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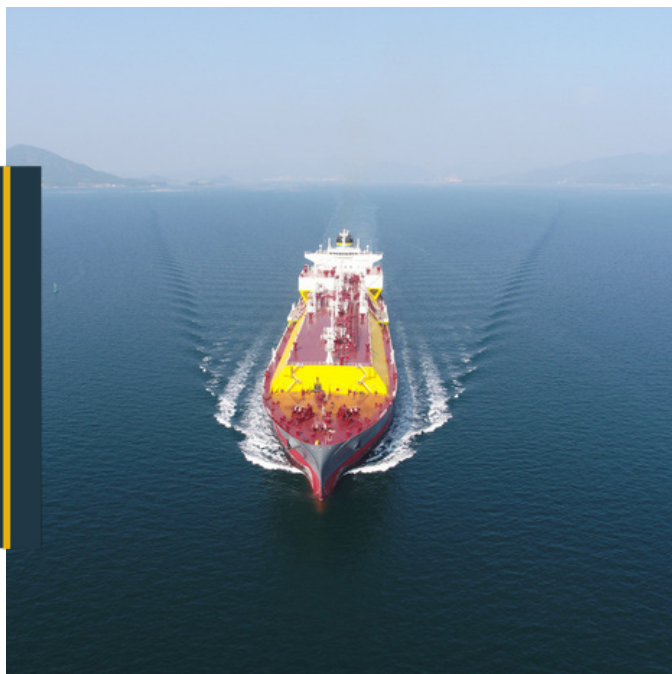
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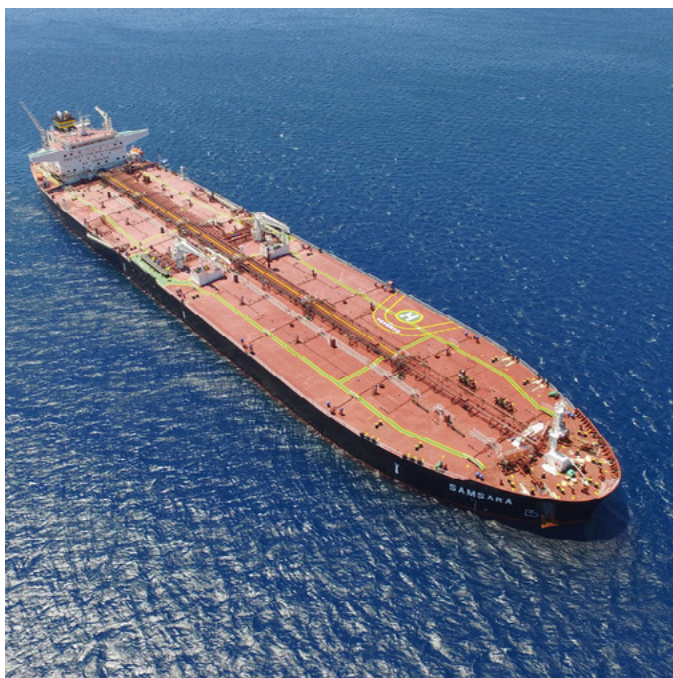


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Gratia Publications I.K.E.
132 Syggrou Ave, 117 45
Athens T: 210-92.22.501 / 92.48.006
F: 210-92.22.640
info@gratia.gr

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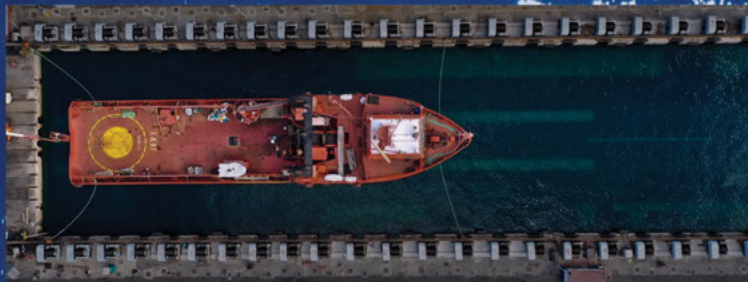


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Editorial

The past weeks have once again reminded us that geopolitics and shipping are inseparably linked. The much-anticipated meeting between Presidents Vladimir Putin and Donald Trump failed to deliver a breakthrough on the war in Ukraine. Expectations for even a modest framework for cease-fire talks were left unmet, prolonging uncertainty in a conflict that continues to shape global trade flows, energy markets, and maritime security.

While Washington and Moscow could not find common ground, the latter quickly sought to demonstrate that it is far from isolated. President Putin's high-profile meeting with leaders from China, North Korea, and India highlighted a carefully orchestrated display of diplomatic strength, which has sent a message to the West: Russia retains allies and economic partners willing to maintain ties, even in the shadow of sanctions and ongoing hostilities. For Europe and the United States, the optics of this summit were a sobering reminder that the Western bloc's cohesion is being tested, and that alternative networks of influence are emerging across Asia.

The ripple effects for global shipping are substantial. As sanctions become more stringent, parallel trading systems are developing. Cargo flows shift, new financial arrangements emerge, and shipping lanes once considered marginal gain new prominence. The reconfiguration of global alliances is not only a matter of politics; it is rewriting the commercial geography in which shipowners and operators must navigate.

Meanwhile, in the international relations front, another rift has deepened. The United States has rejected the International Maritime Organisation's proposed Net Zero Framework, citing economic and competitiveness concerns. Washington has gone further, warning that countries pressing ahead with stricter environmental regimes may face tariffs and trade restrictions. Such a stance not only complicates international climate cooperation but also places shipowners in an increasingly fragmented regulatory landscape.

Against this volatile backdrop, our September issue addresses a crucial topic

for the global shipping community: nuclear energy. Long viewed as an elusive promise, nuclear propulsion is being re-examined with renewed interest in the era of decarbonisation. The potential benefits are undeniable – zero greenhouse gas emissions during operation, high energy density, and a pathway to achieving the ambitious environmental targets set for the sector. Yet the challenges are equally formidable: safety concerns, regulatory complexity, public perception, and the cost of developing and maintaining the necessary infrastructure.

This month's special feature brings together perspectives from shipping personalities on whether nuclear power can realistically become part of shipping's green transition. The debate is not merely technical – it is also ethical, financial, and political. Just as the global order is being reshaped by shifting alliances, the shipping sector is at a juncture where choices made today will define competitiveness and resilience for decades to come.



Despite current uncertainties, we remain cautiously optimistic about the market outlook

Polys V. Hajioannou reflects on the current market dynamics and the future of the dry bulk sector and discusses the significance of committing to ESG initiatives. The Safe Bulkers CEO also emphasises the need for support mechanisms on the road to decarbonisation, as well as the opportunities for growth that come with this transition.

An interview with **Polys V. Hajioannou**,
CEO of Safe Bulkers,

by Giannis Theodoropoulos

How do you view the current supply-demand balance in the dry bulk segment, and in which areas do you see opportunities over the next 3–5 years?

The dry bulk shipping industry is influenced by global macroeconomic trends, infrastructure investments, commodity cycles, fleet supply, and, of course, regulatory changes. As of mid-2025, we're seeing a relatively tight supply-demand equilibrium. On the demand side, China remains the main driver, and its recent infrastructure stimulus package could help sustain moderate growth. Meanwhile, India is gaining momentum as an emerging demand market, particularly for coal, driven by its expanding industrial sector and increasing energy needs. The global grain trade has remained relatively stable, though it is increasingly exposed to climate variability and geopolitical developments such as the ongoing tensions in the Black Sea.

On the supply side, fundamentals remain supportive of freight rates. Fleet growth is restrained, limiting the new tonnage entering the market. At the same time, environmental regulations like the Energy Efficiency Existing Ship Index (EEXI),

the Carbon Intensity Indicator (CII), and the EU ETS are tightening supply by encouraging slower steaming and prompting earlier vessel retirements. Moreover, challenges in securing financing, combined with the uncertainty surrounding future propulsion technologies, are making shipowners more cautious, further curbing newbuild activity.

Despite some near-term uncertainties, we remain cautiously optimistic about the market outlook over the medium to long term. Looking ahead, we believe that a resolution of the ongoing geopolitical tensions and the gradual normalisation of trade flows could contribute positively to the market's balance in the years to come. As we continue to grow, we are confident about the future prospects of our company and our stock performance on the New York Stock Exchange (NYSE). Safe Bulkers stands on a solid foundation, combining an experienced team of professionals, a modern fleet with high specifications, long-lasting world-class partnerships, and a solid corporate strategy, on which we can build further and evolve, capitalising on new opportunities and delivering profitability even amidst volatile markets.

Today, the drive for decarbonisation is essential for the industry's long-term sustainability; However, it does come with significant challenges, especially for small and medium-sized shipping companies – even more so for those running older fleets.

contribute to the national economy and overall quality of life. Its strategic location at the crossroads of major shipping routes, combined with a business-friendly environment that offers attractive tax incentives, and a transparent regulatory and legal framework, makes it exceptionally appealing. On top of that, with modern maritime infrastructure, a high-quality ship registry, and a skilled workforce in the field, Cyprus really stands out as a go-to spot for global maritime business.

The Cyprus flag stands out as a strong and reliable choice, ranking third among European flags and eleventh globally. With its dynamism and outward-looking approach, and the support of all its stakeholders, Cyprus has the potential to capture a larger share of the global industry. Cyprus's shipping industry has seen remarkable growth in recent years. Its president, Nikos Christodoulides, and the government have been placing emphasis on elevating diplomacy – an effort that plays a critical role in safeguarding the country's maritime interests and expanding its international standing. To keep up this momentum and strengthen its position in Europe and beyond, Cyprus must intensify its efforts to develop and reinforce cooperation mechanisms and strategies that protect and expand its maritime interests. Given the current geopolitical volatility, Cyprus needs a multi-layered diplomatic and strategic approach that includes strengthening regional coalitions, deepening its bilateral ties and maritime relations with global powers such as the United States, while continuing to leverage its EU membership to extend the reach of its maritime interests.

Are there any diversification plans beyond dry bulk or geographic expansion into new markets? As a publicly listed company with family roots, how does Safe Bulkers balance corporate governance with long-term family vision?

As a successor to a company originally founded in 1958, Safe Bulkers proudly carries forward over 65 years of enduring and resilient presence in the dry bulk sector, through consistent outperformance and a steadfast commitment to sustainable growth. Over the past decades, we have formed strong partnerships with key players in the dry bulk market, and our company has earned recognition for its operational excellence, strong financial profile, and transparent corporate governance practices.

Being publicly listed on the NYSE since 2008 has added a layer of accountability and transparency, strengthening the foundations our family built this company on. Our governance framework combines experienced independent directors with family representatives, striking a solid balance that keeps us focused on long-term growth while staying true to our core values, which define who we are.

At this stage, our priority is to reinforce that foundation, ensuring long-term resilience and competitiveness. We remain deeply committed to the business we know best, while continuously striving to evolve, leading the way through regulatory frameworks and technological advancements. Our hands-on management approach is currently focused on executing our environmental strategy, with shareholder value firmly anchored at the centre of our operations.

As Safe Bulkers continues to evolve, the new generation of family members has started joining the business, gaining a deep understanding and knowledge of the dry bulk industry, along with the principles of hard work and integrity that have shaped our business over the decades.

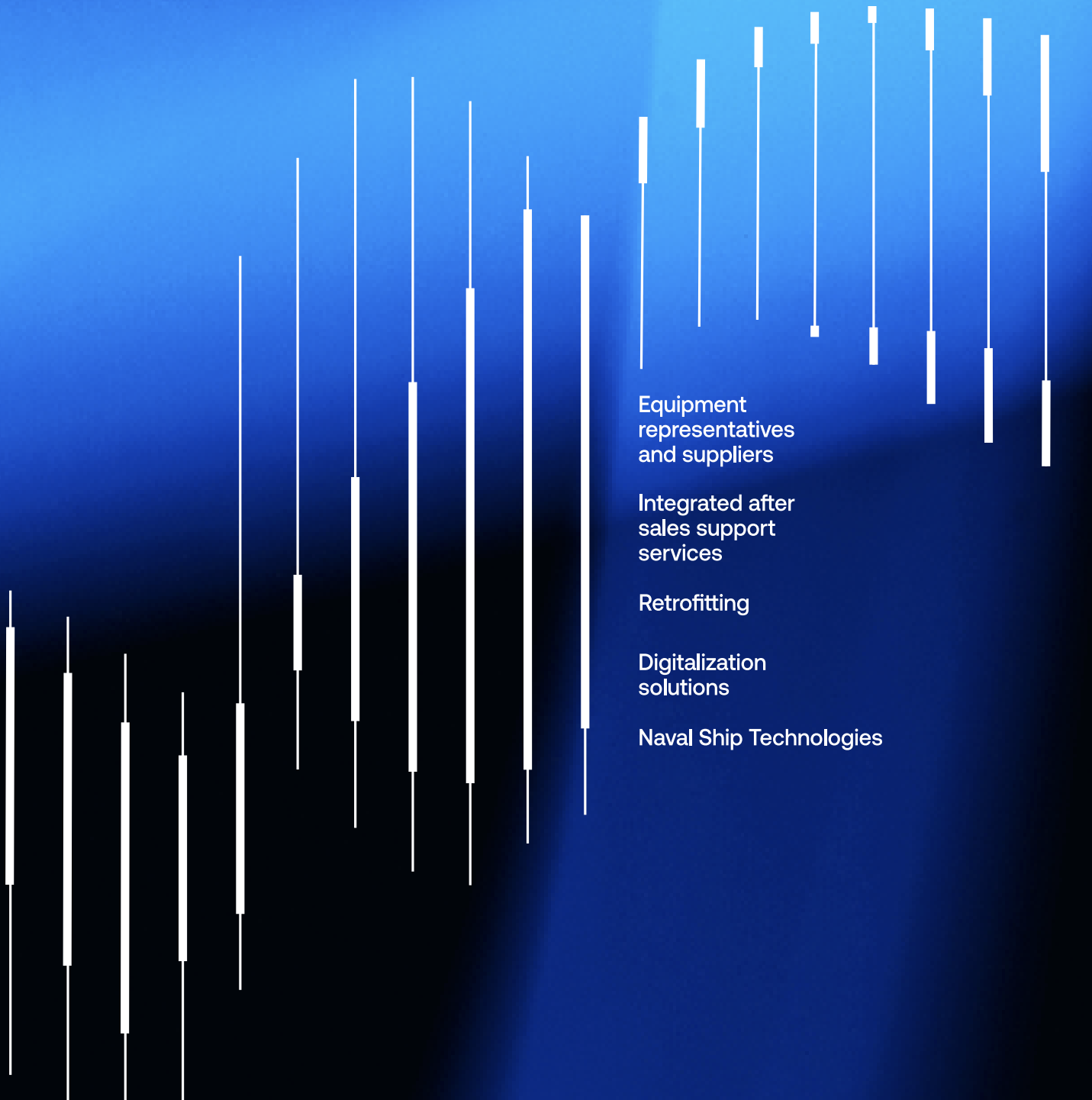
In light of the increasingly complex and fluid geopolitical environment in the Eastern Mediterranean, what kind of diplomatic and strategic relationships should Cyprus prioritise to safeguard its maritime interests?

Cyprus has successfully established itself as a leading global maritime hub, attracting key industry players and fostering significant investment opportunities that

How do you balance commercial performance with ESG expectations from financiers and charterers?

The importance of Environmental, Social and Governance (ESG) performance within the shipping industry has grown significantly in recent years. Shipping companies are gradually required to meet ESG-related standards and regulations in response to the regulatory pressures and stakeholders' expectations around climate change action, social initiatives, and corporate governance practices. Both financial markets

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and charterers are now looking closely at how shipowning and ship management companies drive progress towards their ESG agenda, how they deliver on their company purpose, and what the overall results and broader impacts of their ESG performance are.

At Safe Bulk, we have integrated and elevated our sustainable efforts across every aspect of our operations, continuously improving our ESG performance while creating long-term sustainable value for our stakeholders. Each year, we release our annual Sustainability Report to better inform our stakeholders on our company's approach and performance on ESG matters. We are glad to announce that our 2024 Sustainability Report is already available on the company's website, providing an insight into the work and progress we have made over the past year.

These annual reports reflect Safe Bulk's steadfast commitment to transparency and sustainability, detailing our actions across all ESG dimensions. On the environmental front, we have achieved a 6.09% annual reduction in carbon intensity, based on the Annual Efficiency Ratio (AER), compared to 2023. This follows a 7.42% reduction

from 2022 to 2023 and a 7.16% reduction from 2021 to 2022, marking a 19.3% decrease from 2021 to 2024 and showcasing a consistent downward trend in emissions. In terms of the social aspect of ESG, Safe Bulk has made significant contributions: ten annual scholarships for maritime studies abroad, a total of 20 scholarships valued at €5,000 each per year, granted to students-cadets for the duration of the 4-year Nautical Science programme at the Cyprus Maritime Academy, and several donations, including a specialised search and rescue high-speed craft to the Republic of Cyprus for search and rescue operations in the broader region. Furthermore, the reports underline ongoing improvements to the company's governance framework, the capstone of which is the establishment of an ESG committee at the Board of Directors level.

I am proud of the progress we have made and the commitment our team has shown to ESG initiatives. We have built strong momentum, and I am confident that we will keep increasing our efforts and making an even bigger impact for all our stakeholders in the years to come.

Do you believe that the increasing regulatory pressure for decarbonisation poses a threat to the long-term viability of small and medium-sized shipping companies, particularly those with older fleets and limited access to capital?

Today, the drive for decarbonisation is essential for the industry's long-term sustainability; however, it does come with significant challenges, especially for small and medium-sized shipping companies – even more so for those running older fleets. There is no doubt that the transition can be financially demanding, and not every company has the capital needed for greener technology and fleet upgrades. Still, we see companies that are effectively embracing changes and modernising, not only surviving but further expanding and securing a more advantageous position in the market. At the end of the day, each player in the industry runs their own business, with unique knowledge, assets, and data to drive change and make a difference. Without support mechanisms like green

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financing, collaborative initiatives, or access to innovation, many companies risk falling behind or even being pushed out entirely. But the moment we realise that we are all part of the answer, real progress becomes possible. What we've seen is that if players across the industry stay vigilant and work together, they can successfully turn these challenges into opportunities, enabling value to be unlocked and further growth to be achieved through new technologies, an evolving regulatory framework, and alternative financing mechanisms. At Safe Bulk, we're embracing decarbonisation's challenges by focusing on reducing our emissions and running one of the most efficient fleets in the dry bulk segment. To deliver on this, we are prioritising two key strategies: i) our comprehensive fleet renewal programme by ordering 18 new modern vessels, acquiring younger second-hand vessels, and selling some older ones, and ii) our ongoing programme for the environmental upgrading of the fleet's existing vessels by integrating newer eco-efficient technologies during dry dockings. To date, 25 existing vessels have been upgraded. As part of our fleet renewal programme, the company has signed contracts for the acquisition of two dual-fuel newbuilding Kamsarmax dry bulk vessels, capable of operating with both methanol and conventional fuel. When fuelled with green methanol, these vessels can produce near-zero GHG emissions, based on the well-to-propeller (WTP) life cycle assessment (LCA) methodology. At the same time, following the successful delivery of twelve Phase 3 newbuilds, Safe Bulk maintains an outstanding orderbook for six additional dry bulk vessels, including the two dual-fuel ships. All the newbuildings in our current orderbook are designed to meet the highest operational and environmental standards and are fully compliant with the latest IMO regulations, particularly those focused on reducing GHG emissions (EEDI Phase 3) and nitrogen oxide emissions (NOx-Tier III). These vessels, scheduled for delivery between 2026 and early 2027, will proudly fly the Cyprus flag, strengthening the nation's Registry with some of the most advanced green ships in the market.

Shipping is a dynamic, fast-paced sector with plenty of opportunities, but it demands focus and adaptability. You need to stay sharp and well-prepared for whatever the next day brings.

What advice would you give to the next generation of Greek professionals entering the industry today?

To the young people stepping into the industry, I would say that while degrees and skills provide a strong foundation, it is hard work, strong ethics, and integrity that make you stand out. Shipping is a dynamic, fast-paced sector with numerous opportunities, but it demands focus and adaptability. You need to stay sharp and well-prepared for whatever the next day brings. It can be a high-pressure environment at times, but the experience you gain and the strength of the team around you really make a big difference.

Above all, young people need to believe in themselves and not be afraid to pursue their goals. The maritime industry may be demanding, but it's also filled with opportunity. With courage and determination, there is not only room to grow, but real potential to make a mark in this industry. Seeing my children show genuine interest and get involved in the business we have worked so hard to grow is deeply rewarding. It means a lot to watch the next generation not only carry forward the family's maritime business but also add their own mark to it.

What motivates your social contribution, and how do you see the role of successful entrepreneurs in supporting broader societal needs?

At Safe Bulk, social contribution isn't just a moral responsibility; it's a reflection of our values both as a company and as individuals. It's about recognising that we're not separate from the society we live and work in. We are our people, and by supporting the community, we strengthen the very foundations on which our businesses stand.

I believe entrepreneurs have a real chance to make a meaningful impact by leveraging their positions and using their influence to support and give back to the local communities. Whether it is through supporting education, sustainability, or local development, our actions have the capacity to inspire and touch lives and communities in ways that extend far beyond financial returns. When we align our corporate goals with social value, we don't just build stronger companies; we help shape a better future.



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The responsibility of creating a welcoming environment for the young generation lies with us

In this exclusive interview with *Naftika Chronika*, the CEO of V.Group highlights the industry's role in attracting new talent, advises the young generation on how to build meaningful maritime careers, and offers his insights on the challenges and opportunities facing global shipping today, from decarbonisation and regulatory uncertainty, to the integration of alternative fuels.

An interview with **René Kofod-Olsen**,
CEO of V.Group,

by Spilios Varelas

How do you view the current job market for seafarers, and what are the main challenges and opportunities they face in today's maritime industry? What initiatives are you undertaking to improve crew welfare and retention in this highly competitive environment?

Looking back on the recent past, seafarers used to sign their contracts and be sent out to sea. If, during that time, any changes occurred within their household, they would find out about them after returning home. Nowadays, with the available technology, home can be with them on board the ship. This is a great development – who doesn't want to stay connected with their loved ones? However, the limitations of being in the middle of the sea remain, as seafarers can't do much physically beyond maintaining a virtual connection. While this can be a good thing, in most cases, it is also quite stressful.

At V.Group, we are committed to finding ways to help seafarers and their families. We would not be able to attract any young seafarers, men or women, if we didn't offer connectivity onboard our ships. The ship's configuration also plays a pivotal role in the way seafarers interact with each other. It's essential to foster engagement among crew members and discourage them from staying inside their cabins for too long, where they would simply spend

excessive time on their phones. Striking the right balance between connectivity and onboard social interaction is key, and I am positive we can achieve it.

We should also keep in mind that, until very recently, there was minimal satellite coverage over the world's oceans. Now, with Starlink and other emerging satellite technologies, we have achieved greater connectivity – and within a few years, we may even achieve full global connectivity. V.Group is adapting by installing as much equipment as possible and offering optimal training for our seafarers.

Regarding the young people within the organisation, we offer cadet programmes for our seafarers and graduate programmes for our shore-based personnel, both of whom are extremely important to us. The balance we have managed to create between younger people and more experienced professionals, as well as between men and women within our organisation, has created a phenomenal working environment. Many young people express interest in joining the industry, and the responsibility of creating a welcoming environment that offers a variety of opportunities lies with us. Our group is open to working with young people from across the globe, and we feel fortunate that so many are enthusiastic about working with us. Ultimately, we

are doing our best to keep our culture as youthful as possible.

I would also like to note that the global graduate programme we offer used to be exclusively addressed to naval architects. Currently, we are expanding it to offer the opportunity to young people from various educational backgrounds who aspire to be part of the shipping industry to attend as well.

What advice would you offer to a young person who is just beginning their career in the maritime industry?

The best advice I can offer to young people is to be both ambitious and patient. Older generations often viewed their jobs as something that would be permanent for the rest of their lives. Times were harder back then, or at the very least, different. Today, people may start a job while already thinking about the next one. This is why patience is important. You must first learn the ropes and find your role model. I wouldn't be here myself if I didn't have any role models.

It is also essential to be curious and self-aware. Ask yourself whether you have truly understood something, whether you have created value for your organisation, or how well you've collaborated with your colleagues. Lastly, think about where you would like to go. A lot of people come to me, expressing their ambition and aspirations. However, throughout my career, I have learned that it is not my successes that have contributed to who I am today, but my failures. Life is imperfect, and failure is part of the process. Young people should accept that. Bear this in mind, be patient, and doors will eventually open. Young people should also allow themselves to try things outside of their comfort zone. Only then will you find out whether you can handle new challenges, or whether you flew a bit too close to the sun and need to take a step back and reflect. This applies to both people at sea and those in shore-based roles. If you begin your career as a cadet, aspire to become a captain or a chief engineer. Work hard to become what you aspire to be. Curiosity will give you the drive to become better, maybe even to the point of surpassing your predecessors – especially given the tools and information available today.

Throughout my career, I have learned that it is not my successes that have contributed to who I am today, but my failures. Life is imperfect, and failure is part of the process.

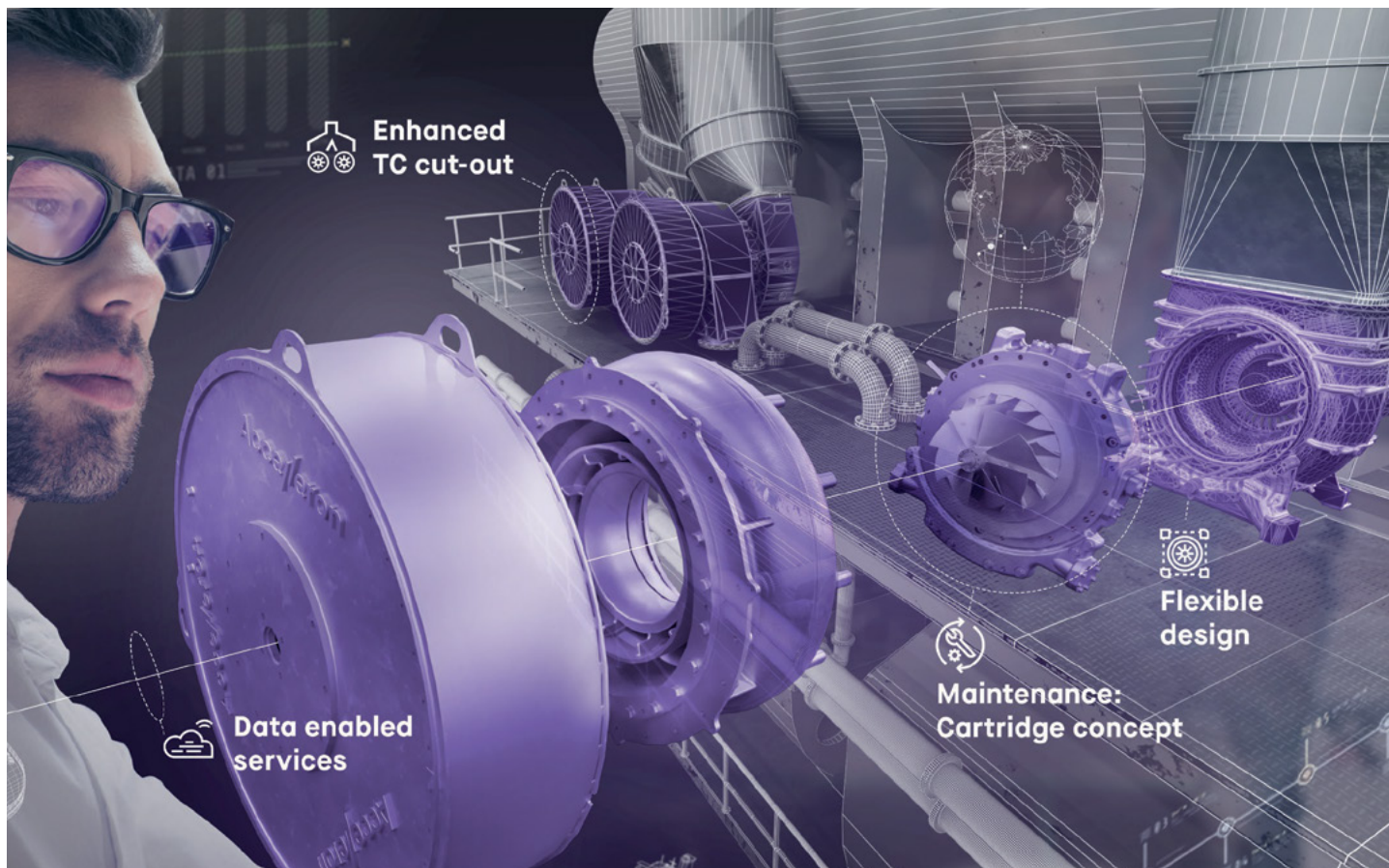
Greece has long been a stronghold for traditional ship management. How do you see the role of third-party managers like V. Ships evolving in the Greek market? What are the key advantages you can offer to Greek shipowners today compared to in-house management?

Greek shipping is said to be characterised by the traditional ship management model, meaning it is not very keen on outsourcing its operations to third-party managers. I personally disagree with that view. In my humble opinion, there is room for both methods, and I am confident that third-party managers can add value across the board.

Coming from a shipowning background myself, we run the company with a shipowner's mindset, because it's what we know. I don't say this with arrogance, but I do believe that we differ from other ship management companies. We have technical and crew departments, which are particularly difficult to run. At the same time, we also run an entirely different company, V.Services, covering everything from engineering and procurement to digital wallets, insurance, travel, and more. We are offering a much broader package.

If shipping companies have scale, their reach and capabilities can become boundless. The reason why V.Group can attract so many cadets is that we manage a pool of 44,000 seafarers. We can attract more global graduates than we can hire on an annual basis because our presence spans over 50 offices across the world. The absence of scale means you cannot do everything by yourself, as shipowners have an endless list of tasks they have to carry out apart from running their ships 24/7. Our capacity for growth and for handling unexpected surprises is completely different from that of a smaller shipping company.

Ultimately, it is irrelevant whether you are a traditional shipowner in Greece. Many are now becoming more flexible and are starting to assess the benefits we can offer. We play our part, and our global network of colleagues is one of our most valuable assets and a key competitive advantage. Ultimately, it is up to us to prove that we are reliable partners.



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Dimitris Patrikios, MD of V.Ships Greece (L) and René Kofod-Olsen, CEO of V.Group (R), at the headquarters of V.Ships Greece

The rise of the so-called “dark fleet” operations causes growing concerns regarding safety, compliance, and transparency. What is your view on their impact on the industry and on responsible ship management practices?

As an individual, I am deeply concerned about the dark fleet. Accidents are bound to happen. There are trade routes that are highly trafficked every single day, occupied by a fleet that does not meet the standards set by the global shipping community. These ships are uninsured and not necessarily classified, and their maintenance is not carried out in the globally agreed-upon way. These are the typical characteristics of the vessels in the dark fleet. When taking into account the hundreds of thousands of tonnes of cargo they carry, one can easily understand where things might go wrong.

My concern is that, with the emergence of new regulations, such as the EU ETS, the dark fleet will persist in the future, continuing to evade compliance with these requirements. However, it is not something that the shipping industry itself can necessarily solve – it is an issue we must hope politicians and regulators around the world will help us find a solution for.

From a safety perspective, you can replace anything on a ship within a short period of time, but you can never replace a seafarer who loses their life. This is something I think about daily, and I hope I never wake up to news

of such an accident. Facing such an incident is much more challenging than most people are willing to admit. One can hope that if there were fewer global conflicts and if regulators agreed upon uniform standards regarding the safety of our waters and seafarers, then the issue could be resolved. Different sets of standards often lead to disruptions.

With growing geopolitical tensions and shifting tariff regimes, how do you foresee global trade patterns impacting the shipping industry, and what role does a ship manager like V.Group play in helping clients navigate this uncertainty?

Historically, there have been specific regions where goods are produced and other regions where these goods are consumed. Trade has been the cornerstone of our society for thousands of years and will continue to uphold this position. More than 90% of global trade, whether it is energy, commodities, or other goods meant for consumption, is accommodated by the shipping industry, and I doubt this will change. However, I do believe there will be a shift in the existing trade patterns. Throughout history, trade patterns have undergone numerous changes, and they may continue to do so. Typically, we only recognise such a shift after a time lag of approximately ten years. The shipping industry is quite resilient, as are the people who constitute it. We will find ways and means to support any changes that may occur. Regarding the role of ship management companies, the more complex the status of the industry is, the greater the need for companies like V.Group. Conflict plays out in many ways that we are obligated to adapt to, and we are here to help shipping companies do so. As the complexity of trade increases, so do the investments required by shipping companies. Compliance with regulations, digitalisation, management, engineering capabilities, and various other operational needs must be addressed. If you ask yourself the question: “If I have 20, 30 or 40 vessels, can I actually manage all that?”, it is up to the management company to provide an answer. Of course, there is a need for adequate commercial and chartering abilities, the capacity to purchase the right assets, proper



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Decarbonisation is a global issue and requires global measures. The task is undoubtedly complex, and the current level of clarity is insufficient.

management of borrowings, and the assurance that there is enough capital for investments, among many other things. I have been a shipowner for the better part of my life, and I firmly believe that the latter is the most important part today.

Ship management can make a meaningful difference, as it seems to be adapting well to the complexities shipping is currently facing, which gives us a good grasp of our role within the industry and allows us to keep on doing what we do best.

Moreover, scalability is a key factor when facing complexities. A small ship management company will be faced with the same complexities, questions, and costs as a large one, but has a limited number of vessels over which to distribute them. Therefore, whether on the shipowning or the ship management side, complexity demands scale. Scalability will play a pivotal role over the next decade, as it is essential to cover the costs of an increasingly complicated world.

Do you believe the current regulatory framework (IMO, EU ETS, etc.) provides sufficient clarity for long-term investment decisions?

Although the clarity provided seems limited, I acknowledge the fact that

politicians working on this subject have been given a difficult task. The burden for shipowners is massive, and figuring out a way to deal with the complexities is crucial. Measures like these have not been implemented before. As of this moment, this is uncharted territory, and we need to address it.

Shipping companies may try to address regulatory requirements as quickly as possible, but bureaucracy, along with many other barriers, continues to hinder this effort. Decarbonisation is a global issue and requires global measures. The task is undoubtedly complex, and the current level of clarity is insufficient. In my view, things will get worse before they get better. We have yet to see the introduction of a uniform tax system or incentives for reinvestments in decarbonisation. Any tax collected should be reinvested into addressing the challenges posed by decarbonisation pressures and requirements.

Moving on, all things being equal, some of the costs should also be passed onto consumers, not borne by the shipping companies alone. We need to explain to young people, for instance, that their shoes will be more expensive. There is a tendency to ask what shipping companies can do to become more efficient.

However, if we all want to move towards decarbonisation, we must accept that the habits of the average consumer must change, too.

Finally, what concerns me is the fact that many countries are coming up with their own decarbonisation taxes, such as the UK ETS, a development that may further complicate the matter, which is already complex enough as it is. I don't believe we have ever been in a more complex shipping environment.

How is V.Group preparing for the integration of alternative fuels, such as ammonia, methanol, or LNG, into its managed fleet?

I don't think there is an ultimate solution to decarbonisation. There are plenty of options: optimising vessels through retrofitting, the way they are painted, the way their hulls are cleaned, etc. These initiatives are progressing. Shipping has always had its frontrunners, and we must applaud them for continuing to push forward. I don't know which solution will prevail, but if I were to guess, I would say that small nuclear reactors could be a potential answer. Of course, there are a plethora of issues that need to be addressed before nuclear reactors are implemented as a source of propulsion. However, I do see it as a potential option in the future, depending on the investment model every company follows.

Hydrogen, ammonia, and alternative fuels in general all have limitations related to their supply chain, availability, and the cost of large-scale production. The alternative fuel that manages to overcome these obstacles will be the winner. However, at the moment, most countries are more focused on the electrification of land-based infrastructure than on finding the right alternative fuel for shipping.

Decarbonisation is a huge challenge, but we can play our part by supporting shipowners. VShips has a dedicated end-to-end department to address all emerging issues. At the same time, we leverage technology and digital solutions to calculate emissions, ensuring alignment with CII and EEXI requirements.



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Consolidation remains a constant consideration in an industry like shipping

As the global LPG shipping market faces heightened volatility and shifting geopolitical dynamics, BW LPG stands at the forefront of adaptation and strategic foresight. In this exclusive interview with *Naftika Chronika*, BW LPG's CEO Kristian Sørensen discusses the company's recent consolidation with Avance Gas, its expanding footprint in key markets like India and the US, and its approach to navigating the freight market's unpredictability. From expanding LPG trading and shipping to the emerging ammonia trade, Sørensen offers valuable insights into the opportunities and challenges shaping the next phase of growth for one of the sector's leading players.

Kristian Sørensen,
CEO of BW LPG,

talks to Giannis Theodoropoulos

What does the future hold for BW LPG after the deal with Avance Gas? Can we expect further consolidation moves in the segment?

We are very pleased with the outcome of the Avance Gas transaction, which represented a meaningful step towards the consolidation of the VLGC market. The deal, which involved the handover of 12 modern VLGCs, expanded our commercial footprint considerably and strengthened our position as a larger, more investable company for shareholders. A major advantage was our ability to take delivery of all 12 vessels within four months of signing, enabling us to have assets on the

water in a healthy market environment for VLGCs.

In addition to the Avance Gas transaction, we have also declared two purchase options over the past year linked to long-term time charters. With these additions, we are satisfied with the current size of the BW LPG fleet. For the time being, our plan is to let the assets work and generate revenue.

In general, consolidation remains a constant consideration in an industry like shipping. However, the feasibility of such moves is heavily influenced by asset prices, which remain elevated at present and continue to pose a challenge for further consolidation.



What are the reasons behind the ongoing volatility in the LPG spot freight market, and what are the short-term prospects?

The VLGC market is one of the most volatile segments in shipping, primarily due to the dynamics of the US LPG exports. It is a highly dynamic export market driven by the price difference between the US and the importing markets in Asia, as well as to a certain degree in Europe. Although the price difference allows for exports most of the year, there are periods when incremental spot cargoes are either in short supply or in surplus, influenced by factors like weather, geopolitical developments, the number of available transit slots in the Panama Canal, etc. Given the relatively small size of the VLGC sector, even a limited number of additional or withdrawn cargoes can significantly shift market sentiment and trigger sharp rate fluctuations.

At the moment, the Israel-Iran conflict is driving spot rates up, as the US is the only LPG exporter that can mitigate the risk of a potential short-

fall of LPG cargoes from the Middle East. Furthermore, long-haul voyages from the US to Asia absorb considerably more capacity compared to Middle Eastern exports, tightening global fleet availability and amplifying freight market volatility in the short term.

In a recent public statement, you stressed that investing in other parts of the supply chain can help mitigate volatility. What investments is BW LPG pursuing at the moment?

Over the last years, we have substantially expanded our LPG trading activity with BW Product Services, where we expect to trade 6 million metric tonnes of physical LPG this year.

In addition, we explored opportunities to invest further along the supply chain and expand into LPG infrastructure by teaming up with local Indian partners in order to build an import terminal outside Mumbai. Initially, we were supposed to invest a relatively modest amount of equity in the range of USD 10-15 million, but the project, like many greenfield infrastructure developments, proved to be quite complex and required substantial attention and time from management and directors. Given the increasing geopolitical volatility and the frontline exposure of our shipping and trading operations to these developments, we ultimately decided to exit the terminal project. This decision allows us to concentrate fully on our core business areas, i.e., shipping and trading, which remain our primary value drivers. At present, we have no plans to expand further into other parts of the LPG supply chain. We believe that focusing on our core competencies is the most prudent approach in the current environment.

What impact is President Trump's energy policy expected to have on LPG carrier demand?

It's important to keep in mind that the US LPG production and exports have increased consistently across successive administrations since President Obama. Moreover, in the US, private companies explore, drill, and export hydrocarbons based on professional



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and corporate investment decisions. That said, the current political environment under President Trump appears more favourable for permitting new natural gas and crude oil projects. This could, in turn, lead to increased LPG availability for export. Moreover, we view the planned investments by US export terminal operators as a positive sign for the future growth of LPG exports, as they are expected to support a sustained demand for LPG shipping capacity.

Why is BW LPG enhancing its presence in the Indian market? What are India's prospects in the seaborne LPG trade?

India is the second-largest importer of LPG, where it is primarily used for heating and cooking. The country already accounts for 50% of LPG exports from the Middle East, and with the world's largest population on a path toward prosperity, its energy needs are expected to grow. LPG fits well into India's energy mix – it is easy to distribute, competitively priced, and a versatile energy source. Due to this versatility, we anticipate that India will use additional LPG as feedstock for its growing petrochemical industry, similar to what we've seen in China.

Through our subsidiary, BW LPG India, which owns and operates the largest fleet of Indian-flagged VLGCs, we have gained valuable experience in the Indian LPG market and are firm believers in the fuel's prospects in India. We are also seeing signs that India is looking to diversify its energy sources by importing more from the US, which in turn is increasing its shipping capacity.

What are the prospects for the ammonia/VLAC market? What challenges should be addressed for ammonia to be considered a viable marine fuel option?

The development of the VLAC market is closely tied to the realisation of large-scale blue ammonia projects in the US over the coming years. A key enabler for this will be the establishment of long-term offtake agreements with importers in the Far East, which would drive demand for long-haul transportation of ammonia in significant volumes, suitable for VLAC deployment.

At present, the ammonia trade is effectively served by midsize and handysize LPG carriers, and most of the existing onshore infrastructure is not yet configured to accommodate VLACs. Overall, the pace of growth in the ammonia trade has been slower than initially anticipated and remains reliant on supportive policy measures, such as the US Inflation Reduction Act (IRA), to gain momentum.

From a technical perspective, the LPG shipping industry has decades of experience handling ammonia as cargo. However, for ammonia to become a viable marine fuel, several considerable challenges must be addressed, including the commercialisation of ammonia-compatible propulsion technology and engines, the resolution of safety concerns related to its use, and the establishment of a cost-competitive fuel supply chain. The new emission regulations are beginning to support this transition through a combination of taxes and subsidies, and we remain cautiously optimistic that a technically and economically viable pathway will emerge.



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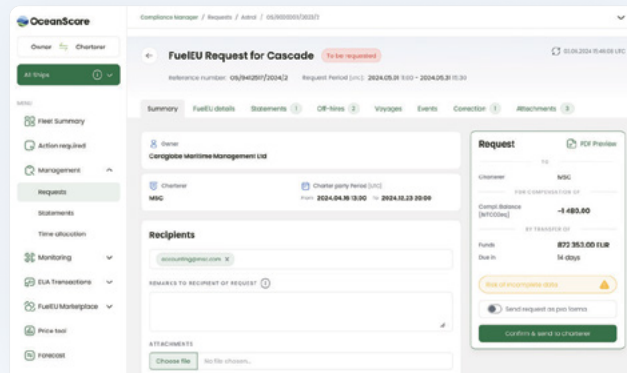


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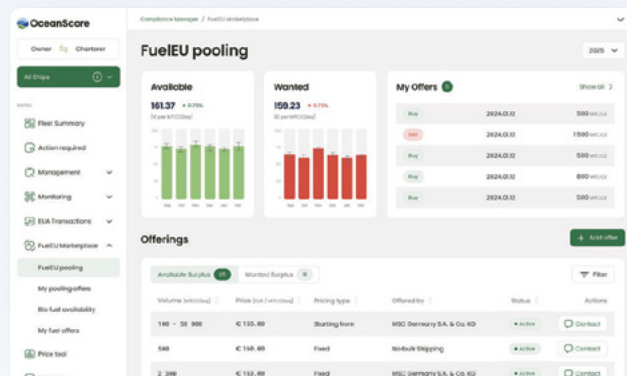
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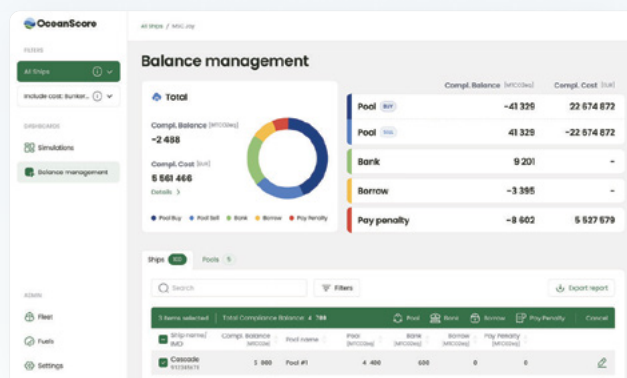
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Contact Us

Orestis Nikolopoulos

Head of Eastern Mediterranean

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The next multiannual financial framework: Transport and tourism become priority sectors with increased funding

by **Eliza Vozenberg**,

Chair of the Committee on Transport and Tourism
of the European Parliament

The proposal for the next multiannual financial framework (MFF), published on 16 July 2025, reflects the EU's continued commitment to economic growth, competitiveness, resilience, and security. In my capacity as Chair of the Transport and Tourism Committee of the European Parliament, I am pleased to announce that transport and tourism have been firmly established as key priorities under the next MFF, accompanied by a substantial increase in the EU budget allocated to transport infrastructure.

During our committee meeting on 16 July, the Commissioner for Sustainable Transport and Tourism, Mr Apostolos Tzitzikostas, presented the proposal and engaged in an exchange of views with members, who expressed their broad agreement and support, acknowledging that the interests of the transport and tourism sectors have been defended in the Union's forthcoming long-term budget.

Competitiveness and security are two major priorities in our current mandate, and the Connecting Europe Facility (CEF) can help us deliver on both. That is why the continuation and reinforcement of this facility under the next long-term budget is of utmost importance for the transport sector. The CEF has been, is, and will continue to be a valuable asset, especially with regard to successfully completing the Trans-European Transport Network (TEN-T).

The next MFF's budgetary figures speak for themselves. Under the next framework, the new budget for transport will amount to €51.5 billion, which is double the allocation provided under

the current framework. In the area of military mobility, funding will rise to €17.65 billion, representing a tenfold increase compared to the current MFF. These substantial budget increases undoubtedly mark a pivotal step in addressing the existing disparities in connectivity and accessibility across the EU, serving as a testament to the critical importance of these sectors for the competitive, sustainable, and secure future of our Union. Beyond enhancing transport alone, this newly restructured MFF has further and broader implications, most crucially for tourism. As one of Europe's economic cornerstones, accounting for 10% of the EU's GDP, tourism is intrinsically linked to the availability of efficient, multimodal, and sustainable transport networks. After all, for tourism to thrive, we must first ensure seamless, accessible, and affordable cross-border travel throughout our diverse Union. Before the start of this mandate, I formally communicated to President von der Leyen the need to emphasise tourism's importance at the European level. It is therefore my sincere pleasure to announce

that, under the new MFF, tourism will be more prominently anchored as a key priority, finally shedding more light on this silent powerhouse of the European economy.

Furthermore, flexibility will be a guiding principle in the next MFF, giving us the necessary space to respond to any unforeseen challenges. Despite initial concerns over the restructuring of the next framework, I remain confident that the interests and priorities of the transport and tourism sectors have been adequately reflected and secured in the next MFF and have been given the funding that they rightfully deserve.

However, even with sound and robust funding, our work is far from over. Now more than ever, we must ensure that such funding is used in a fit-for-purpose and future-proof manner, while we also continue to strive for better results. In my capacity as Chair, I am eager to work with all fellow committee members and the industry to achieve our shared goal: a Europe whose transport and tourism sectors are more competitive, resilient, and sustainable than ever before.

Shipping needs uniform regulations for the transition to the new era

During a recent mission to the United States, the *Naftika Chronika* editorial team had the opportunity to sit down with Joe Kramek, President and CEO of the World Shipping Council. In this exclusive interview, Kramek shares his insights on the global shipping industry's path toward decarbonisation, discusses the growing concern over containers lost at sea, and underscores the crucial role of seafarer education and training in an era of energy and technological transition.



Joe Kramek,
President and CEO
of the World Shipping Council (WSC),

talks to Giannis Theodoropoulos

The United States Trade Representative recently proposed a fee on port calls for Chinese-built vessels and fleets that either include such vessels or have ships on order from China. What impact could this proposal have on liner shipping and the US economy?

We support the revitalisation of the US shipbuilding industry. The World Shipping Council's members operate 75% of the vessels enrolled in the US Maritime Security Programme. Among our members, some are US-based, others are flying the US flag under the MSP, and one is even building ships in the US. That being said, we strongly oppose the proposal, as it will have catastrophic consequences for the US economy. The proposed fees would translate into a tremendous amount of money, which, ultimately, shipowners and consumers will have to pay. It is also important to note that there isn't a separate import and export system. For example, exports from the US to Asia are currently much cheaper

due to trade imbalances. So, the cost would double for farmers, who grow 40% more than the domestic consumption and heavily rely on the Asian export market. Our early assessment is that this increase could amount to as much as \$680 per container on both sides, a cost that will be passed on to every sector of the US economy.

Another major issue is that these fees on Chinese-built or Chinese-operated vessels offer no actual support for US shipbuilding. The WSC has been very clear that the US Administration needs to shift from its retroactive approach to a proactive one. A signal sent on a proactive basis can be much more effective. The US shipbuilding industry needs at least a ten-year outlook, as it is a capital-intensive business and its workers must be trained.

Additionally, the other part of the proposal, which suggests imposing fees on foreign-built car carrier vessels based on their capacity will further slow US economic growth and raise automobile prices for American consumers.



Credit: EPA/ALLISON DINNER

In recent years, EU legislators have introduced initiatives to support maritime transport. What is your view on these measures?

We have a dedicated office in Brussels to ensure that we engage with the EU, and we are hopeful that this will keep the dialogue open. Shipping is important for the EU for several reasons. Every year, \$2.5 trillion worth of goods are imported into the EU by sea, and 90% of the EU's goods are transported with containerships inbound and outbound. Moreover, the EU is one of the largest exporters worldwide and one of the biggest bunkering hubs. So, there are ports like Rotterdam and, to a lesser extent, ports in Spain that are major bunkering stops. We see tremendous opportunities for EU ports to remain strategic hubs for bunkering and fuel production as we pursue the transition toward net-zero emissions. This is definitely one of the ways for the EU economy to remain competitive, as shown in the Draghi report. We have recently published a few proposals for EU maritime decarbonisation,

one of which recommends allocating some of the revenues from the EU Emissions Trading System (ETS) to incentivise renewable fuel adoption. It was encouraging that, at the European Shipping Summit, the European Commissioner for Sustainable Transport stressed that some of the ETS revenues can be used to bridge the price gap with clean fuels and support investments in clean tech. The truth is that EU regulations, such as the ETS and the FuelEU Maritime, do not incentivise the production of clean fuels. Meanwhile, we have 200 dual-fuel newbuildings on the water and 700 more in the orderbook. Having said that, we believe that the demand for cleaner fuels will be high in the years to come.

The key, though, lies in offsetting the cost three or four times to accelerate the transition to net-zero carbon emissions. As our Vice President commented after MEPC83, "the production of clean fuels and energy sources will create economic opportunities across the globe and have environmental benefits that will last for generations. However, considerable work remains to ensure we have the necessary rules and guidance to use the fuels that will power the world's fleet in future years". Ultimately, the EU's proposals are welcome, but the discussion needs to shift from ambition to action.

Representatives of tramp shipping companies argue that liner companies are better positioned for green investments because of the specific routes they operate on. How do you respond to this claim?

This specific claim is understandable to some extent. Our view is that we cannot have solutions based on the type of cargo a ship carries or the routes it operates on; we need solutions that can be applied in all shipping markets and models. That's the best way to accelerate this transition. Even though the liner companies have invested a significant amount of money in newbuildings, it is essential that every segment of the industry moves forward together.

We need solutions that can be applied to all shipping markets and models. That's the best way to accelerate shipping's green transition.

Recently, another incident of containers being lost at sea took place. While such incidents are declining, what initiatives are being implemented to prevent them?

One container lost at sea is one too many. That's how we see it, and we have done a lot of work to address the issue. To put things in context, the WSC collects information and provides it to the IMO. In 2023, a total of 221 containers were lost at sea out of 250 million transported. The percentage is very low, but we can always do better. Over the last three years, we have invested, along with 60 other partners, in a study by MARIN TopTier to identify the root causes of this issue. The study is now complete and in the finalisation stage, and we will soon share the findings with the IMO. An early finding is related to avoiding and managing various types of dangerous parametric rolling that can lead to the loss of containers at sea. We are sharing best practices with mariners and seafarers, while masters are being trained to recognise these conditions and change course and speed accordingly. This early insight has already had a significant impact.

As one delves deeper into the study, multiple reasons can be identified, as the maritime environment is inherently challenging. Let us not forget that, just recently, ships had to go around Africa because they couldn't go through

the Red Sea. Moreover, harsh sea conditions add to the existing challenges seafarers and companies face.

However, we still need to focus on the fundamentals. For instance, container packing onboard the ships must be done properly; the people responsible for loading containers must be accurate regarding the weights they report and must communicate cargo data in a transparent way. Transparency is essential to creating an effective stowage plan because, if ocean carriers receive incorrect information, the stowage plan can be negatively affected.

To address this issue, specific procedures must be followed by all stakeholders in liner shipping. Frankly speaking, even if the loss rate is very low, any incident involving containers lost at sea can pose risks to coastal communities. For this reason, we are in constant communication with the IMO and have launched the study mentioned above.

If you had to choose the three main challenges your members will face in the short term, what would they be?

In my opinion, the first challenge is the uncertainty surrounding tariffs. Shippers are our customers, and the current uncertainty in the US disrupts the entire industry. Enhancing certainty would benefit all stakeholders in the supply chain.

Second, geopolitical challenges continue to be a significant concern. For most carriers, taking the longer route through the Cape of Good Hope to avoid the Red Sea is a tremendous challenge. At the same time, piracy and armed robbery incidents are happening along the African coast.

The third challenge is the transition to net-zero carbon emissions. We have invested some \$200 billion in dual-fuel newbuilding ships, and that investment should be realised for the global community. We want to accelerate the use of alternative fuels, but there are significant risks involved. Their use requires tremendous amounts of training and some of these fuels, such as ammonia, pose risks and can lead to loss of life. Lastly, there are divergent views among member states in the IMO, and it takes a lot of effort to bring them together.

An aerial photograph of a large ship's wake in the ocean, with a large blue semi-transparent 'V' shape overlaid on the image.

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The energy transition is not just a technological challenge but a strategic opportunity for transformation

Maria Rita Galli talks to *Naftika Chronika* about Greece's role as a regional energy gateway that will bridge international supply with Europe's decarbonisation demand. DESFA's CEO highlights the upcoming projects that will shape the regional energy landscape and underlines the emergence of CO₂ transport by ship as an efficient solution.

An interview with **Maria Rita Galli**,
CEO of DESFA,

by Giannis Theodoropoulos

What is your long-term vision for DESFA in the context of the European energy transition?

As we navigate the complexities of the energy transition, we must stay pragmatic. We need a realistic and reliable energy policy that gives investors the confidence to act now and secure affordable energy today while we continue to build the clean, resilient energy system of tomorrow.

At DESFA, we view the energy transition not only as a technological challenge but also as a strategic opportunity for transformation. Our long-term vision is to evolve into a multi-molecule energy operator, developing infrastructure that facilitates the use of LNG as a transitional fuel in the maritime sector, enables CO₂ transport across the Mediterranean, and sets the foundations for the development of a hydrogen economy and trade in the wider region.

We are establishing Greece as a key entry point for global energy carriers, bridging international supply with Europe's decarbonisation demand. Simultaneously, we are building the infrastructure needed to support industrial and transport decarbonisation, enhance energy system flexibility, and ensure secure and resilient access to energy carriers across borders and sectors.

What are the key projects or priorities for DESFA over the next five years?

Over the coming years, DESFA will implement an investment plan of approximately €1.4 billion, which will be of strategic importance for the Greek and regional energy landscape. These investments, committed over the next three years alone, aim to strengthen infrastructure, expand regional interconnections, and reinforce Greece's role as a regional energy gateway.

A key project involves the expansion of our LNG operations at Revithoussa, where a new small-scale LNG jetty is under development. This infrastructure will enable LNG bunkering and fuel supply to smaller vessels, thereby supporting the decarbonisation of maritime transport in an affordable and flexible way, which is a priority for the shipping industry.

At the same time, we are reaching critical milestones on several major projects that set DESFA apart. In the forthcoming months, our strategically located new compressor stations in Komotini and Ampelia will become operational. Thus, additional LNG export capacity from both the Revithoussa LNG Terminal and the Alexandroupolis FSRU will be unlocked, allowing Greece to export LNG of up to 8.5 bcm to neighbouring markets. We are also advancing the APOLLOCO₂ project, co-developed by DESFA and ECOLOG, to establish Greece's first large-scale carbon capture and storage (CCS) hub by 2030. The project will begin by collecting 3 to 5 million tonnes of CO₂ annually from industrial emitters in the Attica region, and then liquifying it at the Revithoussa Terminal before transporting it by ship to storage sites across the Mediterranean. CO₂ transport by ship is emerging as a flexible, scalable, and cost-effective solution, and is set to become a significant new opportunity for shipping companies in the region.

Looking further ahead, DESFA is also working on developing Greece's hydrogen infrastructure and its future interconnections, to eventually allow for the export and transit of hydrogen from Greece and the wider MENA region to demand centres in Europe. Our H2DRIA project, which forms the core of the Greek hydrogen backbone, has already received EU funding, and our analyses show that importing hydrogen derivatives via Greece is one of the most efficient pathways for meeting Europe's hydrogen demand.

Given the geopolitical shifts affecting energy supply chains, how is DESFA ensuring energy security for Greece?

We are living through a time of geopolitical tensions, volatile energy markets,

We are living through a time of geopolitical tensions, volatile energy markets, extreme weather phenomena, and rising global demand. All these macro trends are converging, challenging our systems' resilience like never before.

extreme weather phenomena, and rising global demand. All these macro trends are converging, challenging our systems' resilience like never before.

These events have made it abundantly clear that diversification, flexibility, and interconnection are no longer optional; they are essential. DESFA has acted swiftly to reinforce the security of supply by upgrading and expanding infrastructure that can handle greater volumes from multiple entry points, thereby enhancing energy security for Greece and the entire Southeast European (SEE) region.

The Revithoussa LNG Terminal has proven critical during the recent energy crisis, as the abrupt decline in Russian pipeline imports was offset by a surge in LNG imports from multiple global sources. Today, the terminal, which has seen a surge in demand, continues to serve as a critical entry point for LNG, offering flexibility during periods of market stress. The fact that almost all unloading slots have already been booked through 2030 represents a strong vote of confidence from the market.

We continue to build resilience every step of the way by upgrading and expanding our system, boosting the country's export capacity and enhancing interconnection.

How do you balance the need for innovation with the reliability and safety requirements of critical infrastructure?

Innovation is central to our strategy, but it is always deployed with careful attention to reliability, operational excellence, and safety. DESFA has a long-standing technical legacy and deep expertise in managing complex gas infrastructure. This gives us a solid foundation upon which to innovate safely. The energy transition goals for 2050 cannot be met by relying solely on the existing technologies; it is new technologies that will play a central role in advancing the goals of the green transition. Without innovation, scaling up clean energy solutions to meet global demand and reduce carbon emissions would be much slower and significantly more expensive.



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DESFA strategically invests in modern technologies to address these challenges and bring us closer to tomorrow's energy solutions. For example, the new pipeline toward Western Macedonia has been designed to be up to 100% hydrogen-ready, allowing for seamless conversion. Similarly, our LNG facilities are being adapted to support CCS applications, including CO₂ liquefaction, by leveraging cryogenic synergies to lower the cost and energy intensity of decarbonisation solutions. These are forward-looking steps, but they are executed with the same precision, safety standards, and engineering rigour that underpin all DESFA operations.

Following the recent EU decisions to phase out Russian gas, do you think that Europe's energy security is at risk? What will be the impact on gas prices?

Reducing dependence on Russian energy has brought short-term challenges, especially in terms of price

volatility and supply competition in the global LNG market. That said, the crisis also revealed the strategic strength of well-developed LNG infrastructure. Europe can secure its energy future, provided that we make the right infrastructure investments, strengthen regional cooperation, and diversify our sources effectively.

DESFA's infrastructure played a crucial stabilising role during the crisis, as it allowed Greece to absorb and reroute gas volumes, support neighbouring countries, and moderate potential supply shocks. Still today, the country's strengthened LNG and pipeline networks continue to support both national needs and exports to neighbouring countries, helping stabilise supply dynamics and absorb market shocks. This contributes to both energy security and price moderation over the medium term.

How is DESFA preparing for the future energy mix?

As we work towards decarbonisation, it becomes increasingly apparent that the future energy system will depend on multiple complementary technologies and carriers rather than a single endgame fuel.

DESFA is actively building the multi-pathway infrastructure needed to enable a flexible, resilient, and diverse energy system. Take Revithoussa, for example: the terminal will soon enable LNG bunkering and flexible fuel supply to smaller vessels, supporting the decarbonisation of maritime transport. At the same time, it is being prepared for CO₂ liquefaction to enable the flexible and efficient transport of CO₂ across the Mediterranean. Looking ahead, Revithoussa can serve as a gateway for hydrogen or ammonia imports from the MENA region, with onward transfer to Central Europe via the hydrogen network DESFA is currently developing.

Through this adaptable, multi-carrier approach, DESFA is positioned to meet the evolving energy needs of diverse sectors, ensuring security, affordability, and sustainability as we support Greece's transition today and shape the energy systems of tomorrow.



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We are a benchmark strategic ally in the maritime industry

The Embassy and General Consulate of Panama in Greece serves as the sole diplomatic representation of the Panama Maritime Authority (PMA) in the country.

Under the leadership of HE Mrs Julie Lymberopulos Karnakis, Ambassador and General Consul, the Embassy and General Consulate actively foster strong maritime ties between Panama and Greece. As part of this mission, it has facilitated an exclusive interview with Mr Ramón Franco, General Director of the Merchant Marine Directorate of the Panama Maritime Authority, who, as part of the new administration of President José Raúl Mulino, shares key insights with *Naftika Chronika*.

In this interview, Ramón Franco discusses Panama's strategic vision for the maritime industry, recent developments within the PMA, and the nation's commitment to strengthening its presence in the global shipping sector.

Exclusive interview with Mr **Ramón Franco**, General Director of the Merchant Marine Directorate, Panama Maritime Authority

Could you tell me a bit about your background, training, and early career path?

I am a fourth-generation lawyer, and the third in my family in the maritime field. I studied Law and Political Science at Universidad Santa María la Antigua and obtained a master's degree in Maritime Law and Business from Universidad Pontificia Comillas/Instituto Marítimo Español. For 20 years, I have worked in law firms as a specialist in maritime and corporate law. During that time, I advised shipping companies and financial institutions in Europe, Asia, and the Middle East on the registration and financing of Panamanian-flagged vessels.

Personally, I have a great appreciation for the Greek market, as during my time at Franco y Franco, the family firm, we worked closely with many Greek shipowners.

How did you end up working for the Panama Maritime Authority?

Throughout my professional life, I visited

the Panama Maritime Authority on countless occasions, managing procedures for clients who opted for the Panamanian flag. In addition, I had the honour of presiding over the Panamanian Association of Maritime Law (APADEMAR) for two consecutive terms. This work allowed me to participate in the Technical Table for the modification of the General Law of the Merchant Marine and in the working groups that led to the issuance of Executive Decree 159 of 2021, regarding the Public Registry of Ship Ownership. This trajectory enabled me to establish a reputation in the industry, and thanks to the trust of President José Raúl Mulino, I currently have the honour of leading, alongside a great team, the Panama Ship Registry.

What distinguishes the Panama Registry? Why is it considered a better option compared to other international registries?

We are leaders in the industry and have the support of an entire country. The reasons for choosing the Panama Ship

Registry are clear, as it provides:

- **State backing:** The Panama Ship Registry receives state support and funding, thus offering unique security to our clients.
- **Complete services:** We offer a comprehensive catalogue of services tailored to meet all the industry's needs.
- **Global coverage:** Our network, comprising 53 consulates and 22 Segumar and regional documentation technical offices, ensures a comprehensive and efficient service worldwide.
- **Trained professionals:** We have a broad network of highly trained maritime lawyers and flag inspectors worldwide (more than 190).
- **Commitment to quality:** We operate under high-quality standards and are signatories to the main international maritime conventions, which ensure that our fleet complies with the strictest regulations.
- **Economic benefits:** We offer special incentive programmes for our clientele.
- **Personalised attention:** We focus on providing a close and tailored service to our customers.

What are the main measures you are taking as a Registry to address the dark fleet?

Executive Decree 512

Since Executive Decree 512 came into effect on 18 October 2024, 211 ships (31

of which are in the process of deregistration) with a total of 12,819,234 GRTs have had their registration cancelled. With the deregistration of these 242 ships, the State will no longer receive an approximate amount of \$7,278,460.02 corresponding to the 16,037,375 GRT of the deregistered ships and those in the process of being struck off the Register.

Pre-check

Pre-check refers to the verification process that ships must comply with in order to be registered in the Panama Ship Registry. This process involves a thorough assessment of the risks related to various aspects of the ship, its owner, operator, or charterer before applying for registration in the Register, in order to ensure that the ship complies with international standards on safety, environmental protection, and crew welfare, and to promote cooperation and best practices in the maritime industry.

Since July 2025, the Panamanian Registry has updated its policies to optimise the operational performance of its fleet, minimise the risk of detentions, and prevent the entry of vessels from the so-called ghost fleet.

Panama required full traceability for offshore oil transfers during ship-to-ship (STS) operations

The Panama Ship Registry has become

the first registry in the world to implement stricter controls and mandatory traceability for STS transfer operations. This new measure took effect on 6 August 2025.

The regulation requires all Panamanian-flagged tankers with a gross tonnage of 150 or more to notify the Panama Maritime Authority (PMA) at least 48 hours in advance, providing all the technical and logistical details of each STS operation.

What are you doing to improve standards in terms of fleet performance?

We have established the Performance Monitoring Accelerated Programme with the primary objective of ensuring that vessels comply with the established requirements and have optimised the performance of the Panamanian Merchant Fleet by adopting best practices, reducing maritime safety risks, implementing rigorous inspections, and strengthening supervision and control mechanisms.

Key actions include implementing mandatory pre-arrival checklists for medium-risk vessels entering specific ports destined for areas under the Paris MoU, the US Coast Guard, and the Tokyo MoU (which includes Australia and China). For high-risk (critical) ships, an increased inspection frequency and more thorough Safety Management System (SMS) audits are required, which include their operating companies, as well as warehouses with deficiencies.

What is your vision for the Panama Registry?

Our goal is for Panama to be recognised as the best registry in terms of the quality of its fleet and the service we offer. We are a benchmark in the maritime industry, not only as a registry but also as a strategic ally, going one step beyond simple management.

Our current focus is on 'reinvention', prioritising quality over quantity. We humbly recognise that we have areas for improvement, and we are actively working on them. To achieve this, we are strategically investing in technology, resources and, above all, in our valuable human capital.





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The maritime industry at a crossroads

Protecting seafarers and safeguarding trade

The global maritime industry is at a crossroads. As our ships and crews travel the blue highways of world trade, they keep economies alive. Yet the people who make this possible are too often overlooked.

Today, the maritime workforce faces a perfect storm of challenges: seafarer abandonment, criminalisation and unfair treatment, the flags of convenience system, escalating security threats, and a recruitment and retention crisis that jeopardises the industry's future. We must act in a decisive and collaborative way to protect the people who power the industry.

Seafarer abandonment

Abandonment remains one of the most concerning trends in global shipping. Right now, hundreds of seafarers are stranded on vessels worldwide, left without pay, sufficient supplies of food and drink, or a way home. Abandonment strips away a worker's dignity, leaving them and their loved ones in limbo as legal battles drag on, especially when owners shirk their responsibilities.

Despite the Maritime Labour Convention's provisions, the problem is growing. In 2024, more abandonment cases were reported than ever before, and in 2025, the number of cases is set to increase. This is not a marginal issue – it is a humanitarian crisis made worse by the number of security threats affecting the industry.

Governments, as well as industry and social partners, must work together to strengthen the legal framework to ensure that bad employers are held accountable and abandoned seafarers are swiftly repatriated and compensated.

Flags of convenience and exploitation

Behind abandonment and other abuses lies a deeper problem that the ITF has campaigned against for more than 75 years: the flags of convenience (FOC) system.

For decades, this system has undermined international law by enabling the registration of vessels in countries with little or no connection to their operations. These open registries can allow unscrupulous owners to avoid taxes, undercut labour standards, and evade responsibility. Today, more than 70% of the world's merchant fleet sails under FOC registers. Although they clearly contravene the UN Convention on the Law of the Sea (UNCLOS) and can pose dangers to the interests of seafarers, they have nonetheless become embedded in the maritime industry.

When a ship is abandoned or a crew member is criminalised, the murky chain of responsibility created by FOCs makes justice challenging to achieve. We must be clear: flags of convenience undermine safety, transparency, and fairness. The international community should be working towards the abolition of this system and towards a model that aligns

with international law, wherein ships fly the flags of countries with genuine links to their operations and responsibilities. While the FOC system is in place, we must work to improve seafarers' quality of life with reasonable remuneration standards and improved working conditions.

Criminalisation: Seafarers as scapegoats

The last few years have seen an increase in the criminalisation and unfair treatment of seafarers. Accidents, pollution incidents, and security crises have a direct impact on seafarers. There are instances of seafarers being imprisoned for years in foreign jurisdictions without due process. The tragic irony is that seafarers are frequently the ones who act heroically, preventing disaster or saving lives – yet they are rewarded with suspicion and blame. Criminalisation not only destroys lives but also deters talented young people from entering the profession. We need stronger international protections that guarantee that seafarers receive fair treatment and legal support, no matter where they are in the world.

Escalating risks: Seafarers on the front-line

Maritime work has always involved risk, but the dangers faced by today's crews are intensifying. The recent spate of drone and missile attacks in the Red Sea has put seafarers directly in harm's way, effectively turning them into collateral damage in geopolitical conflicts not of their making. These are not abstract threats: crews have been held hostage (11 seafarers from the "Eternity C" are currently being held by the Houthis in Sana'a, Yemen), injured or even killed. Meanwhile, piracy, unsafe working conditions, and exposure to climate-related hazards remain persistent dangers. We must bring seafarers to the forefront of security planning to ensure their safety. We cannot allow crews to become pawns in global disputes. Shipowners, states, and international bodies must prioritise crew safety, provide adequate training and protection, and involve seafarers in the process of developing strategies to address emerging risks. This raises the critical question: What are the responsibilities of flag states in

The last few years have seen an increase in the criminalisation and unfair treatment of seafarers. Accidents, pollution incidents, and security crises have impacted seafarers, sometimes even with years of imprisonment in foreign jurisdictions without due process. The tragic irony is that seafarers are frequently the ones who act heroically, preventing disaster or saving lives – yet they are rewarded with suspicion and blame.

Recruitment and retention: A looming shortage

All of these challenges feed into the most pressing long-term threat facing the maritime industry: the recruitment and retention of skilled seafarers. The Drewry Manning Report for 2025-2026 already predicts a shortfall of tens of thousands of officers in the coming years. Young people are understandably hesitant to pursue a career at sea when the profession's realities include abandonment, criminalisation, and such grave, life-threatening risks.

While global trade grows ever more reliant on shipping, the maritime industry must focus on investing in the people who make it possible. To attract the next generation, we need to transform the conditions of work at sea. That means reliable contracts, fair wages, pathways for career development, and, above all, respect for seafarers as professionals and 'key workers'.

A call to action

The maritime industry is the backbone of our economies and communities. It must focus on developing a workforce that enjoys safety, feels motivated, and is fairly treated. This is not only good for the workers themselves but it will also allow for economic development and security in global supply chains.

Governments must step up the enforcement of existing international conventions, close loopholes in the FOC system, and guarantee seafarers the same protections any worker ashore would expect. Flag administrations must take responsibility for the safety of the crews whose labour sustains their registries. And finally, the international community must do more to ensure that no matter where a ship is registered, seafarers receive equal protection, fairness, and respect. At the ITF, we will continue to fight on every front: assisting abandoned crews, pushing back against unfair criminalisation, challenging the exploitative FOC system, and demanding real safety and security for seafarers. Seafarers are not invisible – they are the heart of shipping. By protecting them, we protect the lifeblood of the world economy.

protecting crews transiting through war-like and high-risk zones? At a minimum, they must ensure that vessels under their flags are adequately risk-assessed, that crews are consulted before transits, and that seafarers have, and are able to meaningfully enact, their right to refuse dangerous voyages without fear of being blacklisted or losing their job.

These protections must not exist only on paper. Flag states, particularly those operating open registries, have a duty of care that they cannot outsource. If a flag is willing to collect registration fees from shipowners, it must also shoulder the responsibility of safeguarding crews in volatile waters. States must work with industry and unions alike to ensure seafarers are not exposed to unacceptable levels of risk without their informed consent.

Uneven enforcement: A patchwork of protections

The ITF's global work reveals stark disparities in how states enforce seafarer rights and safety protocols. Some nations take their responsibilities seriously, conducting inspections, intervening quickly in abandonment cases, and providing legal assistance when seafarers are unfairly detained. Others, particularly those operating FOCs, lack either the will or the infrastructure to enforce even the most basic international standards. This uneven enforcement creates a dangerous two-tier system. A seafarer on one

ship may enjoy robust protections, while a colleague on a similar vessel under a different flag is left effectively on their own. Such inconsistency not only undermines workers' rights but also creates unfair competition among shipowners. Companies that cut corners benefit financially while responsible operators face higher costs.

The need for stronger international coordination

To break this cycle, we need stronger international coordination. The International Maritime Organisation (IMO), the International Labour Organisation (ILO), and all states within the wider UN system must work more closely with industry and maritime unions to ensure consistent standards and robust enforcement mechanisms.

Greater coordination would also help close loopholes exploited by unscrupulous shipowners. Shared protocols for handling seafarers caught in conflict zones would ensure that no crew is left without protection because of where their ship is registered.

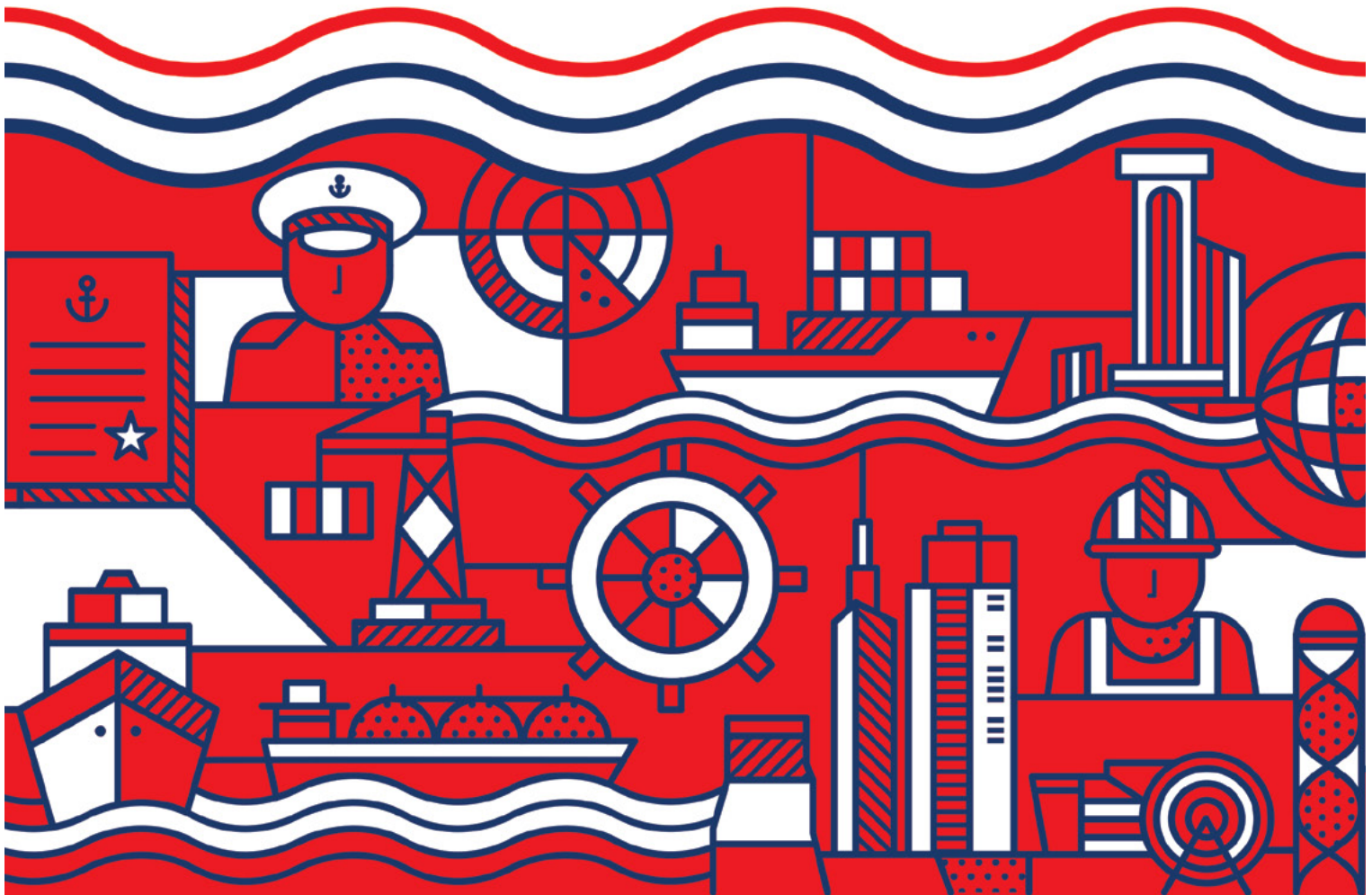
Above all, international coordination must put seafarers at the centre of decision-making. Too often, policies are made in conference rooms without the voices of those most affected. The ITF and our affiliates will continue to push for a seat at the table to ensure that the lived realities of seafarers shape the rules that govern them.



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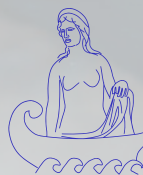
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On the seafront

This month's top news
from naftikachronika.gr

US rejects IMO net-zero framework

The United States has officially rejected the IMO's proposal for a levy on carbon emissions.

In a joint statement by Secretary of State Marco Rubio, Secretary of Commerce Howard Lutnick, Secretary of Energy Chris Wright, and Secretary of Transportation Sean Duffy, it is stressed that "President Trump has made it clear that the United States will not accept any international environmental agreement that unduly or unfairly burdens the United States or harms the interests of the American people".

It should be noted that this October, IMO member states are expected to consider the adoption of the so-called "Net-Zero Framework", which aims to reduce global greenhouse gas emissions from the international shipping sector. "Whatever its stated goals, the proposed framework is essentially a global carbon tax on Americans, levied by an unaccountable UN organisation", the statement sharply notes, continuing: "These fuel standards would conveniently benefit China by requiring the use of expensive fuels that are unavailable at a global scale".

"The Trump Administration unequivocally rejects this proposal before the IMO and will not tolerate any action

that increases costs for our citizens, energy providers, shipping companies and their customers, or tourists. We will fight hard to protect the American people and their economic interests. Our fellow IMO members should be on notice that we will look for their support against this action and not hesitate to retaliate or explore remedies for our citizens should this endeavour fail", the statement concludes.

EU ETS: What shipping will have to pay in the coming period

The shipping industry will soon be required to pay around \$2.9 billion due to the implementation of the EU ETS, the EU's key tool for reducing greenhouse gas emissions, which follows the "Polluter Pays Principle". At the heart of this lies the EU's MRV (Monitoring, Reporting and Verification) platform, the emissions monitoring, reporting, and verification system established specifically for shipping.

According to Drewry data, approximately 13,000 vessels have submitted their 2024 emissions data, as required by the guidelines. The recorded emissions amounted to 90 million tonnes of CO₂, which must be covered by surrendering 40% of the corresponding emission allowances (EUAs) by 30 September 2025.



The roughly 14% increase compared to 2023 is partly attributed to geopolitical factors that forced a large number of ships to bypass the Suez Canal, taking longer routes via the Cape of Good Hope. Of particular significance is the container ship sector, which, despite accounting for only 16% of the vessels (21% in terms of DWT capacity), is responsible for around 34% of total CO₂ emissions. With the current EUA price at €70, Drewry estimates that the shipping industry will be required to pay around \$2.9 billion in the fall of 2025. When the phase-in period ends in 2026 and the measure is fully implemented, the annual cost is expected to rise to around \$7.5 billion. On average, each RoPax or passenger vessel will pay around \$1 million annually, while container ships will pay approximately \$500,000 per year. Facing rising costs, shipping companies

calling at EU ports are accelerating their investments in energy-saving technologies, utilising sustainable biofuels, deploying alternative-fuelled vessels, and applying advanced anti-fouling and low-friction hull coatings, all with the aim of reducing emissions and complying with the new stringent framework. The agreement is considered a milestone for global shipping, but also a difficult challenge, as the path toward decarbonisation requires significant investment, technological innovation, and international cooperation.

Obligations and costs for shipping

Under the new regime, companies operating ships over 5,000 GT that call at EU ports must monitor and record their emissions through the MRV platform, submit verified data by 31 March each year, and surrender

an equivalent number of emission allowances (EUAs) by 30 April.

The implementation will be gradual: in 2025, companies will pay for 40% of their 2024 emissions, in 2026 for 70% of their 2025 emissions, and from 2027 onwards for 100% of their emissions. The measure covers all emissions from voyages between EU ports, 50% of emissions from international voyages to or from the EU, and 100% of emissions from ships at berth in EU ports. Non-compliant companies face a fine of €100 per tonne of CO₂ not covered, as well as the obligation to surrender the missing allowances the following year.

Slowdown in bulk and tanker S&P activity in 2025

Since the start of the year, S&P activity for bulk carriers and tankers has experienced a slowdown compared to the

Dry bulk S&P activity in 2025 has so far been primarily focused on mid-age and vintage vessels. The 11-15-year-old age group was the most active, with 215 sales accounting for 46% of total bulk carrier transactions.

same period in 2024. From January through the end of July 2025, a total of 703 vessels (bulk carriers and tankers, each $\geq 10,000$ DWT) were sold, representing a 15% decline compared to the 831 vessels that changed ownership during the same period in 2024.

Focusing on the dry bulk sector specifically, 469 vessels ($\geq 10,000$ DWT) were sold year-to-date, down from 537 units sold in the corresponding period of 2024 – a 13% decrease. The Handysize sector holds the leading position, with 122 vessels sold year-to-date. It is followed by the Supramax sector with 108 sales (accounting for 23% of the total sales), while the Panamax sector ranks third with 58 transactions. Although the Handysize and Supramax segments, both of which were also the most active during the same period in 2024, saw declines of 11% and 16% respectively in 2025, the Panamax sector was the only one to record an increase in S&P activity, posting a 26% rise in the number of vessels sold compared to the same period in 2024. The Capesize and Newcastlemax sectors saw the largest declines in sales volumes, with 34 Capesize vessels and 9 Newcastlemax vessels sold so far in 2025 – down 45% and 68% respectively compared to the same period in 2024.

Dry bulk S&P activity in 2025 has so far been primarily focused on mid-age and vintage vessels. The 11-15-year-old age group was the most active, with 215 sales accounting for 46% of total bulk carrier transactions, followed by the 16-20-year-old age group, which recorded 99 sales. Among the main sellers were Greek owners, who sold 98 vessels. The majority were Panamax units (32 sales) with an average age of 20 years, while the Supramax sector also saw significant activity, with 31 vessels sold at an average age of 18 years. On the buying side, Chinese buyers topped the charts, having acquired 80 vessels. Their main focus was the Supramax sector, with 25 purchases at an average age of 17 years. The Panamax sector followed closely with 15 purchases at an average age of 19 years.

In the tanker market, a total of 234 vessels ($\geq 10,000$ DWT) have been sold year-to-date, 20% fewer than the 294

vessels sold during the same period in 2024. The MR2 sector holds the leading position, with 71 sales. It is followed by the Aframax/LR2 sector with 41 sales, while the VLCC sector ranks third with 31 transactions. Although all sectors have experienced a reduction in sales volume in 2025 compared to the same period in 2024, the Suezmax sector is the only segment showing the opposite trend. So far in 2025, a total of 27 Suezmax vessels have changed ownership – nearly double the figure for the same period in 2024. In 2025, tanker S&P activity has been dominated by vintage tonnage. Vessels aged 16-20 years led the market with 113 sales, representing 48% of total tanker transactions. Activity in the 21-year-and-older segment also rose, with 34 vessels changing hands so far this year, representing a 26% increase compared to the same period in 2024. Greek owners ranked among the main sellers, offloading 50 vessels. Most were Aframax/LR2 units (16 sales), averaging 15 years of age, while the MR2 and VLCC segments recorded 10 and 9 sales, respectively, with average ages of 17 and 18 years. Chinese buyers led the market on the purchasing side, snapping up 38 vessels. Their activity was focused on the Aframax/LR2 sector, with 11 vessels averaging 18 years of age, closely followed by the VLCC sector with 9 vessels of the same average age.

Source: Xclusiv Shipbrokers S&P Report, 18 August 2025

Tankers: OPEC+ ramps up oil supply while demand growth slows

BIMCO expects a balanced development in the crude tanker market in 2025 and 2026, while it forecasts that the product tanker market will remain weaker than in 2024. The product tanker sector suffers under the weight of increasing supply growth and weaker demand growth due to shorter sailing distances.

Due to OPEC+'s recent decision to reverse oil production cuts, the International Energy Agency (IEA) has significantly increased its crude oil supply forecast. According to the IEA's forecast, oil demand and refinery throughput cannot keep pace with the expansion in supply. "As a result of increased OPEC+ pro-



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duction, the IEA expects an oil surplus averaging 2.3 mbpd during the second half of 2025 and 3.0 mbpd during 2026, peaking at 4.1 mbpd in the first quarter of 2026”, stated Niels Rasmussen, Chief Shipping Analyst at BIMCO.

The US Energy Information Administration (EIA) forecasts that the oil surplus could drive the price of Brent down to an average of \$63/barrel during the second half of 2025 and \$51/barrel during 2026. The lower oil prices could help support demand, but may also encourage increased stock building, resulting in increased demand for tankers. However, extra product tanker demand may be limited as refinery throughput is mostly expected to grow in countries that are currently net importers of refined products. Instead, BIMCO has lowered its demand forecast for product tankers compared to its previous report. Average sailing distances have shortened, partly due to an increase in the number of ships that sail through the Suez Canal instead of the Cape of Good Hope.

When full access to the Red Sea and the Suez Canal will resume remains uncertain, and no further shift in routings has been included in BIMCO’s forecast. If current peace negotiations between Russia and Ukraine are successful, trade with Russia could normalise, according

to BIMCO’s analysis. As with a return to normal Suez Canal routings, sailing distances could shorten, and demand growth could recede as trading patterns could begin to transition back towards the pre-war trade mix.

“During the first half of 2025, both crude and product tanker year-on-year demand growth, as well as rates and prices development, have been negative. We predict that demand will begin to improve during the second half of the year, but that product tanker rates and prices could still fall behind 2024 levels due to high supply growth”, Rasmussen added.

Dry bulk fleet composition in first half of 2025

As of July 2025, the global dry bulk fleet comprises nearly 13,000 vessels, with a combined carrying capacity of just over 1 billion DWT. The order-book currently represents around 9% of the active fleet, with approximately 270 vessels scheduled for delivery by year-end. Deliveries are expected to exceed 500 units in 2026 before falling to below 300 in 2027. Given the minimal contracting activity so far this year, the share of vessels on order is unlikely to surpass 10% of the active fleet.

Older ships dominate smaller segments

Vessels’ age profile remains a defining factor, as there are still a lot of vessels above 20 years of age, mainly in the smaller vessel size segments. The Handysize segment includes more than 500 vessels in the age category of over 20 years, accounting for 18% of the segment’s active fleet. In the Supramax/Ultramax segment, which includes Handymax vessels, there are more than 600 vessels, accounting for about 15% of its active fleet. The striking difference is seen in the Capesize segment, which appears to have only 5 vessels older than 25 years, and 134 vessels aged between 20 and 24 years. However, there are still many Capesize vessels (including VLOCs) in the age categories of 10-14 years and 15-19 years, making up around 60% of the active Capesize fleet, which compete with the younger vessel age categories in the freight market.

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Fleet expansion in 1H 2025: The highest growth seen in the Supramax/Ultramax
The first half of the year saw a net fleet growth of 207 vessels (adding 15.34m DWT), driven by 248 deliveries against just 41 removals.

The strongest growth was in the Handymax/Supramax/Ultramax segment, which expanded by 89 vessels, adding nearly 6 million DWT. In comparison, the Panamax/Kamsarmax segment grew by 41 vessels, totalling about 3.3 million DWT.

Demolition activity: Ageing continues as retirements lag

Demolition activity remains at critically low levels, allowing overaged vessels to stay in service and adding pressure to the future vessel supply and demand balance. From January to June 2025, only 36 vessels were scrapped, totalling just 2 million DWT. Handysize vessels accounted for the largest share of removals (13 units), followed by Panamax/Kamsarmax vessels (12 units), Handymax/Supramax/Ultramax vessels (9 units), and Capesize/VLOC vessels (2 units). At this pace, overaged vessels will continue to crowd the market, delaying

the fleet's energy transition.

What's next

The Hong Kong Convention has the potential to pave the way for greener ship recycling practices and to drive an increase in demolition activity. That said, the current fleet age profile suggests greater potential for vessel removals in the smaller size segments, compared with Capesize tonnage, which seems to attract shipowners' interest, supported by China's sustained iron ore import demand and robust Brazilian export volumes. Brazil's iron ore exports in July reached a record 41 million mt, up by 4.7% year-on-year, according to government data released on 6 August. On the demand side, July also marked the third consecutive month in 2025 where China's iron ore imports surpassed 100 million tonnes, underscoring a trend of elevated monthly intake despite weakening domestic steel production. If ship recycling activity stays muted while deliveries continue to rise, smaller and medium vessel size segments will continue experiencing oversupply risks in 2026, while Capesize markets may remain shielded by the iron ore trade fundamentals.

Source: Allied QuantumSea Research

The busiest short sea shipping ports in Europe

"Key figures on Europe - 2025 edition", published in July, provides an overview of recent developments in the EU, covering topics from people and society to the economy, business, environment, and natural resources. Short sea shipping is the maritime transport of goods over relatively short distances, primarily between ports in the EU (sometimes candidate countries and EFTA countries), as well as ports situated in geographical Europe, on the Mediterranean and Black Sea.

In 2023, the total weight of goods transported to and from main ports in the EU by short sea shipping was 1.6 billion tonnes; this was equivalent to a decrease of 5.4% when compared with 2022. Rotterdam in the Netherlands was by far the busiest EU port in terms of goods transported (handling 159 million tonnes, i.e., 9.9% of the EU total). The second busiest port was that of Antwerp-Bruges in Belgium (with 119 million tonnes), which was almost twice as busy as the third-ranked port, Gdańsk in Poland (with 61 million tonnes). The port of Piraeus ranked 13th among the top 40 ports in the European Union,



Credit: EPA/ERDEM SAHIN

with 29 million tonnes of goods handled by the Greek port in 2023.

Source: Eurostat

Turkey changes stance on Israeli ships and cargo

Turkish port authorities have started – unofficially – requesting shipping agents to provide letters stating that their vessels are not connected to Israel and are not carrying military or hazardous cargo destined for the country, according to two shipping sources.

The sources said that the Turkish Coast Guard headquarters verbally asked port agents to provide written assurances, adding that there is no official circular on the matter. One of the sources noted that the directive applies to all ports in Turkey.

The letter of guarantee must state that the vessel's owners and operators have no ties to Israel and that certain types of cargo, including explosives, radioactive materials, or military equipment, are not on board the ship to be transported to Israel, the second source emphasised. It should be noted that last year, Turkey suspended all trade with Israel (worth up to \$7 billion annually) due to the war that the latter is waging in Gaza against Hamas.

IMO Secretary-General to UN Security Council: "Maritime security is a shared responsibility"

The IMO Secretary-General Arsenio Dominguez has called for vigilance and deeper cooperation among Member States and international partners to address growing threats to global maritime security.

Speaking at the United Nations Security Council high-level open debate on 11 August, chaired by the President of the Republic of Panama, HE José Raúl Mulino, Mr Dominguez outlined the risks facing ships and seafarers as they transport billions of tonnes of goods worldwide.

"Our collective response must be rooted in prevention, constant vigilance, innovation, and continuously strengthened regional and international cooperation", he said. "Multilateralism is key here. Maritime security is a shared responsibility".

He stressed the need for Member States to uphold their obligations under the established international standards for safety, security, and environmental protection in shipping.

Tackling evolving threats

In 2024, nearly 150 piracy and armed robbery incidents were reported to the IMO, with the highest numbers in the Straits of Malacca and Singapore, the Indian Ocean, and West Africa. That same year, unlawful attacks in the Red Sea targeted ships, in violation of international law and freedom of navigation. Cyber-attacks, drug trafficking, and fraudulent activities continue to undermine maritime security, while emerging technologies bring both opportunities and risks, highlighting the urgency of strong cybersecurity governance.

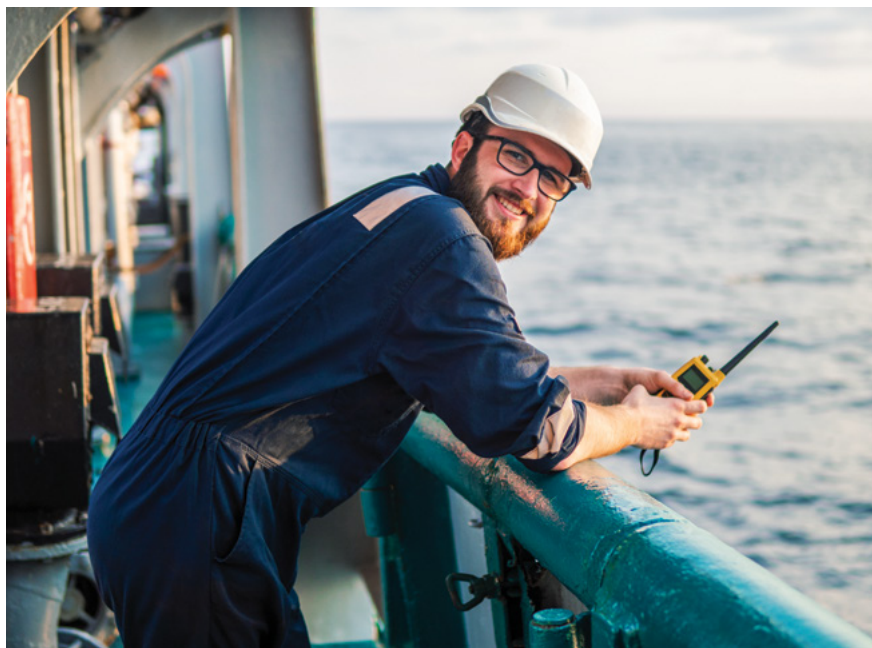
"When geopolitical tensions disrupt shipping and innocent seafarers lose their lives, as we have seen recently in the Red Sea Area and during 2024, the only way forward is constructive dialogue", said Mr Dominguez. "Maritime security is not just technical – it is deeply human".

He also thanked the Security Council for its resolution and its call for an immediate end to attacks on international shipping, as well as for its continued monitoring of the situation.

Seafarers Happiness Index Q2 2025: The main findings

The Q2 2025 "Seafarers Happiness Index" has once again revealed an industry in a state of constant tension. There remain some seafarers fortunate enough to experience the good the industry can offer, while all too many see the bad, and sadly, some are left to cope with the very ugliest of experiences and treatment. This quarter, the overall happiness score of 7.54/10 represents a rising tide of sentiment, and a further quarter of improvement up from Q1's 6.98. However, the words of seafarers continue to paint a picture of systemic challenges that threaten the industry's human sustainability efforts.

Manning levels and crew shortages have evolved from future concerns to present realities. High-quality officer shortages are an issue, and minimum safe manning



levels are widely considered inadequate. As one seafarer bluntly stated, “Minimum safe manning levels aren’t actually safe. Crew members are being removed, and no one cares but us”. The industry faces a self-perpetuating cycle where reduced crews mean fewer mentorship opportunities, threatening knowledge transfer and leadership development. The administrative burden has grown exponentially while manning levels remain static or decrease. Officers spend hours on paperwork that often duplicates information across systems, leading one chief officer to suggest, “What is actually needed is a new position: Administration Officer”. This administrative tide creates a dangerous inversion where “paper safety” takes precedence over actual safety practices. Fatigue management remains critically challenged by traditional shift patterns that disrupt circadian rhythms. Rest hour violations have become normalised, with falsification of records an open secret. The cognitive impairment from chronic fatigue creates risks comparable to alcohol intoxication, yet without equivalent recognition or mitigation strategies. The decline of shore leave has transformed vessels into what many describe as “floating prisons”. Multiple factors contribute to shortened port stays, including immigration restrictions and prohibitive transportation costs.

The psychological impact is profound, with newer generations of seafarers now accepting as normal what previous generations would have considered extraordinary deprivation. Finally, digital connectivity remains woefully inadequate in an era of instantaneous global communication. Typical monthly internet allowances create a paradoxical isolation where seafarers are physically separated from loved ones while simultaneously unable to maintain the digital connections that mitigate such separation for other remote workers.

South Africa: New regulations for the environmental management of offshore ship-to-ship transfer operations

The South African Minister of Forestry, Fisheries and the Environment, Dr Dion George, has signed the Regulations for the Environmental Management of Offshore Ship-to-Ship Transfer, published under the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008). These regulations, which will come into force once published in the Government Gazette, provide South Africa with a clear and enforceable environmental framework to manage offshore ship-to-ship (STS) transfer operations, including bunkering. They are designed to prevent pollution, protect coastal ecosystems,

minimise and mitigate the impacts of a spill in the unlikely event that one occurs, and secure the survival of the African Penguin, together with other marine species and ecosystems in the biodiverse Algoa Bay and along South Africa’s coastline in general.

The new measures include:

- **Prohibited zones:** STS operations are banned within marine protected areas, aquaculture development zones, within five nautical miles of each of these zones, and within three nautical miles of the high-water mark.
- **Wildlife protection:** Operators must monitor for penguins and marine mammals, deploy hydrophone systems, and report sightings and incidents. Immediate response plans must be in place for any oiled or injured wildlife.
- **Weather limits:** In Algoa Bay, operations may only take place in safe conditions, with wind speeds below 22 knots and wave heights below two metres. The Minister may set conditions elsewhere.
- **Pollution prevention:** Operators must use drip trays, leak detection systems, inflatable booms, and have a spill-response vessel on standby within five nautical miles of shore.
- **Training and compliance:** All crew must receive environmental awareness training. Each operator must also submit an independent Environmental Management Plan, approved by the Minister, addressing site-specific risks.
- **Algoa Bay restrictions:** Operations are confined to designated anchorages, with a limit on the number of operators and tankers, and seasonal restrictions in Anchorage Area 2 to protect sensitive habitats.

Non-compliance will be met with firm penalties: fines of up to R2 million, imprisonment for up to five years, or both. Minister George said, “These regulations are a decisive step to safeguard our oceans and secure the future of our African Penguin. They set strict standards for offshore ship-to-ship transfers, ensuring that maritime activity can only proceed safely and responsibly”.



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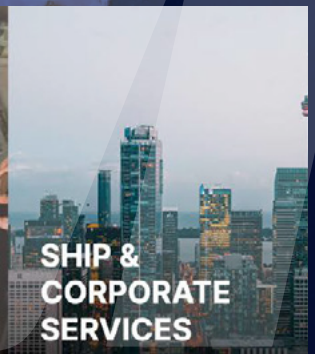
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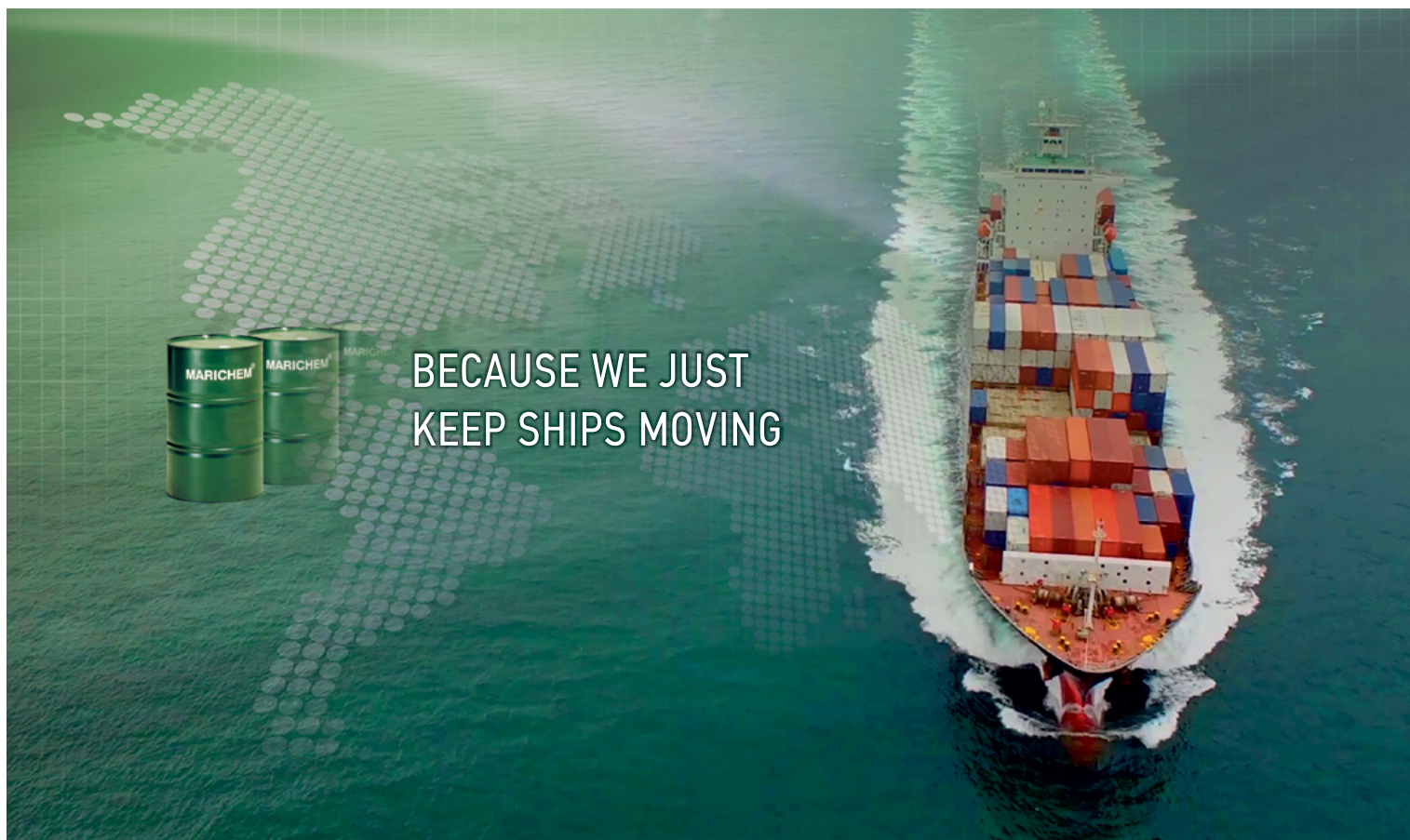
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Ship management companies in Piraeus & Athens

Scientific advisor:
Prof. Ioannis Theotokas
University of Piraeus

Data analysis and commentary by the research
team of *Naftika Chronika*

An exclusive recording and analysis of data
sourced by Greek Shipping Publications (GSP)



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The longstanding leadership of Greek shipping entrepreneurship is reaffirmed each year with the annual "Review of Maritime Transport 2024" by UNCTAD, which highlights the dominance of the Greek-owned fleet in the bulk shipping markets.

According to the report, the Greek-owned merchant fleet remains the leader in terms of carrying capacity, accounting for 16.9% of the global fleet, while also leading in terms of value, with 11.8% of the global fleet's total value.

Furthermore, as emphasised in a report by the Union of Greek Shipowners (UGS), the Greek-owned bulk carrier fleet represents approximately 25% of the global fleet in terms of capacity, while the corresponding percentage for the tanker fleet reaches almost 33%.

Based on data provided by Xclusiv Shipbrokers, almost one in four Panamax vessels and more than one in five Capesize vessels in the global fleet are Greek-owned. Consequently, Greek shipowners remain the dominant players in larger-capacity vessels operating on long-haul routes.

Piraeus and Athens are the ship management hubs of Greek shipping entrepreneurship, while the strength of the Greek-owned fleet consistently positions the region among the world's leading ship management centres.

This is further confirmed by the recent "International Shipping Centre Development Index (ISCDI) Report", which highlights that the wider maritime cluster in Piraeus/Athens is gaining ground, as the Greek capital is home to a number of innovative technology start-ups, working closely with the large Greek shipowning community to develop unique and advanced solutions that enhance the capabilities and efficiency of ship management companies. At the same time, according to the "Leading Maritime Cities 2024" report by Menon

Economics and DNV, Athens ranks second after Singapore in the "Shipping Activities" category, despite losing ground in the overall ranking of global maritime hubs.

The growth rate of the Greek-managed fleet reflects the strength of Greek shipping. Despite ongoing and significant challenges in global maritime trade, the fleet has expanded at a higher rate than in previous years.

This research contributes to the relevant literature by highlighting the structural characteristics of the fleet managed by companies located in Piraeus and Athens, as well as of the companies themselves.

On the following pages, the research team of *Naftika Chronika* presents the findings of the Ship Management Companies in Piraeus and Athens annual research for the third consecutive year, continuing an initiative that started in 2023.

The research contains detailed data on ship management companies located in Piraeus and Athens and their fleet, as provided to the research team by Greek Shipping Publications (GSP) in April 2025.

This research will be referred to as the "September 2025 issue research" or "2025 research". Similarly, the "January-February 2024 issue research" or "2024 research" is based on data provided to the *Naftika Chronika* research team in 2023, while the "January-February 2023 issue research" or "2023 research" refers to data from 2022.

Any changes recorded from the time of data disclosure to the time of publication in the respective research do not affect the structural characteristics of the companies or their managed fleet. They mainly concern the delivery, acquisition, or sale of a number of vessels, which is not sufficient to cause statistically significant changes in the analysis.

	Number	Number of vessels	Average number of vessels	Average vessel capacity (DWT)	Average vessel age (years)
Small-sized companies	307 (54%)	815 (15%)	2.7	55,816	16.1
Medium-sized companies	175 (30%)	1,646 (31%)	9.4	70,065	13.6
Large-sized companies	90 (16%)	2,879 (54%)	32	99,449	12.4
Total	572	5,340	9.3	83,732	13.3

Table 1 Fleet characteristics based on company size
Source: Analysis of data sourced by Greek Shipping Publications

Key findings

There are 572 companies located in Piraeus and Athens, managing a fleet that comprises 5,340 merchant ships. The majority of these ships are bulk carriers (50.9%) and tankers (29.6%). Compared to the data from January-February 2024, the number of companies has remained almost unchanged (increased by one company), while the number of vessels has seen a significant rise, with 182 additional ships (a 3.5% increase).

An analysis of the companies based on the size of the fleet they manage confirms that small companies constitute the majority. Specifically, 54% of the companies are of small size (with a fleet of up to five vessels), 30% are of medium size (6-15 vessels), and 16% are large-sized companies (at least 16 vessels). On average, one company manages 9.3 vessels, while the average capacity of the fleet reaches 83,732 DWT, and the average vessel age is 13.3 years.

The majority of the companies, i.e., 54% of them, are of small size, but manage only 15% of the fleet. Medium-sized companies, which account for 30% of the total number of companies, manage 31% of the fleet, while large-sized companies, which make up 16% of the total number of companies, manage 54% of the fleet. Despite the large share of the fleet managed by large companies, the level of concentration in terms of vessel capacity in the Greek-owned fleet is not considered particularly high. Be that as it may, 13 companies manage more than 50 ships each, with their combined fleet reaching 846 ships. This means that 2.3% of the companies manage 15.8% of the fleet. It is worth mentioning that four of these companies are part of wider shipping groups.

A significant proportion of the companies choose to manage only one type of vessel: 53.8% manage exclusively bulk carriers, 21% tankers, 1.6% containerships, 0.9% LNG carriers, 1.6% LPG carriers, and 4.9% manage one of the other types of vessels. Meanwhile, 16.2% of the companies manage diversified fleets, with the most common combination being bulk carriers and tankers.

Of the bulk carriers in the fleet, most are Panamax-size (35%) and Handymax-size (27%) vessels. Regarding the tanker fleet, MRs (22%), Aframax/LR2s (19%), Suezmaxes (17%), and VLCCs (14%) play a more central role.

36% of the fleet falls within the 11-15-year age group. Although the fleet's average age has been slightly increasing in recent years, mainly due to the companies' heightened activity in the second-hand ship market, seven out of ten ships are up to 15 years old, highlighting the fact that the Greek-managed fleet remains modern. Small-sized companies tend to manage older and smaller vessels, whereas large-sized companies operate larger and younger vessels.

33% (one in three) of ships have been built in South Korea, 32% have been built in China, and 27% in Japan. Additionally, the research findings reveal that small-sized companies tend to manage ships built in Japan, medium-sized companies operate ships built in China and Japan, while companies of large size manage vessels built in South Korea and China.

Research structure

The research is developed in four levels. The first level provides a broad overview of ship management companies in Piraeus and Athens and their distribution based on size and specialisation.

The second level focuses on the types of ships managed by these companies, with a particular emphasis on those operating only bulk carriers, only tankers, or diversified fleets (multiple ship types).

The third level of analysis presents the general characteristics of the fleets operated by these companies, including ship type, age group, and shipbuilding country. Bulk carriers and tankers are examined in greater detail and analysed based on their size, given their central role in Greek shipping.

The fourth level's focus is on the distribution of the Piraeus/Athens fleet by ship type, age group, and shipbuilding country based on company size. This comparison helps outline different management profiles based on company size. The first and second levels of the research were published in the January-February 2025 issue, while the third and fourth levels are presented in this issue.

The analysis incorporates data from the respective research of 2023 and of 2024, allowing for a comparative analysis and tracking of the evolution of the fleet and vessel characteristics under consideration.

	Number	Number of vessels	Average number of vessels	Average vessel capacity (DWT)	Average vessel age (years)
Bulk carriers	308 (53.8%)	2,079 (38.9%)	6.8	79,991	13
Tankers	119 (21%)	1,186 (22.2%)	9.9	115,114	12.7
Containerships	9 (1.6%)	118 (2.2%)	13.1	40,547	16.4
LNG carriers	5 (0.9%)	120 (2.3%)	24	90,927	8.2
LPG carriers	9 (1.6%)	57 (1.1%)	6.3	31,551	13.4
Other ship types	28 (4.9%)	150 (2.8%)	5.4	12,144	23.9
Diversified fleet	94 (16.2%)	1,630 (30.5%)	17.5	76,680	13.2
Total	572	5,340	9.3	83,732	13.3

Table 2 Fleet characteristics based on company specialisation
Source: Analysis of data sourced by Greek Shipping Publications

The size criterion used in the research

Based on their size, the companies are categorised as follows:

Small-sized companies:
Fleet of up to five vessels

Medium-sized companies:
Fleet ranging from 6 to 15 vessels

Large-sized companies:
Fleet of at least 16 vessels

According to the “Review of Maritime Transport” by UNCTAD, bulk carriers and tankers are categorised based on their DWT capacity as follows:

BULK CARRIERS

Handysize	10,000-39,999 DWT
Handymax	40,000-64,999 DWT
Panamax	65,000-99,999 DWT
Capesize	100,000 DWT and above

TANKERS

Small Tankers	Up to 25,000 DWT
Handy	25,000-39,000 DWT
MR	40,000-54,999 DWT
Panamax/LR1	55,000-84,999 DWT
Aframax/LR2	85,000-124,999 DWT
Suezmax	125,000-199,999 DWT
VLCC	200,000-319,999 DWT

Shipping groups are not taken into account

It is important to clarify that the analysis concerns the number of companies and not the shipping groups that may include more than one company. As expected, a limited number of these companies belong to wider ship management groups; however, the fact remains that each of these companies remains responsible for managing its ships, focusing on developing expertise to meet the needs of the specific ship type it manages. In other words, there are common corporate functions shared by all the companies within the group, supporting ship management. But, as a rule, the basic ship management function itself is organised autonomously by each company in the group based on the specific ship type it manages.

Data processing methodology

The original dataset from Greek Shipping Publications included 6,659 vessels and 764 shipping companies. The first step involved removing the 345 vessels that are associated with companies that did not have offices in Greece, leaving 6,314 vessels and the same number of companies.

Since the objective of the analysis is to record companies operating in ocean-going merchant shipping, a detailed examination of all the companies was conducted to identify and exclude those that do not meet this criterion. From the total fleet of shipping companies operating in Attica, 802 passen-

ger vessels and support vessels managed by 151 companies were removed.

As a result, a total of 613 companies with a cumulative fleet of 5,512 vessels remained in the dataset.

As the research is focused on the dynamics of Piraeus and the wider Athens area as an international ship management centre, it only concerns companies with offices in this region. This criterion led to the exclusion of 27 companies based in other regions of the country and the subsequent removal of 60 vessels. Thus, 586 companies managing 5,452 ships were thoroughly analysed.

These 586 companies include both foreign interest companies and independent third-party management companies that have chosen Piraeus/Athens as their fleet management centre or representative office location. Two additional calculations were carried out to determine the final number of companies and the vessels they manage. 83 vessels under construction, which had not yet been delivered, were excluded from the 5,369 vessels.

Finally, vessels with a capacity of less than 1,000 GT and those without an International Maritime Organisation (IMO) ship identification number, along with the companies managing them, were also excluded. As a result, the final dataset comprises 5,340 vessels, with their commercial and/or operational management being carried out by 572 companies located in Piraeus and Athens.

		Number of vessels	Number of companies
1	Total number of registered vessels	6,659	764
2	Ships managed by companies with offices in Greece	6,314	764
3	Ocean-going vessels managed by companies with offices in Greece	5,512	613
4	Ocean-going vessels managed by companies with offices in Attica	5,452	586
5	Ocean-going vessels managed by companies with offices in Piraeus/Athens, excluding vessels under construction	5,369	586
6	Ocean-going vessels of more than 1,000 GT and with an IMO ship identification number managed by companies with offices in Piraeus/Athens	5,340	572

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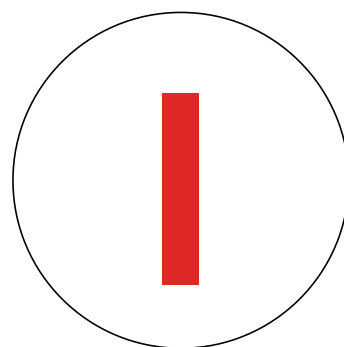
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**Five Generations
of Shipping Tradition**

Ship management profile of companies located in Piraeus/Athens



Graph 1
Distribution of the fleet based
on company size
Source: Analysis of data sourced by Greek
Shipping Publications

The second part of the research focuses on the fleets of the shipping companies (for a detailed breakdown of the structural characteristics of Greek ship management companies, please refer to the January-February 2025 issue), considering their size. The objective is to identify structural differences in the composition of the companies' fleets based on their size. As previously mentioned, 54% (307) of the companies are small-sized (fleet of up to five vessels). These companies collectively manage 15% of the fleet, i.e., 815 vessels. 30% (175) of the companies are of medium size (fleet ranging from six to 15 vessels), managing 31% of the fleet, i.e., 1,646 vessels. Large-sized companies represent 16% (90) of the total number of companies (fleet of at least 16 vessels). These companies collectively manage 54% of the fleet, i.e., 2,879 vessels. As in previous years, a reverse trend is observed between small and large companies regarding their numbers and the number of vessels they manage.

Table 3 Distribution of the fleet by company size for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

	2025	2024	2023
Small-sized companies	15% (815)	16% (817)	16% (835)
Medium-sized companies	31% (1,646)	29% (1,482)	28% (1,440)
Large-sized companies	54% (2,879)	55% (2,859)	56% (2,916)

General Overview

In the wider Piraeus/Athens area, 5,340 commercial vessels exceeding 1,000 GT are reported, excluding passenger ships and support vessels. The total capacity of the fleet is 447,033,366 DWT, with an average age of 13.3 years. Compared to the corresponding 2024 research, the fleet has significantly increased by 182 vessels. The average fleet age has risen by 1.1 years. Thus, despite their intense activity in the second-hand market, shipping companies in Piraeus/Athens continue to manage a modern fleet.

Table 4 Fleet characteristics for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

	Number of vessels	Vessel capacity (million DWT)	Average vessel capacity (DWT)	Average vessel age (years)
2025	5,340	447	83,732	13.3
2024	5,158	436	84,444	12.2
2023	5,191	441	85,004	12.1

Regarding the average capacity of the fleet's vessels, a declining trend has been observed in recent years: the average capacity was 85,004 DWT in 2023, whereas today, it stands at 83,732 DWT.

Significant differences emerge between different ship types. The average capacity of the fleet's 2,719 bulk carriers (50.9%) is 80,895 DWT, with an average age of 13.1 years.

Tankers, which make up 29.6% of the fleet, are on average larger and younger, with the fleet's 1,582 tankers having an average capacity of 110,855 DWT and an average age of 12.7 years.

The fleet's 525 containerships (9.8%) have an average capacity of 58,513 DWT and an average age of 15.2 years, while the 156 LPG carriers (2.9%) of the fleet have an average capacity of 24,809 DWT and an average age of 11.1 years.

LNG carriers remain, as expected, the youngest ship type: the fleet's 179 LNG carriers (3.4%) have an average capacity of 89,679 DWT and an average age of 7.6 years.

The other types of ships, which represent 3.4% of the fleet (179 vessels), have an average capacity of 11,339 DWT

Table 5 Fleet characteristics distributed by ship type
Source: Analysis of data sourced by Greek Shipping Publications

	Number of vessels	Percentage of vessels	Average vessel capacity (DWT)	Average vessel age (years)
Bulk carriers	2,719	50.9%	80,895	13.1
Tankers	1,582	29.6%	110,855	12.7
Containerships	525	9.8%	58,513	15.2
LNG carriers	179	3.4%	89,679	7.6
LPG carriers	156	2.9%	24,809	11.1
Other ship type	179	3.4%	11,339	24.2
Total	5,340		83,714	13.3

and an average age of 24.2 years, rendering this category the one with the smallest average capacity and the highest average age. A significant percentage of these vessels consists of smaller-capacity cargo ships and tankers, which mostly operate in shortsea shipping.

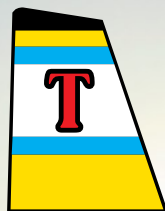
A first look at the fleet's characteristics based on the size of the management company provides insights into the findings of the axes analysis that will follow. The average capacity of the 815 vessels (15%) of the small-sized companies' total fleet is 55,816 DWT, with an average age of 16.1 years.

Small-sized companies tend to manage smaller and older vessels, two factors that are interconnected, as the flexibility of the smaller vessels allows them to have a longer economic lifespan.

The 1,646 vessels (31%) of the medium-sized companies' total fleet have an average capacity of 70,065 DWT and an average age of 13.6 years. Regarding vessel age, no significant variations are observed compared to the overall fleet. The average capacity of the 2,879 vessels (54%) in the total fleet of large-sized companies is 99,449 DWT, with an average age of 12.4 years. Consequently, companies of large size tend to manage larger and more modern vessels.

Table 6 Fleet characteristics based on company size
Source: Analysis of data sourced by Greek Shipping Publications

	Number of vessels	Average vessel capacity (dwt)	Average vessel age (years)
Small-sized companies	815 (15%)	55,816	16.1
Medium-sized companies	1,646 (31%)	70,065	13.6
Large-sized companies	2,879 (54%)	99,449	12.4
Total	5,340	83,732	13.3



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Ship type

The vast majority of the fleet consists of bulk carriers (2,719 ships – 50.9%) and tankers (1,582 ships – 29.6%). More than eight out of ten ships (80.5%) in the fleet belong to one of these two ship types. Additionally, 9.8% (525 ships) of the fleet are containerships, 3.4% (179 ships) are LNG carriers, 2.9% (156 ships) are LPG carriers, and 3.4% (179 ships) are other ship types.

This distribution varies significantly when the size of the company is taken into account. Of the 815 ships (15%) managed by small-sized companies, 69% are bulk carriers, highlighting once again the leading role of dry bulk vessels for these companies. Bulk carriers, being smaller in capacity and less technologically complex, are more affordable for new or smaller companies with limited financing.

Small-sized companies manage fewer tankers (21% of their fleet) and only a small number of containerships, LNG carriers, and LPG carriers (a combined total of 5%). This shift has been gradual in recent years: in 2023, 66% of their fleet were bulk carriers, and 24% were tankers. Over time, tankers have played a decreasing role in the fleets of small-sized companies, possibly due to the increasingly stringent requirements of charterers and regulators.

Bulk carriers also play a crucial role in medium-sized companies, accounting for 63% of their fleet. In addition, a significant percentage of their fleet consists of tankers (28%), while only 7% of their fleet comprises containerships, LNG carriers, and LPG carriers combined. Compared to previous years, there is a slight decrease in the percentage of tankers (2024: 32%, 2023: 33%), while bulk carriers have increased (2024: 61%, 2023: 61%).

In large-sized companies, significant differences emerge in terms of their management profile compared to that of all companies. 39% of their fleet consists of bulk carriers, while 33% are tankers. Notably, 16% of the fleet consists of containerships, while 9% are LNG carriers and LPG carriers.

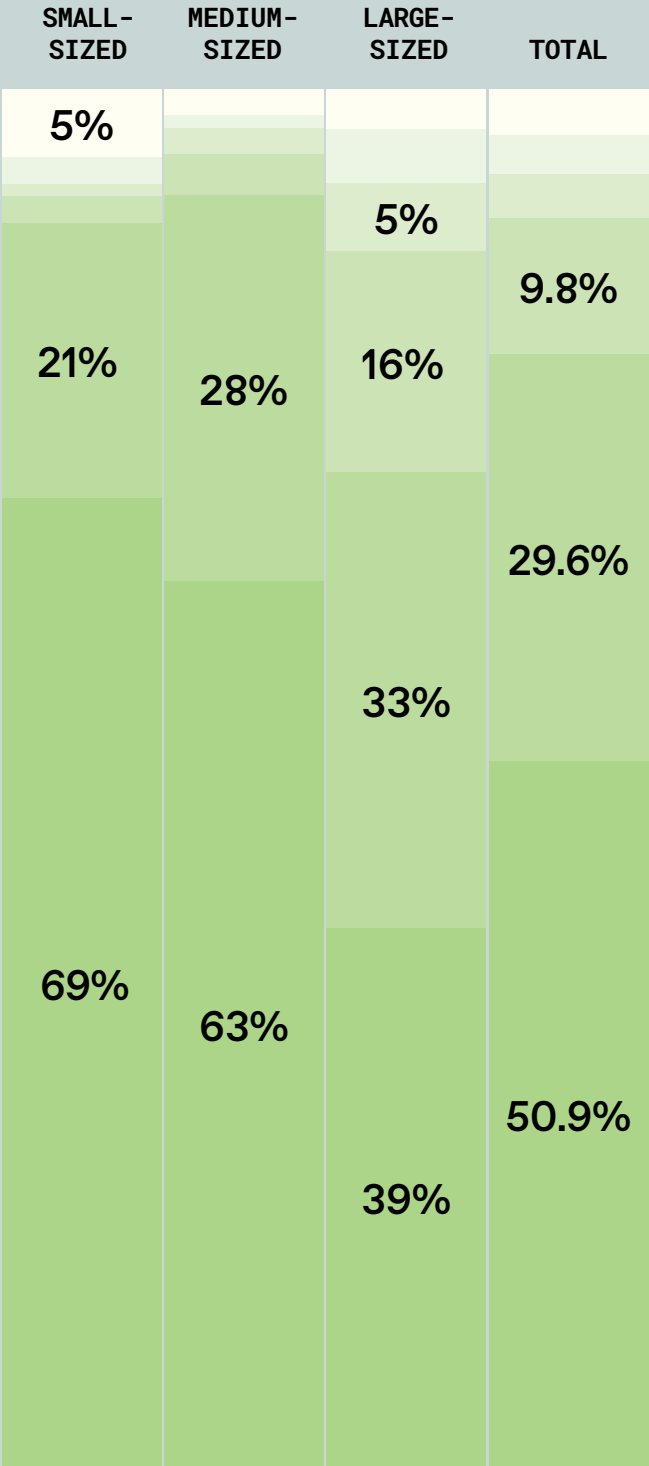
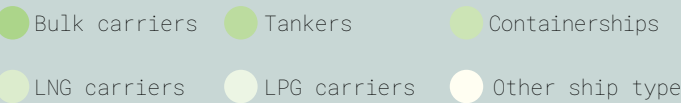
The differences in fleet composition between large-sized companies and the overall fleet are not as “pronounced”. To highlight them, we further categorise large-sized companies into subcategories.

In the first category (companies with fleets of 16 to 29 ships), there are 52 companies managing a total of 1,086 ships, with an average capacity of 94,405 DWT and an average age of 12 years. These companies manage 20.3% of the entire fleet, and their fleet consists of 47% bulk carriers and 36% tankers. This is the first category in which a notable increase in the share of tankers is observed compared to the overall fleet.

In the second category (companies with fleets from 30 to 49 vessels), 25 companies managing a total of 947 vessels are reported, with an average capacity of 89,494 DWT and an average age of 12.1 years. These companies manage 17.7% of the entire fleet, with their vessels comprising 36% bulk carriers, 25% tankers, 27% containerships, 11% LNG carriers, and 1% LPG carriers.

As the size of the companies increases, the role of containerships in the fleet composition becomes increasingly prominent. Additionally, this category of companies manages a significant portion of the entire LNG carrier fleet.

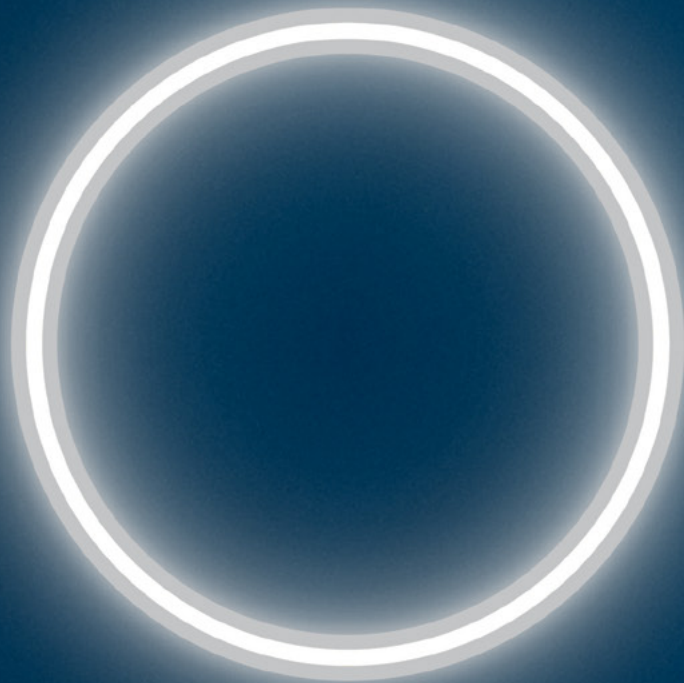
Graph 2
Distribution of the fleet by ship type based on company size
Source: Analysis of data sourced by Greek Shipping Publications
Note: Percentages lower than 5% are not included.



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The final category consists of very large companies, with fleets comprising at least 50 vessels. There are 13 such companies managing a total fleet of 846 vessels with an average capacity of 117,065 DWT and an average age of 13.1 years. Cumulatively, these 13 companies manage 15.8% of the fleet. The fleet composition of these very large companies is as follows: 38% tankers, 30% bulk carriers, 22% container-ships, 4% LPG carriers, and 6% other vessel types. Notably, there is only one LNG carrier in the fleets of these companies. The low number of LNG carriers is owed to the research’s approach, which regards shipping subsidiaries of larger groups that specialise in managing a specific type of vessel as separate entities.

The large number of tankers managed by these 13 companies impacts their fleet’s average capacity, which rises to 117,065 DWT compared to 83,732 DWT for the total fleet. It is worth noting that in the corresponding 2024 research, there were 15 companies in this size category, while in the 2023 research, there were 16 companies.

Moreover, the overall management profile of large-sized companies has not significantly changed in recent years.

Bulk Carriers

Given the particularly high number of bulk carriers in the Greek-managed fleet, a more detailed record of bulk carriers and their distribution in the fleet of small, medium, and large-sized companies – based on ship size – follows.

The size criterion adopted in this research is the same as that of UNCTAD and has been noted at the beginning of the research. Overall, shipping companies located in Piraeus and Athens manage a total of 2,719 bulk carriers. Of these, 22% (588) are Handysizes, 27% (744) are Handymaxes, 35% (946) are Panamaxes, and 16% (441) are Capesizes. 21% (563 vessels) are managed by small-sized companies, 38% (1,030 vessels) by medium-sized companies, and 41% (1,126 vessels) by large-sized companies.

The distribution of the fleet’s bulk carriers by ship size has not shown any significant changes between the years 2023, 2024, and 2025.

However, notable differences emerge when considering the size of the ship management companies. Small-sized companies manage 563 bulk carriers (21%), which are predominantly of smaller size: 35% of their fleet consists of Handysize bulk carriers, while another 34% consists of Handymax bulk carriers – percentages that are significantly higher compared to their percentage in the total fleet.

On the other hand, 28% of the small-sized companies’ fleet consists of Panamax bulk carriers (35% across all companies), while only 3% consists of Capesize bulk carriers (16% across all companies).

As previously stressed, small companies opt for bulk carriers with greater operational flexibility, whose management is less risky as they are not dependent on the few dominant commodities associated with larger vessel sizes. At the same time, precisely because these vessels are more versatile in terms of the cargo they transport, they also operate in markets with lower competition, extending their economic lifespan.

Table 7 Distribution of the bulk carrier fleet by vessel size for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

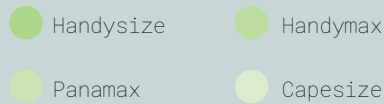
2025	2024	2023
HANDYSIZE		
22% (588)	20% (509)	21% (538)
HANDYMAX		
27% (744)	28% (711)	28% (716)
PANAMAX		
35% (946)	36% (916)	35% (922)
CAPESIZE		
16% (441)	16% (419)	16% (413)

Graph 3

Distribution of the bulk carrier fleet by ship type
based on company size

Source: Analysis of data sourced by Greek Shipping Publications

Note: Percentages lower than 5% are not included.



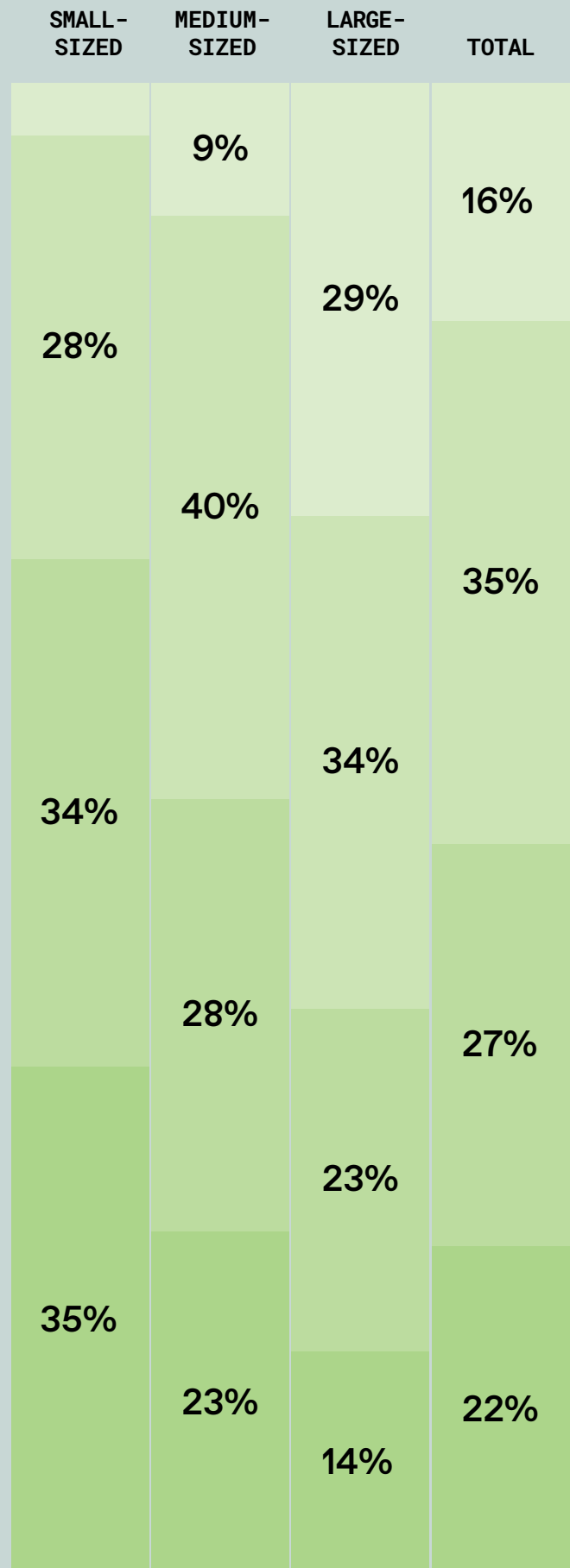
Considering the relationship between a vessel's age, size, and value, smaller ships represent a more affordable choice for companies of small size, as they require lower capital investments. After all, in an environment where financing for shipbuilding or ship acquisition is becoming increasingly restricted, smaller bulk carriers are almost the only viable option for smaller companies that lack the necessary scale to secure funding through bank loans.

Moving on to medium-sized companies, they manage a total of 1,030 bulk carriers (38%). Their management profile closely resembles that of the total number of companies, with the only notable differences being a decrease in the percentage of Capesizes from 16% to 9% and an increase in the percentage of Panamaxes from 35% to 40%.

To a certain extent, large-sized companies represent the opposite end of the spectrum compared to small companies. They manage 1,126 bulk carriers (41%), predominantly Panamaxes and Capesizes, with the latter playing a dominant role, making up 29% of their fleet (compared to 16% across all companies). A significant difference is also recorded in Handysize bulk carriers, which account for 14% of large companies' fleets (compared to 22% across all companies).

Compared to the corresponding research from 2023 and 2024, no major differences are observed for small and medium-sized companies, with the exception of the percentage of Handysize vessels in the medium-sized company fleet, which declined from 28% in 2023 to 23% this year. However, this trend was even more pronounced in 2024, when their percentage had dropped to 21%, meaning there has been a slight recovery in 2025.

For large-sized companies, a gradual shift in fleet composition has been recorded in recent years, which is more pronounced in this year's research. The percentage of Handysize bulk carriers has reached 14%, up from 10% in 2023. On the other hand, the percentage of Panamaxes has decreased to 34%, down from 39% in 2023. This indicates that large companies are diversifying their fleets by incorporating smaller-sized vessels.



Tankers

As with bulk carriers, the large number of tankers allows for a more detailed analysis of the fleet based on vessel size. Of the 1,582 tankers managed by ship management companies in Piraeus and Athens, 14% (220) are Small Tankers, 6% (92) are Handysizes, 22% (351) are MRs, 8% (125) are Panamax/LR1s, 19% (297) are Aframaxes/LR2s, 17% (284) are Suezmaxes, and 14% (213) are VLCCs. This distribution, which has undergone marginal and gradual changes in recent years, reflects the focus of Greek shipowners on oil tankers, especially those of larger size. 52% of the fleet consists of tankers with a capacity of 120,000 DWT and above.

It is worth noting that the tanker fleet has decreased by almost 100 vessels compared to the corresponding 2023 research. In previous years, Greek shipowners took advantage of the higher tanker values on the second-hand market by selling ships and ordering newbuildings. Consequently, the number of tankers is expected to increase in the coming years.

The distribution of the tanker fleet by company size based on vessel size reveals notable differences in the management profiles of different-sized companies. 11% of the fleet (168 vessels) is under the management of small-sized companies, 29% (467 vessels) is managed by medium-sized companies, and 60% (947 vessels) is managed by large-sized companies. As in the case of bulk carriers, tankers of small size play a significant role in the fleet of small-sized companies, with 34% of the tankers they manage being Small Tankers.

Further significant differences compared to the total tanker fleet are recorded for Suezmaxes and VLCCs. Of the tankers managed by small-sized companies, 3% are Suezmaxes, and 5% are VLCCs, with the respective percentages for the total fleet amounting to 17% and 14%, respectively.

In recent years, small-sized companies have increasingly focused on smaller tankers: the percentage of Aframaxes has declined from 19% in 2023 to 17% in 2025, Suezmaxes from 8% to 3%, and VLCCs from 8% to 5%. As in the case of bulk carriers, managing larger vessels presents growing challenges, which become more pronounced over time.

Moving on to medium-sized companies, the most significant types of tankers in their fleet are Small Tankers and MR tankers, each accounting for 26%. The percentages of Aframaxes, Suezmaxes, and VLCCs in medium-sized companies stand at 14%, 14%, and 3%, respectively, lower than their percentage in the total fleet.

Compared to previous years, two significant differences are reported: the percentage of Small Tankers has increased from 20% in 2023 to 26% in 2025, while the percentage of MR tankers has declined from 30% in 2023 and 2024 to 26% in 2025. Large-sized companies are heavily focused on larger vessels, with 22% of their fleets consisting of Aframaxes/LR2s, 23% of Suezmaxes, and 20% of VLCCs. In contrast, only 4% of their fleet consists of Small Tankers. For the remaining vessel sizes, there are no significant deviations from the distribution observed in the total tanker fleet.

Additionally, there have been no significant changes in the fleet distribution of large-sized companies over the past three years for any vessel size.

Table 8 Distribution of the tanker fleet by vessel size for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

2025	2024	2023
SMALL TANKERS		
14% (220)	13% (210)	13% (213)
HANDYSIZE		
6% (92)	5% (80)	3% (63)
MR		
22% (351)	24% (391)	23% (379)
PANAMAX/LR1		
8% (125)	8% (133)	9% (157)
AFRAMAX/LR2		
19% (297)	19% (309)	21% (350)
SUEZMAX		
17% (284)	17% (275)	17% (276)
VLCC		
14% (213)	14% (224)	14% (232)

Graph 4
Distribution of the tanker fleet by ship type
based on company size
Source: Analysis of data sourced by Greek Shipping Publications
Note: Percentages lower than 5% are not included.

- Small Tankers
- Handysize
- MR
- Panamax/LR1
- Aframax/LR2
- Suezmax
- VLCC

1/5 tankers

managed by large-sized companies are

VLCCS

1/4 tankers

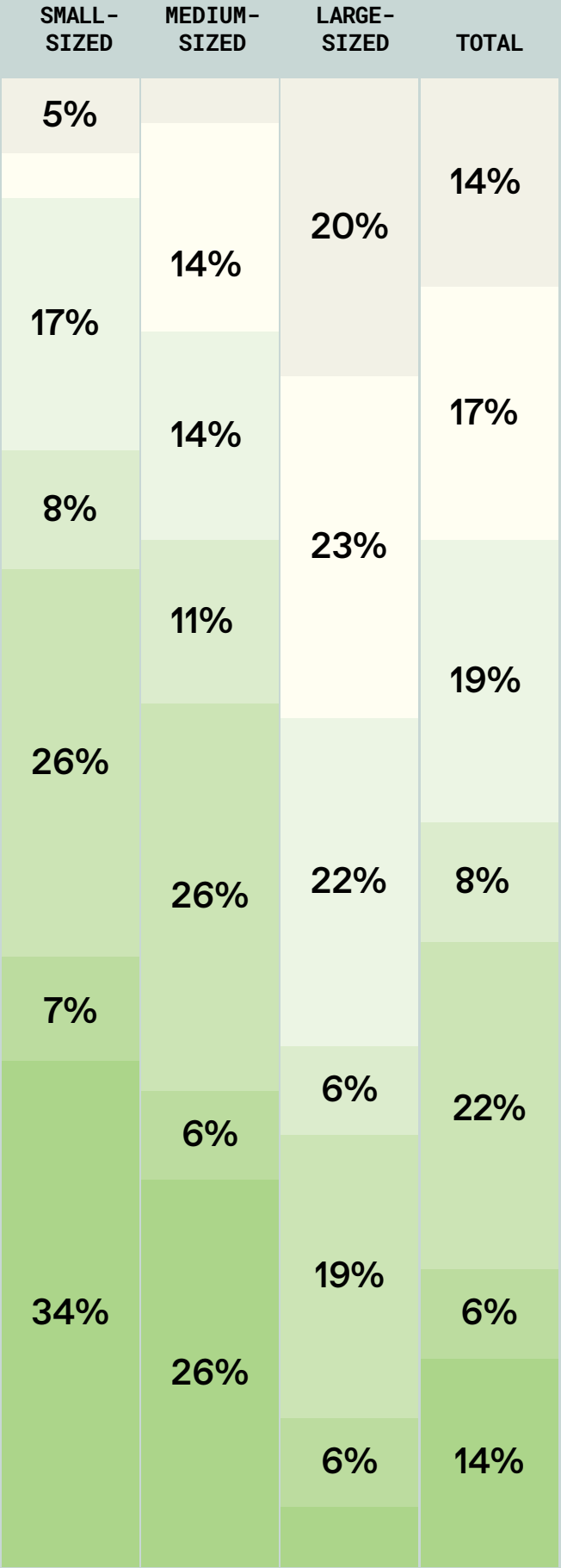
managed by medium-sized companies are

MRS

1/3 tankers

managed by small-sized companies are

SMALL
TANKERS



Age Group

The average age of the fleet managed by companies located in Piraeus and Athens has increased slightly in recent years. Currently, 12% of the fleet (650 vessels) are up to five years old, 18% (981 vessels) belong to the 6-10-year age group, 36% (1,921 vessels) fall within the 11-15-year age group, 24% (1,293 vessels) are 16-20 years old, 6% (315 vessels) belong to the 21-25-year age group, and 4% (180 vessels) are 26 years old or older.

The percentage of vessels up to ten years old has gradually declined from 38% in 2023 to 30% in 2025. The percentage of vessels 20 years or older has slightly increased to 10% from 8% in the past few years.

Smaller companies tend to manage older vessels: only 4% of their fleet is aged up to five years old, and 10% is aged 6-10 years old, compared to 12% and 18%, respectively, across the total fleet.

At the same time, 9% of the fleet of small-sized companies falls within the 21-25-year category, and 8% is at least 26 years old. These percentages differ from the total fleet, where the respective percentages stand at 6% and 4%. Additionally, 41% of the vessels in small-sized companies are 11-15 years old, compared to 36% in the total fleet.

The older age of small companies' fleets aligns with their broader management profile. These companies primarily operate bulk carriers, particularly smaller bulk carriers, which typically have a longer economic lifespan.

The age distribution of medium-sized companies' fleets does not differ significantly from that of the total fleet. The only notable difference is that 40% of their fleet is between 11 and 15 years old, compared to 36% across the total fleet.

Large-sized companies, which tend to manage larger and less flexible vessels, are the ones operating the most modern fleet among the different company categories.

37% of the fleet in large-sized companies consists of vessels up to ten years old. Given that 32% of their vessels are 11-15 years old, 69% (almost seven out of ten) of the vessels in large-sized companies are 15 years old or younger.

There are several notable differences over the past three years. Between 2024 and 2025, the percentage of the small-sized companies' fleet aged 6-10 years dropped from 21% to 10%. A significant percentage of the fleet was either sold or had been on the threshold between the 6-10-year and 11-15-year age groups, transitioning to the latter by 2025. The percentage in the 11-15 years age group increased from 38% to 41%, while the 16-20 years group rose from 18% to 28%.

For medium-sized companies, a steady trend has been observed from 2023 to 2025, where vessels have transitioned from the 6-10-year to the 11-15-year age group. In the corresponding 2023 research, 25% of medium-sized companies' fleets belonged to the 6-10-year age group, while 37% belonged to the 11-15-year age group. Today, these percentages stand at 17% and 40% respectively.

For large-sized companies, the changes are less significant. Between 2023 and 2025, the percentage of vessels aged 6-10 years gradually declined from 27% to 22%, while those in the 16-20-year group increased from 17% to 24%.

Graph 5
Age distribution of the fleet by company size
Source: Analysis of data sourced by Greek Shipping Publications
Note: Percentages lower than 5% are not included.

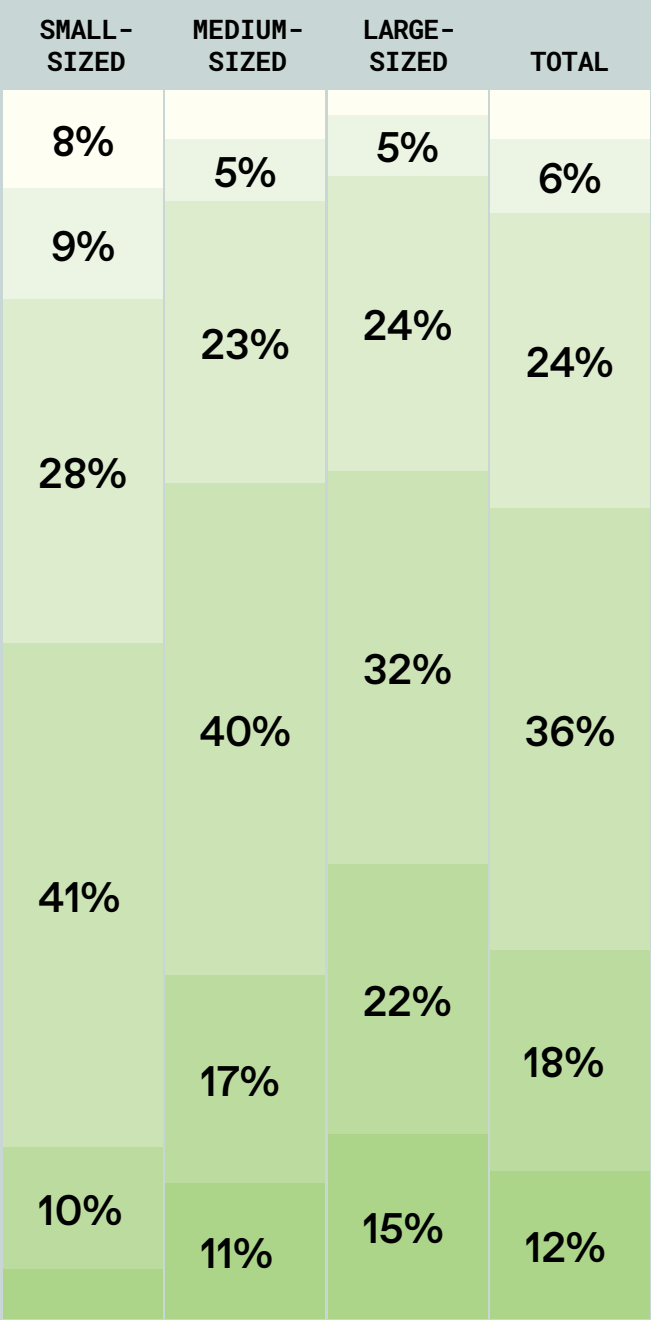
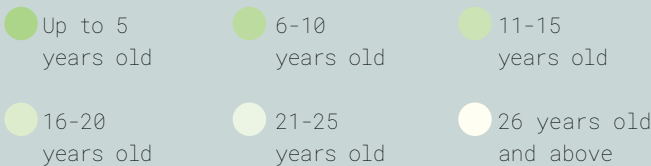


Table 9 Distribution of the fleet by age group for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

	2025	2024	2023
Up to 5 years old	12% (650)	14% (710)	13% (693)
6-10 years old	18% (981)	22% (1,126)	25% (1,302)
11-15 years old	36% (1,921)	39% (2,023)	37% (1,924)
16-20 years old	24% (1,293)	18% (940)	17% (891)
21-25 years old	6% (315)	5% (237)	5% (259)
26 years old and above	4% (180)	2% (122)	3% (122)

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Shipbuilding country

The competition between the three leading shipbuilding nations continues for another year, with South Korea surpassing its rivals to claim the top position. 33% (one in three – 1,760) of the ships managed by companies in Piraeus and Athens have been built in South Korean shipyards. Chinese shipyards remain at the second place, with 32% (1,722), while Japanese shipyards remain third with 27% (1,427). 8% (431) of the ships were built in a country other than the top three shipbuilding nations.

China’s ascent has been gradual over the past two years, increasing from 29% in 2023 to 32% in 2025. In contrast, South Korean shipyards lost 2% over the same period, while Japanese shipyards saw a 1% decline.

Recent data on ship orders suggests that China’s power will become even more pronounced in the coming years. With limited slots available in other countries’ shipyards, China has secured the lion’s share of orders for 2024.

In any case, each shipbuilding country specialises in different ship types and plays a distinct role depending on the size of the managing company. 35% (286 vessels) of the small-sized companies’ fleet were built in Japanese shipyards. Japan previously held the reins, specialising in small and medium-sized bulk carriers, which is reflected in the fleets of small-sized companies, as they tend to manage older, smaller bulk carriers. 34% (279 vessels) of the small-sized companies’ fleets were built in China, while 21% (170 vessels) were constructed in South Korea.

Japan rises to the top position in the fleet of medium-sized companies, with 35% (577 vessels) out of the 1,646 vessels in this category. Once again, Japanese shipyards have a significantly higher percentage compared to the one they hold when the total fleet is taken into account, while South Korea holds a much lower percentage (24% compared to 31%).

For large-sized companies, South Korea leads the way with 41% (1,191 vessels), well above its 33% share of the total fleet. On the other hand, Japan drops to 20% from 27%. The differences recorded over the past years across different company sizes highlight some gradual market shifts.

China’s percentage in the small-sized companies’ fleet increased from 30% in 2023 to 32% in 2024 and 34% in 2025.

A similar trend is evident across all company size categories. In the medium-sized companies’ fleet, China’s share stands at 33% in 2025, up from 27% in 2023. In contrast, South Korea’s share decreased from 28% in 2023 to 24% in 2025. In large-sized companies, China’s share grew from 29% in 2023 to 31% in 2025, while South Korea’s share slightly dropped from 42% in 2023 to 41% in 2025. The share that Japan holds across all company size categories has remained relatively stable over the past few years.

Given the challenges facing the Western shipbuilding industry and the continued outward focus of European marine equipment manufacturers, this year’s research also looks at the engines installed on vessels.

Shipping executives have often argued that shipyards in each country prioritise domestic engine and equipment

China's percentage regarding shipbuilding has risen



Table 10 Distribution of the fleet based on shipbuilding country for the period 2023-2025
Source: Analysis of data sourced by Greek Shipping Publications

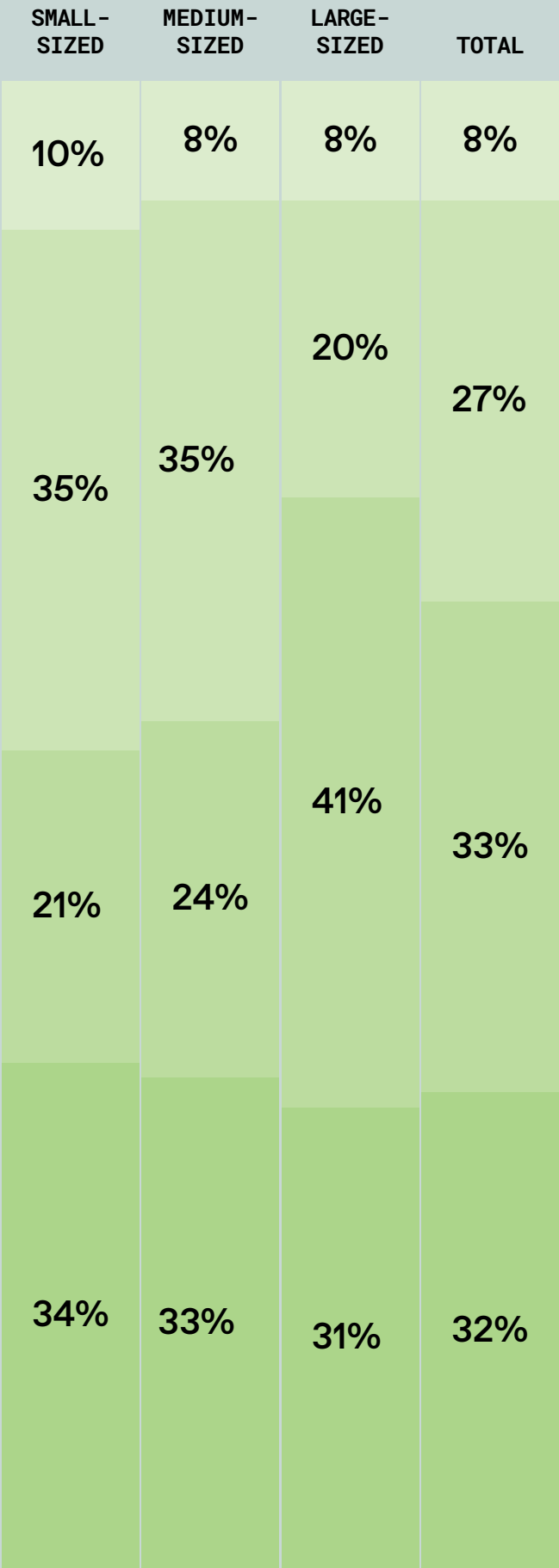
	2025	2024	2023
China	32% (1,722)	30% (1,522)	29% (1,490)
South Korea	33% (1,760)	35% (1,805)	35% (1,803)
Japan	27% (1,427)	27% (1,401)	28% (1,482)
Other	8% (431)	8% (430)	8% (416)

Graph 6
Distribution of the fleet by shipbuilding country
based on company size
Source: Analysis of data sourced by Greek Shipping Publications
Note: Percentages lower than 5% are not included.

- China
- South Korea
- Japan
- Other

manufacturers. Indeed, if a company orders a vessel but chooses an engine manufacturer outside the shipyard’s official “makers’ list”, costs may increase significantly. A total of 97.2% of vessels built in Japan are equipped with Japanese-made engines. Despite Japan’s leading technological expertise, recent scandals involving data falsification on fuel consumption have shaken the industry’s confidence in Japanese engines.

A total of 90.4% of ships built in South Korea are equipped with South Korean-made engines. The lower percentage (compared to Japan) is partly due to the engines of LNG carriers, one of the last “strongholds” of European dominance in maritime technology. Although 93.8% of LNG carriers in the fleet were built in South Korea, 30.5% of their engines were made in Europe. In China, the picture is changing, as 42.4% of ships built in Chinese shipyards are fitted with Chinese-made engines, while 42.3% are equipped with South Korean engines. Despite China’s rapid progress in terms of quality, it seems that some shipowners remain hesitant to trust the Chinese marine engine manufacturing market.



2025 VS 2024 VS 2023

	2025	2024	2023
Number of vessels	5,340	5,158	5,191

Percentage of vessels per company size

Small-sized	15%	16%	16%
Medium-sized	31%	29%	28%
Large-sized	54%	55%	56%

Percentage of vessels in the total fleet

Bulk Carriers	51%	50%	50%
Tankers	30%	31%	32%
Containerships	10%	9%	9%
LNG Carriers	3%	3%	3%
LPG Carriers	3%	3%	3%
Other vessel types	3%	4%	3%

Fleet distribution by age

Up to 5 years old	12%	14%	13%
6-10 years old	18%	22%	25%
11-15 years old	36%	39%	37%
16-20 years old	24%	18%	17%
21-25 years old	6%	5%	5%
At least 26 years old	4%	2%	3%

Fleet distribution by shipbuilding country

China	32%	30%	29%
South Korea	33%	35%	35%
Japan	27%	27%	28%
Other	8%	8%	8%



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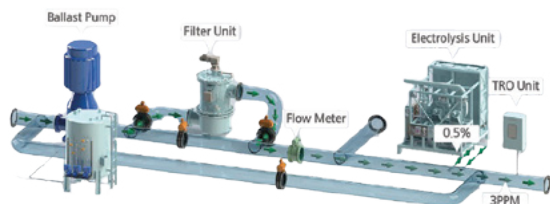
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- Less power consumption, Less neutralizer consumption
- No holding time in sea water & brackish water



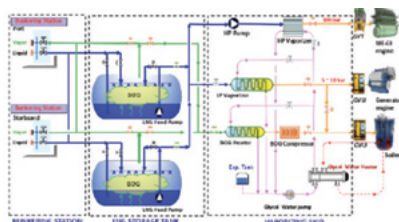
Energy Storage System

- DNV type approval in 2019, KR type approval in 2021 respectively
- Two products (2.5C, 1C) available acc. to ship's configuration
- ESS installation retrofit based on each ship's electric load analysis
- ECO ship supply package including ship's design, installation and supervision



PURIGAS™, Fuel Gas Storage & Supply System

- Total Package Service for Engineering & Supply
- Engineering support with proven technology and operating experience for various ship types
- Much engineering data for ship design relevant to FGSS



SSAS Master – Integrated Automation System

- Specialized for LNG control
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Katradis Group

at the Forefront of Sustainable Shipping

When innovation, environmental consciousness, and maritime expertise come together in a strategic vision.

Shipping is one of the fundamental pillars of the global economy, but also one of the most demanding sectors in terms of environmental responsibility. As the pressure for sustainability and compliance with stricter environmental regulations intensifies, the transition to a greener and more responsible operational model is not only imperative but strategically crucial for the survival and competitiveness of companies in the industry.

Katradis Group, with many years of presence in the Greek and international maritime market, emerges as a pioneer in this transition. Sustainability is not a theoretical approach for us; it is a core pillar of our corporate strategy and fundamentally shapes every decision we make — from the selection of raw materials and technologies to the way we produce, package, and distribute our products.





Our sustainability strategy is based on clear and measurable pillars:

1. 100% Recyclable Materials: Circular Economy in Practice

All our synthetic ropes are made from high-quality polymer materials such as PP, PES, and HMPE, which are fully recyclable at the end of their life cycle. In this way, we actively support the circular economy in the maritime sector, reducing waste and promoting sustainable management of raw materials.

2. Safe Coatings – Protection Without Pollution

The specialized coatings we apply to our ropes and components ensure durability, functionality, and product lifespan without harming the environment. All coatings comply with the REACH Regulation and are free of toxic substances and heavy metals, thus protecting both the people who use our products and the ecosystems of ports and waterways.

3. Rope Recycling Initiatives – Collaborating for the Planet

Aiming to enhance sustainability and the circular use of our products, we participate in pilot research programs in collaboration with academic institutions and international organizations. This effort focuses on:

- Educating our customers on proper disposal and recycling
- Developing new, sustainable second-use materials
- Creating model circular economy frameworks for the maritime sector

4. Reducing Our Carbon Footprint

A large portion of the energy used to produce our prod-

ucts comes from renewable sources, such as our privately-owned photovoltaic unit. Additionally, we carefully choose electricity providers with a high share of green energy in their energy mix, ensuring our production process is as environmentally friendly as possible.

5. Recyclable Packaging

Our products are delivered in fully recyclable packaging, thereby extending the life cycle of packaging materials and significantly reducing waste. This is yet another testament to our comprehensive approach that integrates sustainability at every stage of the supply chain.

6. Global Networking – Action Beyond Borders

Katradis Group collaborates with international organizations, technical chambers, and certification bodies, supporting collective actions toward climate neutrality in shipping. At the same time, we participate in research projects and forums where new standards for sustainable maritime practices are established.

A Greener, Safer, Smarter Future

Katradis Group invests in sustainability not as an obligation, but as a strategic opportunity and moral responsibility. In every measure, every initiative, and every technological innovation, our goal remains constant: to contribute to a more efficient, cleaner, and more responsible maritime world.

Because the future of shipping doesn't just belong to those who adapt — it belongs to those who shape it.

International

Edited by: Spilios Varelas & Pantelis Paidousis

Shipping entrepreneurship developments

Diana Shipping acquires 10% stake in Genco

According to a filing by New York-based Genco Shipping & Trading with the US Securities and Exchange Commission, Diana Shipping has acquired almost 10% of the former's shares. The company, led by Ms Semiramis Paliou, paid a total of around \$61.7m for 4.29m of Genco's shares, corresponding to a 9.99% stake.

Earlier, in July, Diana had acquired 7.7% of Genco shares (3.3 million shares). As a result, Diana has become the largest shareholder of Genco, which has a fleet of more than 40 bulk carriers, the sizes of which range from Supramax to Capesize.

SEAVEN achieves major milestone with acquisition of 20th vessel in fleet

Seaven Tanker & Dry Management has announced a significant milestone in its

progression, proudly acquiring its 20th vessel. This achievement underscores the company's unwavering commitment to growth and excellence in the maritime sector.

Seaven's fleet includes modern, medium-sized oil and chemical tankers as well as cement carriers. Each vessel is double-hulled and outfitted with the latest technological advancements, ensuring high standards of safety and efficiency. Significantly, fifteen of the twenty vessels now operate under the Greek flag, reflecting the company's dedication to bolstering the Greek maritime community. The fleet primarily operates across the Mediterranean, Black Sea, and Northern Europe, serving leading oil majors and esteemed cement companies. The company is a proud member of numerous national and international organisations, including INTERTANKO, INTERCARGO, BIMCO, the Hellenic Chamber of Greece,



News from the seas of the world

waters



the Union of Greek Shipowners, the Hellenic Shortsea Shipowners Association, and Helmepe. In 2018, Seaven made history as the first company globally to achieve certification from the Green Award Foundation for vessels under 10,000 DWT, firmly establishing its commitment to sustainable shipping practices.

Based in the heart of Piraeus, Seaven continues its journey toward the “seven seas of the world”, as its name suggests. The company is committed to expanding its dynamic presence in international maritime transport by investing in innovation and fostering strong relationships with its partners. At the core of its strategy are the safety of its cargo and personnel, alongside environmental protection and a commitment to Greek maritime tradition.

Industry leaders revolutionise the ARA bunkering market

In a groundbreaking development for the global marine fuels industry, leading shipping and bunkering companies have come together to launch a Bunkering Services Initiative focused on solving the widely reported issues of fuel quantity shortages and fuel quality opacity across the marine fuel supply chain. By addressing these market distortions, marine fuel buyers can make optimal procurement decisions, and suppliers can operate on a level playing field.

Joining the Bunkering Services Initiative is voluntary, and participation by all marine fuel buyers and suppliers who are committed to adopting and complying with its standards and governance is welcome.

At the outset, focused on Amsterdam-Rotterdam-Antwerp (ARA), the world's second-largest bunkering hub, the Initiative represents 20% of ARA market volume, comprising several thousand deliveries each year.

Credit: Diana Shipping

Founding participants include some of the most prominent names in the industry, including Cargill, Frontline, Hafnia, Hapag-Lloyd, Mercuria, Minerva Bunkering, Oldendorff Carriers, GmbH & Co. KG, Trafigura, TFG Marine, Unifeeder, and Vitol, as well as other key players in the energy and shipping sectors.

The concept is uniquely designed to be self-regulating, leveraging powerful data-driven insights to monitor participant behaviour and adherence to standards – thereby advancing the objectives of regulatory authorities without requiring their administration.

The initiative defines a new gold standard of technology-enabled bunkering operations, with seamless integration of mass flow meters, digitalised workflows over the blockchain, traceable fuel quality measurements throughout the supply chain, full accounting of quantity balances, and real-time reporting to participants.

Navigator Gas announces a joint venture with Amon Maritime for the construction of two new ammonia gas carriers

Navigator Holdings Ltd., the owner and operator of the world's largest fleet of Handysize liquefied gas carriers, has entered into a joint venture with Amon Maritime.

Pursuant to the joint venture, Navigator will acquire approximately 80% of the joint venture company, Navigator Amon Shipping AS, of Norway, with Amon Maritime holding approximately 20%, subject to the investment terms and conditions. The joint venture aims to construct two new 51,530 cubic metres capacity ammonia-fuelled liquefied ammonia carriers, which will also be capable of carrying liquefied petroleum gas.

The joint venture has entered into contracts with Nantong CIMC Sinopacific Offshore and Engineering Co., Ltd. to build the vessels, with deliveries scheduled to take place in June and October 2028, respectively, at an average price of \$84 million per vessel. Notably, each of the vessel projects has been awarded a NOK 90 million (approx. \$9 million) investment grant by the Norwegian government agency Enova. It is expected

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that the joint venture will finance the majority of the purchase price of the vessels through commercial bank finance, with the remainder sourced from capital contributions by Navigator and Amon Maritime. Navigator expects to finance its share of the capital contributions from available cash resources, and these investments are expected to be accretive to the company's earnings.

CMA CGM invests in clean tech company

Hycamite TCD Technologies Ltd announced CMA CGM, a global player in sea, land, air, and logistics solutions, as a new investor.

Hycamite, a pioneering clean tech company committed to decarbonizing industry, is set to begin operations in 2025 at its recently completed industrial-scale methane-splitting plant in Kokkola, Finland, the largest in Europe. This breakthrough technology produces low-carbon hydrogen and high-value solid carbon products from methane. Scalable and adaptable to market needs, it enables low-carbon production of critical materials and can be deployed globally, close to industrial end-users. Hycamite's graphite production capability was recognized earlier this year by the European Commission as one of 47 strategic projects under the Critical Raw Materials Act (CRMA). "We are excited to welcome CMA CGM, through its energy fund PULSE, as a strategic investor. As a global player in container shipping with a diversified portfolio, CMA CGM's investment will accelerate Hycamite's efforts to decarbonize maritime transport and support the industrial scaling of our technology more broadly. Since 2022, Hycamite has been advancing its marine application through a development programme partly funded by Business Finland. Now, with Kokkola CSF operations to commence shortly, our innovative technology is poised to transform maritime transportation and other hard-to-abate sectors worldwide. CMA CGM's investment signals growing international interest in our technology," says Laura Rahikka, CEO of Hycamite. "CMA CGM's support will fast-track the development and adoption of our multiple methane-splitting applications."

The sea is our world...



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Geopolitics

What was discussed at the historic Trump-Putin summit in Alaska

Presidents Donald Trump and Vladimir Putin spoke of “progress but no agreement” following their historic meeting in Alaska on the evening of Friday, 15 August 2025, against the backdrop of efforts to achieve a ceasefire in the war in Ukraine.

The two leaders, accompanied by their top diplomatic advisors, met at Elmendorf-Richardson Air Base near Anchorage, under the slogan “Pursuing Peace”. Representing Russia were Foreign Minister Sergey Lavrov and Putin’s diplomatic advisor Yuri Ushakov, while the American delegation was accompanied by Secretary of State Marco Rubio and special envoy Steve Witkoff.

After nearly three hours of talks, the two presidents held a joint press conference. Russian President Vladimir Putin spoke first, referring to a constructive atmosphere of mutual respect and describing the negotiations as thorough. Without revealing details, he expressed hope that the meeting would serve as a “starting point” not only for Ukraine but also for restoring US-Russia relations, with prospects for cooperation in energy, technology, space, and the Arctic.

For his part, US President Donald Trump called it an “extremely productive meeting”, stressing that “many points were agreed to” and that there is now “a very good chance” for an agreement. In fact, he announced that he would brief Ukrainian President Volodymyr Zelensky and left the possibility of a future meeting in Moscow open.

The Alaska summit is considered a turning point, marking a return to the diplomatic stage three and a half years after the start of the Russian invasion, which has caused the bloodiest conflict in Europe since World War II.

Vladimir Putin reiterated Moscow’s position that eliminating the causes of the conflict is a prerequisite for a long-term resolution of the crisis. “I have every reason to believe



that moving down this path, we can bring the conflict in Ukraine to an end”, he said. At the same time, he expressed hope that mutual understanding would bring peace to Ukraine and that the progress made during the Alaska summit would not be undermined, hinting at the European allies of Kyiv. “We hope they will not make any attempts to use some backroom dealings to conduct provocations to torpedo the nascent progress”, Putin noted. Subsequently, the US President stated that there is still a way to go before an agreement is reached, clarifying that “we agreed on many points” and there are still a few on which there are disagreements. “We did not reach an agreement today, but we have many chances to achieve it”, he concluded.

The US-EU deal on tariffs and trade

The US and the EU have announced a trade deal that fundamentally rebalances the economic relationship between the world’s two largest economies. As the White House stated, the deal marks a generational modernisation of the transatlantic alliance and will provide Americans with unprecedented levels of access to the EU market. It will also bolster America’s economy and manufacturing capabilities. The EU will purchase \$750 billion in US energy and make new investments of \$600 billion in the United States, both by 2028. Purchases of US energy products will diversify the EU’s sources of supply and contribute to Europe’s energy security. The EU will replace Russian gas and oil with significant purchases of US LNG, oil, and nuclear fuels. Under the agreement, the EU will pay the US a tariff rate of 15% on autos and auto parts, pharmaceuticals, and semiconductors. However, the sectoral tariffs on steel, aluminium, and copper will remain unchanged—the EU will continue to pay 50% and the parties will discuss securing supply chains for these products. “Today, with this deal, we are creating more predictability for our businesses. In these turbulent times, it is necessary for our companies to be able to plan and invest. We are ensuring immediate tariff relief. This will have a clear impact

on the bottom lines of our companies. And with this deal, we are securing access to our largest export market. At the same time, we will give better access to American products in our market. That will benefit European consumers and make our businesses more competitive. The deal provides a framework from which we will further reduce tariffs on more products, address non-tariff barriers, and cooperate on economic security. Because when the EU and US work together as partners, the benefits are tangible on both sides”, EC President Ursula von der Leyen stated.

Macron: “France will recognise the Palestinian state”

President Emmanuel Macron announced via a post on social media platforms that France will recognise the State of Palestine at the United Nations General Assembly in September in New York. “Faithful to the historic commitment to justice and peace in the Middle East, I have decided that France will recognise the state of Palestine. I will make a formal announcement at the UN General Assembly next September”, stated the French president in posts on X and Instagram. France will subsequently co-chair, together with Saudi Arabia, an international conference of heads of state and government aimed at reviving the so-called “two-state solution” between Palestine and Israel. To date, 142 UN member states have recognised the Palestinian state, while the US and Israel firmly oppose this plan. President Macron stressed that “the urgent need today is to end the war in Gaza and save the civilian population”, adding, “We must finally build the state of Palestine, ensure its viability, and enable it to contribute to the stability of the entire Middle East, by accepting its demilitarisation and fully recognising Israel”. The French President wrote in a letter to the Palestinian Authority President Mahmoud Abbas, stating that by recognising the Palestinian state, France aims to “contribute decisively to peace in the Middle East”, adding that the country “will mobilise all its international partners who wish to participate in this”.

Thailand and Cambodia agree to a ceasefire

A ceasefire between Cambodia and Thailand came into effect at the end of July, hours after they agreed to halt their deadliest conflict in more than a decade, following five days of intense fighting that displaced over 300,000 people. After efforts by Malaysia, the current Chair of the Association of Southeast Asian Nations (ASEAN) regional bloc, the United States, and China to bring both sides to the table, the two countries’ leaders agreed during talks in Putrajaya to end hostilities, resume direct communications, and create a mechanism to implement the ceasefire. UN Secretary-General António Guterres welcomed the ceasefire as a positive step towards ending current hostilities and easing tensions. He urged both countries to fully respect the agreement and to create an environment conducive to addressing long-standing issues and achieving lasting peace. The UN Secretary-General commended Malaysia, as well as the United States and China, for their dedicated efforts towards the peaceful resolution of the situation.

The first direct flight in 77 years departs from Moscow to Pyongyang

In a move that reflects the strong ties between Russia and North Korea, the first flight of Nordwind Airlines took off at the end of July from Moscow’s Sheremetyevo airport. The Boeing 777-200 covered the distance between Moscow and Pyongyang in 8 hours. At the initial stage, flights will be carried out once a month. In the event of an increase in tourist and business flow, the possibility of increasing the frequency of flights will be considered. “27 July is a significant day for the Russian Federation and the Democratic People’s Republic of Korea. Today, for the first time in more than 70 years of diplomatic relations, a direct air service has been launched between the capitals of our countries - Moscow and Pyongyang. This was achieved thanks to the coordinated work of the Russian Ministry of Transport, Rosaviatsia, Nordwind Airlines (“Severny Veter” LLC), colleagues from the DPRK, with the support of the Russian Ministry of Natural Resources”, said Deputy Minister of Transport Vladimir Poteshkin.

Blue Economy

Greece to establish two new Marine National Parks

Announcing the two new marine national parks on Monday, 21 July, the Greek Prime Minister Kyriakos Mitsotakis noted that he was delivering on a promise to establish “two new Marine National Parks - one in the Ionian Sea, and the other in the Southern Cyclades, in the iconic Aegean”. The Greek Prime Minister pointed out that this places Greece at the forefront among Mediterranean countries in terms of the size of its marine protected areas, with the two parks extending over an area of 27,500 square kilometres, or 25% larger than initially announced. An excerpt of his statement is given below:

“The sea has always been Greece’s silent force. It is part of who we are - shaping our civilisation and our history, feeding our people, and nurturing our spirit. The two National Parks will be among the largest marine protected areas in the entire Mediterranean. They will allow us to meet the target of protecting 30% of our territorial waters by 2030, way ahead of schedule, and will be vast sanctuaries for life beneath the waves. They will also help to preserve ecosystems, restore balance, and set a bold new standard for marine conservation. And perhaps, most importantly, within these marine zones, the hugely damaging practice of bottom trawling will be banned”.

The state of shore power infrastructure in European ports

Shipping activity is most heavily concentrated in ports, and so are its pollution and emissions. Over 6% of Europe’s maritime GHG emissions occur during port operations, alongside high levels of air pollutants such as sulphur oxides and fine particles. Reducing these emissions is crucial to enhancing urban air quality and safeguarding public health.

To help address this, the EU has introduced a mandate requiring ports to provide onshore power supply (OPS) by 2030. This measure will allow ships to plug into the local electricity grid while docked, thereby replacing the use of fossil-fuel auxiliary engines and reducing harmful emissions.

A new study by DNV on behalf of the NGO T&E shows that only one in five required onshore power supply (OPS) connections are currently installed or contracted, with slow uptake across most ports. Of the 31 ports studied, only four have installed or contracted more than half of the connections required by 2030.

Because they spend significantly more time at berth, cruise ships produce more than six times more port-side emissions than container ships. In 2023, Carnival’s 3,500-passenger cruise ship, the “Azura”, emitted a whopping 22,800 tonnes of CO₂ in European ports. Plugging in at port would eliminate almost all of it and cut the ship’s total yearly emissions by a fifth. Current EU laws fail to regulate the full scope of at-berth emissions. Key sources of pollution from smaller vessels and unregulated ship types remain unaddressed. Based on these findings, T&E recommends:

- Advancing EU shore power requirements for cruise terminals and cruise ships to 2028, reflecting the segment’s high proportion of at-berth emissions and relatively advanced OPS readiness.
- Integrating shoreside electricity into the Renewable Energy Directive (RED III) electricity crediting mechanism as part of national transposition, to enhance investment viability and accelerate port decarbonisation.
- Earmarking dedicated EU funding for OPS and port grid expansion



under the next Multiannual Financial Framework (MFF), including continued support through the Alternative Fuels Infrastructure Facility (AFIF).

- Expanding shore power requirements to a broader range of ships at berth, including currently excluded ship types and smaller vessels, as part of future revisions to Alternative Fuels Infrastructure and FuelEU Maritime regulations.

Pakistan launches 120-acre aquaculture park to drive blue economy growth

The Federal Minister for Maritime Affairs of Pakistan, Muhammad Junaid Anwar Chaudhry, announced the establishment of a state-of-the-art Aquaculture Park at Korangi Fish Harbour (KoFHAH), Karachi, at an estimated cost of 3 billion rupees. The Minister made the announcement while chairing a high-level meeting on the development of the blue economy, attended by Chairman Gwadar Port Authority (GPA) Noorul Haq Baloch, representatives from Korangi Fish Harbour



Authority (KoFHAH), the Marine Fisheries Department (MFD), and the Balochistan Chamber of Commerce and Industry. The estimated annual production of a 120-acre aquaculture park ranges from 360 to 1,200 tonnes, depending on the cultivated species and the farming system employed. Its annual revenue potential is projected to be \$720,000 to \$7.2 million, influenced by species selection, market prices, and production intensity.

The Minister stated that the project, spanning 120 acres, should be developed under a public-private partnership framework, aiming to boost the country's blue economy through sustainable aquaculture. The meeting was informed that the land cost for the Aquaculture Park has been determined based on an extensive farming model, providing an affordable and efficient foundation for private investors.

Experts informed the meeting that Pakistan's coastal waters possess highly conducive conditions for aquaculture, providing an ideal environment

for farming a variety of marine species. To accelerate the process, the Federal Minister directed the Korangi Fish Harbour Authority to submit a comprehensive execution report within 10 days.

ABS and FLOWRA to advance offshore wind technologies

ABS and the Floating Offshore Wind Power Technology Research Association (FLOWRA) of Japan signed a memorandum of understanding to collaborate and explore new technologies to support the floating offshore wind industry.

"For over 160 years, ABS has been leading the charge for safety excellence in the marine and offshore industries. Joining FLOWRA represents a great opportunity for us to work closely with industry leaders who are shaping what safety means for floating offshore wind developments. By leveraging ABS's deep domain experience in offshore energy and leaning into our shared interests in the development of practical standards and require-

ments, ABS and FLOWRA aim to support a safer future for the global floating wind industry", said Rob Langford, ABS Vice President, Global Offshore Renewables.

FLOWRA is a technical research association that collaborates with overseas organisations to research and develop common basic technologies for floating offshore wind, aiming to reduce costs and risks.

Masakatsu Terasaki, Chairperson of FLOWRA BoD, said: "We are delighted to be collaborating with ABS, one of the world's active classification societies and a leading certification body in the floating offshore wind segment. This partnership is of great significance to FLOWRA's efforts. By combining ABS's exceptional technical expertise and risk management capabilities with FLOWRA's initiatives, we anticipate advancing the optimisation of floating offshore wind power systems and establishing a robust technical foundation, while reducing development risks and costs".

Passenger Shipping

The Port of Barcelona to reduce the number of cruise terminals

Barcelona City Council and the Port of Barcelona recently signed a new agreement to reorganise cruise activity and render it more sustainable. The agreement will reduce the number of cruise terminals at the Port of Barcelona. It will roll out a series of projects to improve passenger mobility and make it more sustainable, moving forward in the responsible management of cruises and improving the coexistence between port activity and the city.

The central plank of the new agreement, signed by both administrations, involves reducing the number of cruise terminals from seven to five by demolishing current terminals A, B and C, and building a new terminal on the site of terminal C. The resulting terminal will be public; in other words, it will be open to general use and have the capacity to serve 7,000 passengers at any given time.

In addition to this reorganisation and the progressive reduction in the number of terminals, a comprehensive renovation of a 610-meter-long section of the wharf,

corresponding to the current terminals A and B, will be carried out, to which end the Port of Barcelona will invest 50 million euros. These actions will place the port's cruise facilities among the most modern and sustainable in the world, offering the necessary quality of service to support port operations (where the journey begins and ends), which provide the greatest added value to the city and have better connectivity with airports.

MSC's dynamic expansion in the luxury cruise sector

Construction of the Explora Journeys fleet, the MSC Group's luxury lifestyle brand, continues at full speed. A triple-important ceremony took place at the Fincantieri shipyard in Sestri Ponente in mid-July: the technical launch of the "Explora III", the coin laying for the "Explora IV", and the steel cutting of the "Explora V".

Comprising a total of six units – the first two, "Explora I" and "Explora II", are already in service – the luxury brand's fleet, entirely built by Fincantieri, will be operational within three years. The "Explora III" will be christened next year, "Explora IV" and "Explora V" will be delivered in 2027, and the "Explora VI" will set sail in 2028.

The MSC Group's investment in the six Explora Journeys ships, five of which were built in Sestri Ponente, amounts to approximately €3.5 billion. This investment will generate significant economic, technological, and employment benefits in Italy, estimated to reach over €15 billion.

CLIA's "All Aboard Greece" campaign gives voice to Greece's cruise community

Bringing together representatives from governments, port authorities, and tourism leaders, Cruise Lines International Association (CLIA), the leading voice of the global cruise community, has launched the "All Aboard Greece" campaign to promote cooperation and sustainable growth in the cruise sector. The campaign unites key representatives from national and local government, port authorities, tourism bodies, academics, suppliers, and cruise professionals. Their shared message: Cruising

Credit: EPA/Enric Fontcuberta





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Bringing together representatives from governments, port authorities, and tourism leaders, Cruise Lines International Association (CLIA) has launched the “All Aboard Greece” campaign to promote cooperation and sustainable growth in the cruise sector.

in Greece is a force for growth and prosperity — and coordination and collaboration are key to its sustainability. It features a series of videos showcasing testimonials and insights from across the cruise value chain. The first two videos show:

- **Cruising and Economic Impact** – with commentary from the Secretary General for the Aegean and Island Policy, Mr Manolis Koutoulakis, port agents, and academics, the video highlights how cruising generates over €1.1 billion in added value and supports hundreds of jobs in island and port communities.
- **Ports and Growth** – Spotighting multiple destinations, this video explores the importance of infrastructure and long-term planning in developing Greece as a leading cruise hub.

“Cruising is particularly important to the Greek economy, as it supports the livelihoods of thousands of people across the country, and these professionals are our greatest ambassadors. We are proud that, through this campaign, we are giving a voice to the people and professionals who make cruising in Greece possible”, said Maria Deligianni, Regional Director Eastern Mediterranean, CLIA.

Oceania Cruises takes delivery of “Oceania Allura” – its eighth luxury ship

Oceania Cruises has recently taken delivery of the “Oceania Allura”, its eighth elegant boutique ship.

The 1,200-guest “Oceania Allura”, built at the Fincantieri Shipyard in Genoa, is the second ship in Oceania Cruises’ Allura Class and heralds the evolution of Oceania Cruises’ legacy of offering culinary – and destination-immersive travel experiences. The “Oceania Allura” follows her sister ship, “Oceania Vista”, which was launched to global acclaim in May 2023.

“The ‘Oceania Allura’ is our most innovative and luxurious ship to date. She represents our bold vision for an entirely new generation of luxury travel experiences. As always, at the heart of this beautiful ship is an extraordinary crew dedicated to providing exceptional cuisine,

personalised, intuitive service and immersive enrichment opportunities for our guests”, said Jason Montague, Chief Luxury Officer of Oceania Cruises.

Oceania Allura will be followed in summer 2027 by the line’s first Sonata Class vessel, “Oceania Sonata”, and then by her sister ship, “Oceania Arietta” in 2029, representing the dawn of a new generation of luxury cruising. Each Sonata Class vessel will carry approximately 1,390 guests and measure approximately 86,000 gross tonnes.

At the delivery ceremony in Genoa, Montague announced that two further Sonata Class ships will join the fleet. The vessels, previously ordered as options for Oceania Cruises, have now been confirmed for delivery in 2032 and 2035, respectively.

Celestyal announces successful refinancing as it accelerates growth strategy

Celestyal has announced the successful completion of a major refinancing initiative, replacing its original vessel acquisition funding with a more efficient financing model.

This milestone marks a significant step forward in Celestyal’s growth plans, substantially lowering the company’s cost of capital and unlocking additional flexibility to reinvest in its fleet, product and commercial operations.

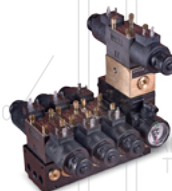
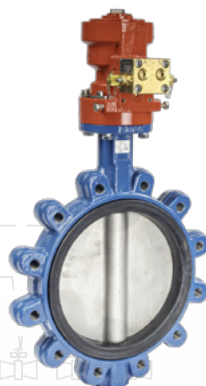
Marios Theodosiou, Chief Financial Officer at Celestyal, said: “This refinancing marks a powerful endorsement of the progress we’ve made to evolve and fuel Celestyal’s ambitious development strategy. From a full fleet renewal and more sustainable operations, to expanding our commercial footprint, launching year-round operations, and announcing our sailing programme further ahead than ever before, we’ve demonstrated our ability to transform at pace”.

It also signals growing confidence in Celestyal’s long-term business model, underpinned by improved profitability, enhanced financial resilience and consistent operational delivery.

“We are well-positioned to continue delivering on our strategic ambitions with a strong financial foundation, including diversifying source markets and expanding into new regions, accelerating the next stage of our growth.”

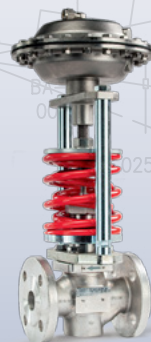


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www.ergomaticltd.com

ERGOMATIC SA

Tel: +30 2104408000
sales@ergomaticltd.com

Head Offices

13, Ag. Petrou Ave.
13675 Athens Greece

Factory Facilities

7th km Thivon/Halkidas
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Enhancing the competitiveness of Europe's ports is an enabler of Europe's ambitions

I was asked to share the vision of the European Sea Ports Organisation (ESPO) on how to strengthen the competitiveness of Europe's ports. Before answering this question, I believe I should first set out why it is essential to safeguard and further strengthen the competitiveness of Europe's ports.



by **Isabelle Ryckbost**,
Secretary General
of the European Sea Ports Organisation

Ports in Europe are instrumental in realising Europe's ambitions in terms of sustainability, competitiveness, and resilience. You all know that Europe's seaports are gateways to the world and are at the crossroads of global supply chains. They connect maritime transport with the hinterland through various modes of transport. They ensure the mobility of people, citizens and travellers, connecting cities and regions and are indispensable lifelines between Europe's mainland and its islands and peripheral regions. Ports often play a pivotal role as enablers of tourism in Europe, both by facilitating cruises and by being the ferry port of call for many tourist destinations and cul-

tural heritage sites.

But nowadays, ports do more. They are taking on new roles that supplement, rather than replace, their traditional ones.

Ports are hubs of energy. Many ports in Europe are instrumental in securing Europe's energy supply and play an increasingly important role in hosting the production, facilitating the storage and conversion, importing and exporting of new fuels and energies. They are, in effect, a catalyst in realising Europe's energy and climate ambitions.

Seaports also cluster important industries or serve as transit points to these industry clusters in the direct hinterland. As unique links between land and sea, they are crucial to all sectors of the blue economy.

Finally, due to the current geopolitical context, the crucial role of ports as facilitators of military mobility and as partners in stepping up Europe's preparedness and resilience strategy is coming to the forefront.

As such, ports are at the centre of the challenges Europe is facing in terms of climate change, trade barriers, geopolitical threats, and looming conflicts. They are more than ever needed to build a sustainable, strong, smart, and resilient Europe. So, safeguarding and further strengthening the competitiveness of EU ports is a prerequisite for reaching Europe's ambitions.

How can we safeguard and further strengthen the competitiveness of Europe's ports?

In ESPO, we have been reflecting on this question as part of our contribution to the forthcoming EU Ports Strategy, which is due to be announced at the beginning of 2026. As you might know, the forthcoming EU Ports Strategy will be a comprehensive Commission document that will follow the wish of the European Parliament to address foreign investments in strategic port infrastructure in Europe and to look at how the competitiveness of Europe's ports can be strengthened.

Let me share with you our main priorities regarding the strengthening of our ports' competitiveness:

- Capturing the changing port landscape and diversity of ports. First of all, we think that it is of paramount importance that the policy recognises the new roles ports are taking up, and, above all, the wide diversity and unique character of each port in Europe. Ports differ based on their location, size, geographical characteristics, business, governance, tasks and serving markets. Each port has its own history and narrative and is preparing for its future as well as its role in building a more sustainable, competitive and resilient Europe. Some ports will be crucial in building Europe's new energy landscape, while others will be essential pillars of Europe's Preparedness Strategy. Some will combine all these tasks, while others will continue to play their role as a node in the supply chain, a lifeline, or a supplier to the local economy in the best and most sustainable way.
- Ports need a stable and flexible policy framework that equips, rather than constrains. "Check the box", and one-size-fits-all solutions should be avoided; instead, efforts and investments should focus on areas where they make the most sense, thereby avoiding stranded assets. To operate effectively in a fast-changing geoeconomic and geopolitical environment and fulfil their responsibilities in the best way, ports require a stable yet flexible policy framework. This framework should enable them to be effective and ambitious in reaching Europe's goals while remaining agile and resilient in the face of sudden shocks and disruptions. The implementation of existing legislation should be prioritised. Additional requirements should not be put forward to solve problems that result from legislation that still needs to be implemented.
- Completing TEN-T and addressing connectivity gaps with ports remains key. We believe that completing the TEN-T network and enhancing Europe's connectivity keeps Europe together, strengthens its competitiveness, and is an enabler of resilience. The 2024 TEN-T Regulation very rightly recognises the role of ports as cross-border multimodal nodes and transport hubs which are gateways for trade, industrial clusters, military mobility, clean energies, and fuels. Stepping up the modernisation of Europe's port connectivity to the hinterland through adequate rail,



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inland waterways, and road links remains crucial to enhancing competitiveness. Furthermore, we strongly support the new approach to award TEN-T status to ports that serve as energy hubs or contribute to Europe's energy security, based on the new energy criterion. Cargo volumes remain important, but are not the only way of assessing the importance of ports. The new criterion added to the TEN-T guidelines, in addition to the throughput criterion, should be fully implemented.

- An “omnibus” for ports. We welcome the current simplification efforts but find that this “start-stop” approach creates significant uncertainty and unnecessary effort. A more realistic approach from the start would have avoided this.

Ports should invest in moving forward towards sustainability and resilience instead of having to invest in (over)reporting and finding their way through complex procedures and legislation; the best omnibus is the one that aims at respecting a certain regulatory hygiene when planning new legislative proposals. Moreover, we believe that inconsistencies between different legislations can delay and even block high-added-value projects in ports, thereby hampering their energy transition and decarbonisation path. Such inconsistencies have, for instance, been identified between the taxonomy legislation on the one hand and the circular economy or water framework directives on the other. Finally, we believe that permitting procedures (including appeal procedures) take too long and procurement procedures and requirements are too complex, not always proportionate to the goal that is being pursued. As a result, investors are discouraged, and valuable projects risk being shelved and funding being blocked.

- The Net-Zero Industry Act (NZIA) has correctly put its finger on the problem, but it has yet to deliver. The EU's ambitions to simplify and speed up permitting procedures do not seem to have impacted the local, regional, and national permitting processes. We believe that ports must be seen as “net-zero acceleration areas”. Ports, being specific and strategic areas of public interest for the energy transition and suitable locations for net-zero industries, should be considered under a specific permitting ease policy. Energy transition and clean industry projects should be considered as “overriding public interest” projects, which could then be assessed under a fast-track procedure.



Sea Ven

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Ports should be a red line in Europe's policy making. Ports are at the crossroads of the current climate, geoeconomic, and geopolitical challenges and need room for manoeuvre to help navigate Europe's economy and society through these constantly changing realities.

projects in ports (e.g., those focused on greening, energy transition, and resilience) have a high societal value, but often yield slow, low, and risky returns on investment. Such investments, without business relevance and feasibility for the investing port authority, can only be realised with sufficient and robust funding and smoother state aid permitting procedures. The CEF funding has proved to be an essential instrument for supporting Europe's ports in their investment needs. However, the budget envelope for ports is far too low to cover all the investments underpinning Europe's public interest responsibilities. These investments are crucial to rendering Europe's ports future-proof and competitive.

- Avoiding competition distortions with non-EU neighbouring ports. Europe's ports are located on European territory, but they function in a larger geoeconomic and geopolitical context. European and non-European ports operate on the same pitch, but they often do not follow the same economic rules. The distortion of competition between European and non-European ports must be prevented. Funding and financing ports and port investments that are in direct competition with EU ports should be avoided. European initiatives such as the Global Gateway should support partners, not competitors. EU Policy must recognise the global nature of shipping when developing regional measures. The EU should lead the way at a global level by actively advocating for a higher global ambition level, rather than focusing on regional measures that hinder Europe's competitiveness. Policies like the EU-ETS for shipping, which put EU ports at a competitive disadvantage compared to their non-EU competitors, should be avoided.
- Europe needs to invest more in its ports. The European port sector is highly capital intensive and has high investment needs. The investment pipelines of EU ports reflect their multidimensional role, combining traditional and new functions. A 2024 ESPO study reveals that the investment needs of European port authorities amount to €80 billion over the next 10 years (2024-2034). The second most crucial category concerns investments in sustainability and energy transition. The most critical category of investment for port authorities, however, remains basic port infrastructure. In fact, the greening of ports is accompanied by significant adaptations to basic infrastructure (e.g., preparing quays for offshore wind or CO₂ transport and pipeline infrastructure), which is also reflected in this first investment category. We must understand that this large sum does not even take into account the dual-use investment needs that will follow in order to strengthen Europe's military preparedness. Many new investments and

Let me conclude by stressing once more the foundational character of ports, which should be a red line in Europe's policy making. Ports are at the crossroads of the current climate, geoeconomic, and geopolitical challenges. They need room for manoeuvre to help navigate Europe's economy and society through these constantly changing realities. We need a policy that elevates ports, not one that restrains them. That is the best way to enhance the competitiveness of Europe's ports and port stakeholders. The message of Transport Commissioner Tzitzikostas at ESPO's Annual Conference in Thessaloniki was clear: finding solutions "without increasing the regulatory burden, duplicating efforts, or re-inventing the wheel". For Europe's ports, the forthcoming Ports Strategy must be based on and follow the recommendations of the Competitiveness Compass and the Draghi report, focusing on simplification, implementation, and enforcement of the regulatory framework developed over the last few years, rather than adding new regulations and constraints.



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Our continued investment in Greece is testament to our commitment

Gavin Griffin and Sean Neilan discuss the company's global vision, ESG commitments, and the importance of Greece as a hub for Wilhelmsen's continued growth.



An interview with **Gavin Griffin**, Vice President, Ships Agency, Wilhelmsen Group & **Sean Neilan**, Sales Director Europe & Americas, Wilhelmsen Port Services



What are the values and principles that represent Wilhelmsen Group in the shipping industry?

Our group's vision is to be a "shaper" in the maritime industry. Being a shaper means being a pioneer, determined to lead, and taking every opportunity to innovate and meet the ever-changing needs of our customers and stakeholders. Our values are rooted in customer centricity, empowerment, learning and innovation, stewardship, as well as teamwork and collaboration. These values govern our behaviour and are consistently reflected in our actions. They are the basis for how we handle our business in order to achieve our vision.

Can you describe the shipping sectors Wilhelmsen Port Services is involved in and the advantages of your port agency solutions?

As part of the wider Wilhelmsen Group, Wilhelmsen Port Services covers all shipping segments as agents through our global maritime network. In addition to offering all types of agency services, we also support our customers with our HUB solutions, Maritime Logistics network, and cruise shore excursions. Recently, we also launched our Port Cost Financing solution, which allows customers to free up significant working capital and bring increased efficiency to their operations.

How do you tackle the challenges posed by shipping's energy transition?

As a group, we are strongly involved in the industry's energy transition through our New Energy division, which is focused on building an ecosystem that supports this shift. This includes departments involved in energy infrastructure, offshore wind, technology, and decarbonisation. At Port Services, we have set focused internal ESG goals and ambitions, and we contribute to the Wilhelmsen Group's annual sustainability report. This ensures our clients that we are a responsible service provider that can support their own ESG targets. Currently, we are focusing on how we can capture Scope 3 emissions data on behalf of our customers. While reporting Scope 3 emissions is not yet mandatory for many of them, we feel that, as a professional and responsible ships agency provider, it is important that we proactively prepare and organise this data so that it is available when needed.

What services does Wilhelmsen Port Services provide through its offices in Piraeus?

We have heavily invested in our Greek organisation over the last 4 years. In addition to our ships agency team, which handles all vessel types and agency-related services, during this period, we have established and grown our HUB

services team to support our customers on a global basis. We also have a strong cruise team in place offering shore excursions in addition to all standard agency-related services.

Strengthening our presence in Greece has been a good move for Port Services. The passion and pride our teams have for working in the maritime industry have truly helped us in delivering operational and service excellence. The Greek market holds significant strategic importance for us, and we believe our continued investment here is testament to our commitment.

What is the role of your personnel in the continuous evolution of Wilhelmsen Port Services within the port agency sector?

As previously mentioned, it is our team's pride and passion for working in the maritime industry that allows us to deliver operational and service excellence. As a Scotsman visiting Greece, I can't help but notice how deeply rooted shipping is in Greek culture and DNA. Our team in Greece brings that heritage to their daily roles by not only offering suggestions for improvement but also being involved in many of our improvement programmes.

Strengthening our presence in Greece has been a good move for Port Services. The passion and pride our teams have for working in the maritime industry have truly helped us in delivering operational and service excellence.



The reinvention of European waterfronts

by Dr Ilias Bissias

From docks

The riverside transformations in Cologne

European metropolises are eagerly seeking to develop – or rather, create – their public image: a new image that will attract and charm foreign visitors while also reflecting the everyday life of their citizens.

Within this context, it is no coincidence that many cities in Western Europe, by taking advantage of European and regional funding, are focusing on redevelopment projects and neighbourhood improvements, with the aim of turning them into points of attraction for both visitors and residents.

In cities where water is – or should be – a dominant element, such projects tend to focus on the areas in which the sea, river, or lake serves both as a landmark and as a point of historical and cultural reference. So far, media attention has primarily focused on the redevelopment of waterfronts in Lisbon, Barcelona, Southampton, and Rotterdam. However, particular interest also lies in the efforts of German cities, which are trying to develop their own model, highlighting riverside areas that once functioned as trade centres and can now become hubs of entrepreneurship and tourism development.

The cities along the Rhine are no excep-

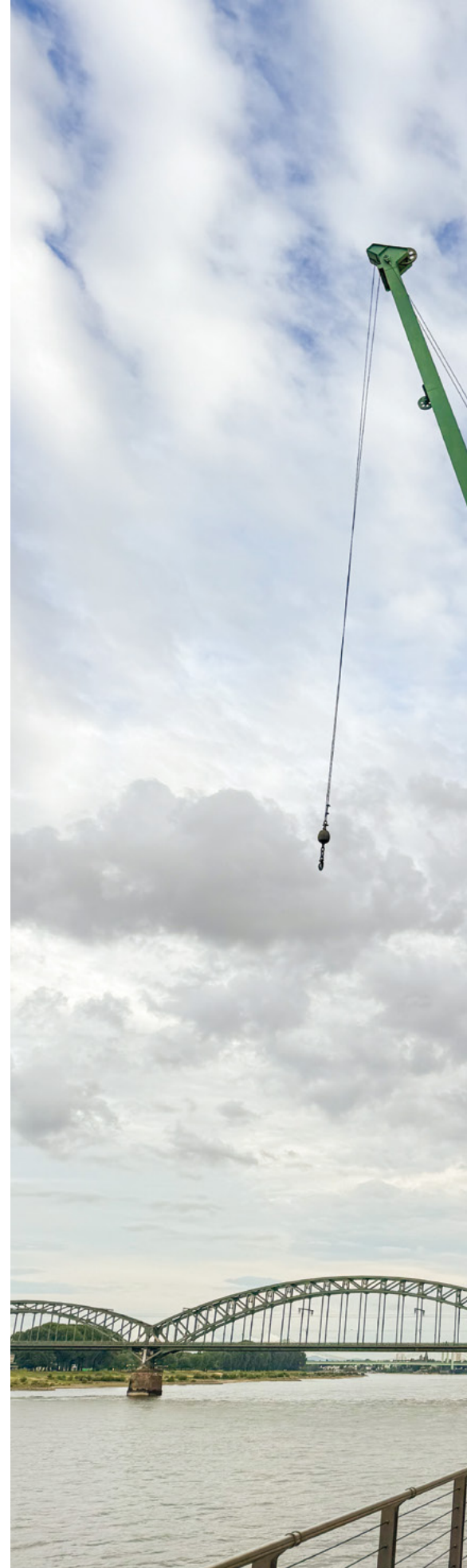




Photo credits: Naftika Chronika

to destinations

tion to this trend of waterfront transformation. Today, the Rhine has become a popular destination for many travelers in the cruise market, with numerous small-scale luxury river cruise ships attracting a significant share of passengers with high expectations and needs. Düsseldorf's local authorities were the first to take advantage of this popularity and focus on projects that would enhance the aesthetics of the urban fabric while also increasing its appeal to visitors.

Of course, the example set by Düsseldorf could not be ignored by neighbouring Cologne. The rivalry between the two cities, after all, has always been – and continues to be – ever-present. Cologne's riverside was well-suited for redevelopment in a way that reflects the city's historical traditions as well as the welcoming nature of its residents. Nowadays, Cologne is undergoing a transformative period, with both public and private initiatives enhancing the accessibility and attractiveness of its riverside areas for residents and visitors alike. These projects aim to foster a vibrant urban environment that harmoniously blends historical heritage with modern urban living.

Public initiatives: Revitalising the riverside

The Rheinauhafen (Rheinau Harbour) in Cologne is a prime example of successful waterfront redevelopment. Once a bustling industrial harbour established in the 1880s, it has been transformed into a vibrant urban district blending modern architecture, cultural institutions, and sustainable urban living. Spanning 15.4 hectares along the river between the Severinsbrücke and the Südbrücke, the area now hosts a mix of residential, commercial, and recreational spaces. At the heart of Rheinauhafen stand the Kranhäuser (Crane Houses), three striking buildings designed to resemble harbour cranes. Completed between 2006 and 2010, these structures are supported by slender glass stair towers and feature cantilevered arms extending over the river. The middle building, Kranhaus1, won the MIPIM Award in Cannes in 2009. Today, these buildings house



luxury apartments and offices, as well as smart coffee shops, bars, and restaurants, symbolising the fusion of industrial heritage with contemporary design. Rheinauhafen is also home to several cultural institutions, including the Imhoff-Schokoladenmuseum (Chocolate Museum), which features interactive exhibits on the history of chocolate, as well as the German Sport & Olympia Museum and the FrauenMediaTurm (Women's Media Tower), housed in the medieval Bayenturm, one of the rare surviving towers of Cologne's city wall. Together, these sites contribute to the area's cultural richness and appeal to visitors and locals alike.

The redevelopment places a strong emphasis on sustainability, with energy-efficient buildings and green spaces integrated throughout the district. The underground parking facility, one of the largest in Europe, helps minimise surface-level parking and promotes a pedestrian-friendly environment. Public transportation options, including tram and bus lines, ensure easy access to and from the area. Overall, Rheinauhafen serves as a model for urban waterfront redevelopment, successfully



blending historical preservation with modern development. Its transformation has revitalised the area, making it a desirable place to live, work, and spend leisure time. By integrating cultural, residential, and commercial spaces, along with its commitment to sustainability, Rheinauhafen showcases the potential of thoughtful urban planning in revitalising former industrial waterfronts.

Completed in 2016, the Rheinboulevard in Deutz is another standout public project. This 516-metre-long staircase and promenade stretches from the Hohenzollern Bridge to the Deutz Bridge, offering panoramic views of the Rhine and the Cologne Cathedral. Featuring tree-lined paths, natural stone seating, and lush greenery, it creates a welcoming space for both locals and tourists to relax and enjoy the riverside.

The Rheinboulevard is not just a place of leisure but an efficient piece of urban planning that reflects Cologne's broader efforts to enhance public access to the Rhine. Designed to accommodate both pedestrian traffic and public gatherings, it is now a popular venue for cultural events, city festivals, and informal socialising. Subtle lighting, integrated historical markers, and seamless links to nearby infrastructure, such as the Deutzer Brücke and the Köln Messe/Deutz station, reinforce its role as both a functional and aesthetic asset.

Most importantly, the Rheinboulevard symbolises a shift in how Cologne engages with its river. Once regarded



primarily as an industrial and transport artery, the Rhine is now celebrated as a space for recreation, community, and identity. The success of the Rheinboulevard has not only elevated the appeal of the Deutzer Hafengebäude but also set a benchmark for other riverside cities seeking to blend heritage, design, and accessibility in their urban landscapes.

The long-awaited new urban quarters

The Deutzer Hafen project is one of Cologne's most ambitious urban redevelopments. Spanning 38 hectares, this area is being transformed into a mixed-use district with residential units, office spaces, parks, and recreational facilities. Plans include an outdoor swimming pool and extensive green spaces, aiming to create a vibrant community along the riverfront. Central to the vision is urban sustainability, with the master plan including energy-efficient building standards, car-reduced

mobility concepts, and climate-adaptive infrastructure. Historical industrial elements, such as old silos and cranes, will be preserved and repurposed, blending the site's industrial heritage with contemporary architecture. In this way, Deutzer Hafen won't be just another construction site, but a blueprint for how cities can regenerate unused spaces without erasing their past. Still in its planning and early development stages, the project reflects Cologne's broader commitment to reshaping its relationship with the Rhine. Along with the success of the nearby Rheinboulevard, it highlights a city-wide trend: turning once-isolated riverfront areas into inclusive, future-oriented neighbourhoods. As the project progresses, Deutzer Hafen is bound to become a flagship of Cologne's urban transformation, a place where history, innovation, and liveability converge on the banks of the Rhine.

Plans are also underway for the construction of two new pedestrian and cyclist bridges across the Rhine. The Ubiering bridge, designed by GRASSL and partners, will be Germany's longest cable-stayed bridge for non-motorised traffic, spanning 265 metres. This bridge will link the city centre with the Deutzer Hafen, enhancing connectivity and promoting sustainable modes of transport.

Cologne's concerted efforts to revitalise its riverside areas reflect a commitment to creating inclusive, sustainable, and attractive urban spaces. Through the collaboration of public authorities and private developers, the city is creating environments that celebrate its rich history while embracing modernity. These initiatives not only improve the quality of life for residents but also attract visitors, establishing Cologne's riverside as a vibrant destination for all.



Singapore Harbour



London



Shanghai



Piraeus

The leading shipping centres and the dynamics of Athens/Piraeus

The recent release of the International Shipping Centre Development Index (ISCDI) Report by the Baltic Exchange and Xinhua has confirmed once again the resilience of maritime transport, which, despite the fragile and volatile environment created by geopolitical developments, continues to perform its role uninterrupted.

by Gannis Theodoropoulos

As the report characteristically states, landmark ports “continue to show strong growth amidst a particularly turbulent period for global supply chains and trade, providing a degree of stability and certainty for the shipping industry”. But which are the top centres/ports that attract the attention of the international shipping community and will most likely continue to play a leading role in the coming years, despite the fragile balance in maritime transport?

The term “shipping centre” refers to the cities/geographical areas that offer the most favourable conditions in terms of infrastructure, services, and human resources for the development of maritime activities.

The following analysis examines the findings of two relevant reports: the International Shipping Centre Development Index (ISCDI) Report and Leading Maritime Cities of the World 2024. These reports will help draw some useful conclusions.

The undisputed dominance of Singapore and the rise of Athens/Piraeus

The International Shipping Centre Development Index (ISCDI) Report provides a comprehensive ranking of the world’s top 43 port cities and shipping centres, taking into account a range of parameters. These include the provision of legal, financial, and freight brokerage services, as well as data such as cargo

handling, draft, and length of container berths. Additionally, the index assesses the overall business climate, taking into consideration customs duties and the performance of the supply chain.

According to the 2025 report, Singapore, London, Shanghai, Hong Kong, Dubai, and Rotterdam maintained their positions in the top six shipping hubs due to their continued important role in providing essential shipping services, advanced port infrastructure, and alignment with global environmental regulations.

Singapore, with an impressive score of 99.5/100, maintained its dominance for the twelfth consecutive year, marking a series of firsts across the shipping value chain, particularly at its renowned port. The report notes that, amid geopolitical upheavals and changing trade patterns, Singapore continues to maintain its unwavering commitment and strategic vision. In 2024, its container traffic increased by 5.4% to reach its highest level at 41.12 million TEUs. The previous record was set in 2023, with 39 million TEUs. At the same time, marine fuel sales also set a record, reaching 54.92 million tonnes, surpassing the 2023 record (51.82 million tonnes). Moreover, it is worth noting that Singapore’s maritime potential extends beyond its port. Last year, 30 maritime industry companies were established or opened branches in Singapore, and, according to the report, around 200 international shipping groups are based in the country.

London, which found itself in second place with a score of 81.02, remains one of the world’s leading maritime centres for maritime services, including a world-class legal system. Moreover, the UK capital hosts some of the world’s largest shipbrokers, ship managers, marine

insurers, and financial institutions, many of which continue to offer green finance solutions to the maritime sector. The UK government has launched a series of funding rounds to support the green and digital transition of the maritime transport sector. It has also announced a number of important laws to protect seafarers’ rights, including the Seafarers’ Wages Act to improve working conditions and protect wage rights, and the launch of the Seafarers’ Charter, in partnership with France, to strengthen employment protection for crews. Following the challenges of COVID-19, China’s ports are once again demonstrating their resilience and significant role as major shipping hubs. In this context, it is not surprising that Shanghai ranks third (81.01) in the ISCDI Report’s ranking of the top shipping centres. In 2024, container traffic increased by 4.8% to more than 51.5 million TEUs. The continuing expansion and upgrading of its port facilities have played a decisive role in this growth. The completion of new berths at the Yangshan Deep Water Port, together with the introduction of additional automated handling equipment, significantly increased the management capacity and operational efficiency of the Port of Shanghai. In addition, the port’s proactive approach to environmental sustainability is noteworthy. In 2024, Shanghai made significant strides in reducing its carbon footprint by adopting green technologies and practices. Initiatives such as the use of shore-side power for ships at berth, the investment in electric and hybrid port equipment, and the implementation of energy-efficient systems have helped reduce emissions and promote sustainable port operations.

Table 1:
The top five shipping centres (2021-2025)
Source: International Shipping Centre
Development Index Report

Ranking	2025	2024	2023	2022	2021
1	Singapore	Singapore	Singapore	Singapore	Singapore
2	London	London	London	London	London
3	Shanghai	Shanghai	Shanghai	Shanghai	Shanghai
4	Hong Kong	Hong Kong	Hong Kong	Hong Kong	Hong Kong
5	Dubai	Dubai	Dubai	Dubai	Dubai



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According to experts, Singapore is expected to remain the world's leading maritime city for the next five years, while Shanghai is anticipated to strengthen its position and take second place.

Fourth place went to Hong Kong (80.77), which, amidst an ever-evolving shipping environment, has managed to capitalise on any opportunity that has arisen, adapting to the new realities of the freight market by launching the Hong Kong Chamber of Shipping to strengthen its credentials as an international shipping centre. Established by Leung Chunying and industry leaders, the Chamber brings together major shipowners, operators, and classification societies, such as China Merchants Energy Shipping, COSCO Shipping (Hong Kong), and the Hong Kong branch of the China Classification Society. It is hoped that Hong Kong's shipping, commercial, financial, professional, and educational sectors will collaborate with those in mainland China to create a unified national shipping ecosystem while transitioning towards high-value-added activities within the industry. To enhance capacity and efficiency, Hong Kong continues to push forward ongoing infrastructure projects. The expansion of the Southwest Tsing Yi reclamation area, which will create additional container stacking areas and support future terminal development, remains on schedule for completion by 2026. Meanwhile, upgrades to automated gate systems at Kwai Tsing are expected to increase throughput efficiency by up to 20%. Dubai ranked fifth, with a score of 75.97. Dubai's resilience is underscored by the fact that the UAE's seaports experienced exceptional traffic volumes in 2024,

despite global geopolitical turmoil. Jebel Ali remained the UAE's top port, with more than 15.5 million TEUs handled in 2024, up from 14.47 million TEUs in 2023. Part of this increase can be attributed to Dubai's emergence as a leading hub for oil transport, due to recent geopolitical developments and the evolving international sanctions landscape.

The top ten were rounded out by Rotterdam, Ningbo-Zhoushan, Athens/Piraeus, Hamburg, and New York/New Jersey. Particularly with regard to Athens/Piraeus, which dropped one place compared to 2023 and came in eighth, the report notes that over 1,000 shipping offices are located in the wider Attica basin, as the provision of services for ship management and ship ownership makes it a shipping metropolis of international standards. Moreover, the wider cluster is gaining ground, as the Greek capital hosts a number of innovative technological start-ups that collaborate closely with the large Greek shipping community to develop unique and modern solutions, thus enhancing the capabilities and efficiency of ship management companies.

Athens/Piraeus is losing ground, but the momentum in ship management remains undisputed

This year's Leading Maritime Cities report by Menon Economics and DNV ranks Singapore at the top of the world's maritime centres for yet another year.

As in its previous editions, the report examines five pillars: Shipping, Finance and Law, Maritime Technology, Ports and Logistics, Attractiveness and Competitiveness.

Singapore remains the world's leading maritime city, unaffected by global conflicts and the growing environmental changes in the industry. Singapore has maintained its position as the world's leading shipping hub, ranking first in three of the five pillars: Attractiveness and Competitiveness, Shipping, and Ports and Logistics, surpassing both Athens and Shanghai in their respective categories.

Rotterdam and London continue to hold second and third place, respectively. Rotterdam scores highly in most pillars, particularly in the Ports and Logistics



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Ranking	Shipping	Finance & Law	Maritime Technology	Ports & Logistics	Attractiveness & Competitiveness	Overall ranking
1	Singapore	London	Busan	Singapore	Singapore	Singapore
2	Athens	New York	Singapore	Shanghai	Rotterdam	Rotterdam
3	Tokyo	Oslo	Oslo	Rotterdam	London	London
4	Shanghai	Singapore	Shanghai	Ningbo	Copenhagen	Shanghai
5	Hamburg	Tokyo	London	Hamburg	Hamburg	Oslo

and Attractiveness and Competitiveness categories. However, it ranks tenth in Finance and Law and does not lead in any of the pillars.

London reclaimed the top spot in Maritime Finance and Maritime Law from New York. In the overall ranking, Shanghai remains in fourth place, but Oslo overtook Tokyo to take fifth place. Below the top five, there are significant changes compared to a few years ago. For example, Hong Kong, which was in fourth place in 2019, dropped to twelfth place this year, although it ranks fourth in the ISCDI Report. Athens has also lost ground in the overall ranking, although it still ranks second in the Shipping pillar. The reason Athens is not at the top lies in the general perception that it primarily serves shipping companies of Greek interests rather than international shipping entities. Consequently, the report notes, companies of foreign interests are shifting towards other emerging centres, such as Singapore and Dubai. In fact, despite the war and unrest in the region, maritime centres in the Middle East have strengthened their position. Dubai improved its overall position from the previous edition of the report, coming in eleventh. Abu Dhabi made the most notable leap, moving up ten places (from 32nd to 22nd). As the Leading Maritime Cities report notes, this is the result of strategic public policies and consistent investment, which make the city a pole of attraction for talent and companies.

According to the experts participating in the report, Singapore is expected to remain the world's leading maritime city for the next five years, while Shanghai is anticipated to strengthen its position and take second place. The leading city in the European region is Rotterdam, with London and Oslo ranked as the leading contenders. Additionally, experts predict that Dubai will rise in the rankings and enter the top 5 in the coming years.

Table 2:
The overall ranking of the top shipping centres by service
Source: Leading Maritime Cities 2024

Table 3:
The top five maritime centres
Source: International Shipping Centre
Development Index, Leading Maritime Cities

Ranking	ISCDI	LMC
1	Singapore	Singapore
2	London	Rotterdam
3	Shanghai	London
4	Hong Kong	Shanghai
5	Dubai	Oslo



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Ionic Tankers (Mgt) Inc.
93 Poseidonos Avenue
Glyfada 16674, Athens
Greece
Tel: +30 210 4282818
info@ionictankers.com



Ionic Bulk Carriers (Mgt) Inc.
93 Poseidonos Avenue
Glyfada 16674, Athens
Greece
Tel: +30 210 4282818
info@ionicbulkcarriers.com

Ionic (UK) Shipping Agencies Ltd.
36, Upper Brook Street,
London, W1K 7QJ
United Kingdom
Tel: +44 203 0965150
london@ionicship.com



Ionic (Manila) Manning Inc.
7th Floor, Suntime Tower, 13 Meralco Ave.,
Ortigas Center, Pasig City,
Metro Manila, Philippines 1600
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crewing@ionicmanila.com

Maritime industry benevolence

Edited by: Panagiotis Korakas

HELMEPA Scholarships: In continuous support of Greece's new generation of scientists

The recognition of excellence and the creation of equal opportunities for the development of the new generation, with an open mind and without discrimination, are consistently among the strategic priorities of the Hellenic Marine Environment Protection Association (HELMEPA). In this spirit, from 1998 to the present day, HELMEPA has awarded a total of 68 scholarships, of which 40 were awarded to women and 28 to men, covering both maritime studies (37 scholarships) and studies in environmental fields (31 scholarships). The recent HELMEPA scholarship award ceremony for the Academic Year 2025-2026 took place on Friday, 18 July 2025, at the offices of Diana Shipping Services S.A. During the event, the recipients of HELMEPA's latest scholarship programme, accompanied by their families, had the opportunity to meet with HELMEPA's Board Members. **The scholarships awarded during the ceremony were the following:**

- Ms Semiramis S. Paliou, HELMEPA's Chairperson, awarded the €7,500 scholarship in memory of George P. Livanos, HELMEPA's Founder, to Mr Efstratios-Panagiotis Pergantis for

postgraduate studies in "International Shipping, Finance and Management" at the Athens University of Economics and Business.

- Mr John A. Xylas, Board Member of HELMEPA, awarded a second €7,500 scholarship in memory of George P. Livanos to Ms Pinelopi-Panagiota Giannakopoulou for postgraduate studies in "Sustainable Blue Economy" at the Department of Maritime Studies at the University of Piraeus.
- Mr Ioannis Drakogiannopoulos, Honorary Chairman of HELMEPA's Training Committee, awarded the €15,000 scholarship in memory of Captain Vassilis K. Constantakopoulos, HELMEPA's Honorary Chairman, to Mr Ioannis Georgakis for postgraduate studies in "Wind Energy" at the Technical University of Denmark.
- Ms Irene S. Daifas, General Secretary of HELMEPA's Board, awarded the €15,000 scholarship in memory of Stavros Daifas to Mr Anastasios Samaras-Malamas for postgraduate studies in Economics (Environmental & Resource Economics) at the London School of Economics and Political Science.
- Ms Ioanna C. Martinou, Board Member of HELMEPA, awarded the €15,000 scholarship in memory

of Athina I. Martinou, donated by the Athina I. Martinou Foundation, to Ms Niki Giannakou for postgraduate studies in the Magister Juris (MJur) programme at the University of Oxford.

- Ms Maria V. Hajioannou, Board Member of HELMEPA, awarded the €10,000 scholarship in memory of Vassos Hajioannou to Mr Nikolaos Papanikolaou for postgraduate studies in "Environmental Engineering" at the Delft University of Technology in the Netherlands.
- Ms Elektra Apostolopoulou and Mr Spyros-Nikolas Apostolopoulos awarded the €10,000 scholarship in memory of Nikolaos S. Apostolopoulos to Ms Maria Chatzikonstantinou for postgraduate studies in "LLM Maritime Law" at the City St. George's, University of London.

Donation by the Vardinoyanneio Foundation & Motor Oil towards the installation of new desalination units at the Municipality of Loutraki-Perachora- Agioi Theodoroi

To address the problem of water adequacy and quality, the installation of new desalination units is being implemented in the municipal communities of Agioi



Theodoroi, Isthmia, and Loutraki of the Municipality of Loutraki-Perachora-Agioi Theodoroi with a donation by the Vardinoyanneio Foundation and Motor Oil. The donation is made within the framework of the Memorandum of Cooperation between the municipalities mentioned above and the Vardinoyanneio Foundation, which focuses on public utility and infrastructure projects, aimed at enhancing the quality of life in these municipalities, in close partnership with the local authorities. Specifically, the donation concerns the supply and installation of:

- 1 seawater desalination plant with a capacity of 1000 m³ in Agioi Theodoroi.
- 2 seawater desalination units with a capacity of 500 m³ in Agioi Theodoroi.
- 4 seawater desalination plants with a capacity of 500 m³ of seawater in the Municipality of Isthmia.
- 1 desalination plant for brackish water with a capacity of 500 m³ in the Municipality of Loutraki-Perachora.

It should be noted that the first seawater desalination unit, with a capacity of 1,000 m³, already operates in Agioi Theodoroi, while works for the installation of the two seawater desalination units

in Isthmia and the brackish water desalination unit in Loutraki-Perachora are currently in progress.

Since its establishment, Motor Oil has been actively committed to promoting the development, prosperity, and progress of the local communities in which it operates.

Firmly upholding its values and principles, Motor Oil Group consistently contributes to impactful projects and initiatives that address the needs of the local communities.

The Hellenic Red Cross has been reinforced with a state-of-the-art Mobile Blood Donation Unit by means of a donation by the John S. Latsis Public Benefit Foundation

The Hellenic Red Cross (HRC), which has a longstanding tradition and legacy in organising voluntary blood donation drives in Greece, has been operationally reinforced with a state-of-the-art Mobile Blood Donation Unit, donated by the John S. Latsis Public Benefit Foundation. The handover ceremony of the vehicle took place on Monday, 28 July 2025, in the outdoor area of the Zappeion Megaron. The event featured a symbolic inaugural blood donation at the HRC's new Mobile Unit, in the presence of the President of the HRC, Dr Antonios

Avgerinos, and the Foundation's representative, Ms Natalia Andronikou, Programmes & Grants Officer, as well as numerous volunteers from all HRC Divisions.

The HRC's Mobile Blood Donation Unit fills a critical operational gap by enabling the prompt and safe collection of blood outside hospital settings, in line with the World Health Organisation's (WHO) guidelines, particularly in times of emergency. This state-of-the-art vehicle is fully equipped with all required medical and technical specifications. It is designed to reach even the most remote and hard-to-access areas of Greece, ensuring flexibility, operational readiness, and improved access for those wishing to donate blood.

The HRC's extensive experience and expertise in the field of voluntary blood donation have proven particularly valuable in times of crisis, most notably during the COVID-19 pandemic, when dozens of mobile blood drives were organised to meet urgent hospital needs. The organisation also places special emphasis on the most challenging periods of the year – Christmas, Easter, and the summer months – when blood reserves tend to drop significantly.

Dr Antonios Avgerinos, President of the Hellenic Red Cross, noted: "This generous donation by the John S. Latsis Public



Credit: Hellenic Red Cross

Benefit Foundation stands as a symbol of life, social contribution, and solidarity. This significant contribution, which is an expression of recognition and appreciation for the work of the Hellenic Red Cross in the field of voluntary blood donation, meaningfully strengthens our efforts by ensuring direct access to life-saving services and by spreading the message of voluntary blood donation to every corner of the country.

The Mobile Blood Donation Unit reinforces the role of the HRC as a key pillar of the national drive for blood self-sufficiency, undertaking even the most demanding missions in remote and hard-to-reach areas. It is a 'vehicle of hope' that will travel across Greece, carrying the message of voluntary blood donation and human compassion".

Polys Hajioannou undertakes the reconstruction of religious monuments in Cyprus

In July this year, Cyprus faced the second most devastating wildfire in its modern history, according to local media. The tragic toll of the fire that broke out on the "island of Aphrodite", scorching 125 m² of land, resulted in two deaths, dozens of injuries, and immeasurable material damage.

In light of this, the CEO of Safe Bulkers Inc., Mr Polys V. Hajioannou, announced via a social media post the reconstruction of two churches that were destroyed by the recent wildfires in Cyprus. Specifically, the churches to be rebuilt are the Church of

Saint Silouan and Sophrony the Athonites, located in Souni, and the Chapel of Saint John the Russian, located in Vouni.

Mr Polys V. Hajioannou stated in his post: "Following an on-site inspection carried out by our company's volunteers, and after my conversation with our respected hierarch, Metropolitan Athanasios of Limassol, we are fully undertaking – within a short timeframe and as directed – the reconstruction of both the Church of Saint Silouan and Sophronios the Athonites in Souni, which was destroyed, and the Chapel of Saint John the Russian in Vouni. I sincerely thank the volunteers of our company, who reached the restricted area through the burned land, in order to provide us with a clear picture of the devastation experienced by our fellow compatriots".

A generous donation by Nikolas D. Pateras for the restoration of the Church of St. Nicholas in Oinousses

On Tuesday, 15 July 2025, the Mayor of Oinousses, Mr Georgios Daniil, welcomed with special honour to the City Hall one of the island's greatest benefactors, Nikolas D. Pateras, President of Contships Management Inc.

The Mayor of Oinousses had the opportunity to inform him about the ongoing and planned projects on the island, while also expressing his gratitude to Mr Pateras for his unwavering interest in the development of "Aignousa". He also thanked him for his recent donations towards the island, which include a modern patrol vehicle for the local Police Station and a passenger vehicle that serves the needs of the Municipality. He also congratulated Mr Pateras for his significant social contribution to the renovation of the "Ioannis Diamantis Pateras" Wing at Evangelismos Hospital in conjunction with Minister of Health, Mr Adonis Georgiadis, which is currently in progress.

A detailed meeting followed with Father Ioannis Katsounis, Protopresbyter of the Holy Cathedral of Saint Nicholas in Oinousses, during which Father Ioannis briefed Mr Pateras on the serious structural and interior issues facing the church. Father Ioannis and Mr Daniil earnestly conveyed to Mr Pateras the



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shared request of the local community for his support in the restoration and renovation of the island's historic church. Following this request, the President of Contships Management Inc. announced that he would fully fund the complete restoration of the Church of Saint Nicholas with a budget of €650,000, in memory of his parents, Diamantis and Anastasia Pateras, and his grandparents, Nikolas and Maritsa Pateras.

This joyous news filled the hearts of Oinoussians around the world with deep emotion and happiness, according to the Mayor, who stated: "Our land, the birthplace of many of our country's great benefactors and donors, expresses its profound gratitude to the great benefactor, Mr Nikolas Diam. Pateras, and his family, and wishes him abundant health, blessings, and the grace of Saint Nicholas, the patron saint of our island and our lives. May he grant eternal rest to the souls of his ancestors".

SNF-supported air ambulance transports 15-year-old to Italy for emergency transplant

At the end of July 2025, news of a 15-year-old boy who suffered acute liver failure following a heatstroke shocked Greece. His transfer from the Paediatric Intensive Care Unit of the General University Hospital of Patras (Rio), where

he was hospitalised and intubated, to a specialised Transplant Centre in Turin that had secured a liver transplant was deemed necessary. The boy was immediately transported in the new state-of-the-art Beechcraft King Air 360C aircraft donated to the Hellenic Ministry of Health by the Stavros Niarchos Foundation (SNF) in May 2025. This particular aircraft was the most suitable choice for the boy's air transport, as it met both the necessary medical and technical specifications and the required safety conditions, given the distance and duration of the flight. Subsequently, following the boy's smooth air transfer to Turin, the transplant was completed successfully. The Ministry of Health, the National Centre for Emergency Care (EKAV), and the Air Force responded immediately. The SNF expressed its gratitude to the medical and nursing staff who selflessly contributed to the successful outcome of the incident – from the Health Centre of Metsovo and the General Hospital of Ioannina G. Hatzikosta to the General University Hospital of Patras – and, of course, to the medical team and the EKAV paramedic who accompanied him to Turin.

As part of its \$1 billion-plus Global Health Initiative (GHI) – its largest initiative to date – the SNF has supported the procurement of five aircraft (three aeroplanes and two helicopters) to strengthen EKAV's Air Ambulance Services. The implementation of the grant was made possible through a collaboration between SNF and the Hellenic Ministry of Health, which has ownership of the aircraft, EKAV, which uses them, and the Hellenic Air Force, which assists in flight operations. During their first four years of operation (June 2021-March 2025), the five aircraft carried out nearly 3,500 patient transports all across Greece.

Announcement of the 8th round of the "Points of Support" Programme's results

The eighth round of the "Points of Support" Programme, which started in 2015 and has to date funded a total of 191 projects with more than 104,000 beneficiaries, is a collaborative initiative of the John S. Latsis Public Benefit



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The eighth round of the “Points of Support” Programme, which started in 2015 and has to date funded a total of 191 projects with more than 104,000 beneficiaries, is a collaborative initiative of the John S. Latsis Public Benefit Foundation, the TIMA Charitable Foundation, the Bodossaki Foundation, the Captain Vassilis & Carmen Constantakopoulos Foundation, the A. G. Leventis Foundation, the Athanasios C. Laskaridis Charitable Foundation, the Costas M. Lemos Foundation, the Hellenic Initiative Canada, the Athina I. Martinou Foundation, and the Helidoni Foundation.

Foundation, the TIMA Charitable Foundation, the Bodossaki Foundation, the Captain Vassilis & Carmen Constantakopoulos Foundation, the A. G. Leventis Foundation, the Athanasios C. Laskaridis Charitable Foundation, the Costas M. Lemos Foundation, the Hellenic Initiative Canada, the Athina I. Martinou Foundation, and the Helidoni Foundation. The “Points of Support” Programme has been coordinated by the Bodossaki Foundation since 2022. The goal of the programme is, on the one hand, to support original small-scale projects with maximum social impact and, on the other hand, to reinforce the infrastructure and promote the capacity development of Greek civil society organisations, with the aim of further enhancing the development, effectiveness, and sustainability of their work. The 33 projects that have been selected – out of a total of 190 applications – will receive funding amounting to €10,000 each; the projects, which fall within a wide range of thematic areas identified by the programme funders, will have a duration of up to 8 months, and will be implemented by 33 NGOs, along with four partner organisations. In addition, within the framework of the programme, the selected organisations will participate in free capacity building activities, designed, funded and implemented by Social Dynamo, the NGO hub of the Bodossaki Foundation.

The projects that are being funded have been categorised by thematic area:

- Social Integration of People with Disabilities (Donor: John S. Latsis Public Benefit Foundation)

- Support for the Elderly (Donor: TIMA Charitable Foundation)
- Children and Health (Donor: Captain Vassilis and Carmen Constantakopoulos Foundation)
- Alleviation of Poverty and the Food Crisis (Donor: The Hellenic Initiative Canada)
- Environmental Protection:
 - Protection of the Flora and Fauna in the Urban and Peri-urban Environment (Donor: A. G. Leventis Foundation).
 - Protection of Aquatic Ecosystems: Lakes, Rivers and Wetlands (Donor: A. C. Laskaridis Charitable Foundation).
 - Protection of Forest and Other Terrestrial Ecosystems (Donor: Costas M. Lemos Foundation)
- Support for Small Seaside Local Communities (Donor: Athina I. Martinou Foundation).
- “Sustainable Cities and Communities” (Donor: Helidoni Foundation)

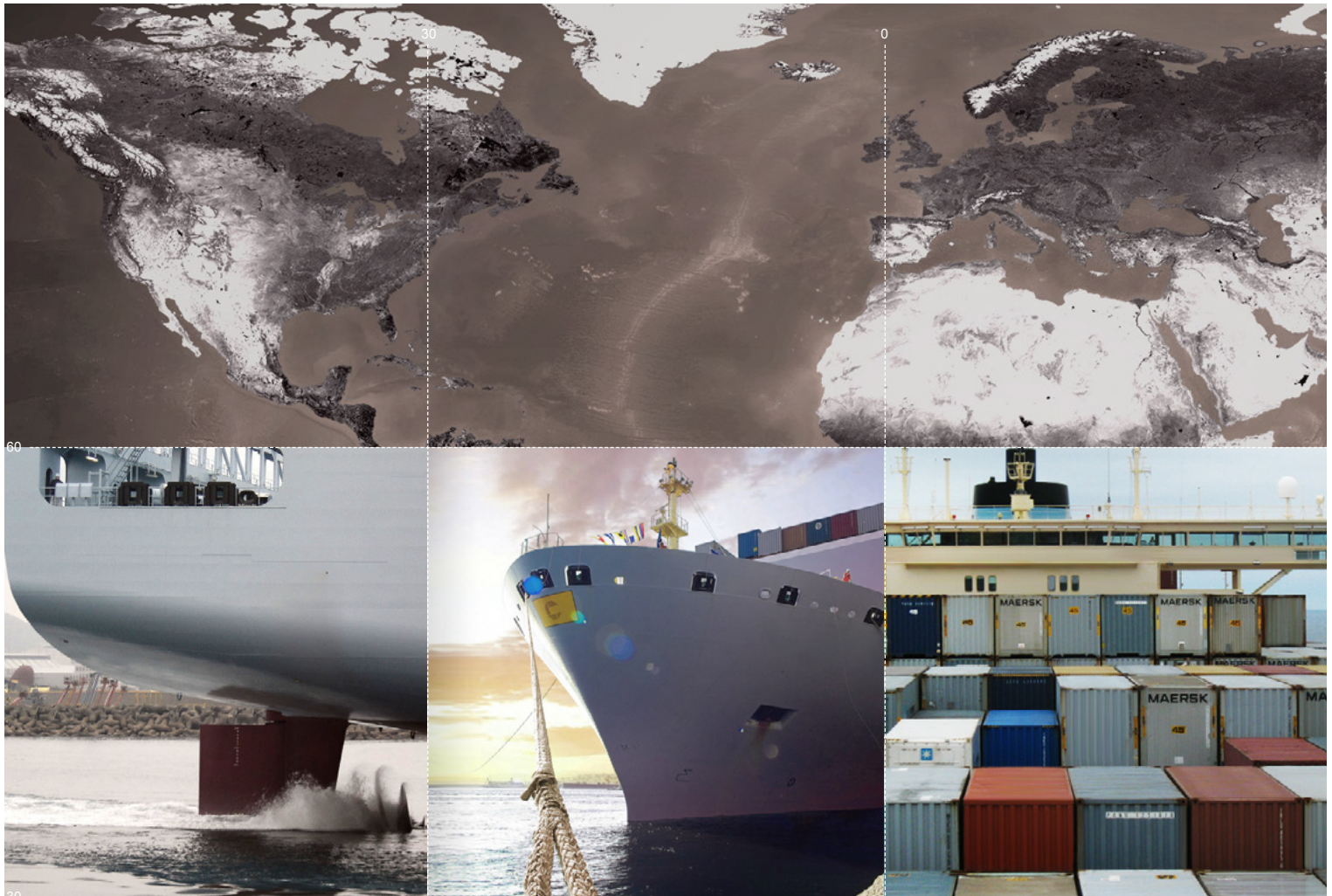
The complete list of organisations supported under each thematic area is available on the Bodossaki Foundation’s website.

International Cavafy Summer School 2025: Cavafy and Egypt

The International Cavafy Summer School is an annual scholarly initiative of the Cavafy Archive and the Onassis Foundation focused on Constantine P. Cavafy (1863-1933), his work, and his archive.

The Summer School took place from 7 to 12 July 2025, for the 7th consecutive year. The theme for 2025 was “Cavafy and Egypt”.

Academics, researchers, and early-career scholars from around the world met in Athens to attend a week of seminars, presentations, and discussions centring on Cavafy’s work in relation to Egypt. The focus of the workshops, the presentations, and the discussions was the relation of C. P. Cavafy’s work to contemporary Arab poets, his legacy in Arabic poetry and prose, and Arabic translations of his corpus, as well as comparative studies of Egyptian influences in Greek, Egyptote, and Western writers among his contemporaries.



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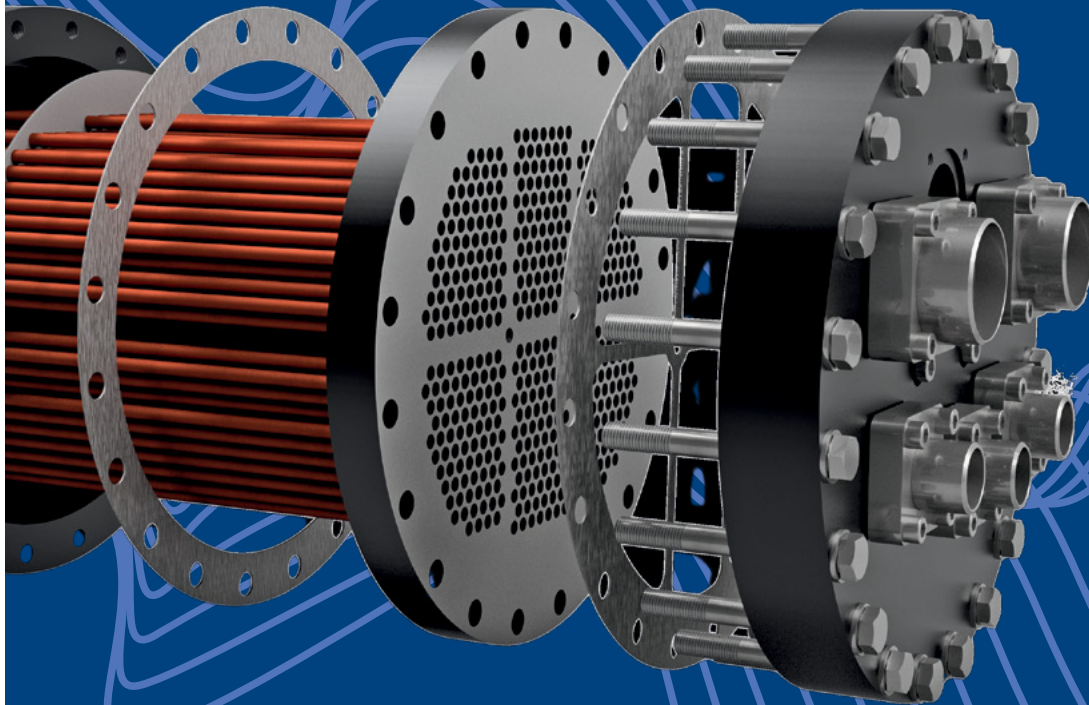
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In this context, in May 2025, FARAD S.A. announced the signing of a new direct contract with Naval Group Hellas, which establishes FARAD S.A. as an official maintenance provider for the three new FDI frigates of the Hellenic Navy.



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Nuclear



in

ship

Credit: MARTIN DIVISEK

energy



As the shipping industry accelerates its efforts toward decarbonisation, the discussion around nuclear propulsion is gaining renewed momentum. Once regarded as a distant prospect, nuclear energy is now being reconsidered as a potential pathway for achieving the sector's ambitious emissions-reduction targets. While offering the promise of near-zero carbon operations and unparalleled endurance at sea, nuclear-powered shipping also raises complex questions – ranging from regulatory and safety frameworks to public perception, financing, and the readiness of port and crew infrastructure.

In this special feature, *Naftika Chronika* brings together leading voices from shipping companies and classification societies to explore the opportunities and challenges of adopting nuclear technologies at sea. Their perspectives shed light on the feasibility of nuclear propulsion, the hurdles that must be addressed, and the strategic role it may play in shaping the future of sustainable maritime transport.

Edited by: Giannis Theodoropoulos

shipping

The questions of where and how to dispose of nuclear waste remain technically unresolved

In the last century and even more so in the last few decades, humanity's demand for energy has increased exponentially. The dependence on fossil fuels poses a threat to the economic stability of states that are not energy self-sufficient. At the same time, fossil fuels themselves are not inexhaustible to cover indefinitely the insatiable needs of modern civilisation.



Opinions expressed by
Panos Kourkountis,
Chairman of MARTECMA
& Technical Director of SEA Traders S.A.

For Europe and other powerful countries, the search for alternative forms of energy that could replace fossil fuels appears to be of vital importance. The goal is to eliminate the reliance on fossil fuels and lower CO₂ emissions.

In this context, nuclear energy, with its enormous energy potential and zero carbon dioxide emissions, is considered crucial for energy independence and strategic competitiveness. It is now considered an essential tool for maintaining geopolitical influence and economic power.

Tightening environmental regulations in shipping, along with the need to reduce emissions from ships, makes the use of nuclear power in propulsion attractive. The advantages are apparent; however, the problems – mainly environmental – cannot be ignored.

Nuclear energy research is no longer limited to conventional reactors but is now focused on technologies such as Molten Salt Reactors (MSRs), Generation IV reactors, and microreactors. These technologies are not new. In the USA, as early as the 1970s, the development of MSRs was abandoned due to political and economic measures and the serious technical challenge posed by the highly corrosive nature of molten salts. Today, interest is rekindled, mainly due to the ability of these reactors to operate as autonomous units, the theoretical increased safety, and the lower production of radioactive waste.

However, we should not be under the illusion that there are reactors – MSRs or otherwise – that produce negligible or harmless nuclear waste. The production of radioactive isotopes through nuclear fission is inevitable, and no level of radioactivity is negligible. Even the minimal levels of radioactivity reported in medical applications are dangerous for vulnerable groups, pregnant women, or people sensitive to radiation.

Nuclear-powered warships have been around for many years. However, the use of nuclear reactors in commercial shipping poses several obstacles, including the high initial cost of installation, low fossil fuel prices, and technical and legislative issues related to the use and trade of nuclear isotopes, which are expected to be resolved in the coming decades.

A nuclear-powered ship will carry from

the beginning all the fuel it will need throughout its life cycle and will be required to deliver the radioactive waste it produces for safekeeping. The initial extremely high cost and the difficulties of deactivation and decommissioning are expected to be resolved with "leasing" type financing models. No technology is adopted commercially unless it is competitive and economically viable. It is expected that the most significant advantage of nuclear power on ships will be the overall lower cost of acquisition and operation during its lifetime.

Nonetheless, radioactive waste will remain the major unresolved issue. Although nuclear propulsion does not emit pollutants during operation, it creates high-intensity, long-lived radioactive waste that requires safe storage for hundreds or even thousands of years. This timescale exceeds any historical human experience with technology. Giants like Microsoft, Amazon, and Google are investing billions of dollars in promoting and "decriminalising" nuclear energy. Indeed, polls show growing public acceptance.

In shipping, the promise of a nuclear-

powered ship that does not need refueling or incur fines is akin to the discovery of the pendulum.

However, the issue of radioactive waste is systematically suppressed. Multi-page studies and analyses often fail to devote a single paragraph to the subject. The communication management of the problem is limited to numerical estimates of volume, as if volume is a measure of the risk. For example, no mention is made of the effects that a handful of radioactive waste would have if it were to be found in a public space in a large city.

This "scientific approach", which measures radioactive waste by volume, is equivalent to measuring electric current with... a ruler.

No problem is solved if we ignore or underestimate it. The questions of where and how to dispose of nuclear waste remain technically unresolved and as politically charged as ever. In the United States, for example, the only long-term underground repository for nuclear waste has been put on hold indefinitely. New research programmes have been funded to study the effects of underground nuclear waste disposal



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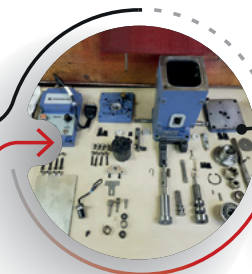
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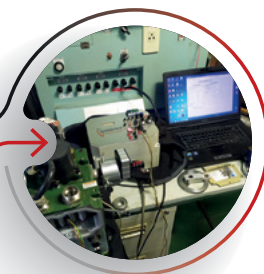
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using sophisticated computational models and experimental methods. To ensure maximum protection for hundreds to thousands of years, many different materials are combined in multi-barrier systems. But for none of these materials is there any real experience regarding their long-term exposure to radioactivity. Moreover, for materials like concrete, bentonite clay, and other mixtures used for storing radioactive waste, there is a lack of data on how their properties change over time.

What will we do if research programmes conclude that the management that has been carried out so far was not safe? Limits have been established for radioactivity in drinking water, and when these limits are exceeded, measures must be taken. But what measures are really capable of “cleaning up” radioactivity?

Science and technology progress through application and experience. Many of the scientific “truths” of the past have been disproven. In the case of nuclear energy, the “trial and error” approach will be fatal to humanity.

The levels of radioactivity in the seas and lands are already steadily increasing from the existing industrial and military activities of our modern civilisation. Nuclear pollution is accumulative and irreversible. We must think more seriously. We have recent experience with other technologies that were once considered harmless, such as internal combustion engines, and have moved towards their universal adoption.

When internal combustion engines first appeared, no one imagined that building millions of them would have an environmental impact. For a century, it was widely believed that CO₂ posed no threat to the environment — until science proved otherwise.

Are we ready to safely manage a world where thousands of small nuclear reactors will be operating, many of them privately? What will the overall levels of radioactivity be in the coming decades? How will marine ecosystems be protected for the centuries to come? And, most importantly, how will future generations deal with the legacy of radioactive waste that we will have produced but failed to manage? Many governments are already promoting nuclear energy as a solution for energy self-sufficiency and geopolitical competitiveness.

The European Union has included nuclear energy in its “green taxonomy”. The political will to adopt nuclear energy is therefore a given, and the technical and regulatory issues surrounding its use in industry and commercial shipping will be gradually addressed. What remains deeply unresolved – and increasingly avoided for discussion – is the environmental footprint of radioactive waste.

The consequences could be catastrophic. We risk sacrificing the future of humanity to the greedy consumption of natural resources and energy.

This technology, however promising, should remain more of a means of theoretical reflection and scientific study until it can completely and permanently solve the environmental issues it will cause. Any hasty commercial exploitation of it in the name of energy “progress” shifts the problem and the risks to future generations.

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HULL PERFORMANCE

Training engineers to become nuclear reactor engineers will not be possible

Stavros Hatzigrigoris analyses the benefits but also the technical challenges of using nuclear energy technologies in commercial shipping.



Opinions expressed by
Stavros Hatzigrigoris,
Advanced Engineering Services

Can nuclear-powered ships help the industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

The issues of air emissions and the 2050 zero-carbon target have been discussed for the past decade or so. Nuclear power – if we forget the fact that reactors may not be easily manoeuvrable when entering or sailing from port and during stay in port – is one of the very few technical solutions that can meet the zero-carbon emissions, even if the well-to-wake assessment is used. Nuclear propulsion is “silently” supported by the US Administration and several US companies; yet, it has not been discussed in detail during any of the IMO meetings so far. It seems likely that the new Trump rhetoric will contribute to changing the public sentiment in favour of nuclear propulsion. Having said this, the public’s “not in my back yard” perception is something that

will still require a lot of work to be done. Several types of small reactors are under development in various countries that offer enhanced safety, reduce the risk of handling nuclear waste, and eliminate the possibility of utilising the reactor’s nuclear fuel for military purposes.

On the other hand, most of the new zero-carbon fuels being discussed at the IMO are creating the need for providing the infrastructure, manufacturing, transporting, and distributing the fuel in ports and onboard ships. That is not the case with nuclear reactors since they enable ships to carry enough fuel for operating for the rest of their useful lives. Having said that, fuel traders and charterers may show no interest in getting involved with nuclear reactors and nuclear fuel. The entities that may be involved in nuclear propulsion may be limited to countries that possess mines of nuclear substances, the providers of nuclear fuels, and the manufacturers of reactors. Needless to say, the total

cost of a nuclear-powered ship (CaPex + OpEx for the five-year cycle maintenance of the reactors + fuel) may give shipowners a competitive advantage if the cost of fossil and zero-carbon fuels, which are both expected to increase, is calculated over the useful lives of the ship.

To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

At the moment, commercial nuclear ships cannot enter ports without special permission. The IMO developed the Convention on Nuclear Ships in the 1960s, but its efforts were abandoned, possibly due to the effects of the Cold War period. Today, this convention should be re-discussed and a new, updated convention finalised, possibly with the help of the International Atomic Energy Agency, which is supporting this effort. That would enable flag states and port authorities to accommodate nuclear ships without compromising the safety of the local population.

What are the major technical challenges in integrating nuclear power into commercial vessels?

Nuclear technology is unknown to shipbuilders, shipyards, and operators. Nuclear reactors that may be used on merchant ships may also be used for navy ships, creating the need for strict controls on who is to produce and who is to install them on board ships. The sale of

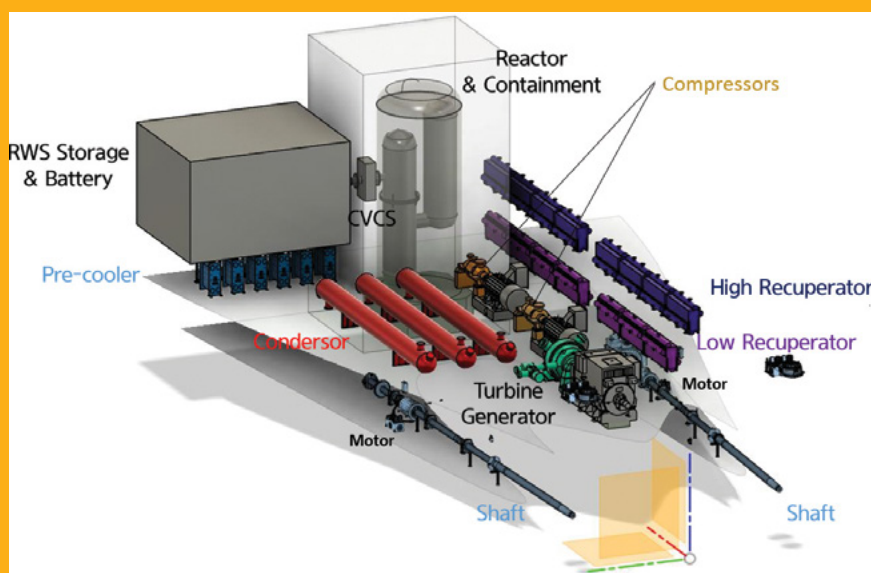


The NS (Nuclear Ship) "Savannah", the first commercial nuclear power cargo vessel, en route to the World's Fair in Seattle.

Credit: Elton Lord/Atomic Energy Commission, Public domain, via Wikimedia Commons.

a nuclear-powered ship will also be more difficult, if allowed at all. Reactors will have to be delivered complete with their casings, and any potential need for repair and maintenance must be addressed from the design stage. The engine room space will need to be enlarged; however, devices such as exhaust gas cleaning systems or carbon capture and storage systems will not be required. Training engineers to become nuclear reactor

engineers will not be possible; therefore, the only solution will be for reactor manufacturers to provide reactor operators. Reactors will produce steam, so it will be necessary to educate the engine room on steam or electric propulsion. In principle, the operation and maintenance of the auxiliary systems of a nuclear ship may be simpler than the new technology systems that may have to be installed on ships utilising other zero-carbon fuels.



Are there concerns regarding radioactive waste management at sea?

There are two more issues to discuss: the recycling of the reactors' used nuclear fuel and its possible use for the manufacturing of weapons. MSR reactors utilise their fuel down to almost 99% in comparison to the PWRs, which only utilise 5% to 10%. The fuel from an MSR can often be reprocessed and reused in the same or a similar reactor, either in batches or by removing all the fuel and enriching it for reuse. It has to be noted here that some MSRs operate like PWRs and would still produce radioactive waste that should be stored. The practical burdens of reusing the MSR fuel for producing weapons-usable material are the high radioactivity, the corrosiveness of the

Nuclear propulsion is “silently” supported by the US Administration and several US companies; yet, it has not been discussed in detail during any of the IMO meetings so far. It seems likely that the new Trump rhetoric will contribute to changing the public sentiment in favour of nuclear propulsion.

fuel, and the fact that online reprocessing systems produce mixtures that are difficult to purify and reuse.

What types of ships or operational profiles (e.g., tankers, LNG carriers, bulkers, containerships) would you consider most suitable for nuclear propulsion in the first wave of adoption?

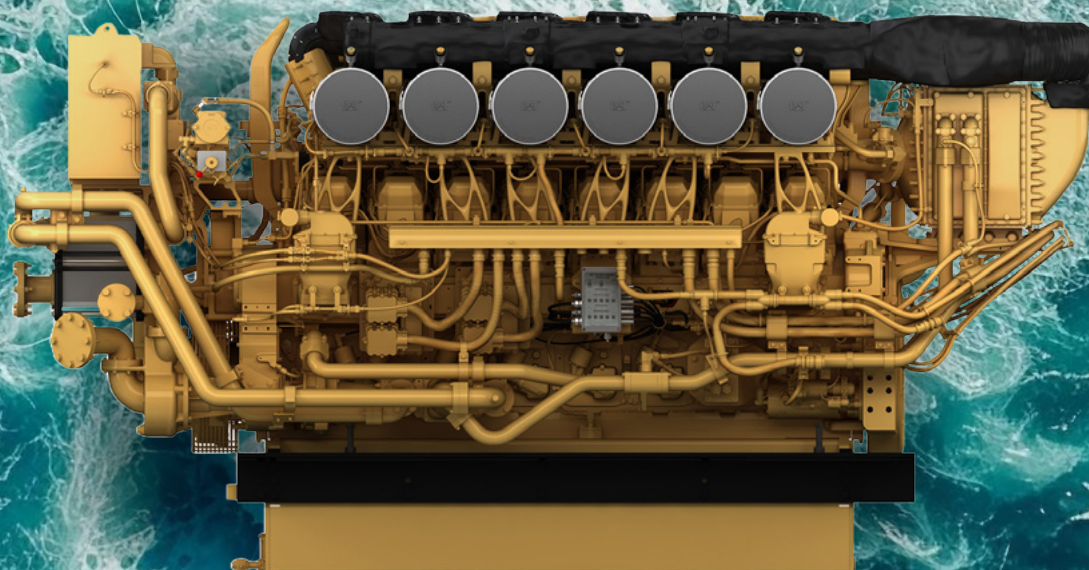
Technically, nuclear reactors can be used on all types of ships, keeping in mind that the higher the required power, the more economically feasible the use of a reactor will be. Operators can increase the speed of their ships without fearing that their emissions will increase and that they will be financially penalised. Some designs place the reactors in the engine room area, while others in the middle of the ship. Major overhauls will be planned at five-year intervals, and reactor refurbishment/replacement/re-fuelling every 20 or 25 years. One of the critical issues that SMR reactor technology should address is the slow response to load changes in the reactors. That can be solved by charging battery banks or steam dumping, if necessary, or by installing separate, small propulsion units for entering or leaving port, which may render the propulsion system non-100% carbon-free. Whilst in port and in order not to shut down the reactor, the ships can provide electrical power to the shore grid. During sailing in the open sea, steam turbines or electric propulsion can be utilised. The reactor should be installed at the centerline of ships with sufficient double bottom protection to minimise any risk of flooding. Measures to protect against radia-

tion (this is a low risk) should be provided. However, any leak from a molten salt reactor will lower the fuel's temperature, which will solidify, and the chain reaction will be stopped at temperatures below 450°C. Since the “Savannah”, the first nuclear-powered ship, was built in 1962 as an ambassador for the peaceful use of nuclear power, three more nuclear-powered ships have been built. One in France, one in Japan, which never operated commercially, and one more general cargo ship in Russia that utilised the same type of reactor as the ice-breakers. The latter is still in use in the Russian Arctic region.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or ship-yards?

Another area for expanding the small reactors nuclear technology is the installation on floating barges positioned away from the jurisdiction borders of developed countries. The cost of cooling water will be minimal, and many legal issues, permits, and other requirements will be easier to handle. Security measures will be easier to implement. Such reactors can be used to provide electrical power ashore, produce hydrogen and ammonia, or other environmentally friendly fuels. Several countries, both in the Atlantic and in the Mediterranean, are studying this option, and at least one of them has issued preliminary tender documents. With reference to providing electrical power ashore, it is worth noting that at present, there are at least 75 floating stations utilising liquid fuels or LNG, providing power to many areas, mainly in under-developed countries. A case in point is Iraq, which recently commissioned two floating power stations providing 600 MW of electricity to Basrah. Russia has a PWR installed on a floating structure, which has been in operation since 2020, with no significant problems reported, despite the reactor being of an older technology. Recently, Terrapower, a Bill Gates-associated company, entered into an agreement with HD Hyundai to develop and test marine-type nuclear reactors. This trend is expected to continue growing.

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Thorium Molten Salt Reactors: Are they the solution?

In this article, we will examine how Thorium Molten Salt Reactors work, their safety, efficiency, waste management, proliferation concerns, and their current status. Finally, we will look at their suitability for ships.



Opinions expressed by
Panos Zachariadis,
Technical Director of Atlantic Bulk
Carriers Management Ltd.

Principle of operation

Thorium is abundant in the Earth's crust – it is as abundant as lead. Molten Salt Reactors (MSRs) work by having the fuel, in this case thorium, dissolved in a high-temperature (600 to 800°C) liquid, together with salts that liquify at these high temperatures. This liquid has the viscosity of water, namely, it is not thick, and therefore it can be easily handled by pumps. The liquid acts both as the fuel and the cooling medium of the reactor. Thorium found in the earth is thorium-232 and is slightly radioactive but not fissile, meaning it does not split to create nuclear energy. However, it is fertile to do so. When it is hit by neutrons, it absorbs one neutron, transforming into thorium-233. Thorium-233 decays fast to protactinium-233 and after 27 days to uranium-233. Note here that conventional reactors use rods of uranium-235, not uranium-233. Uranium-233 is fissile; thus, once hit by neutrons, it splits, releasing huge amounts of energy and more neutrons. The new neutrons hit more thorium, and the cycle continues.

Safety and efficiency

In standard nuclear reactors, only 1% of the mined uranium is used. The rest is discarded as spent nuclear waste. Standard reactors must shut down every 2 years to replace the fuel rods. In thorium reactors, all the thorium is used and

exhausted as fuel (with no enrichment necessary). Because of this, thorium provides 200 times more energy than uranium. Furthermore, thorium reactors can be refuelled with additional thorium while online, with no downtime, and thus can continue to operate for many years. The reaction cannot become uncontrollable. MSRs are inherently safe, or so-called "walk-away safe". They do not operate under pressure; thus, an explosion is not possible. Due to the high temperatures, heat transfer is better and more efficient. There is a risk that the reactor will cool down if something goes wrong, but this will only freeze the molten salt liquid, potentially damaging some pumps and heat exchangers. However, this danger is to the equipment, not to people. In the unlikely event of extremely high temperatures, a plug melts, and the liquid salt is collected by gravity into a sump tank, where it freezes.

Waste

The waste from thorium reactors is radioactive for 300 years, rather than the 200,000 to 300,000 years of conventional reactors using U-235. However, the waste includes aggressive liquids, which may not be suitable for geological repositories. The quantity of the waste, however, is only 1% of that from standard reactors.

Proliferation

Uranium-233 can be used to make nuclear weapons. However, it is extremely difficult to do so because of its extremely high level of gamma radiation, which affects those handling it and makes it easily to detect. Few countries have attempted atomic detonations using U-233, but all of them have tried it once and abandoned further attempts due to the difficulty of handling the material. Thus, any proliferation concerns (e.g., by regulators) would be directed towards the makers of the reactors, rather than the potential theft of the material by third parties (due to their extreme radiation).

Current status

Several prototype reactors around the world are in the finalisation stages. It is expected that by 2030, the concept will have been proven, and by 2035, if not earlier, it will be commercially available. China appears to be ahead, having successfully operated a small experimental thorium reactor in the Gobi Desert

in 2025, and is currently planning to scale up. The country has sufficient thorium to meet its energy needs for approximately 20,000 years.

Marine applications

Thorium reactors can be made small (e.g., 10-30 MW) and modular, making them suitable for powering ship engines. Some companies targeting this market are finalising their marine designs, while big shipbuilders, such as Hyundai and Imabari, are investing in the technology. The same companies are working on floating but stationary MSRs to power ports, data centres (which require large amounts of electricity), and to produce hydrogen from desalinated seawater for further use in green fuels.

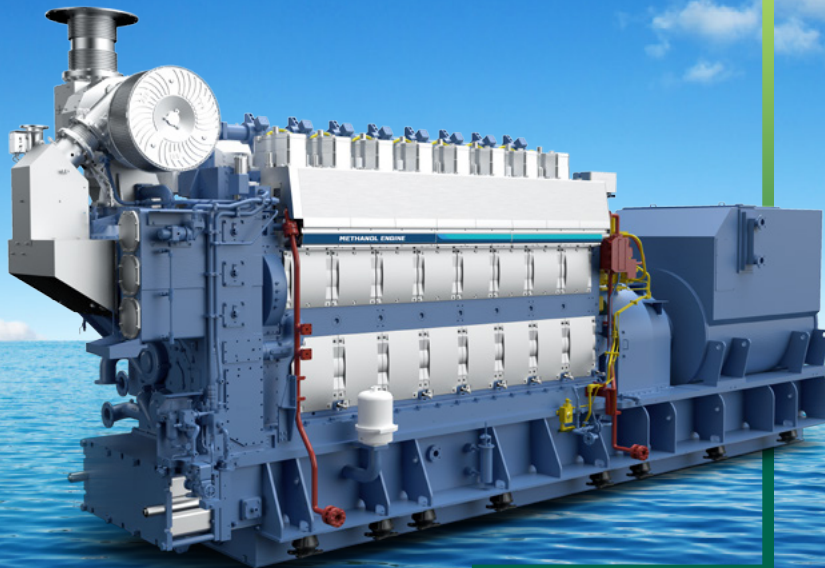
The IMO has already started discussions on the subject. Some crew training will, of course, be required, mainly for the peripheral equipment, and not for the reactor itself, which will be totally enclosed. In this respect, the reactor can be viewed as an “atomic battery” with no outside intervention required other

than changing it with a new one after some years, probably during a scheduled drydocking. By the way, “atomic battery” may be a better name for the technology, rather than nuclear energy for ships, since the latter term is usually confused with the standard second-generation nuclear energy that we use now.

As far as cost is concerned, makers currently seem to price their equipment based on the lifetime cost of fuel saved. However, word from “insiders” suggests that the cost of the reactor is significantly lower and can be drastically scaled down in the future, especially in view of future competition. In all probability, such reactors for ship use will be leased from the manufacturer, rather than being purchased together with the ship. This will also facilitate maintenance and refuelling. Obviously, the possibility of having unlimited energy on board is exciting, as it will allow for faster speeds. At the same time, the nature and design of ships themselves may change (think of an autonomous ship or even a hovercraft that can also operate on land!).



Saving the Earth with Green Technology



Crew lists will need to be “enriched” with “nuclear scientists”



Opinions expressed by
Dr Panos Deligiannis,
Head of Shipping at ECOLOG

Panos Deligiannis believes that nuclear energy offers a viable pathway to decarbonisation and asserts that a unified global regulatory framework would accelerate the adoption of nuclear-powered ships.

Can nuclear-powered ships help the industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

I strongly believe in nuclear-powered shipping as a means of effective decarbonisation. In 2020, a Joint Energy Initiative (JIP) was formed between NEDA, old colleagues at NCSR “DEMOKRITOS”, and the National Graduate School of Engineering of Caen in France with the aim of investigating nuclear propulsion for a VLCC and the types of next-generation reactors that can fit a large commercial shipping profile, taking into account the benefits and drawbacks. Contrary to Joseph M. Dukert’s statement, we placed a nuclear reactor in a hull designed initially for conventional fuel; however, it served the purpose of the initial approach.

The primary advantages of a nuclear-powered ship are that it utilises a carbon-free fuel, which has high energy density and a minimal ecological footprint. Its engine provides reliable power genera-

tion, requires no maintenance, and does not, or rarely requires, refuelling. It has unlimited commercial scope, allowing for increased payload.

The main disadvantages are related to radiation risk and concerns about proliferation. Additionally, a regulatory/licensing framework is still lacking, and there is uncertainty regarding the insurance regime. Other significant disadvantages include the complex waste management and the appropriate infrastructure requirements for nuclear S/Y, ports, terminals, etc. Finally, the lack of social acceptance, as well as the scientific crew requirements, must be taken into consideration.

What do you think is required to drive the adoption of nuclear-powered ships: technological breakthroughs, regulatory changes, or demand from charterers?

Today, there is long experience with LWR-type thermal reactors in warships and submarines. However, the commercialisation of nuclear propulsion requires, firstly, the regulatory coupling of the

IMO-IAEA framework, with an essential role played by the IAEA Safety Standards, to solve issues of proliferation and licensing. Second, significant forward investments, which necessitate subsidies and state commitment, as well as multi-layered insurance coverage with extensive safety and environmental liability for radiation, will be required.

From a technical point of view, more compact and lighter units and a fuel cycle compatible with maritime trade will be needed, which will have implications for operating costs and the long life of reactor components (reflectors, heat exchangers, attached pumps) – especially those with very high design temperature. Additional requirements include a core material with consistent and verified thermophysical properties, and a pressure design that takes into account critical emergency zones in meters rather than kilometres, ensuring the availability of suitable nuclear assessment tools for the proposed core designs.

What are the key technical challenges in integrating nuclear power into commercial vessels?

No significant technical challenges are foreseen; however, the hull and cargo area design needs to take into account the peculiarity of the nuclear reactor and the ancillary systems as, due to the radiation shielding of the core, the reactor becomes heavier, and, therefore requires structural reinforcement and careful study of trim and stability, as well as the dynamic effect of the ship's motion on the operation and fixing arrangements. Moreover, core accessibility, depending on individual core design, is vital in order to minimise clashing in case of refuelling or even removal of the unit. Finally, a minor technical inconvenience may be the return of gas turbines in shipping following their gradual replacement by internal combustion engines and the subsequent shortage of experienced crews.

To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

In general, port authorities and flag states are poorly prepared to handle nuclear-powered ships.

There are, however, national regulators

Not all ships are suitable for nuclear power. Large ocean-going containerships, tankers, bulk, and gas carriers are potential candidates due to the increased demand for bunkers, emissions reduction, and bunkering operations requirements.

of license holders, such as the US Nuclear Regulatory Commission (NRC), worldwide that are familiar with nuclear ships' port calls. This requires bilateral agreements to be in place between recognised national licensing organisations. A worldwide common regulatory framework developed within the framework of the IMO and the IAEA will definitely expedite nuclear ships allowed to call ports and cross the Suez and Panama canals. There have been nuclear-powered naval and pilot ships (e.g., the NS "Savannah" and the "Otto Hahn") that regularly received permission to visit civilian ports; however, the frequency and operation of these ships maintained a low social provocation level.

Free trading may need to be a more A-to-B sailing based on long-term contracts between specialised ports certified for radiation exposure events.

How does nuclear propulsion affect ship design, maintenance, and crew training requirements?

Retrofitting a nuclear reactor will be more difficult since hull design may require restructuring.



A dedicated hull design needs to be developed with economy and payload in mind, allowing for the concentrated weight of the reactor, the access for reactor refuelling (if required), and fission products removal (if required).

Whatever the operation, it will have to be performed by specialists, not crew members (as is the case with normal bunkering), and it must take place at a certified/ licensed facility. I don't believe crews can be trained to run nuclear reactors. They may undertake only the operation and maintenance of the heat energy transferred through a series of heat exchangers to a CCGT or other heat-to-electric converters.

Crew lists will need to be "enriched" with "nuclear scientists" on board who will handle the operation of the reactor; it is not certain if this will be included in the STCW someday. The general crew ought to attend basic radioprotection courses and participate in regular and emergency preparedness exercises on board.

Are there concerns regarding radioactive waste management at sea?

Licensing a nuclear reactor by an IAEA member state requires that the reactor operator have an approved nuclear waste management plan, ensuring secure waste storage onboard and a contract with an off-taker. I am not aware of any national regulatory authority that accepts third-party waste for permanent storage, except for the Russian Federation's units. Furthermore, spent fuel and fission products from fast reactors increase the risk of proliferation concerns for use in nuclear weaponry. Security is much harder to ensure on board a ship, especially in view of today's geopolitical predicament.

What types of ships or operational profiles (e.g., tankers, LNG carriers, bulkers, container ships) would you consider most suitable for nuclear propulsion in the first wave of adoption?

Not all ships are suitable for nuclear power. Large ocean-going container-ships, tankers, bulk and gas carriers are potential candidates due to the increased demand for bunkers, emissions reduction, and bunkering operations requirements. Furthermore, chartered ships with long-term contracts, sailing between fixed locations and carrying specific cargoes, are also suitable at least for the initial period of adoption, due to the long period of port notice requirements.

Could nuclear propulsion be combined with other technologies for hybrid solutions?

New era nuclear-powered ships need to be thought within the "all-electric" concept, where all the operations are electrified. Then, nuclear power is not restricted to the traditional direct steam cycle for propulsion, but rather a plug-and-play electric system, such as fuel cells, batteries, or renewables, which connects to the main switchboard for electric power distribution to consumers onboard. The advantage of this is that the ample propulsion power onboard large ships can also be utilised for operations at the terminal or the anchorage.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or shipyards?

FNPPs already exist (Russian Akademik Lomonosov, two modified KLT-40S ice-breaker-type nuclear reactors, producing 35x2 MWe) and have been operating successfully since 2019.

FNPPs provide an integrated, reliable, sustainable, and dispatchable power generation with true zero emissions to impact the decarbonisation of remotely dispersed consumers. They offer modularity and scalability and may be used to familiarise society with safety and environmental issues. The FNPP platform is a necessary prelude and intermediate step towards commercial nuclear shipping that will facilitate the resolution of the regulatory and licensing framework gap and the coupling of the IMO and the IAEA. Proliferation concerns are better tackled with a fixed-location infrastructure.

A technician wearing a blue hard hat and safety glasses is working on a complex engine system. He is holding a diagnostic tool with multiple colored wires connected to it. The background shows various pipes and mechanical components of the engine.

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Nuclear energy at sea: A new frontier for maritime decarbonisation & Greece's role

The global shipping industry is undergoing a profound transformation as it confronts growing pressure to decarbonise. With international regulations tightening, the need for new propulsion technologies has never been more urgent. Among the various alternatives under exploration, such as hydrogen, ammonia, and synthetic fuels, nuclear energy is emerging as a compelling, albeit underexplored, option for the future of commercial shipping.



Opinions expressed by
Dr **George Laskaris**,
Nuclear Physicist and President
of Deon Policy Institute

Though its deployment in civilian maritime applications is still in the early stages, nuclear propulsion offers unique advantages: long operating autonomy, zero greenhouse gas emissions, high power density, and drastically reduced fuel logistics. These attributes make it particularly well-suited to the demands of long-haul shipping, where the current pace of innovation in alternative fuels is unlikely to keep up with regulatory mandates.

This article outlines the current state of nuclear technology in maritime transport, reviews key economic and regulatory considerations, and highlights the potential role of Greece, which is home to one of the world's most powerful merchant fleets, in leading this technological transition.

The technological opportunity

Nuclear energy is not a novel idea for the shipping industry. Currently, more than 160 vessels are operating using over 200 naval reactors, mainly in military submarines and aircraft carriers¹. The first

commercial vessel powered by a nuclear reactor, the NS "Savannah", launched in 1959 under the US "Atoms for Peace" programme, and even docked in Piraeus during a public awareness tour². While early commercial efforts stalled due to high costs, Cold War politics, and insufficient regulatory structures, technological advancements and today's climate imperatives are reigniting interest in nuclear propulsion.

Today, two main categories of maritime nuclear applications are actively being pursued. The first involves floating nuclear power plants (FNPPs), which can generate electricity and heat for ports, industrial facilities, and offshore installations. The second concerns nuclear-powered commercial ships designed for deep-sea transport. New reactor technologies, such as Molten Salt Reactors (MSRs), Lead-cooled Fast Reactors (LFRs), and microreactors like the Westinghouse eVinci, are being developed specifically for flexible and modular maritime deployment³.



Maritime applications: Use cases and benefits

Floating nuclear power plants (FNPPs) are already in operation. Since 2019, Russia's first FNPP, the Akademik Lomonosov, has supplied electricity and heat to the remote Arctic city of Pevek⁴. New projects in the United States, South Korea, and Europe aim to adapt small modular reactors for marine deployment on floating platforms.

These installations provide a consistent and emissions-free energy source suitable for various applications. For instance, they can provide reliable shore power to shipyards and ports, which is an important consideration as EU regulations will soon require ships at berth to connect to onshore electrical systems⁵. Additionally, they can supply both thermal and electrical energy for the production of green fuels, including hydrogen, ammonia, and methanol. Their capacity to power energy-intensive facilities such as data centres and desalination plants is particularly important in light of the rap-

idly growing demand in these sectors⁶. Finally, floating nuclear plants may also support offshore oil and gas platforms by reducing emissions from fossil fuel operations⁷.

Nuclear-powered commercial ships also offer a range of operational and economic advantages. Because nuclear reactors operate most efficiently at near-constant output, these ships can maintain higher cruising speeds without significantly increasing fuel costs. For instance, a 15,000-TEU container vessel using nuclear propulsion could complete 15 to 17 voyages per year, compared to 10 to 12 with conventional LNG engines⁸. Moreover, by eliminating the need for large fuel tanks and internal combustion engines, nuclear-powered ships can increase their cargo capacity; in the example above, up to 800 additional TEUs could be carried⁹. Their autonomy is also notable: depending on the technology used, nuclear ships can operate for five to seven years – or even longer – without refuelling. Finally, nuclear-

powered vessels are not subject to carbon taxes or emissions trading schemes, making them attractive from a compliance standpoint¹⁰.

Economics and business models

Although the initial capital cost of building a nuclear-powered ship is significant, long-term operational savings, primarily in fuel costs, can offset the investment, particularly for ultra-large crude carriers and container ships.

Financing aside, the successful deployment of nuclear propulsion will depend on new business models tailored to the unique requirements of nuclear energy. One proposed solution is similar to the “power-by-the-hour” model used in aviation, where third-party certified operators manage the nuclear propulsion system under long-term service contracts. These operators would be responsible for licensing, fuel management, maintenance, and compliance, thus allowing shipowners to lease propulsion services without directly handling the nuclear systems.

While such business models are still developing, many nuclear technology companies are actively pursuing vertically integrated approaches to address these requirements. This division of responsibility, which mirrors practices in the airline industry, may prove critical in reducing the perceived risk associated with nuclear propulsion.

Safety and regulation

Nuclear energy is among the safest sources of electricity. The nuclear industry has achieved this record through strict regulatory oversight, advanced reactor design, and a long-standing commitment to safety. Many new reactor designs rely on passive systems, which function without active mechanical intervention and are thus well-suited to dynamic marine environments.

Nonetheless, applying these technologies to ships and offshore platforms introduces new challenges. Emergency planning in densely populated port areas, for instance, requires careful coordination, as do protocols for dealing with piracy or malicious interference¹¹. Organisations such as the American Bureau of Shipping (ABS) have begun to address these challenges by publishing regulatory guidance specific to nuclear power systems for marine applications¹².

Regulatory developments are accelerating on an international level. The International Maritime Organisation (IMO) has initiated a long-overdue review of its 1981 Resolution A.491(XII) concerning the safety of nuclear merchant ships¹³. Meanwhile, the International Atomic Energy Agency (IAEA) has launched the ATLAS initiative to support licensing and standards development for floating and mobile nuclear reactors. The newly established Nuclear Energy for Maritime Organisation (NEMO) is bringing together stakeholders from both the nuclear and maritime industry to facilitate this transition¹⁴.

Greece's strategic role

Greece is exceptionally well-positioned to lead in this emerging field. The country controls approximately 20% of the global commercial shipping capacity¹⁵,

and the maritime sector contributes more than 7% of the country's GDP, while directly employing around 150,000 people¹⁶. As the European Union moves forward with aggressive decarbonisation targets, Greece has an opportunity to combine its shipping leadership with a strategic investment in nuclear energy.

Taking advantage of this opportunity will require a national strategy tailored to nuclear maritime applications. This includes the creation of a coherent licensing framework for both floating and shipboard reactors, a strengthening of the Greek Atomic Energy Commission's institutional capacity, and proactive participation in international forums where maritime nuclear regulations are being shaped.

Furthermore, Greece must invest in education and technical training to prepare a new generation of engineers, operators, and regulators. The country's shipyards, particularly those in Skaramangas and Syros, are already undergoing revitalisation and could be integrated into global supply chains for floating nuclear platforms¹⁷. Meanwhile, port cities such as Piraeus and Heraklion, which are exploring renewable energy and shore power initiatives, could be ideal candidates for early deployment of floating reactors to support port electrification.

As global shipping enters a new decarbonised era, nuclear energy offers a mature, powerful, and sustainable solution for long-haul maritime transport. While challenges remain, particularly in regulatory alignment, public perception, and operational readiness, the technology is sound and is building momentum.

For Greece, the stakes are high, but so is the potential reward. With thoughtful planning, institutional reform, and strategic investments, the country can become a leader in nuclear maritime innovation. This would not only reinforce Greece's longstanding maritime leadership but also align it with the clean energy future that the global economy demands. After all, great is the power of the state that controls the sea. But greater still is the one that charts the sea's future.

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The adoption of nuclear-powered ships will require coordinated action across multiple domains

Spyros Zolotas asserts that adopting nuclear propulsion can significantly aid the maritime industry in achieving its decarbonisation goals while emphasising the importance of addressing public concerns around nuclear power.



Opinions expressed by
Spyros Zolotas,
Marine Vice President, South Europe
at RINA

Can nuclear-powered ships help the industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

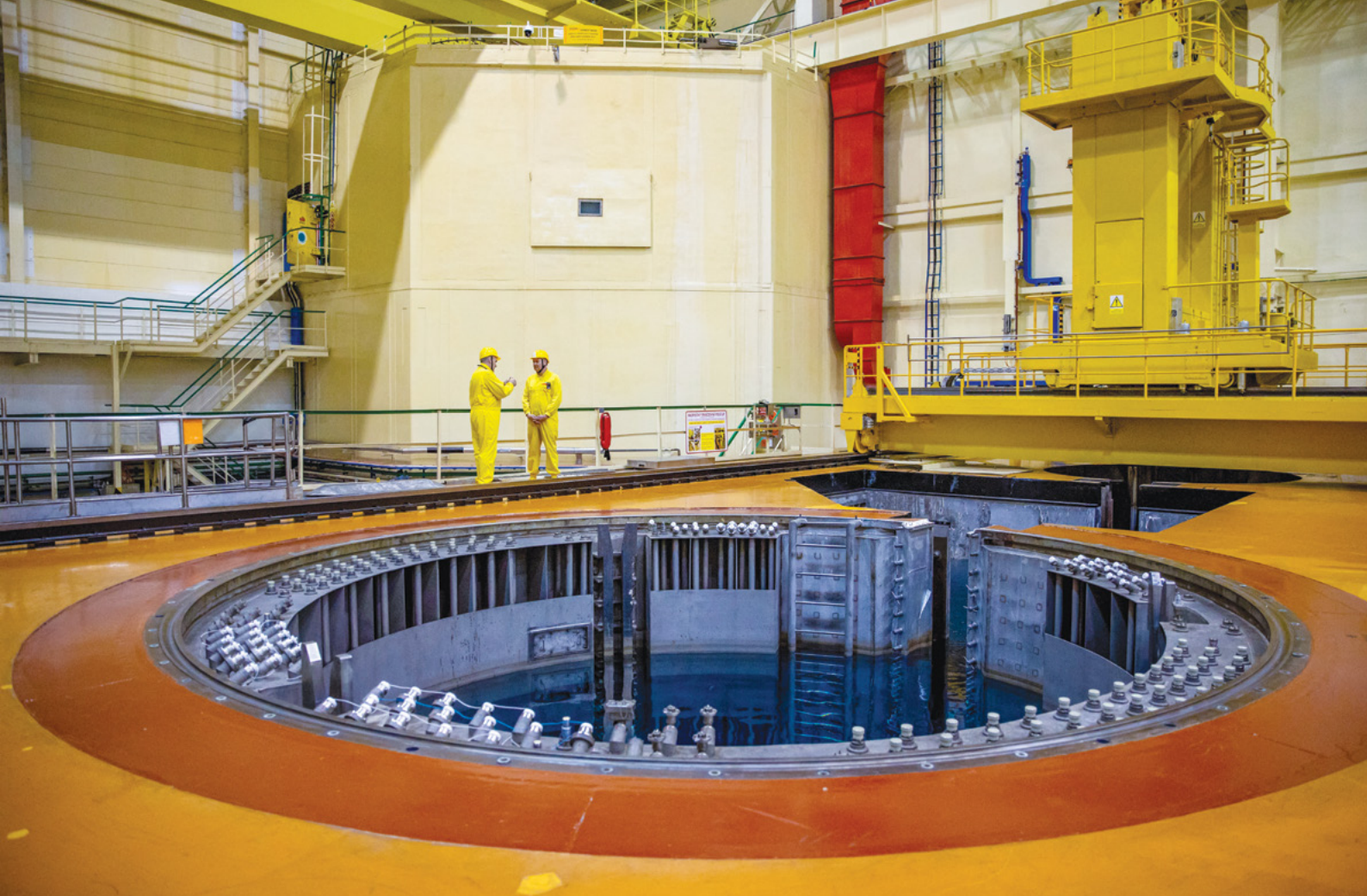
With the total annual fuel consumption of ships above 5,000 GT reaching 211 million tonnes in 2023, according to the IMO Ship Fuel Consumption Database, there is a great opportunity to accelerate the development of clean technologies. Advancing these solutions and ensuring their safe and affordable integration on board will be essential for enabling a more sustainable future for shipping. Nuclear-powered ships hold considerable promise in helping the maritime industry meet the IMO's 2050 decarbonisation targets. Unlike conventional propulsion systems that rely on fossil fuels, nuclear propulsion emits no carbon dioxide during operation, making it a compelling solution for long-term sustainability. The advantages are clear: nuclear energy offers unmatched energy density, enabling vessels to operate for extended periods without refuelling,

while also providing a stable power output ideal for long-haul voyages. Of course, the technology also presents challenges: high initial capital costs, complex safety and regulatory requirements, and issues related to public perception must all be addressed. These factors make nuclear propulsion a powerful yet complex tool in the decarbonisation toolkit.

What do you think is required to drive the adoption of nuclear-powered ships: technological breakthroughs, regulatory changes, or demand from charterers?

Driving the adoption of nuclear-powered ships will require coordinated action across multiple domains. First and foremost, regulatory modernisation is essential. The current international framework lacks comprehensive and up-to-date guidelines for the safe design, construction, and operation of nuclear-powered commercial vessels.

Recognising this gap, RINA issued the "Guide for Nuclear Installation on Board of Marine Units" to provide general



requirements for nuclear installations on board marine units and to establish technology-neutral, basic requirements independent of the type of reactor or marine unit on which the nuclear installation is installed. The philosophy of the RINA guide is to provide guidance on the arrangement and installation of nuclear power systems on board, in line with the applicable international regulations. As a further step, the RINA guide will soon be complemented by other publications dealing with specific technologies, such as pressurised water reactors, molten salt reactors, and lead-cooled fast reactors, establishing goals and functional requirements to reach, and specific ship types, such as passenger ships and Ro-Ro passenger ships, with particular attention to their 'safe return to port' capabilities. From a technological standpoint, further advances in reactor design are necessary, particularly for small modular reactors and next-generation systems such as molten salt or lead-cooled fast reactors, to meet the unique demands of the marine environment. Economic viability

will also depend heavily on demand signals from cargo owners and charterers, who are increasingly prioritising sustainability and emissions reduction in their procurement decisions. Regarding public confidence in the safety and environmental integrity of nuclear systems, it can only be strengthened through transparency, education, and demonstrated success in early pilot projects. In parallel, financial incentives or carbon pricing mechanisms could help close the cost gap between nuclear propulsion and traditional marine fuels.

What are the key technical challenges in integrating nuclear power into commercial vessels?

One of the primary challenges is adapting reactor technology to the maritime environment, which requires compact, resilient designs that can withstand the dynamic conditions at sea. Ensuring adequate containment will also have to be addressed. Additionally, integrating nuclear systems with existing shipboard infrastructure demands careful engineering. These challenges are significant,

but not insurmountable, especially with the growing body of experience from naval applications.

To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

Preparedness among flag states and port authorities varies. Countries with experience in naval nuclear propulsion, such as the United States, Russia, and France, are better positioned to manage the complexities of nuclear maritime operations. However, most port authorities still need to develop the infrastructure, training, and regulatory frameworks needed to safely accommodate nuclear-powered vessels. A coordinated international effort, ideally led by the IMO, will be essential to establish consistent standards and build the capacity required to support these ships globally.

How does nuclear propulsion affect ship design, maintenance, and crew training requirements?

The adoption of nuclear propulsion fundamentally alters the requirements for

The adoption of nuclear propulsion fundamentally alters the requirements for ship design. Reactor placement and the necessary radiation shielding require significant space and structural adaptation, especially to ensure vessel stability and the protection of personnel.

Commercial vessels will likely include large, energy-intensive ships, such as ultra-large container vessels, LNG carriers, and larger bulk carriers. These types of ships benefit the most from the high energy density and long endurance that nuclear propulsion offers. Vessels operating on fixed routes, where regulatory and logistical planning can be streamlined, are also strong candidates.

Additionally, ice-class ships operating in remote regions could benefit from nuclear propulsion, as it reduces the need for frequent refuelling in challenging environments.

Could nuclear propulsion be combined with other technologies for hybrid solutions?

Nuclear propulsion can indeed be integrated into hybrid systems. Combining it with batteries, fuel cells, or wind-assisted propulsion could enhance operational flexibility and safety. For instance, nuclear energy could provide a reliable baseload, while batteries or alternative systems handle peak loads or port operations. Such hybrid configurations could also serve as transitional solutions, easing the industry's transition to broader nuclear adoption while maximising the efficiency and resilience of operations.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or shipyards?

Floating nuclear power plants are a promising solution for providing clean, stable shore power to energy-intensive ports and shipyards. They could significantly reduce emissions from port operations and support the electrification of shipyard activities. FNPPs are particularly attractive for remote or energy-constrained locations where traditional power infrastructure is lacking. However, their deployment must be accompanied by rigorous safety standards, regulatory oversight, and public engagement to address concerns around security and environmental impact. With the proper safeguards in place, FNPPs could play a valuable role in the maritime energy transition.

ship design. Reactor placement and the necessary radiation shielding require significant space and structural adaptation, especially to ensure vessel stability and the protection of personnel.

The maintenance of nuclear vessels is complex, and it often demands highly specialised facilities and skilled technicians. The inspection and handling of radioactive components must be regular, while following stringent protocols. However, shipyards capable of supporting such work are still limited.

Regarding crew members, they must undergo specialised training not only in marine engineering but also in nuclear technology, radiation safety, and emergency preparedness. The operation of nuclear-powered vessels will likely require certification from both maritime and nuclear safety authorities, setting a high bar for personnel qualification. In addition, remote support from shore-based teams would be essential. With today's advanced digital monitoring tools and efficient communication systems,

such support could significantly enhance the safe and effective operation of such vessels.

Are there concerns regarding radioactive waste management at sea?

Radioactive waste management is a legitimate concern. Although modern reactors produce relatively small amounts of waste, the handling, storage, and eventual disposal of radioactive materials must be managed with the utmost care. Strict containment protocols and international oversight are essential to ensure that nuclear waste does not pose a risk to marine ecosystems or human health. Transparency and adherence to established best practices will be key to ensuring environmental safety and earning the public's trust.

What types of ships or operational profiles would you consider most suitable for nuclear propulsion in the first wave of adoption?

The first wave of nuclear-powered com-



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Each of the nuclear technologies will impact design, training, and maintenance in different ways

Mark Tipping advocates the integration of nuclear propulsion into the marine environment as a pathway to meeting shipping's net-zero emissions targets.



Opinions expressed by
Mark Tipping,
Global Power to X Director,
Marine and Offshore, Lloyd's Register

Can nuclear-powered ships help the maritime industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

Yes, nuclear propulsion is a true carbon-zero technology. We know that if we can integrate it into the marine environment, it will help meet the goal of achieving net-zero emissions by 2050.

Nuclear propulsion can have many advantages for clients, depending on the ship-owner's operating model. What is often cited as a key advantage of nuclear propulsion is faster passage times, meaning that vessels will no longer be limited by the need to conserve fuel. Nuclear technologies are so sufficiently energy-dense that they completely remove that constraint. Since the advent of the propeller and the paddle wheel, bunkering has been the bane of ship operators' and crews' lives. At a stroke, bunkering is turned from a very regular operation into a maintenance operation. In best-case scenarios, the periods between bunkering can be measured in decades.

Freeing operations from the constraints of running out of fuel automatically extends an asset's operational range and expands voyage routes. This is a true game changer for the maritime industry.

Of course, the most significant challenge facing the sector remains the lack of experience across all new fuel types, including, but not limited to, nuclear.

What do you think is required to drive the adoption of nuclear-powered ships: technological breakthroughs, regulatory changes, or demand from charterers?

The person who buys the technology first is always the one who changes the game. The adoption of nuclear-powered ships will be accelerated by changes to the cost of carbon by the IMO and the need for energy security. Nuclear energy can provide energy security for very long periods of time, both in terms of cost and availability.

What are the main technical challenges in integrating nuclear power into commercial vessels?

This is a complex issue due to the vast range of vessel types involved and the fact that there is more than one nuclear technology being developed for the marine industry. All of these technologies can be integrated into ships using the knowledge and expertise we already have. This brings us back to the economic case for all of it.

To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

Recently, we have seen both the IMO and the International Energy Agency (IEA) advance initiatives for the revision of nuclear guidance and regulation in maritime. This will shape how flag states and port authorities start to form their own views on nuclear propulsion. Lloyd's Register is already engaging with these organ-

isations and other bodies to help facilitate ships' transition into using nuclear technologies.

How does nuclear propulsion affect ship design, maintenance, and crew training requirements?

Like with any new alternative fuel, ship design and training will be impacted, as will crews. Each of the nuclear technologies will affect design, training, and maintenance in different ways.

As with other new fuel types, such as ammonia and hydrogen, the current shortage of skilled seafarers is a critical factor. At present, very few are trained to deal with them. We anticipate that the requirements for nuclear propulsion will be comparable to those for all other fuel types.

Are there concerns regarding radioactive waste management at sea?

Yes, but the regulations governing the ship's operation will strictly mandate the control, handling, and management of these materials. It should be noted that since the dawn of the atomic age, nuclear materials have been transported at sea under well-established and closely followed protocols. The same level of stringency will be applied to nuclear-powered ships.

What types of ships or operational profiles (e.g., tankers, LNG carriers, bulkers, container ships) would you consider most suitable for nuclear propulsion in the first wave of adoption?

This is a really good question and an area that Lloyd's Register is currently exploring.

It is interesting to note that Bud Darr, President and CEO of the Cruise Lines Industries Association (CLIA), recently spoke on record about his belief that nuclear power is a viable, if not the most feasible path forward for the cruise industry.

Could nuclear propulsion be combined with other technologies for hybrid solutions?

It is hard to see the benefit of doing this, as nuclear power already provides the most efficient energy source available. That said, combining nuclear propulsion with other technologies is technically possible, and we look forward to seeing the scenarios presented as various solutions are developed.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or shipyards?

The first thing to acknowledge is that FNPPs have existed in the US since the 1970s and are also currently operated in Russia. For instance, back in the '70s, the USS General S.D. Sturgis provided 10 MW of power to the Panama Canal.

The value proposition for FNPPs is extensive. Imagine being able to build and deploy a unit within 18 months of signing a contract. That is what the future will bring. Ports are in need of clean, energy-dense power solutions, which FNPPs provide in a clean, energy-dense package. On a global scale, nuclear power holds the potential to truly revolutionise the maritime sector.



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Public perception is one of the greatest potential obstacles facing the widespread adoption of nuclear-powered vessels



Opinions expressed by
Dr Spyros Hirdaris,
Manager at the Athens Global Ship Systems
Centre (Corporate Technology), ABS

Can nuclear-powered ships help the industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

Traditional nuclear reactors have been used to provide zero-emission power for naval and government vessels for more than 60 years. With the increased focus on achieving zero carbon emissions in the maritime industry and the development of small modular reactor (SMR) technology that is practically emissions-free, nuclear-powered merchant ships could offer a potential solution for decarbonising the global fleet.

The advantages and disadvantages of their use are related to technology readiness, economic matters, engineering implementation, and public perception. SMR technology is still under development. These reactors could be installed on vessels, perhaps modularly, and provide energy without the need for frequent bunkering operations. Since they are not pressurised, they pose less risk. Their fuel is stored within the reactor and, therefore, it does not require additional space. Finally, while SMRs carry

extra weight because of the shielding, they are lighter than conventional engines and systems. This means that for every KW produced, less energy is spent on ship propulsion.

In the short to medium term, the high capital expenditure associated with nuclear propulsion and the availability of uranium resources are limiting factors. Careful thought to the contractual arrangements governing the new construction, maintenance, and the ownership of the reactor itself is essential. However, public perception remains one of the greatest potential obstacles to the widespread adoption of nuclear-powered vessels, as the primary public concern about nuclear fuel is the perceived safety risk it would pose.

What do you think is required to drive the adoption of nuclear-powered ships: technological breakthroughs, regulatory changes, or demand from charterers?

In 2024, the International Atomic Energy Agency (IAEA) reported that 67 SMRs of variable technology readiness are under development. In the future, some of these could be useful for maritime use.

The IMO's regulatory framework for nuclear merchant ships was introduced in 1981 through Resolution A.491(XII), a supplement to SOLAS Chapter VIII. In June 2025, the 110th session of the IMO Maritime Safety Committee (MSC 110) prepared instructions for relevant sub-committees to initiate the revision of the code and assigned this task to the Sub-Committee on Ship Design and Construction (SDC), requesting it to submit proposals for the revised version of A.491(XII) in January 2026.

The ratification or updating of the Brussels Convention and its implementation in international law is likely to be needed to allow the insuring of SMRs before they can be commercially deployed. This will give significant momentum to further discussions on liability insurance, chartering, and finance matters.

What are the major technical challenges in integrating nuclear power into commercial vessels?

Currently, ABS supports the industry through joint development projects (JDPs), new technology qualifications

(NTQs), and approvals in principle (AIPs). The SMR philosophy could impose restrictions on ship design. The modularity concept imposes a fixed maximum power output per reactor, corresponding to a set lifespan of its core. Although it is possible to operate an SMR at a lower constant power level, its core will last longer. This may cause the reactor's end-of-life to decouple from the ship's standard dry-docking schedule, thus leading to significant additional operational costs. Hence, SMRs would be better suited for larger ships.

Another technical issue to consider is nuclear power plants' ability to tolerate higher accelerations caused by ship motions and vibrations, allowing for flexibility in the overall design. While there are significant safety benefits to placing the plant amidships, this location may not be feasible for specific vessel types like oil tankers and LNG carriers, or it may negatively impact cargo capacity. Challenges related to access to suitable shipyards or other support facilities, as well as the physical removal of the reactors, are major concerns. The degree

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of redundancy required by a nuclear-powered vessel may be higher than that of a conventionally-powered one due to safety reasons, causing a decrease in performance. This is particularly true for LNG carriers with two separate power, propulsion, and steering plants, which provide a high level of redundancy compared to little or no redundancy, which is typically the case with single-screw vessels driven by marine diesel engines.

To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

The UK-based Maritime & Coastguard Agency adopted the IMO's Code of Safety for Nuclear Merchant Ships in the Merchant Shipping (Nuclear Ships) Regulations back in 2022. The kick-off process for the modernisation of the IMO A.491(XII) framework, which was decided by the 110th session of the IMO's Maritime Safety Committee (MSC) in June 2025, implies that flag states and port authorities will become increasingly interested in and reflective upon the goals, objectives, and risks of nuclear shipping.

How does nuclear propulsion affect crew training requirements?

The IAEA offers several updated publications and safety standards addressing the education and training of nuclear power plant personnel, while the IMO STCW Convention governs the training requirements for conventional vessels. The updated IMO Code of Safety for Nuclear Merchant Ships is likely to impact the education and training programmes of engineering officers, naval architects, or marine engineers. In the future, shipowners, operators, and their personnel will need to fully understand nuclear propulsion systems. Knowledge of the nuclear fuel cycle, radiation protection, emergency procedures, and nuclear reactor maintenance will be essential. The usual complement of seafarers will likely continue to operate the nuclear ships of the future. Still, additional highly trained personnel will be required onboard to monitor the reactor during service. Training programmes akin to those used by naval forces operating nuclear-powered ships could be useful in cultivating expertise among civilian maritime personnel. Training programmes must be tailored to

The usual complement of seafarers will likely continue to operate the nuclear ships of the future. Still, additional highly trained personnel will be required onboard to monitor the reactor during service.

the specific type of reactor technology utilised aboard ships. This implies a detailed understanding of the reactor's operational characteristics, safety protocols, and emergency response procedures. The establishment of global standards and the mutual recognition of certifications across jurisdictions will streamline the process in order to comply with international regulations.

Today, the ABS dedicated centres in Houston, Athens, Doha, and Singapore are designed to prepare seafarers for a multi-dimensional industry with alternative fuels and emerging technologies. Our Athens centre, which has the support of the Greek Ministry of Maritime Affairs and Insular Policy and the Union of Greek Shipowners (UGS), addresses critical emerging safety issues such as handling dynamic fuels, risks generated by cyber-enabled systems, hybrid battery propulsion and other technology-driven changes onboard. In the future, nuclear shipping could be part of our training agenda.

Are there concerns regarding radioactive waste management at sea?

The IMO Irradiated Nuclear Fuel Code (INF Code) accounts for the IAEA requirements and is mandatory for ships carrying packaged irradiated nuclear fuel, high-level radioactive waste, or plutonium. Provisions under this code are interlinked with the IMO International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) and the International Maritime Dangerous Goods (IMDG) Code. This risk management framework can reduce the risks of several types of potentially hazardous materials carried either in packaged or bulk form. It also addresses risks related to environmental pollution from accidental release.

Section 2.7 of the IMDG Code reflects the provisions of IAEA requirements on Class 7 radioactive materials. However, only radioactive material packaged as cargo is considered, and therefore, ships or offshore units using radioactive material for energy production are not applicable. This means that the risk-based framework should be modernised to account for ships using nuclear power as well as the associated handling of nuclear fuel and other radioactive wastes.



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ABS worked with Herbert Engineering Corporation on the high-level design of a standard LNG carrier – called Fission Forward – to illustrate how one type of advanced nuclear fission technology could be applied for shipboard power in the future. The Fission Forward project placed emphasis on which aspects of ship and reactor design may require further investigation to guide the development of the integrated technology and regulatory framework.

Picture Credit © ABS/HEC

What types of ships or operational profiles (e.g., tankers, LNG carriers, bulkers, container ships) would you consider most suitable for nuclear propulsion in the first wave of adoption?

Floating nuclear power plants (FNPPs) and high-value ships such as container ships or LNGs could be the first adopters of SMR technology.

Recent work by ABS demonstrated that the total cost of ownership for nuclear-powered and traditionally fuelled vessels is similar during the initial years of operation. However, over time, the operating expenses for conventionally fuelled vessels are expected to increase, given the anticipated rises in carbon costs and fuel prices. This is not the case for nuclear-powered ships.

It is important to acknowledge that nuclear fuel prices may vary depending on the type of fuel, so a more detailed evaluation of the total cost of ownership (TCO) and vessel speed needs to be investigated on a case-by-case basis. It is worth noting that decommissioning costs, which can be rather high, should

also be considered, although available data on this aspect remains scarce.

Could nuclear propulsion be combined with other technologies for hybrid solutions?

The IAEA defines nuclear-renewable systems as integrated facilities comprising nuclear reactors, renewable energy generation, and industrial processes that can simultaneously address the need for grid flexibility, emissions reduction, and optimal use of investment capital.

These systems are often referred to as integrated energy systems that incorporate multiple generators and produce multiple energy products in either coordinated systems (i.e., a loosely coupled network of generators in a grid balancing area) or tightly coupled energy systems (i.e., energy parks in which subsystems are co-designed and controlled).

While the true value of these systems remains to be demonstrated, current research suggests that the hybrid use of nuclear and renewable energy sources may help meet energy demands in a flex-

ible and resilient manner, while supporting the established sustainable development goals. The benefits for shipping are yet to be proved.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or shipyards?

FNPPs represent a game-changing approach to nuclear energy deployment. They can be centrally manufactured and easily transported to operation sites, combining advanced nuclear technology with shipyard efficiency. They offer flexible power supply, providing clean electricity for local grids, heating, cooling, and EV charging. Their offshore nature enhances safety, granting protection from extreme weather events. FNPPs also allow for rapid deployment, enabling faster implementation to meet urgent energy needs.

SMRs could be installed on FNPP designs with significant advantages in terms of safety and cost. Their modular concept allows energy output to adapt to the cold-ironing needs of large ports. With refuelling cycles of approximately five years, designs would be compact and simpler, eliminating the need for fuel or high radioactive waste to be handled on board. The first comprehensive rules for FNPPs were unveiled by ABS at a forum for nuclear industry leaders held jointly with the Idaho National Laboratory (INL) in October 2024. The ABS Requirements explain how the interface between stakeholders could function to allow for any type of reactor technology. They also propose a framework for nuclear regulators to collaborate with flag administrations and ABS to ensure complete regulatory oversight and licensing.

Most recently, ABS formed an industry consortium with Core Power and Athlos Energy to explore the potential of deploying FNPPs to meet the energy demands of islands, ports, and coastal communities in the Aegean Sea. The group will research how FNPPs can potentially unlock a range of applications, including the establishment of grid-scale electricity in remote locations, the delivery of emission-free energy to ports, and the distribution of reliable clean energy to desalination plants.



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Adoption of nuclear propulsion for commercial shipping requires a multifaceted approach

Dr John Kokarakis emphasises that the adoption of nuclear propulsion in shipping demands a comprehensive strategy that addresses regulatory, technological, and market-driven challenges.



Opinions expressed by
Dr John Kokarakis,
Technical Director, SEEBa Zone,
at Bureau Veritas Group

Can nuclear-powered ships help the industry meet the IMO decarbonisation targets by 2050? What are the pros and cons of nuclear propulsion systems compared to conventional ones?

Nuclear-powered ships have the potential to help the maritime industry achieve the International Maritime Organisation's (IMO) net-zero greenhouse gas (GHG) emissions target by or around 2050. Nuclear propulsion eliminates direct CO₂, SO_x, and NO_x emissions throughout a vessel's operational life, aligning with the IMO's 2050 net-zero goal. Thus, air pollutants associated with conventional fuels are eliminated.

The lifetime cost of these types of vessels is lower, enabling a shorter return on investment (ROI). Because reactors require minimal refuelling (every 5-15 years), they reduce reliance on carbon-intensive bunkering, which makes them ideal for remote routes. Studies confirm that nuclear-powered ships can achieve near-zero emissions with minimal cargo capacity loss due to the high energy

density of nuclear propulsion. At the same time, marginal fuel cost increases enable faster voyages, improving logistics efficiency.

On the other hand, accidents such as collisions or groundings carry the risk of radioactive marine pollution, harming ecosystems, while reactor heat discharge may disrupt marine biodiversity. What is more, the upfront costs for reactors, specialised ports, and waste management are significantly higher. Port access and liability frameworks must be regulated. Finally, commercial vessels are less damage-resistant than military vessels, thus increasing the risks during conflicts or extreme weather conditions.

What do you think is required to drive the adoption of nuclear-powered ships: technological breakthroughs, regulatory changes, or demand from charterers?

The adoption of nuclear propulsion in commercial shipping requires a multifaceted approach, one involving regulatory modernisation, technological



innovation, and market demand. Based on current developments, regulatory frameworks are the most immediate barrier. However, once a regulatory framework is in place, technological advancements and charterer demand will accelerate adoption.

The IMO has initiated an overhaul of the outdated Code of Safety for Nuclear Merchant Ships (Resolution A.491(XII)), with work assigned to the Sub-Committee on Ship Design and Construction (SDC) starting in January 2026. This revision aims to accommodate advanced reactor designs, such as lead-cooled fast reactors, and concepts beyond traditional pressurised water reactors. Current efforts are focused on addressing accident risks and liabilities related to radioactive contamination.

What are the major technical challenges in integrating nuclear power into commercial vessels?

Traditional land-based nuclear reactors are not suitable for commercial ships due to their size, weight, and stability requirements. Thus, developing compact, lightweight reactors, like the SMRs, that do not compromise cargo capacity is essential. The designs must also be marinised to withstand corrosion, vibration, and the inevitable ship motions. At the same time, the reactor's output must align with the vessel's power needs, and operating reactors at partial power to extend core life should be avoided.

Since commercial hulls are less damage-resistant than naval vessels, the risk of a radiation leak during accidents or extreme weather is increased. The potential disruption of marine ecosystems due to heat discharge from reactors is another significant consideration. Radioactive materials make ships targets for theft or attacks, mandating robust security. Safety Protocols must be created to minimise emergency planning zones to the vessel's footprint. Shielding must prevent radiation exposure to the crew and cargo during operations and maintenance. Operating reactors requires highly specialised personnel, which the maritime industry currently lacks. Training programmes for nuclear engineers and technicians

Nuclear-powered ships generate various radioactive wastes, including low- and intermediate-level waste (contaminated materials and activated solids), as well as spent nuclear fuel, which must be carefully managed to avoid environmental contamination. The safe containment and isolation of radioactive waste are crucial to prevent exposure to humans and marine ecosystems.

power system must handle variable power demands for manoeuvring, cargo handling, and port operations. Nuclear reactors require dedicated maintenance infrastructure during drydocking. Commercial marine reactors aim for long core lives (5-15 years or more), which reduces refuelling frequency but requires careful lifecycle planning – refuelling and spent fuel handling demand strict regulatory compliance and infrastructure. Operating a nuclear propulsion system requires trained personnel knowledgeable in reactor physics, radiation safety, and emergency procedures. This is a significant shift from conventional engine crews. Unlike naval vessels, commercial nuclear ships cannot afford to have large crews solely for nuclear plant management due to the high cost. Crews must be thoroughly trained in radiation protection, accident response, and security protocols to effectively manage potential nuclear incidents.

Are there concerns regarding radioactive waste management at sea?

Nuclear-powered ships generate various radioactive wastes, including low- and intermediate-level waste (contaminated materials and activated solids), as well as spent nuclear fuel, which must be carefully managed to avoid environmental contamination. The safe containment and isolation of radioactive waste are crucial to prevent exposure to humans and marine ecosystems. Unlike land-based nuclear plants, ships operate in dynamic marine environments, complicating waste handling and storage. Refuelling intervals for commercial marine reactors are long (5-15 years), but when refuelling occurs, specialised port facilities and protocols are required to handle spent fuel and radioactive waste safely. Such infrastructure is currently limited globally. Potential accidents, such as collisions or groundings, could lead to radioactive leaks, posing risks of marine pollution and long-term ecological damage. Thermal pollution from reactor cooling systems is also a concern. International regulations governing the shipment, handling, and disposal of radioactive waste at sea are evolving but are not yet fully harmonised.

are underdeveloped. Ports to support nuclear vessels must be established. Their creation requires international cooperation. Facilities for reactor maintenance, waste storage, and emergency response are also “sine qua non”.

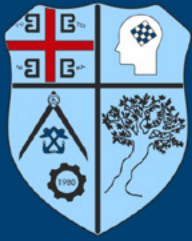
To what extent are flag states and port authorities prepared to handle nuclear-powered ships?

Licensing nuclear-powered vessels requires close coordination between maritime and nuclear regulatory authorities within flag states. Flag states must implement safety and security measures applicable to maritime nuclear reactors, including accident scenarios, piracy threats, and radioactive material safeguarding. Few flag states have direct experience with nuclear propulsion in commercial shipping. Russia is an exception, operating nuclear ice-breakers and the floating nuclear power plant Akademik Lomonosov. Most commercial ports worldwide lack the specialised infrastructure, emergency response capabilities, and

regulatory frameworks to accommodate nuclear-powered vessels. They lack facilities for refuelling, radioactive waste handling, and emergency containment. The IMO, in collaboration with the IAEA, is working on the Atomic Technology Licensed for Application at Sea (ATLAS) project, aiming to establish international frameworks that will support port authorities in regulating and managing nuclear-powered ships and floating nuclear power plants.

How does nuclear propulsion affect ship design, maintenance, and crew training requirements?

Nuclear reactors require heavy radiation shielding and structural protection against collisions, grounding, and terrorist attacks. Shielding adds weight and volume, which can affect ship stability, trim, and cargo space. Reactor compartments must be isolated and secured to prevent unauthorised access. Multiple containment barriers prevent radioactive release during accidents, including grounding or capsizing. The reactor and



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What types of ships or operational profiles (e.g., tankers, LNG carriers, bulkers, container ships) would you consider most suitable for nuclear propulsion in the first wave of adoption?

The most suitable ship types and operational profiles for the first wave of nuclear propulsion adoption are large ocean-going vessels that benefit from long endurance, high power demand, and infrequent refuelling needs. Very Large Crude Carriers (VLCCs) and Ultra Large Crude Carriers (ULCCs) stand out. These tankers operate on long-haul routes with minimal port calls, making their need for long intervals between refuelling ideal for nuclear propulsion. Nuclear reactors' long core life (5–15 years) aligns well with VLCC/ULCC operational patterns, reducing downtime and bunker dependency. The heavy shielding and reactor weight are offset by the large vessel size, minimising cargo capacity loss. As a second choice, nuclear propulsion is also feasible for large bulkers and containerships (more

than 24,000 TEUs) due to its minimal impact on cargo volume. Nuclear power enables higher design speeds at marginal fuel cost price jumps, improving logistics efficiency. Large container ships benefit from the compactness and lighter weight of nuclear power plants compared to conventional engines.

Could nuclear propulsion be combined with other technologies for hybrid solutions?

A nuclear primary power source is especially suited for large vessels on long voyages. Hybrid solutions may combine nuclear power with electric propulsion systems and battery storage. Batteries can assist during low-speed operations (e.g., manoeuvring in ports) or peak power demands, reducing wear on the reactor and improving fuel efficiency. Nuclear power could also be paired with green synthetic fuels, hydrogen, or LNG in dual-fuel or hybrid configurations, thus allowing flexibility in switching power sources depending on the route, port regulations, or operational needs,

especially where nuclear propulsion alone may not be practical. Lessons from nuclear submarines show that hybrid mechanical/electric drives can enhance efficiency and operational flexibility. Such systems enable smoother power transitions and redundancy, which are crucial for commercial vessels with varying speed profiles. Nuclear power has zero operational emissions, while batteries or alternative fuels can cover scenarios where nuclear use is limited or less efficient.

What are your thoughts on floating nuclear power plants (FNPPs) as a potential shore power solution for energy-intensive ports or shipyards?

FNPPs can provide substantial clean electricity to power port operations and supply shoreside power ("cold ironing") for multiple docked vessels simultaneously, drastically reducing local air pollution and carbon emissions. Barge- or ship-based FNPPs can be transported to different ports or coastal facilities as needed, enabling deployment in locations lacking land-based nuclear infrastructure or where grid capacity is limited. Small Modular Reactors (SMRs) used in FNPPs can be built to standard designs, allowing economies of scale, easier licensing, and adaptable power outputs tailored to the port demands. FNPPs reduce the need for large land-based power plants and associated infrastructure, easing siting challenges and potentially lowering capital costs. The IMO and the IAEA, together with classification societies, with Bureau Veritas in a pole position, are developing comprehensive safety, design, and operational requirements for FNPPs. Modern designs incorporate advanced safety systems, such as high-temperature gas-cooled reactors with passive shutdown capabilities, containment of heat and radiation, and rapid emergency shutdown mechanisms to mitigate accident risks. Despite its technical feasibility, FNPP deployment faces challenges related to public perception, environmental concerns, and liability frameworks that must be addressed through transparent risk management and international cooperation.



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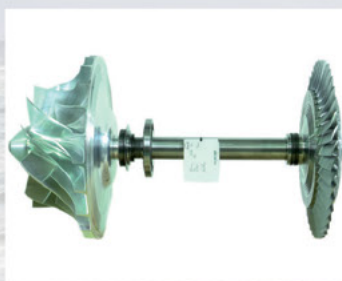
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Engineering the Green Transition

"How Smart Technologies and Sustainable Materials Support Maritime Decarbonisation"

From celestial navigation to satellites, maritime evolution continues. Today's challenge: balancing efficiency with sustainability. With tighter regulations and rising public concern, shipping must go beyond logistics; it needs to move goods responsibly and with minimal environmental impact.



As the world struggles with the climate crisis, maritime stakeholders are being called to drastically reduce emissions and environmental impact. Shipping alone accounts for nearly 3% of global greenhouse gas (GHG) emissions, prompting regulators and financial institutions to push for greener operations. What is unfolding, is more than a regulatory adjustment; it is a fundamental shift in how the industry must operate, and the pace of change is moving faster than ever.

Smart Technologies; Real-time Impact

The core challenge lies in fleet decarbonization. How can the industry maintain its high-volume logistics while aligning with climate targets set by the IMO and the EU Green Deal? While much of the attention is rightly focused on long-term propulsion solutions, there's a parallel



and highly practical pathway available right now: operational efficiency through smart systems and sustainable materials. One of the most impactful areas of development, is Artificial Intelligence (AI) and data-driven predictive analytics, decision-making and maintenance. Ships today generate large amounts of performance and structural data. By training AI models to assess and evaluate this data to identify the early stage of structural fatigue, micro-cracks, corrosion and equipment degradation, operators can detect these issues long before they become failures. This allows maintenance procedures to shift from reactive to predictive, minimizing downtime, dry-dock visits and costly, fuel-intensive operations. Data-driven decision support systems are equally critical. By integrating real-time weather, ocean currents and ves-

sel-specific performance curves, modern routing systems can dynamically optimize voyage paths. These tools enable operators to avoid adverse weather, enhance safety and reduce fuel consumption, without physical modifications to the vessel. In an industry where minor optimizations yield major environmental benefits, AI-powered routing is rapidly becoming a necessity, especially as regulatory frameworks like the EU's Fit for 55 package and the FuelEU Maritime initiative set stringent emissions limits, aiming to cut GHG emissions from shipping by at least 55% by 2030 in line with broader climate targets. Autonomous and semi-autonomous navigation technologies further enhance this effort. By refining how vessels move, maneuver, adjust speed and react to maritime conditions and by improving safety and human decision-making,

these systems reduce overcorrection, idle time, and route inefficiencies.

Greener Below the Waterline

The road towards sustainability, however, should extend beyond software applications. Green materials hold equal importance, especially in marine coatings. Conventional antifouling paints often include harmful biocides that are released into marine ecosystems. New generations of environmentally friendly coatings can eliminate the release of these harmful substances. These modern solutions function to lower hull friction while stopping biofouling without producing substances that harm the environment. The immediate and enduring effects include better fuel consumption alongside reduced cleaning requirements together with quantifiable GHG emission reductions across the entire vessel lifespan. A basic surface modification produces substantial effects beneath the surface.

Collectively, these developments show a broader industry shift: the understanding that decarbonization is not a single breakthrough but a patchwork of interconnected innovations, each targeting a distinct stage of the maritime value chain. It calls for the same pioneering spirit that once took us from sail to steam, and from compasses to satellites. This time, however, our destination is not a place, it is a responsibility.

Charting a Sustainable Course

At VANOS S.A., we contribute to this transition through R&D innovation and practical implementation, by developing advanced tools ranging from digital twins to monitor vessel's integrity, develop and support predictive maintenance strategies, and extend operational lifespan to routing technologies, supporting the advancement of autonomous navigation systems. Complementing these technologies, our portfolio also includes certified eco-friendly marine coatings already deployed across commercial fleets. Together with our extended network of trusted partners and associates, we provide integrated solutions that help maritime operators reduce emissions and navigate a more sustainable future.



STS operations at 50

Bridging the gap between guidance and practice

Ship-to-Ship (STS) transfer operations have become an indispensable element of global energy transportation, enabling the safe and efficient transfer of crude oil, refined products, and liquefied gases between vessels.



by Dr Alexandros Glykas,
CEO of DYNAMARINE

These operations allow flexibility in logistics chains, reduce congestion in ports, and provide commercial advantages for shipowners and charterers alike. Yet they are inherently complex and carry risks that, if not carefully managed, can lead to severe safety, environmental, and reputational consequences.

Over the past fifty years, the industry has invested significant effort in codifying safe practices for STS transfers. The Oil Companies International Marine Forum (OCIMF), together with other industry associations such as SIGTTO, has produced a series of best practice guides and technical documents that now form the backbone of industry standards. Since the release of OCIMF's first STS guide in 1975, the sector has accumulated a wealth of written guidance, operational frameworks, and lessons learned from decades of experience.

Despite this progress, accidents and incidents continue to occur with troubling regularity. Fatal embarkation accidents, pollution events linked to hose failures, and hundreds of mooring line breakages demonstrate that the presence of guid-

ance alone does not equate to safety in practice. This persistent pattern highlights a critical paradox: the industry has no shortage of technical standards, yet their consistent and effective implementation remains elusive.

The nature of OCIMF's guidance

To understand this paradox, it is necessary to consider the nature of OCIMF and its publications. OCIMF is a voluntary, member-driven organisation representing oil majors, shipowners, and terminal operators. Its strength lies in consensus building, but this is also its limitation. Strict, prescriptive rules would risk alienating members or imposing obligations that some stakeholders may find impractical. As a result, OCIMF publications are deliberately framed as "best practice" rather than enforceable requirements. Enforcement rests on the individual "appetite" of energy companies.

This approach ensures broad applicability across a highly diverse industry. STS operations take place under vastly different conditions, ranging from shel-



tered anchorages in established hubs to offshore transfer points exposed to adverse weather, and from operations run by highly professional service providers to those managed with minimal resources. OCIMF's flexibility allows the guidance to cover this diversity. Yet flexibility comes at a cost. Broad recommendations, while adaptable, dilute enforceability and leave ample room for interpretation, especially in cases when traders organise the STS operations instead of oil majors.

In practice, responsibility for implementation is pushed down to vessel operators, whose competence, resources, and oversight vary significantly. This variability creates an uneven safety landscape where outcomes depend as much on the operator's safety culture and management capacity as on the existence of guidance itself. It is this divergence that distinguishes low-risk vessels from high-risk ones: the quality and robustness of the operator's Safety Management System (SMS) practices ultimately determine whether incidents are prevented or allowed to occur.

Guidance versus execution

The real problem, therefore, is not the absence of solutions, as systems for risk assessment, vessel screening, and structured operational oversight are clearly in place and well-documented. The issue lies in the lack of consistent execution across the global fleet.

Execution requires resources, expertise, and constant vigilance. Many operators, particularly those who conduct STS operations infrequently, lack the organisational depth to maintain a robust risk management system for these specialised transfers. Proper screening of counterpart vessels and service providers, thorough risk assessments tailored to local conditions, and structured post-operation feedback are all resource-intensive processes. When companies view compliance as a matter of occasional reference to a guideline rather than as an embedded operational practice, the likelihood of incidents increases. Human and organisational factors exacerbate the challenge. Fatigue, communication barriers among multinational crews, inconsistent training standards,

and commercial pressure to complete operations quickly all contribute to unsafe shortcuts. These are systemic issues that guidelines alone cannot resolve. Without a proactive safety culture and sustained investment in competent personnel, the risk of accidents remains entrenched.

Embedding risk management in the SMS

Enhanced risk management in STS operations requires a shift in mindset: operators must view STS safety not as a compliance exercise, but as a strategic commitment. The International Safety Management (ISM) Code provides a natural foundation for this. Section 1.2.2.2 of the Code obliges companies to establish safeguards against identified risks. For STS, this obligation translates into careful preparation, structured training, and systematic oversight before, during, and after each transfer.

Practical measures can significantly improve outcomes. One essential step is the conduct of STS drills involving both participating vessels and STS specialists. These drills enhance coordination, build familiarity with emergency responses, and reduce miscommunication. Alongside drills, operators should retain formal records of each crew member's STS experience, ensuring that hard-won lessons are not lost through crew rotation and can be considered when planning future manning.

Another priority is dedicated training for personnel transfer by basket, as this remains one of the most hazardous phases of STS operations, with a number of tragic accidents recorded in recent years. Structured training programmes, simulation exercises, and periodic onboard refreshers help mitigate this risk and prepare crews to manage emergencies effectively.

Each STS operation should also be preceded by a specific risk assessment. This assessment must be more than a generic checklist; it should take into account past incident data, the risk profile and track record of the selected STS Service Provider, prevailing and forecast weather conditions, the quality and certification of fenders, hoses and other equipment, and the competence

Enhanced risk management in STS operations requires a shift in mindset: operators must view STS safety not as a compliance exercise, but as a strategic commitment.

of the Person in Overall Advisory Control (POAC). By tailoring risk assessments to each operation, operators can address the unique hazards associated with the specific transfer, rather than relying on assumptions.

Finally, the use of class-approved portable chocks for baby fenders offers a simple yet effective safeguard against equipment slippage, a recurrent source of accidents. Combined with structured feedback loops, post-operation debriefings, and continuous oversight, these measures help transform OCIMF guidance from static documents into dynamic, living practice.

The role of STS service providers

A further complication lies in the variability of STS Service Providers. While OCIMF provides the framework, the frontline responsibility for safe execution rests with the vessel operators' level of awareness and preparedness. Unfortunately, the prudence, competence, and transparency of STS service providers are highly uneven across the industry. Over the past five years, STS operations have also been exploited by certain trading interests to facilitate the transfer of sanctioned cargoes. This development has encouraged a segment of STS service providers and charterers to operate with limited transparency, engage in high-risk practices, and exhibit minimal accountability. The result has been a rise in large-scale incidents and reputational risks, demonstrating how commercial misuse can undermine the integrity of STS operations and magnify operational hazards.

To raise the baseline, vessel operators and charterers must demand greater transparency and accountability. One effective measure would be the establishment of centralised risk profile records for STS service providers. Databases including incident histories, audit results, and performance ratings would enable operators to make informed decisions and discourage the use of providers with poor records. Transparency of this kind creates accountability and fosters positive competition.

In parallel, the enhancement of STS clauses in charter parties can provide powerful contractual leverage.



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By stipulating that only vetted, low-risk service providers may be used, charterers and owners align commercial arrangements with safety priorities. This approach shifts safety from being an operational afterthought to a contractual obligation, thereby reducing the temptation to select providers solely on the basis of cost.

Finally, requiring STS service providers to carry indemnity cover of at least USD 10 million, with a deductible not exceeding USD 10,000, would help ensure financial responsibility and resilience. Such requirements would not only safeguard compensation in the event of an incident but also filter out providers unwilling to meet internationally accepted standards of liability.

Beyond box-ticking: Compliance as a strategic choice

One of the most persistent obstacles to progress is the mindset with which compliance is approached. Too often, adherence to OCIMF guidance is treated

as a box-ticking exercise: forms are completed, checklists are signed, but the underlying culture remains unchanged. OCIMF's "minimum risk" procedures establish clear benchmarks, and in the event of an incident, they may well influence the allocation of liability. Yet some operators regard them as administrative obstacles rather than as opportunities to strengthen resilience.

This mindset prevents meaningful improvement. Compliance, when reduced to paperwork, delivers little protection. But when reframed as a strategic choice, it becomes a pathway to enhanced safety, stronger legal protection, and improved environmental responsibility. Operators who treat risk management as an investment rather than a burden position themselves not only to avoid accidents but also to demonstrate accountability to charterers, regulators, and insurers.

STS operations now stand at a decisive crossroads. After fifty years of OCIMF guidance, the industry has developed

a comprehensive framework of best practice, yet incidents continue to occur because guidance has not been effectively translated into execution. The time has come to move beyond reliance on written standards and embed safety into the daily practice of all stakeholders.

For vessel operators, this means adopting enhanced training, structured drills, experience retention systems, and rigorous risk assessments that consider the performance of service providers, the quality of equipment, and environmental conditions. For service providers, it means embracing transparency, carrying meaningful financial safeguards, and committing to structured oversight. For charterers, it means using contractual leverage to require prudent providers and align commercial priorities with safety.

Ultimately, compliance must be redefined as a strategic commitment, not an administrative burden. OCIMF's "minimum risk" procedures should be seen as living benchmarks, forming the foundation of risk assessment and liability management across the sector. If the industry is embraced in this way, it has the tools to foster a genuine culture of safety. Only then will STS operations truly reflect the high standards envisioned over the past half century – and prevent the recurrence of avoidable accidents.

About DYNAMARINE

DYNAMARINE is a specialised Risk Assurance Subject Matter Expert in (STS) operations, bridging the gap between guidance and execution. Managing a registered fleet of about 1,000 vessels, it delivers structured oversight, vessel screening, incident data analysis, and continuous monitoring aligned with OCIMF standards and the ISM Code. Its expertise in risk assessment, crew preparedness, and post-operation feedback has reduced incident rates by more than 70% compared to non-registered vessels. Soon, DYNAMARINE-registered ships will be visible on EQUASIS of EMSA, reinforcing transparency. The company has also established strategic partnerships with the USCG, maritime administrations, insurance underwriters, and AIS data providers.



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Water scarcity in Greece and across the EU: Challenges & prospects

For many people in Europe, water scarcity was not a critical issue in the past few decades, as the continent was considered a region of rivers, lakes, and summer thunderstorms.



by **Elias Dimitriou**,
Research Director
in the Department of Inland Waters
of the Hellenic Center for Marine Research

However, this is not the case in Southern Europe, which has historically been an area of intense climatic variability, characterised by frequent alternations between dry and wet periods. Greece, in particular, is at the epicentre of these trends, having a Mediterranean climate that, over the last few years, has tended to be hotter and drier. These physical characteristics, combined with heavy summer tourism, intensive irrigation, and ageing water infrastructure, maximise water stress and put significant pressure on farmers, hoteliers, and households. The good news is that today, Europe and Greece have a growing toolbox of solutions to increase water use efficiency and mitigate scarcity. The challenge is to deploy them fast and efficiently.

What “water scarcity” actually means

Very often, people confuse water scarcity with drought, a natural phenomenon that occurs when the amount of rainfall is lower than usual in a given area. Water scarcity is a broader concept

expressing the gap between water demand and supply. Water scarcity may exist even without a formal drought if consumption, leakage, and water pollution exceed available water resources. Across the EU, monitoring agencies closely track this gap. The European Environment Agency (EEA) estimates that in southern Europe, approximately 30% of the population lives in areas experiencing permanent water stress, and up to 70% face seasonal summer stress – a reality driven by irrigation demand, public water supply, and tourism.

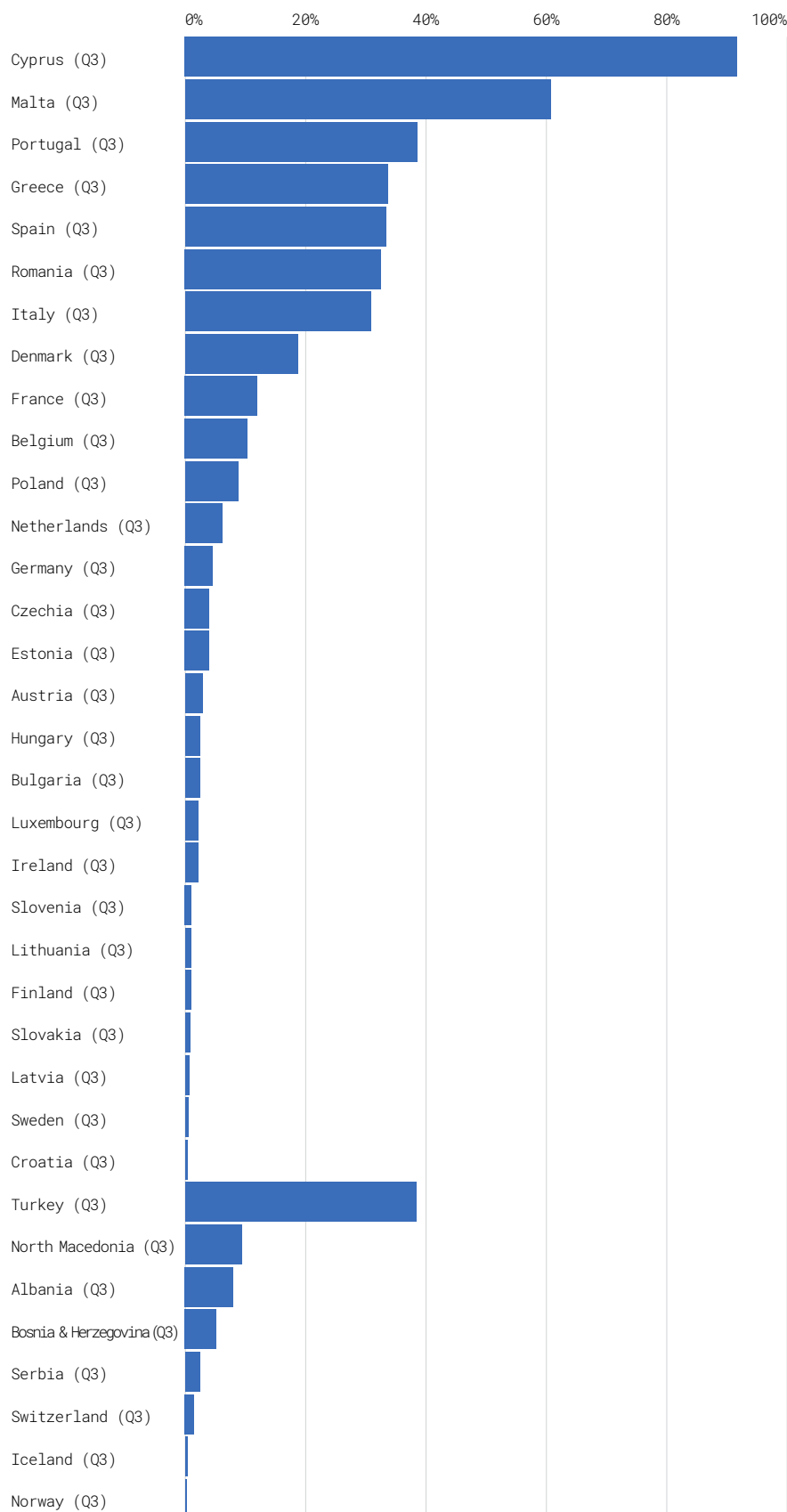
The European view on the issue

The EU has an important water-related legal framework, including the Water Framework Directive (2000/60/EC, WFD), which requires Member States to achieve “good status” for their water bodies (lakes, rivers, groundwater) within a specific time framework. Nevertheless, the implementation is proving challenging, as a recent European Commission assessment indicates that only 39.5% of EU surface waters



Resources under pressure

Seasonal water scarcity conditions for European countries in 2022, measured by the water exploitation index plus (WEI+)
Source: European Environment Agency



are in good ecological condition, with pressures from agriculture, pollution, and climate change all contributing to the issue.

The EEA's Europe's State of Water 2024 outlined the challenges of protecting and restoring aquatic ecosystems, delivering on the zero pollution ambition, and adapting to water scarcity, drought and floods.

To monitor scarcity and drought in near-real time, the European Drought Observatory (EDO) compiles maps and indicators across the continent; its bulletins since 2022 have repeatedly highlighted southern Europe's persistent water deficits.

Greece's water reality: A Mediterranean hot spot

In Greece, agriculture accounts for approximately 86% of the country's water consumption, with a significant portion of this allocation occurring through open channels and older irrigation practices that result in substantial water losses due to evaporation and seepage. Similarly, old urban water supply networks often have significant leakages that frequently exceed 20-30% of the total water supply. Several projects are underway to improve the irrigation and domestic supply networks, but a lot more is needed to minimise water losses at an acceptable level.

Tourism also puts pressure on water resources by increasing demand when supply is limited. Especially, islands with small aquifers and limited water resources face peak consumption in July and August, the driest months of the year. In recent summers, several islands declared water emergencies, restricting non-essential uses and attempting to install desalination units in a short time period.

Additionally, we can see that the climate shifts from floods to dry conditions at a glance. In September 2023, Storm Daniel devastated Thessaly with record rainfall, resulting in loss of life and destruction of water infrastructure, including irrigation networks and pumping stations. Nevertheless, Thessaly still faces an annual water deficit and needs to undertake urgent measures to sustain the irrigation of the existing crops.



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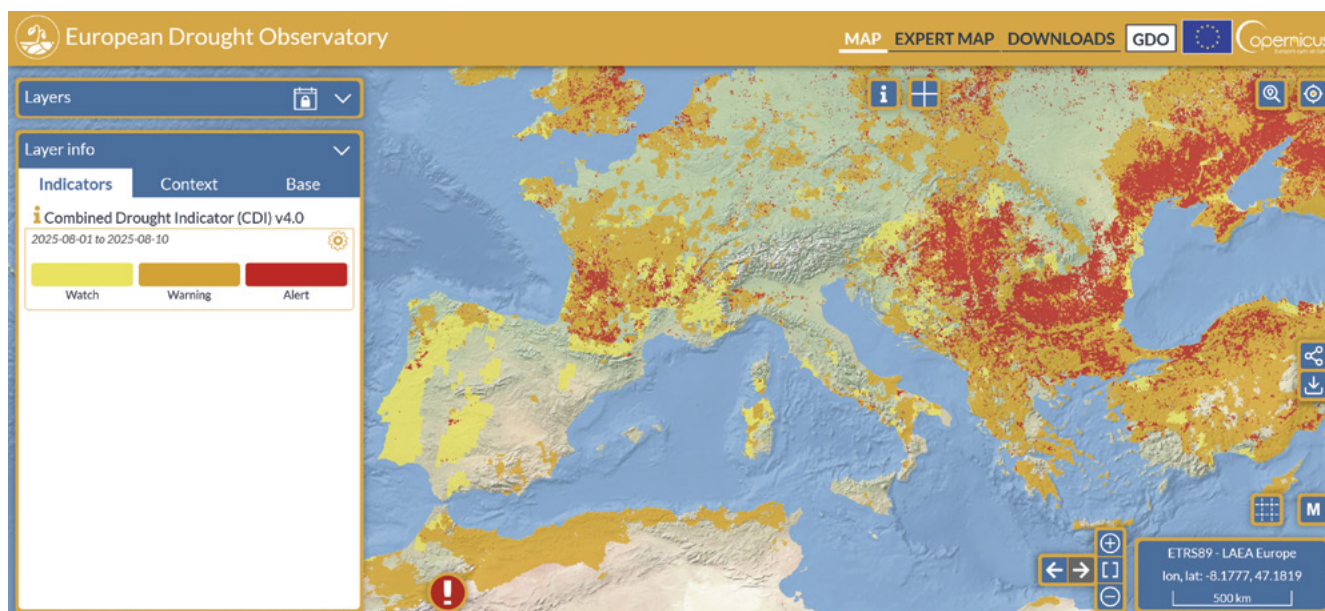
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Indicative drought map for the first ten days of August 2025 by the European Drought Observatory
Source: <https://drought.emergency.copernicus.eu/tumbo/edo/map/>

What tools exist at the European level

There are three main European policies that can assist in mitigating water scarcity:

- Water Framework Directive (2000/60/EC) – the backbone of the EU water policy, including the “cost-recovery” principle meant to reflect the true cost of water services and encourage efficiency, which can enhance optimal water demand management by using economic incentives/tools to reduce over-consumption, which, however, is not fully implemented in many European countries yet.
- Regulation 2020/741 (EU) on water reuse – since June 2023, the EU has imposed common minimum standards applicable to the use of treated urban wastewater in agricultural irrigation, supported by guidelines and risk management plans. This regulation promotes the reuse of treated water across borders and reduces barriers to investment.
- Monitoring systems for assessing water availability and droughts in real-time (e.g., European Drought

Observatory, HIMIOFoTS Research Infrastructure, <https://www.himiofots.gr/en>) are crucial for the efficient mitigation of water scarcity, enabling authorities to anticipate pressure and target measures effectively.

What Greece is doing: From emergency fixes to long-term strategy

In 2025, the Greek government announced a national, multi-year plan to upgrade water infrastructure, expand desalination and storage – with targeted action for Attica and Crete, and a pipeline of island projects (over 100 small-scale schemes) to improve supply and water quality.

On the ground, several new desalination units for Aegean islands and remote municipalities have been licensed, and the country’s Water Scarcity and Drought Management Plans are being updated to incorporate lessons learned from recent extreme climate events. However, several additional steps are necessary to mitigate the impacts of future water scarcity effectively. Some of them are:

- Water demand management. Water companies should establish pricing that reflects scarcity without compromising basic water needs and install smart metering and leakage detection systems to

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minimise water losses. Tourism operators can reduce demand by implementing low-flow taps and toilets, utilising greywater reuse for green space irrigation, and conducting leak audits. Households can also save a significant amount of water by using efficient taps and toilets, as well as implementing behavioural changes that can be facilitated by public awareness campaigns. None of this replaces infrastructure, but it can be applied fast and contributes towards the target of lower water consumption.

- Improve water infrastructure and repair the water supply networks. Water reuse infrastructure must be developed by establishing efficient treatment facilities and a greywater supply network that can be initially used for the irrigation of green spaces and specific crops. In coastal basins, pairing reuse with managed aquifer recharge can stabilise groundwater and push back saltwater intrusion. Desalination is essential for some islands and drought-prone areas, which can be combined with renewable power to reduce operation costs. Special care should be taken to ensure effective brine management and limit relevant ecological impacts. Repairing or replacing old water supply networks is of paramount importance since water losses are unacceptably high in many agricultural and urban areas. Water providers should adopt targeted network pressure management, district metering, acoustic leak detection, and continuous monitoring to save a significant amount of water, often at a lower cost per cubic meter than building desalination plants or new reservoirs.

- Climate-smart agriculture and nature-based solutions. With irrigation dominating Greek water use, modernising on-farm practices can be very efficient in water saving. Soil moisture sensors, drip systems, nighttime irrigation, drought-tolerant crop varieties, and shifting away from the water-demanding crops in the most stressed basins are some indicative examples.

Wetlands, floodplains, and healthy soils act like sponges, moderating both flood peaks and summer low flows. Across the EU, the EEA stresses ecosystem restoration as part of water resilience. In Greece, such approaches include reconnecting rivers to floodplains where safe, re-wetting wetlands, and utilising small, distributed water storage systems and managed aquifer recharge, rather than a singular focus on large dams.

The path forward: From ambition to implementation

Greece and the EU have the necessary instruments to move forward and mitigate the impacts of drought. There is a strong legal backbone (WFD), upgraded wastewater rules, harmonised reuse standards, real-time water and drought monitoring, and a newly announced strategy that prioritises water security for the next 30 years. It should be noted that water security isn't just one project – it's a portfolio of actions, and it touches every sector of the economy and society. The challenge lies in efficiently executing the necessary steps to achieve consistent funding, clear governance, credible timetables, and transparent reporting, all of which build public trust. If we manage to accomplish most of the above efficiently, transparently, and with community support, we may be able to keep the taps running even as the climate warms.

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Mylaki Shipping Agency Ltd

Operations Head Office

43, Iroon Polytechniou Ave., 185 35 Piraeus, Greece / T: +30 210 422 3355
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Greece

Ag. Theodoroi: 1, Spirou Meleti St., 200 03 Agioi Theodoroi / T: +30 27410 62301
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Through a seafarer's eyes

Horizon

Be prepared: Ballast water management inspection campaign by Paris and Tokyo MoUs

From 1 September to 30 November 2025, a crucial Port State Control Concentrated Inspection Campaign (PSC CIC) will focus on Ballast Water Management (BWM). Organised by the Paris and Tokyo MoUs, with anticipated participation from most other PSC MoUs, this campaign highlights the ongoing commitment to environmental protection and adherence to BWM regulations. An additional questionnaire, detailing specific focus areas for the CIC, is expected to be released in early August.

Recent inspections in 2024 and 2025 have revealed common deficiencies in BWM compliance. These often involve issues with the ballast water record book, such as a lack of flag approval for electronic versions, incomplete or incorrect entries, discrepancies with operational logs, or the use of outdated record

books. Ballast Water Management System (BWMS) issues are also prevalent, including failures to report malfunctions to PSC, insufficient recording of issues, systems being out of order, or a lack of adherence to contingency measures. Furthermore, problems with the ballast water management plan itself, such as inconsistencies, missing information, or outdated details regarding the BWM method, port of registry, or designated person, have been observed.

To maintain continuous compliance, it is essential to incorporate these insights into routine onboard maintenance schedules and to ensure thorough and ongoing familiarisation of the crew with BWM procedures. While the CIC is part of regular PSC inspections, meaning that inspections will not be solely limited to BWM, this specific topic will be a key focus during the first PSC inspection conducted by a participating MoU. Proactive preparation is vital to ensure smooth operations and avoid potential non-compliance findings.



from the bridge

by Capt. George Georgoulis



The following checklist has been created to ensure vessels' BWM compliance:

Ballast water record book

- Flag approval: Confirm that any electronic ballast water record books have the necessary flag approval letters readily available on board.
- Accuracy and completeness: Verify that all entries are accurate, complete, and reflect actual ballast water operations.
- Consistency: Cross-reference entries with the BWMS log to ensure consistency between the recorded data and system operations.
- Current version: Ensure the most

current version of the ballast water record book is in use.

Ballast Water Management System (BWMS)

- Malfunction reporting: Establish procedures for immediately informing Port State Control (PSC) in the event of any BWMS malfunction.
- Issue documentation: Ensure all BWMS issues, including malfunctions or failures, are thoroughly recorded in the ballast water record book.
- Operational readiness: Verify that the BWMS and all its components are in full working order.

- Contingency measures: Be prepared to follow all established contingency measures in case of BWMS malfunction or failure.

Ballast Water Management plan

- Information consistency: Confirm that all information within the plan regarding the BWM method, port of registry, and designated person is consistent, complete, and up to date.

General compliance

- Routine maintenance integration: Integrate the points above into your routine on-board maintenance programmes.

It is becoming increasingly evident that human factors play a significant role in managing the cyber risks of shipboard systems. Based on an analysis by CyberOwl, the majority of cybersecurity incidents can be traced to human error, whether intentional or unintentional, which has created cyber vulnerabilities.

- Crew familiarisation: Implement ongoing training and familiarisation programmes for the crew on all aspects of ballast water management procedures and regulations.

Top 5 common cyber threats and 7 deadly signs of unsafe behaviour (UK P&I)

The shipping sector has become more connected than ever. There is a constant race to connect, digitise, and deliver smarter ship systems that allow for more remote access and support. The introduction of low-orbit technology, such as Starlink and OneWeb, is enabling and accelerating this trend. However, this increased connectivity has also made ships and their crews vulnerable.

As a result, the regulatory landscape has become more complex, with new requirements continuing to be implemented to ensure that shipboard systems are secure and do not impact the safe navigation and operation of the fleet. It is becoming increasingly evident that human factors play a significant role in managing the cyber risks of shipboard systems. Based on an analysis by CyberOwl, the leading cybersecurity experts for shipping, the majority of cybersecurity incidents can be traced to human error, whether intentional or unintentional, which has created cyber vulnerabilities. On the other hand, due to the technological environment on ships, humans still play a critical role in responding to cyber incidents, with

26% of cyber incidents on ships during 2024 being related to human factors and over 75% of these incidents requiring response actions involving the crew.

Top 5 cyber threats to shipping

1. Business email fraud: A type of attack that involves criminals gaining access to or impersonating a business email to trick someone into revealing information or transferring money. There is growing evidence of criminals varying their methods by using social media, messenger apps (such as WhatsApp or WeChat), or a combination of communication channels, in addition to email, to achieve their goals.
2. Malware, especially ransomware: Short for malicious software, malware is software designed to intentionally harm a computer, network, or server. The most common malware threat in shipping is ransomware, a type of malware that blocks access to a computer system or the data stored on it until a ransom is paid. Malware is particularly dangerous because it is generally designed to spread easily across machines, over a network, via removable devices such as USB, or via email.
3. Data theft: The unauthorised theft (access, transfer, and storage) of data. Generally, this data contains personal, confidential, sensitive, or financial information. In shipping, this may include passwords, personal or financial data of the crew or employees of the shipping company, commercially sensitive data about the ship's cargo, schedule, or customers.
4. Denial of Service (DoS): An attempt to interrupt or terminate the normal operation of a computer system by overwhelming it with a flood of requests or communications. This can result in a slowdown in performance, a complete crash of the target computer system, or the denial of legitimate access to that system.
5. Falsification of AIS or GNSS data through "spoofing": AIS spoof-

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Collision
Avoidance

AI Route Planning

Navigation Alerts

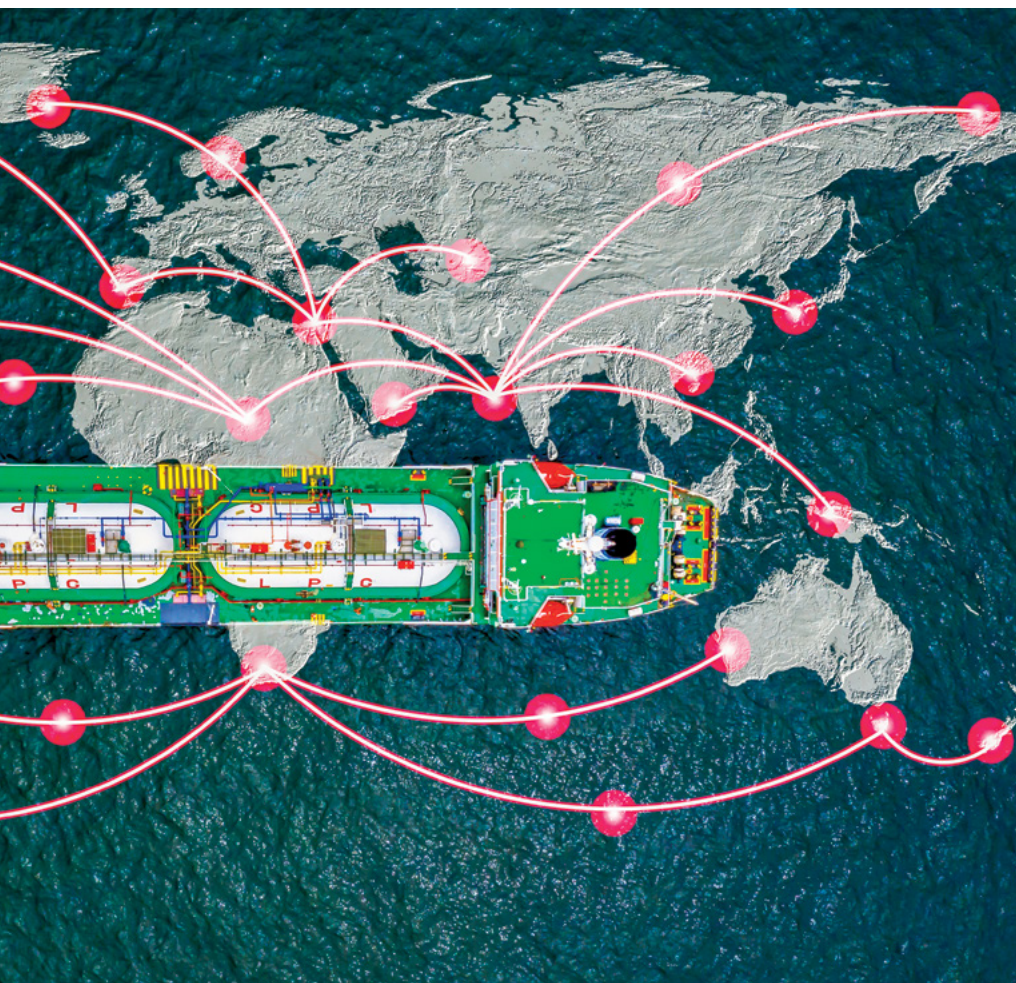


ing is the deliberate manipulation of Automatic Identification System (AIS) data to deceive AIS tracking systems about the identity, position and other information of a ship. GNSS spoofing involves the transmission of fake or tampered satellite signals to deceive a Global Navigation Satellite System (GNSS) receiver. Reports from the US Coast Guard Navigation Center indicate an increase in this activity during 2023 and 2024 in areas of geopolitical conflict, such as the eastern Mediterranean, the Black Sea, the Red Sea, the coastal waters of China, and the Persian Gulf.

Seven “deadly sins” of insecure behaviour

1. Payments to unverified parties: Payments made to fraudulent parties pretending to be legitimate suppliers, such as making payments before checking the accuracy of bank account details or complying with requests to change the beneficiary’s bank account before checking the validity of the requester. Ideally, checking and confirming the validity of the requester should be done verbally over the phone.
2. Insecure use of removable devices: Poor control of removable devices such as USB, external hard drives, or mobile phones creates the risk of spreading malware. This risk is particularly serious in cases where the removable device is transferred between information technology (IT) and business technology (OT) systems. Risky behaviours include connecting the same removable device alternately to personal computers (PCs), third-party devices, company IT equipment or OT systems, e.g., Electronic Chart Display and Information System (ECDIS), Global Maritime Distress and Safety System (GMDSS), or other operational panels and human-machine interfaces of OT systems, without scanning the removable device for malware.
3. Insecure links: Clicking on insecure links that lead to suspicious or malicious websites. Clicking on links in emails from unknown or untrusted sources or clicking on links sent via messaging services or applications, such as WhatsApp or WeChat, constitute risky behaviour.
4. Insecure network connections: Connecting insecure equipment to critical vessel networks creates a risk of spreading malware or inadvertently providing remote access to critical equipment to threat actors. Enabling the vessel’s computer hotspot and connecting personal devices such as computers, mobile phones or tablets to connect to the internet, or connecting personal devices of crew members or guests to the vessel’s internet network, either via Ethernet cable or Wi-Fi, without proper security procedures should be avoided.
5. Unauthorised remote access: Providing remote access to unknown or unauthorised parties. Crew members should avoid responding to unplanned or unauthorised requests from any third party claiming to be a vessel or equipment manufacturer to provide a remote connection to a vessel system. Other risky behaviours that should be avoided include providing remote access to an unknown IP address or leaving remote connections open long after the intended task has been completed.
6. Dangerous software downloads: Downloading unapproved, unwanted, or dangerous software that may contain malware or serious vulnerabilities. Downloading software from unknown or untrusted sources must be avoided. The most common dangerous software downloads in 2023 and 2024 included PDF editors, image editors, and computer games. Crew members often download PDF or image editors with the good intention of trying to edit a document needed to complete ship or port operations. However, this inadvertently introduces cyber risk.
7. Supply chain attacks: This occurs when a shipping company inadvertently provides access to a threat actor through a shipping supplier’s computer systems. Examples of risky behaviour that should be avoided include over-trusting connections to third-party systems without validat-





ing their legitimacy, poor control of remote access provided to third parties, and allowing ship guests to connect computers or USB devices to ship systems without scanning those devices for malware beforehand.

NorthStandard: Is ethanol the sustainable biofuel for the maritime industry?

In October, the International Maritime Organisation is set to adopt a legally binding framework to reduce GHG emissions from ships over 5,000 GT, pending its entry into force in 2027. Including a new fuel standard and a global emissions pricing mechanism, the framework is crucial to the United Nations agency's goal of achieving net-zero emissions in global shipping by 2050, as well as interim targets for 2030 and 2040. In the near future, however, for shipowners investing in the use of biofuels in their efforts to decarbonise, it is easy to see

that demand for biofuels could outstrip current supply. Ethanol, an alternative fuel used since the 1980s to power cars, may be worth considering for wider use as a marine fuel as the shipping industry looks for additional options.

Ethanol is already an established ingredient in automotive fuels. Waterfront pumps and fuel filler caps on many gasoline-powered cars now display E5 or E10 to indicate an ethanol content of up to 10% (E10). New cars even have E25 on their gas caps (Brazil). Car manufacturers are confident that engines can handle ethanol content of up to 25% (E25) to create a lower carbon footprint. Given these developments, it is worth considering the potential for ethanol to play a larger role in the shipping industry.

Ethanol ($\text{CH}_3\text{CH}_2\text{OH}$), also known as ethyl alcohol, is a colourless, volatile, and flammable organic compound commonly used as a fuel, solvent, and in alcoholic beverages. It is also used as a biofuel (bioethanol) when produced from renewable resources such as corn, sugarcane, or agricultural waste. Sugars can be converted into ethanol through a biological process called fermentation, specifically alcoholic fermentation. This process is usually carried out by yeasts, which consume sugars such as glucose, fructose, and sucrose and convert them into ethanol and carbon dioxide under anaerobic conditions. In principle, the carbon dioxide emitted when burning bioethanol is offset by the carbon absorbed when growing the plants.

Unlike some biofuels, bioethanol can be considered both renewable and sustainable, as it is derived from widely available crops. It burns cleaner than fossil fuels, thus reducing CO_2 emissions as well as sulphur oxides (SO_x) and particulate matter (PM) emissions. The lower greenhouse gas emissions are particularly true when produced from renewable sources, including biomass and waste.

Furthermore, there is already infrastructure available for use, as ethanol is widely used in land transport. Some refuelling and storage facilities could be adapted for maritime use.

As in the automotive industry, ethanol can be blended with other fuels, and blending with marine fuels is set to be tested soon. However, there are acknowl-

As with most alternative fuels, ethanol has a 50% lower energy density than fossil fuels. Its energy density is also around 40% lower than biodiesel, which could impact engine efficiency and reduce operating range, as ships may not be able to carry enough fuel without larger tanks.

edged challenges to its use in the marine sector. As with most alternative fuels, ethanol has a 50% lower energy density than fossil fuels. Its energy density is also around 40% lower than biodiesel, which could impact engine efficiency and reduce operating range, as ships may not be able to carry enough fuel without larger tanks. Any lower range would likely require consideration of the terms of time charter contracts, including speed and performance guarantees. Ethanol is also hygroscopic and can corrode tanks, engines, pipelines, and valves not specifically designed for its use. Cleaning units, filtration, and transfer systems must also be specifically designed to handle ethanol. Biodiesel is more compatible with existing marine engine types (as a “drop-in fuel”), but ethanol may require specially built or modified engines specifically for ethanol. Crew training and safety must also be considered when using ethanol, as it is a low flash point fuel (13-15°C), and vapours can accumulate, increasing the risk of explosion if there is inadequate ventilation. The fuel also poses toxicity and health hazards that require scenario-based training, including vapour release and emergency response. Ethanol fires also develop differently from hydrocarbon fires and require specialised firefighting equipment, procedures, and personal protective equipment. Contamination and spillage behaviour are also factors that should be considered. Ethanol is water-soluble and disperses rapidly in the marine environment, but, unlike oil, it does not form a surface slick, making physical recovery difficult. It is biodegradable, but rapid breakdown can reduce oxygen in the water, leading to hypoxic (low oxygen) conditions that are harmful to marine life.

The IMO and other maritime bodies are still developing guidelines for regulating alternative fuels such as ethanol, and further clarity will be necessary to encourage investment and adoption as part of the IMO’s zero or net-zero (ZNZ) emissions technology.

Delivery of ammonia bunkering vessel in Singapore following pilot ammonia bunkering trial

Fortescue, with support from the Maritime and Port Authority of Singapore (MPA) government agencies, research institutes, and industry partners, has successfully conducted the world’s first use of ammonia, in combination with diesel in the combustion process, as a marine fuel onboard the Singapore-flagged ammonia-powered vessel, the “Fortescue Green Pioneer”, in the Port of Singapore. The vessel was loaded with approximately 6.4 cubic meters of liquid ammonia from the existing ammonia facility at Vopak Banyan Terminal on Jurong Island for the fuel trial.

In completing the fuel trial, the “Fortescue Green Pioneer” received flag approval from the Singapore Registry of Ships (SRS) as well as the “Gas fuelled ammonia” notation by DNV to use ammonia, in combination with diesel, as a marine fuel.

Globally, ammonia is used in agriculture and industry. It is manufactured as a chemical by combining nitrogen from the air with hydrogen. As a carrier for hydrogen, ammonia can be transported to demand centres for power generation and as a marine fuel in support of the energy transition. Several dual-fuelled ammonia vessels have already been ordered by shipowners.

In preparation for the vessel’s operations in Singapore, Hazard Identification (HAZID) and Hazard and Operability (HAZOP) study workshops were jointly organised by MPA, Fortescue, Vopak, research institutes, and industry partners to identify the potential risks during fuel transfer and engine trials and to develop the necessary prevention, control, and mitigation measures.

Training sessions, including gas-specific hazardous materials emergency responses and MPA-led safety drills, were also conducted to assess the operational



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Credit: Fortescue

readiness and preparedness of the crew in the event of an incident. All crew attained the necessary proficiencies on the new enhanced procedures prior to the trials.

Fortescue engaged DNV to be part of the innovation process from the very early stages of this project. The “Fortescue Green Pioneer’s” ammonia fuel systems and engine conversion received class approval by DNV, based on its Technology Qualification process, to ensure that the new technology and systems fitted onboard, which were not covered under existing regulations, will function within specified limits and acceptable levels of confidence.

Finally, a tranche of approximately 6.4 m³ (4.4 tonnes) of liquid ammonia was loaded on the vessel for this new set of trials. Fortescue revealed that a designated test area along Raffles Reserved Anchorage was secured by Singapore’s MPA for the trials, and the Emergency Operations Centre (EOC) was set up at the MPA’s Port Operations Control Centre for representatives of the MPA, Fortescue, Vopak, research institutes, and government agencies to monitor the fuel loading and sea trial operations.

After the successful trial of bunkering ammonia, the Japan-based ITOCHU Corporation has signed a shipbuilding contract for a 5,000 m³ ammonia bunkering vessel with Sasaki Shipbuilding Co., Ltd., marking a significant step forward in maritime decarbonisation efforts.

The vessel, ordered through ITOCHU’s wholly owned Singapore subsidiary Clean

Ammonia Bunkering Shipping Pte. Ltd. (CABS), will be the world’s first newbuilding ammonia bunkering vessel. It will be constructed alongside an ammonia tank plant to be built by Izumi Steel Works Ltd. The vessel is expected to be delivered in September 2027, according to the company announcement, with ammonia bunkering demonstrations in Singapore scheduled to begin shortly thereafter.

The project is part of the Demonstration Project for Bunkering Ammonia as Marine Fuel in Singapore, adopted by Japan’s Ministry of Economy, Trade and Industry under its Global South Future-oriented Co-Creation Project. The vessel will be flagged under the Singapore Registry.

ITOCHU plans to establish a safe off-shore bunkering operation of ammonia as marine fuel by way of ship-to-ship transfer and aims to expand this business model to other major maritime hubs, including Spain (Strait of Gibraltar), Egypt (Suez Canal), and Japan.

The development comes as the International Maritime Organisation (IMO) continues its push toward reducing greenhouse gas emissions from international shipping to net-zero by around 2050. In April 2025, international approval was granted for draft convention revisions that include systems for phasing in alternative low-emission fuels and providing economic incentives for zero or near-zero emission vessels.

Ammonia bunkering vessels are drawing attention globally as important facilities in the fuel supply chain that play the last one-mile role in connecting the maritime and fuel industries, according to ITOCHU. More pilot projects with limited quantities of ammonia are required, and fully effective risk assessments will be revised by the experience gained. The pilot projects should be extended to all geographical areas where the project aims to develop ammonia fuel supply infrastructures, considering the local and climatic properties of each geographical point (weather, currents, prevailing winds).

Finally, it should be clearly understood that the supply of fuel from shore to ship in terms of design and safety measures has a huge difference with the supply from ship to ship, and we know this from our experience in the supply of conventional fuels.



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Charterwell Maritime S.A.: M/V “Star Opal” & M/V “Star Ocean”

Vessel type

Ultramax Bulk Carrier

Deadweight

64,576 MT

Flag

Bahamas

Port of registry

Nassau

Classification society

Bureau Veritas (BV)

Shipyard

New Dayang Shipbuilding Co., Ltd

Place

Yangzhou, China

Delivery date

28.05.2025

Charterwell Maritime has expanded its fleet with the recent addition of two newly built bulk carriers. On 28 May 2025, the company took delivery of the M/V “Star Opal” and the M/V “Star Ocean” from the Chinese shipyard New Dayang Shipbuilding. The Kollakis Group, which includes Charterwell Maritime, is closely monitoring developments related to shipping’s green transition, and has been implementing an expanded newbuilding programme since 2018, with 20 ships already delivered and an additional eight expected in the next two years.



L-R: Xu Bin / General Manager / Sumec Marine & New Dayang Shipyard, Stefanos P. Kollakis / Principals / Charterwell Maritime S.A., He Jun / Chairman / Sumec Marine



L-R: Xu Bin / General Manager / Sumec Marine & New Dayang Shipyard, Lucas G. Kollakis / Principals / Charterwell Maritime S.A., Paris G. Kollakis / Principals / Charterwell Maritime S.A., He Jun / Chairman / Sumec Marine



Star Opal / Star Ocean Christening/Delivery commemorative photo

First line

L-R: Konstantinos Petrakis / HSQE Manager / Charterwell Maritime S.A., Spyros Papandreou / New Buildings Manager / Charterwell Maritime S.A., Xu Gang / Vice Chairman / Sumec Marine, Ilias Kokoris / Commercial Manager / Charterwell Maritime S.A., Stefanos P. Kollakis / Principals / Charterwell Maritime S.A., He Jun / Chairman / Sumec Marine, Sophie Deltour / Training and Qualification Manager New Construction Management / BV Shanghai, Godmother of M/V "Star Ocean", Paillette Palaialogou / Senior Vice President East Europe, Mediterranean Sea, Middle East, India & Africa (EMA) / BV MARINE & OFFSHORE DIVISION, Godmother of M/V "Star Opal", Antonios Faraklas / Managing Director / Charterwell Maritime S.A., Paris G. Kollakis / Principals / Charterwell Maritime S.A., Lucas G. Kollakis / Principals / Charterwell Maritime S.A., George Andreadis / Marine Chief Executive for Greece / BV Hellas, Xu Bin / General Manager / Sumec Marine & New Dayang Shipyard, Carl Larsson / Associated Shipbroking Athens office, Elena Tassioula / General Manager, Greece, Cyprus, Turkey & Malta / BIMCO

Second & third line

New Dayang & Charterwell Maritime S.A. representatives & Officers of the two ships



L-R: Carl Larsson (Carl Larsson set up Associated Shipbroking's Athens office in early 2025 to focus on newbuildings in China, South Korea, and Japan for the Greek market), Stefanos P. Kollakis / Principals / Charterwell Maritime S.A.

Ionic Tankers (Mgt) Inc.: “Ionic Semeli”

Ionic Tankers Inc. recently took delivery of the “Ionic Semeli”, a Suezmax oil tanker built at the JMU TSU Shipyard in Japan. Ionic’s 19th vessel features innovative technologies that meet the highest energy efficiency and environmental compliance standards. Notably, the company’s entire fleet, which consists of 8 tankers and 11 bulk carriers, has been built in Japan, demonstrating Ionic’s confidence in the expertise of Japanese shipyards.

Vessel type	Flag	Country
Oil Tanker	Marshall Islands	Japan
Size type	Shipyard	Delivery date
Suezmax	JMU TSU Shipyard	23 July 2025
Hull type	Yard Number	
Double Hull	S5180	





Nereus Shipping S.A. “Ocean Star”

Nereus Shipping S.A. took delivery of the newbuilding LR2 “Ocean Star” on 11 July 2025 from the Vinashin Vietnam shipyard. The vessel, with a capacity of 115,000 MT, was built by the Hyundai Mipo Dockyard and is the third in a series of four sister LR2 vessels that enhance the company’s fleet. The “Ocean Star” has been constructed to high standards in order to meet the requirements of oil majors and terminals. At the same time, it complies with all the latest environmental regulations and is equipped with cutting-edge technological innovations. The vessel flies the Greek flag, as does the entire fleet of the company.

Year built	Vessel type	Flag
2025	Oil Tanker	Greek
Classification society	Length	Registry
ABS	242.78m	Piraeus
Deadweight	Breadth	Shipyard
115,000 MT	42.40m	HD Hyundai Vietnam Shipbuilding Co., Ltd





Technology &

Edited by: Theano Krassa

The world's longest-range hybrid electric vessel

Glosten has teamed up with Fleetzero to design what is expected to be the world's longest-range hybrid electric vessel.

The project will retrofit an AET-owned and operated lightering support vessel with Fleetzero's plug-in hybrid-electric propulsion system. Once complete, the vessel will operate primarily on battery power, demonstrating the potential of long-range hybrid-electric propulsion in commercial shipping. With the vessel design well underway, we will transition into detailed engineering in the coming months.

The world's first methanol dual-fuel Kamsarmax bulk carrier

Tsuneishi Heavy Industries (Cebu) successfully launched the world's methanol dual-fuel Kamsarmax bulk carrier on 17 July 2025 at Slipway No. 2 at THI. The vessel is scheduled to embark on its maiden voyage in January 2026.

This landmark achievement represents a significant step forward in THI's commitment to shaping a more sustainable future for the maritime industry. By adopting methanol as a propulsion fuel, the vessel achieves significant emissions reductions during operation, cutting carbon dioxide by 10%, nitrogen oxides by 80%, and sulphur oxides by 99% compared to conventional vessels. Moreover, the use of green methanol further advances the decarbonisation of maritime transport, promoting environmentally responsible shipping practices.

The launch ceremony served as a proud



shipbuilding



testament to the dedication, skill, and innovation of THI's workforce, who continue to uphold the company's reputation as a trusted name in global shipbuilding.

Two Alpha Gas carriers to get enhanced operational support with Wärtsilä Lifecycle Agreement

Wärtsilä has signed a five-year Lifecycle Agreement with Alpha Gas. The agreement covers two LNG carriers, each equipped with four Wärtsilä 34DF engines, and is aimed at giving Alpha Gas increased operational insight, availability, and better maintenance cost predictability. The order with Wärtsilä was booked in Q2 2025.

In today's challenging legislative and economic environment, shipowners and operators are increasingly looking for support in maximising efficiency and the use of their assets. For LNG carriers in particular, which have limited opportunities for unscheduled stops and downtime, they are looking to safeguard their vessels' reliability.

"Our emphasis is on enabling the highest level of efficiency and reliability throughout our fleet", says Peter Lonski, Technical Director of Alpha Gas. "This agreement with Wärtsilä will help us achieve that goal, while at the same time allowing us to accurately predict our maintenance costs. We also expect to be able to extend the time between overhauls, thanks to the dynamic maintenance planning feature". The agreement with Wärtsilä will help Alpha Gas to optimise the operations and maintenance of the two LNG car-

riers more effectively through 24/7 expert remote support and guidance for troubleshooting and maintenance using specialist diagnostic tools. Wärtsilä experts will be able to directly monitor the vessels' systems and employ advanced diagnostic tools to support the crew with troubleshooting activities and rapid fault resolution. The agreement will also help to minimise OpEx and lifecycle costs by enabling preventive interventions that can prevent the need for later expensive repairs and on-site visits.

"The maritime industry is complex, with many moving parts; therefore, we take a consultative approach with our customers, working closely with them to tailor the agreement to their specific needs as a means to add value to their operations", comments Henrik Wilhelms, Director of Agreement Sales at Wärtsilä Marine.

Wärtsilä signed a similar agreement with Alpha Gas in November 2024, covering two more LNG carriers. The four Alpha Gas sister vessels now covered by the Wärtsilä Lifecycle Agreement are the "Energy Pacific", "Energy Endeavour", "Energy Integrity", and "Energy Intelligence".

NEMO granted NGO consultative status with IMO and IAEA

The Nuclear Energy Maritime Organisation (NEMO) has been officially granted NGO consultative status with the International Maritime Organisation (IMO) and has received a formal invitation to participate regularly in the General Conference of the International Atomic Energy Agency (IAEA) – a significant milestone in its global engagement efforts.

With this new status, NEMO will play an active role in shaping international dialogue and policy at the highest levels of maritime and nuclear governance. As a recognised NGO, NEMO will contribute expert knowledge, technical input, and strategic recommendations to support the integration of nuclear technologies in shipping, offshore energy platforms, and floating nuclear power systems.

NEMO is also set to participate in the IAEA's upcoming ATLAS initiative (Atomic Technologies Licensed for Applications at Sea), launching later in 2025. This global programme aims to support the development of regulatory frameworks for nuclear energy at sea. NEMO will provide techni-

The Nuclear Energy Maritime Organisation (NEMO) has been officially granted NGO consultative status with the IMO, and has received a formal invitation to participate regularly in the General Conference of the International Atomic Energy Agency (IAEA) – a significant milestone in its global engagement efforts.

cal expertise and strategic guidance across all ATLAS Implementation Groups, helping to define the future of nuclear-powered maritime solutions.

Through its consultative role, NEMO will support the creation of robust regulatory frameworks, safety protocols, and best practices for commercial nuclear propulsion and mobile nuclear energy systems. This development also reinforces NEMO's commitment to fostering international cooperation and accelerating progress toward a low-carbon maritime future.

ITOCHU places newbuilding order for ammonia bunkering vessel

ITOCHU Corporation recently signed a shipbuilding contract with Sasaki Shipbuilding Co., Ltd. for the construction of a 5,000 m³ ammonia bunkering vessel, along with an agreement with Izumi Steel Works Ltd. regarding the construction of an ammonia tank plant that will be installed on the vessel. These agreements were signed by Clean Ammonia Bunkering Shipping Pte. Ltd. (CABS), a wholly owned Singapore-based special-purpose company of ITOCHU. In connection with this, CABS has concluded a financing agreement with The Hiroshima Bank, Ltd. for part of the vessel's purchase.

Through the development and construction of this vessel, and its subsequent demonstration, ITOCHU will establish a safe off-shore ammonia bunkering operation by way of ship-to-ship transfer, which serves as an important step for the promotion of the integrated project. Then, ITOCHU plans to establish a connection between the first movers in clean ammonia production and the first movers in the operation of ammonia-fuelled vessels, securing initial demand for ammonia as a marine fuel. The company's ultimate aim is the commercialisation of the ammonia bunkering business in Singapore and the expansion of a similar business model to major maritime transportation points around the world, including Spain (Strait of Gibraltar), Egypt (Suez Canal), and Japan.

By taking advantage of the expertise and knowledge gained through the vessel's construction and the planned demonstration of ammonia bunkering in Singapore, ITOCHU will contribute to strengthening Japan's competitiveness in the construction of ammonia bunkering vessels and the production of ammonia tank plants, the demand for which is growing rapidly.



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Why are energy companies turning their backs on renewables?

by Pantelis Paidousis

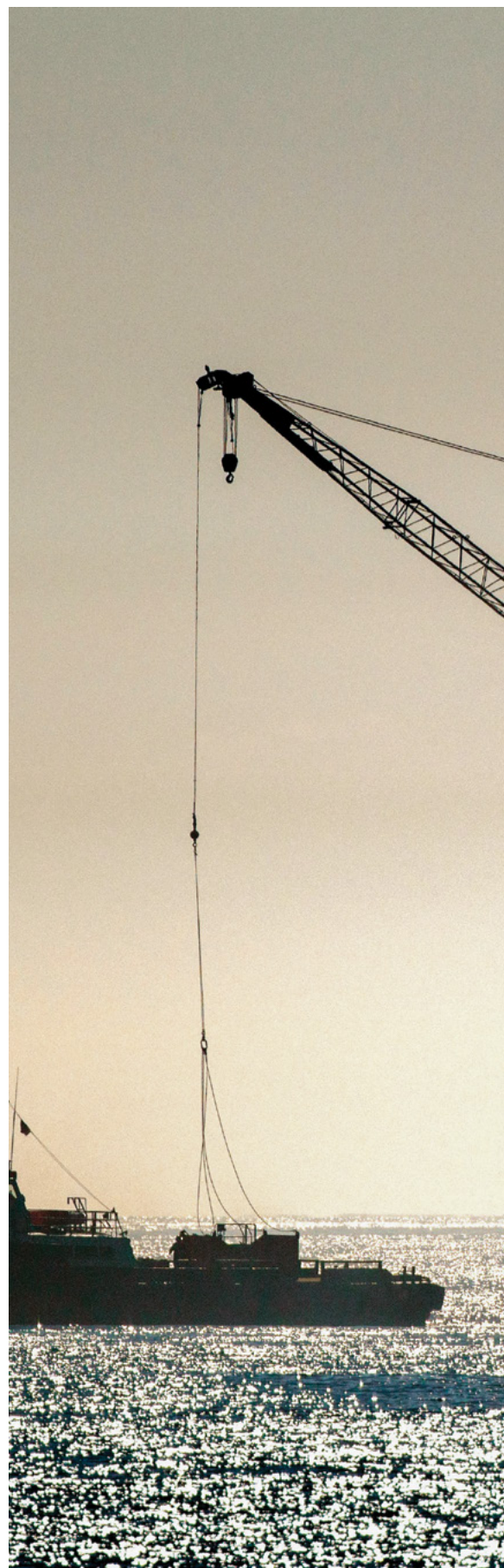
We are in the year 2020. The COVID-19 pandemic is ravaging the planet, putting national health-care systems under extreme pressure. The virus is spreading rapidly, and thousands of people are losing their lives every day. In this context, many governments around the world take a radical decision: a total lockdown.

Economic activity grinds to a halt, global demand for travel collapses – dragging fuel demand down with it – while industrial production slows abruptly. As a result, global energy consumption plummets, with oil and natural gas prices dropping to historic lows. In this climate of uncertainty, where no prediction of a return to normalcy can be considered reliable, the energy sector is put to the test. Alarm bells ring for energy giants, particularly in the West, with company losses surpassing \$100 billion, according to Wood Mackenzie data. In this unstable environment, top energy companies are forced to reassess their strategies and investments. The pressure is twofold: on one hand, the international community is demanding the acceleration of the energy transition and the reduction of carbon emissions; on the other, investors are looking for new, sustainable growth models. Under these circumstances, a growing number of energy companies are making a sudden, and in some cases erratic pivot towards Renewable Energy Sources (RES).

Renewables are emerging in the eyes of companies and investors not just as a “cleaner” energy source but as a more sustainable and attractive business prospect compared to oil and gas. In this light, oil and gas giants start announcing ambitious commitments to reduce their emissions and invest in “green” projects. However, behind these overly ambitious declarations, the entire energy sector seems to be in free fall.

Traditional oil companies such as BP and Shell are adding wind and solar projects to their portfolios. A wave of investment in RES is just around the corner. Yet most companies lack the necessary expertise in this field, raising valid questions about this transition’s effective and sustainable outcome.

“Investors and companies focused on what at the time seemed to be the dominant narrative about a shift toward wind and solar energy”, noted ExxonMobil CEO Darren Woods in an interview with the New York Times in November 2024. Fast forward to today. In 2025, the energy sector has returned to a state of normalcy,





Credit: EPA/EUGENE GARCIA

allowing companies to re-evaluate their strategies and investments with greater clarity. With return on investment as the primary criterion, many companies that previously announced a shift to renewables are once again eyeing the promising prospects of oil and gas projects.

The big picture of the energy market

Amid profound geopolitical and geo-economic shifts, renewable energy sources retain their momentum as a sustainable option. However, they are gradually losing their appeal compared to fossil fuels, which are returning to the forefront as a strategic tool of power for national economies.

This trend is reinforced by a strong momentum in the demand for fossil fuels in key countries like China and India, and by the ambitions of developing economies, such as Namibia, Suriname, Congo, and Mozambique, which seek to exploit their substantial hydrocarbon reserves. These conditions are creating second thoughts among energy giants that had temporarily turned to renewables.

These reservations are further intensified by the International Energy Agency's (IEA) recent estimates, which show a shortage in the global oil market, despite the apparent surplus reflected in the market's supply-demand balance. At the same time, the IEA projects an accelerated natural gas demand growth of 2% in 2026, which will push global consumption to an all-time high of 4.35 trillion cubic meters.

The re-election of Donald Trump as President of the United States seems to have further complicated the landscape. The Republican president has openly advocated for fossil fuels, dismissing any concerns about climate change and labelling renewable energy sources as unreliable and costly. Recently, through the One Big Beautiful Bill Act, he required US federal agencies to enhance provisions that abolish or amend tax incentives for solar and wind energy projects starting in 2026. It is worth noting that, under the existing legal framework, developers of renewable energy projects could claim a 30% tax credit through 2032. Under the new provisions, this advantage is essentially eliminated, impacting the financial viability of "green" projects.

All the above factors converge to strengthen confidence in oil and gas projects, reinforcing the belief among many companies that

In recent years, the profitability scale has clearly tipped in favour of oil and gas projects, to the detriment of solar and wind ones. Energy companies can reap far greater profits from hydrocarbon extraction projects, a fact that is leading them to revise their strategies.

This is illustrated by an S&P Global Commodity Insights analysis, which examines the average return on capital depending on the type of investment (oil & gas versus RES) for the period 2010-2023. According to the analysis, oil and gas companies reached an average return on capital of 11% in 2023, compared to -8% in 2020. During the same period, the average return on capital for RES companies remained consistently low at around 2%.

Looking at average returns on capital over time, it's clear that investments in oil and gas projects are subject to significant fluctuations. This volatility increases the sense of uncertainty and makes it harder to forecast returns, thus raising the investment risk. In contrast, renewable projects, while offering lower returns, exhibit greater stability, making them a more predictable investment option.

Commenting on the findings, Mark Viviano, CFA at the energy investment firm Kimmeridge, noted: "Looking at relative shareholder returns, the message is clear. The market wants energy companies to focus on their core competencies. That doesn't mean abandoning the energy transition; on the contrary, it simply means being realistic about it".

they should reassess their strategies and allocate more capital to fossil fuels.

The case of BP

A telling example is BP, which in 2020 committed to reducing its oil and gas production by 40% by 2030, while accelerating the development of RES. However, five years later, in February 2025, BP revised its priorities, cutting its planned investments in RES by \$5 billion and increasing its annual fossil fuel spending to \$10 billion.

This represents a 180-degree shift in the company's strategy, aimed at increasing its profits and attracting more investors. In this context, the energy giant recently announced its largest oil discovery in 25 years, in the offshore "Bumerangue" block off the coast of Brazil. This discovery is a significant step toward BP's goal of producing 2.3–2.5 million barrels of oil equivalent per day by 2030.

The harsh reality of profitability

In recent years, the profitability scale has clearly tipped in favour of oil and gas projects, to the detriment of solar and wind ones. Energy companies can reap far greater profits from hydrocarbon extraction projects, a fact that is leading them to revise their strategies.

Facing a critical challenge

The renewed interest in fossil fuels highlights one of the most critical challenges facing energy companies today.

Climate change poses risks that have been escalating for decades. According to the scientific community, every fraction of a degree in global temperature rise – caused by fossil fuels – exponentially increases both the intensity and frequency of phenomena such as heatwaves, wildfires, droughts, storms, and loss of biodiversity. At the same time, companies are being called to meet investor demands by continuously improving their profitability levels. Yet, investors still expect meaningful progress in reducing emissions.

In any case, the energy industry stands at a pivotal crossroads, where the need for financial sustainability and the demand for environmental responsibility are in conflict. The real challenge for energy companies and the global community is to find a balanced strategy that integrates energy security, profitability, and sustainable development.



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Commodities

Edited by: Giannis Theodoropoulos

Dry Bulk Cargoes

COAL

Global coal demand to remain on a plateau in 2025 and 2026

Global coal demand is likely to remain broadly unchanged this year and the next, despite short-term fluctuations across several major markets in the first half of 2025, according to the International Energy Agency's (IEA) latest update on the sector.

The "Coal Mid-Year Update" shows that global coal demand increased to a new all-time high of around 8.8 billion tonnes in 2024, up 1.5% from 2023, as rising consumption in China, India, Indonesia, and other emerging economies more than offset declines in advanced economies in Europe, North America, and Northeast Asia.

However, several of these trends reversed in the first half of 2025, as demand declined in China and India due to a weaker growth in electricity consumption and strong increases in power generation from renewable sources. By contrast, coal use grew by around 10% in the United States, as robust growth in electricity demand combined with higher natural gas prices drove up coal consumption for power generation. In the European Union, coal demand was broadly flat, with lower industrial consumption offsetting higher demand from electricity generation.

Despite these short-term variations, the report notes that the underlying structural drivers of the world's coal use

remain broadly unchanged. As a result, it forecasts a slight increase in global coal demand in 2025, followed by a marginal decline in 2026, bringing demand to just below 2024 levels. This outlook remains consistent with the forecast published in December in "Coal 2024", the IEA's annual coal market report, with the main changes of note since then including downward revisions for global economic growth and the significant energy policy shift in favour of coal in the US.

Over the whole of 2025, coal demand in China is expected to decline slightly, by less than 1%. In the US, demand is expected to grow by around 7%, and in the EU, it is set to decrease by nearly 2%. Global coal production is expected to rise to a new record in 2025, driven by continued output growth in China and India, which rely on coal for their energy security. However, the report anticipates a decline in global coal production in 2026, as high stock levels and lower prices begin to weigh on supply.

Coal trade volumes, which rose steadily in recent years, are projected to contract in 2025 for the first time since the 2020 COVID-related downturn. This decline is expected to continue into 2026, which would mark the first consecutive two-year drop in global coal trade volumes this century, according to IEA data.

EIA expects coal's share of US electricity generation to increase to 17% in 2025

The US Energy Information Adminis-

tration (EIA), in its latest "Short-Term Energy Outlook", expects US coal-fired power plants to remain relatively well-stocked through the end of next year. The EIA estimates that power plants in the United States had 124 million short tonnes of coal on-site at the end of June, enough for them to consume that coal at a rate of about 1.3 million short tonnes per day, meaning they had about 93 days' worth of fuel on-site. This metric, also called "days of burn", is calculated by dividing coal inventories held at power plants by a seasonal consumption rate. The EIA also forecasts that days of burn will range between about 90 and 120 days between now through the end of 2026, or about a month's worth of coal more than power plants had on-site between 2019 and 2022.

Although coal inventories held at US power plants have fallen since early 2024, coal consumption in the US electric power sector has also fallen since then, so the supply measure of days of burn remains relatively high. Reflecting this supply condition, coal shipments to power plants – many of which occur by rail – have declined in line with falling demand.

The long-term decrease in US coal consumption will temporarily reverse in 2025 primarily because of rising electricity demand and coal's increased competitiveness in the electric power sector, which accounted for more than 90% of US coal consumption in 2024. US natural gas prices last year were at historic lows,

and as natural gas prices increased in the first quarter of 2025, coal became more competitive: US coal consumption in the first quarter of 2025 was 18% more than in the first quarter of 2024.

In its short-term forecast, the EIA expects coal's share of US electricity generation to increase from 16% in 2024 to 17% in 2025, before declining to 15% in 2026. Overall, electricity generation is increasing to meet growing electricity demand, especially from the commercial and industrial sectors. Similarly, the EIA forecasts a 6% increase in US coal consumption for 2025, followed by a 6% decrease in 2026 with planned coal power plant retirements and increasing renewable capacity coming online.

IRON ORE-STEEL

West Africa iron ore exports surge even before Simandou commissioning

Western Africa (Mauritania, Sierra Leone, and Liberia) exported a record 18 mt of iron ore in the first half of 2025, up 34% from a year earlier, according to Kpler's data. The growth precedes the anticipated November 2025 commissioning of Guinea's Simandou project and reflects momentum from ArcelorMittal Liberia Phase II and Sierra Leone's Tonkolili operations.

With Simandou coming online in November, Kpler expects Western Africa iron ore exports to increase by 30% y/y to 36 million tonnes in the whole of 2025 and reach an export capacity of around 200 million tonnes by 2030.

Decline in world crude steel production

World crude steel production for the 70 countries reporting to the World Steel Association (worldsteel) was 151.4 mt in June 2025, a 5.8% decrease compared to June 2024.

Crude steel production by region

Africa produced 1.7 mt in June 2025, up by 3.0% compared to June 2024. Asia and Oceania produced 112.9 mt, down by 6.2%. The EU-27 produced 10.4 mt, down by 8.2%, while Europe (non-EU) produced 3.3 mt, down by 8.4%. The Middle East produced 4.3 mt, a decrease of 4.9%. North America produced 8.7 mt, up by 1.2%. Russia and the Commonwealth of Independent



10% of US grain cargoes have been destined for China so far in 2025.

States, along with Ukraine, produced 6.7 Mt, down by 8.8%. Finally, South America produced 3.5 mt, an increase of 1.3%.

Top 10 steel-producing countries

China produced 83.2 mt in June 2025, down by 9.2% compared to June 2024. India produced 13.6 mt, up by 13.3%. Japan produced 6.7 mt, down by 4.4%. The US produced 6.9 mt, up by 4.6%. Russia is estimated to have produced 5.6 mt, down by 7.4%. South Korea produced 5.0 mt, down by 1.8%. Turkey produced 2.9 mt, a decrease of 3.5%. Germany produced 2.7 mt, down by 15.9%. Brazil produced 2.8 mt, down by 0.5%. Iran is estimated to have produced 2.2 mt, down by 15.5%.

GRAINS

US grain shipments jump 9% despite Chinese tariffs

During the first half of 2025, US sea-borne grain shipments increased 9% y/y, driven by stronger maize exports. While an increase in import tariffs led to a 57% y/y drop in volumes to China, the US has been able to find alternative markets for most of its cargoes, says BIMCO.

In March 2025, China introduced higher tariffs on US grain shipments, significantly reducing the competitiveness of US cargoes. As a result, the share of US grain cargoes destined for China plunged from 26% in the first half of 2024 to just 10% in 2025. To compensate for the decline, the US increased its shipments to other markets in Asia, Latin America, and the Mediterranean.

Still, the shift in markets did not fully offset the losses in certain commod-

ities. According to BIMCO's data, US soya bean exports fell by 10% y/y and sorghum exports by 89% y/y, as China remains a dominant player in these trades. Notably, 67% of global soya bean shipments and 84% of sorghum shipments are destined for China. By contrast, China accounts for a much smaller share of global wheat (7%) and maize (5%) shipments.

"While the increase in volume was a positive for the dry bulk sector during the first half of 2025, tonne-mile demand still fell by 7% y/y, due to a 14% decrease in average sailing distances. The new destinations for US grains are, on average, closer to the US than China. Additionally, the recovery of US grain shipments via the Panama Canal further shortened distances", says Filipe Gouveia, Shipping Analysis Manager at BIMCO.

"A seasonal uptick in grain shipments is expected over the rest of the year following the US harvests. Tighter global supplies of wheat and maize could help sustain shipments. However, finding alternative markets for soya beans and sorghum may remain a challenge. For soya beans in particular, China is expected to continue favouring Brazilian cargoes, bolstered by Brazil's growing production", claims Gouveia.

Latest forecasts on global wheat production, consumption, and trade

The US Department of Agriculture (USDA) recently published its monthly "World Agricultural Supply and Demand Estimates" report for July. The global wheat outlook for 2025/26 points to

reduced supplies, higher consumption, lower trade, and reduced ending stocks. Global wheat supplies are projected to decrease by 0.4 million tonnes to 1,072 million, primarily due to reduced beginning stocks in several countries and lower production in Canada, Ukraine, and Iran, which more than offset higher production in Kazakhstan, the EU, Pakistan, and Russia. Global consumption is expected to rise by 0.8 million tonnes to 810.6 million, mainly due to higher feed and residual use in Kazakhstan and Thailand.

World trade is 1.3 million tonnes lower at 213.1 million on reduced exports for the EU and Ukraine, only partially offset by higher exports for Russia and the United States. Projected 2025/26 global ending stocks are lowered by 1.2 million tonnes to 261.5 million, primarily due to reductions in Canada and the EU.

IGC projects lower production

The International Grains Council's (IGC) estimate of total world grain (wheat and coarse grains) production in 2025/26 is lowered by 1 million tonnes m/m to 2,376 mt. The 2025/26 total grain production is forecast to be the largest ever, at 60 mt higher y/y, mainly because of anticipated bumper maize and wheat harvests.

Forecast consumption growth of almost 2% is seen as slightly faster than average, including record food (up by 13 mt), feed (up by 16 mt), and industrial (up by 7 mt) uses. End-season inventories are projected to be more or less unchanged y/y, at 582 mt, including 140 mt for major exporters, representing a 9% increase. World grains trade is projected to climb by 2%, boosted mainly by increased shipments to Asia.

Amid tentative expectations for larger southern hemisphere harvests, world soybean production is projected to increase by 1% y/y, reaching a peak of 428 mt in 2025/26. While availabilities should remain plentiful, a solid y/y gain in utilisation could see carryovers tighten, including among key exporters. After edging up in the current year, global import demand is likely to expand by 2% in 2025/26, as South American suppliers take a bigger share of total volumes.



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Wet cargoes

CRUDE OIL

IEA: The lowest rate of global oil demand growth since 2009

In its July Oil Market Report, the International Energy Agency (IEA) projects global oil demand growth to increase by 700 kb/d in 2025, its lowest rate since 2009, with the exception of 2020, which was owed to the COVID-19 pandemic. Annual growth eased from 1.1 mb/d in 1Q25 to just 550 kb/d in 2Q25, with emerging market consumption particularly lacklustre. Global oil demand is projected to expand by 720 kb/d to reach 104.4 mb/d in 2026.

Global oil supply increased by a steep 950 kb/d m/m to 105.6 mb/d in June, led by Saudi Arabia. Output was up by 2.9 mb/d y/y, of which OPEC+ accounted for 1.9 mb/d. With higher OPEC+ targets for August, world oil supply is projected to rise by 2.1 mb/d to 105.1 mb/d this year and by an additional 1.3 mb/d in 2026, with non-OPEC+ adding 1.4 mb/d and 940 kb/d, respectively.

These large supply increases compare with modest expected growth in global oil demand of around 700 kb/d in 2025 and 720 kb/d in 2026, reaching 104.4

mb/d. Yet the seasonality in crude runs to meet Northern Hemisphere summer travel demand is boosting refinery throughputs by 3.7 mb/d from May to August. The typical doubling in crude burning for power generation over the same period, to around 900 kb/d, further tightens the market.

The largest conventional hydrocarbon field yet discovered in Poland

Central European Petroleum (CEP) has made a significant oil discovery (33.4 API oil) at its 100% owned and operated Wolin East 1 (WE1) well, located in the Baltic Sea approximately 6 km offshore from the city of Świnoujście.

The WE1 well was drilled using a jack-up rig in waters 9.5 meters deep and reached a vertical depth of 2,715 meters. Tests confirmed the presence of a 62-meter hydrocarbon column and excellent reservoir properties for oil and gas production in the Main Dolomite geological formation. The Wolin East oil discovery is estimated to contain mean recoverable oil, sales gas, and natural gas liquids totalling 200 million barrels of oil equivalent (mmbobe).

There is also significant further low-risk exploration, appraisal, and secondary



recovery potential within the license in the Main Dolomite as well as in the deeper Rotliegend formation. With these opportunities included, the Wolin license is estimated to contain a total of more than 400 mmboe of recoverable hydrocarbon resources.

As estimated above, the oil and gas resources in Wolin East constitute the largest conventional hydrocarbon field yet discovered in Poland, and one of the largest conventional oil discoveries in Europe in the past decade.

CNOOC Limited brings Kenli 10-2 Oilfields Development Project on stream

On July 22, CNOOC Limited announced the start of production for Phase I of the Kenli 10-2 Oilfields Development Project, marking the launch of the largest shallow lithological oilfield offshore China.

The project is located in the southern Bohai Sea, with an average water depth of approximately 20 meters. The main production facilities include a new central platform and 2 wellhead platforms, which leverage the adjacent existing facilities for development. A total of 79 development wells are planned to be

commissioned, including 33 cold recovery wells, 24 thermal recovery wells, 21 water injection wells, and 1 water source well. Peak production is expected to reach approximately 19,400 barrels of oil equivalent per day in 2026. The oil property is heavy crude.

Kenli 10-2 is the first lithological oilfield with a proved in-place volume of 100 million tons discovered in the shallow depression zone of the Bohai Bay Basin. It is being developed in two phases under a strategy of “exploration and development integration, regional coordination, and phased implementation”. CNOOC Limited has adopted an innovative combined development approach of “conventional water injection, steam huff and puff, and steam flooding”, providing strong technical support for the efficient utilisation of oil reserves. The project’s platform integrates both conventional cold production and thermal recovery systems and is equipped with over 240 sets of key equipment. It is one of the most complex production platforms in the Bohai region and the first large-scale thermal recovery platform for heavy oil in the southern Bohai Sea.

LIQUIFIED NATURAL GAS (LNG)

Middle East to overtake Asia in gas output in 2025, becoming second-largest region globally

The Middle East is on track to surpass Asia and become the world’s second-largest gas producer in 2025, ranking only behind North America, according to research and analysis from Rystad Energy. Gas production in the Middle East has grown by about 15% since 2020, and the region’s projected future growth underscores the determination of regional producers to monetise gas reserves and develop export potential in order to meet global demand.

The region currently produces approximately 70 billion cubic feet per day (Bcf/d) of gas, a figure forecast to increase by 30% by 2030 and 34% by 2035 thanks to significant developments in Saudi Arabia, Iran, Qatar, Oman, and the UAE. By 2030, the region will add another 20 Bcf/d to its production, equivalent to half of Europe’s entire gas demand as of today.

A significant portion of this expansion



The Middle East is on track to surpass Asia and become the world's second-largest gas producer in 2025, ranking only behind North America.

will come from new projects that can produce gas at a cost-effective level of less than \$5 per thousand cubic feet. The Gulf trio of Qatar, the UAE, and Saudi Arabia are leading this gas-driven growth, with Qatar's ambitious North Field expansion set to elevate its LNG capacity by 80%, from 77 to 142 million tonnes per annum (mtpa) by the decade's end, all while maintaining a competitive breakeven price of under \$6 per MMBtu.

By 2028, the region is expected to add new capacity of 60 mtpa, representing a sizable portion of Rystad Energy's predicted global increase of 150 mtpa. Qatar is leading this expansion, adding 48 mtpa through its North Field East and North Field South projects. The UAE will contribute an additional 10 mtpa from the Ruwais LNG project, while TotalEnergies is developing the Marsa LNG project with a capacity of 1 mtpa in Oman. Rystad Energy projects these developments to involve investments of more than \$50 billion, highlighting the region's strategic effort to strengthen its position in the global LNG market.

Venture Global and Eni announce 20-year LNG Sales and Purchase Agreement

Venture Global, Inc. and the Italian company Eni S.P.A. announced the execution of a new 20-year Sales and Purchase Agreement (SPA) for the purchase of 2 mtpa of LNG from CP2 LNG, Venture Global's third project. This deal marks Eni's first-ever long-term agreement with a US LNG producer. To date, approximately 13.5 mtpa of CP2 Phase One has been sold, raising the total contracted capacity for all of Venture Global's projects to 43.5 mtpa. To date, Venture Global has supplied Italy with nearly 40 cargoes of US LNG from its Calcasieu Pass and Plaquemines LNG facilities.

"We are honoured that Eni, a leading innovator and global gas player, has chosen Venture Global as their first American LNG supplier. Italy is an important ally and trading partner to the United States, and we are grateful for Eni's trust as our newest customer. This deal marks a significant milestone for the company and is further recognition of our grow-

ing global energy leadership and strong record of execution", said Mike Sabel, CEO of Venture Global.

Eni joins a growing number of world-class LNG customers for CP2 in Europe, Asia, and the rest of the world. Accordingly, CP2 is a strategically important project for global energy supply and security.

TotalEnergies & CMA CGM launch LNG bunkering logistics joint venture in Rotterdam

TotalEnergies and CMA CGM Group have entered into an agreement to develop a 50/50 logistics joint venture dedicated to the implementation and operation of an LNG bunker supply solution at the port of Rotterdam, in the Netherlands. This strategic partnership reflects the shared ambition of both French companies to work jointly towards the acceleration of the energy transition in the maritime sector.

Expanding LNG infrastructure in Europe As part of this new logistics joint venture, a new 20,000 cubic-meter LNG bunker vessel will be positioned in Rotterdam by the end of 2028 and jointly operated. The CMA CGM-TotalEnergies joint venture will offer a complete logistics service, from reload access at Gate terminal facilities to LNG bunker delivery to a wide range of vessels operating in the Amsterdam-Rotterdam-Antwerp (ARA) region, including those of CMA CGM as well as other shipping operators. The joint venture will capitalise on TotalEnergies' established logistics infrastructure in the ARA region, where the 18,600 m³ LNG bunker vessel Gas Agility has been in operation since 2020. By integrating the joint venture's future LNG bunker vessel with Gas Agility, the partnership aims to create synergies that enhance delivery flexibility and boost operational efficiency across the region.

A long-term LNG supply agreement

To support CMA CGM's goal of reaching net-zero carbon emissions by 2050 and ensure the supply of its dual-fuel LNG-powered fleet, which will grow to 123 vessels by 2029, TotalEnergies will supply CMA CGM with up to 360,000 tonnes of LNG annually, from 2028 onwards and until 2040.



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Legends & milestones

Edited by: Panagiotis Korakas

Legendary shipowners and milestone events in the history of Greek shipping



Snapshot taken on 23 June 1969, during the launching ceremony of the “Atlantic Helmsman”, a bulk carrier built in Hakodate Dock Co. shipyards for Greek shipowner G. S. Livanos. According to Naftika Chronika’s 15 July 1969 issue, it was the 8th vessel in an order for ten newbuildings at the same Japanese shipyards.

The “Ellinis” was originally built as SS “Lurline” in 1932. The ocean liner was acquired and refitted by Chandris Lines in 1963 and was introduced to the Greece-Australia line on 28 December of the same year. With a service speed of 22 knots and capacity for 1,600 passengers, the “Ellinis” remained in service up until 1986 (Photo credit: Press Photo Agency, S.Valakis, D. Vanalidis, G. Skouras).



The “Aquarius” being launched at Perama on 15 September 1971. It is considered “the first cruise ship built in Greece”, having been constructed at Perama for Hellenic Mediterranean Lines. The vessel’s construction was completed in May 1972, and its cost was reported to be approximately 120 million drachmas (Photo credit: MK Studio).





The "Ethnos" was a 1956-built general cargo ship, built in Japan by Mitsubishi Heavy Industries for Costas M. Lemos. It had a capacity of 15,756 DWT and a speed of 18,5 knots.

The "Mobil Astral" being towed into the Hellenic Shipyards of Skaramanga in 1970, in order to be drydocked. With a capacity of 102,000 DWT, this "super tanker" was the first vessel to "inaugurate" the then-new dry dock at the Hellenic Shipyards of Skaramanga, which had a total capacity of 240,000 DWT and had cost \$10 million.



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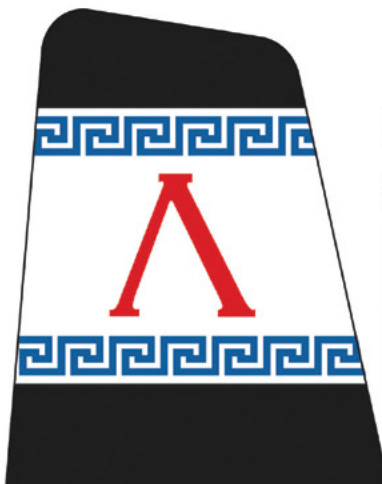


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SUN ENTERPRISES LTD.

Livanos Building
47-49 Akti Miaouli, 185 36 Piraeus
Tel: +30 210 4292910-14
Fax: +30 210 4292523
Email: email@SunEnterprises.gr



S. LIVANOS HELLAS S.A.

Galaxias Building
6 Skouze Str, 185 36 Piraeus
Tel: +30 210 4292730 - 4
Fax: +30 210 4292523
Email: crew@SunEnterprises.gr

Aviation industry

Edited by: Pantelis Paidousis

News from the aviation world



IATA's outlook for air transport

According to the International Air Transport Association (IATA), passenger traffic growth will decelerate to 5.8% y/y in 2025, down from 10.6% y/y in 2024. On top of some macroeconomic developments, such as the deceleration of the global economy to around 2.5% GDP, supply chain issues will continue to prevent airlines from realising their full growth potential and curtail progress on reducing CO₂ emissions.

IATA also expects a substantial slowdown in air cargo growth in 2025, to only 0.7% y/y. Aircraft deliveries are now lagging behind their peak levels by 30%. As a result, the aircraft backlog has risen to a record-high of 17,000 aircraft. If this backlog increase were assumed to be caused solely by delivery delays, it would indicate that airlines are short of 5,400 aircraft, i.e., 18% of the active fleet. Given the expected annual production of around 2,000 aircraft, this may take three to five years to resolve.

In 2025, IATA anticipates that airlines'

revenues will remain broadly flat compared to 2024 and forecasts a net profit of USD 36.0 billion at a still meagre 3.7% net profit margin. Although this performance is among the best in the industry's history, it still represents only half of what all global industries achieve on average.

AEGEAN invests in two new Airbus A321neo XLR aircraft with even greater range and comfort

AEGEAN will add two new Airbus A321neo XLR (Extra Long Range) aircraft to its fleet, which offer even longer range of up to 10.5 hours, accelerating the initiation of its flights to India in March 2026. With this addition, AEGEAN's Airbus A320/A321 neo order stands at 60 aircraft, of which 36 have already been delivered (to date).

The capabilities and comfort features of the A321neo XLR aircraft expand AEGEAN's options for new additional connections, offering 2.5 hours more than the A321neo LR and 4.5 hours more than the



A321neo. At the same time, a new level of comfort and services is introduced, with a customised configuration of only 138 seats in total, of which 24 are Business Class Suites equipped with fully lie-flat beds, increased privacy, and full aisle access.

The two A321neo XLR aircraft, expected to be delivered in December 2025 and January 2026, significantly increase the fleet size and capabilities of AEGEAN's "special purpose" sub-fleet, considering the existing order of four A321neo LRs, previously announced in April 2024 (and scheduled for delivery in 2027 and 2028). Following the delivery of the new A321neo XLR aircraft, AEGEAN plans to commence five weekly flights to New Delhi in March 2026, and soon thereafter, three weekly flights to Mumbai in May 2026 – the second destination of the company's network in India. The exact flight schedule will be announced at the end of September, when ticket sales start. With the future deliveries of the A321neo LR aircraft in 2027 and 2028, AEGEAN will

also consider the launch of additional new routes to destinations such as Bangalore, Seychelles, Maldives, Nairobi, Almaty, and Lagos.

Boeing: Airlines will need 2.4 million new pilots, techs, and crew by 2044

Fuelled by emerging markets and changes in fleet mix, Boeing projects continued demand for aviation personnel as the global commercial fleet changes to meet the demands of the flying public. Boeing's 2025 "Pilot and Technician Outlook (PTO)" report anticipates the industry will require nearly 2.4 million new aviation professionals through 2044 to meet the long-term increase in air travel. Boeing, which released its annual 20-year forecast at the EAA AirVenture Oshkosh convention, stated that commercial carriers will need substantial hiring and training to sustain the global commercial fleet, including 660,000 pilots, 710,000 maintenance technicians, and 1,000,000 cabin crew members.

In the PTO, Boeing projects through 2044:

- Two-thirds of new personnel will need to be replaced due to attrition, while one-third will support growth in the commercial fleet.
- Demand for new personnel will be driven primarily by single-aisle aeroplanes.
- As in past years, Eurasia, China, and North America will continue to drive demand for more than half of the new industry personnel.
- South Asia and Southeast Asia are the fastest-growing regions for personnel, with staffing demand expected to more than triple.

Aviation sector issues urgent call to accelerate policy action on SAF

A coalition of European aviation stakeholders, including DESTINATION 2050 partners, fuel suppliers (FuelsEurope, Hydrogen Europe, Project SkyPower), and cargo/express carriers (European Cargo Alliance, European Express Association), led by ERA, issued an urgent call for accelerated support to unlock the decarbonisation potential of Sustainable Aviation Fuels (SAF).

The joint call highlights the pressing challenges of affordable SAF deployment across Europe. The SAF market in Europe is still in its infancy. Currently, only HEFA-based fuels are commercially available, and there's a large cost differential compared to conventional fossil kerosene. Next-gen SAFs (like e-SAF and advanced biofuels) are struggling to secure investment and reach final investment decisions (FID).

A 10-point action plan has been handed to the EU Commissioner for Sustainable Transport and Tourism, Apostolos Tzitzikostas. The goal is to provide regulatory certainty, de-risk investments, bridge cost gaps, guarantee price transparency, monitor markets, and foster innovation.

This initiative arrives just as the European Commission prepares to unveil its Sustainable Transport Investment Plan in the third quarter of 2025, which stakeholders hope will include robust support for SAF production and infrastructure.

Maritime numbers

74%

the percentage of the global container-ship fleet running on traditional fuel oil

324

the number of Greek-owned vessels capable of burning alternative fuels (as of July 2025)

25.1%

the market share of South Korean shipyards in ship orders during the first half of 2025

3,588

the number of tankers over 16 years old

95

the number of LNG-powered car carriers

576

the number of containers lost at sea in 2024

113.41 million dwt

the total bulk carrier orderbook

13.1 million tonnes

the volume of wheat shipped from Russian ports in the first half of 2025

2,054,900 TEUs

were handled in the port of Piraeus in the first half of 2025

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