2022).¹ Whether a vessel is equipped with OCC is specified in Clarksons, and the assignment follows the same binary principle as for other technology-intensive components.

Retrofit

For the retrofit market, we use the same vessel-level methodology as for newbuilds. For each vessel in the existing fleet, we estimate newbuild value based on vessel type and tonnage, combined with segment-specific prices for 2025 from Clarksons. This value serves as the basis for calculating retrofit investments, and the allocation of equipment and cost components follows the same proportions as in the newbuild estimates.

Retrofit value is calculated per technology component by multiplying the newbuild value by the equipment proportion and the relevant component proportion from the cost profile. The assignment is binary: if a vessel is registered with an installation date for the relevant technology in 2025, the entire component value is assigned as climate technology value. Vessels without a registered installation date for the component are assigned zero climate technology value.

The retrofit market is estimated only for climate technology components within energy carriers, electrical systems, auxiliary systems, and onboard carbon capture (OCC), as these are components with registered retrofit installation indicators in Clarksons. For OCC, the valuation method follows the same approach as for newbuilds, with capital cost proportions varying across vessel segments.

Shipowners' Direct Purchases (OPEX)

The market for shipowners' direct purchases (OPEX) is estimated indirectly based on Clarksons' OPEX index and the operating fleet. The operating fleet is here defined as vessels built before 2025 and specified in Clarksons as operational at the time of data extraction. The calculation is limited to vessels registered with climate technology equipment in Clarksons, and vessels already included in the 2025 retrofit market are excluded to avoid double counting. (Continued next page)

Appendix A | Methodology for Estimating the Global Market for Maritime Climate Technology (3)

Clarksons' OPEX index is valued at USD 7,421 per day per vessel in 2025 and is calculated as a weighted average of bulk, container, crude oil, and LNG vessels. We calculate an implicit operating cost per tonnage unit (GT and DWT) based on Clarksons' curve for the same vessel types. For each vessel segment in the operating fleet, total OPEX is estimated as the average of GT- and DWT-based estimates, scaled by the number of vessels and average tonnage per segment.

Total OPEX per segment is then multiplied by an equipment proportion of 18 percent, which according to Clarksons (cited in PwC Greece, n.d.)¹ is a typical estimate of the OPEX share related to spare parts and maintenance. The value is then multiplied by climate technology cost proportions from the same cost profiles used in newbuild and retrofit calculations. Climate technology value assignment is binary per component: only vessels registered with the relevant technology in Clarksons are assigned climate technology value for that component.



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