



# THE GREEN TRANSITION



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## AN OVERVIEW

There is a wind of change in the shipping industry as business and political leaders recognise and respond to the climate crisis. Decarbonisation and sustainability are now core considerations in the future of the sector.

The IMO has mapped out an ambitious pathway towards a carbon neutral industry. The ultimate goal is worthy, but there are likely to be disruptions and challenges along the way that make it important for all stakeholders to plan and prepare in order for it to succeed.

In this article, we outline the various stages that lie ahead and anticipate some of the practical and contractual challenges for our Members.

# THE GREEN LANDSCAPE

## Greenhouse gases

A cocktail of greenhouse gases is produced during the combustion process of fossil fuels. Sulphur oxide (SO<sub>x</sub>) and nitrogen oxide (NO<sub>x</sub>) are the most harmful, alongside black carbon, methane (CH<sub>4</sub>) and CO<sub>2</sub>. These gases not only contribute to global warming but also harm human health, causing respiratory and other problems.

There has recently been a drive to reduce SO<sub>x</sub> emissions by capping the sulphur content of fuel and requiring the entire industry either to shift from heavy fuel oil to the use of very low or ultra low sulphur fuels, or else install “scrubber” equipment to remove sulphur oxides from engine exhausts.

NO<sub>x</sub> emissions, on the other hand, cannot be capped at source but can be reduced by engine design improvements. The IMO has addressed this too in recent years by requiring such changes.

In terms of CO<sub>2</sub> emissions, these depend on the amount and type of fuel burned and are currently addressed by phased improvements for newbuilds, as we discuss below, as well as by fuel data collection requirements for existing ships. However, the approach to CO<sub>2</sub> reduction is about to step up a gear.





# THE GREEN LANDSCAPE

## **The IMO's roadmap to “net zero”**

The world took its first major step towards decarbonisation back in 1992 with the establishment of the 1992 United Nations Framework Convention on Climate Change (UNFCCC), an international treaty under which nearly all global States agreed to reduce the level of greenhouse gases to safe levels. The subsequent adoption of the Kyoto Protocol made inroads towards this goal by implementing a series of emission reduction targets between 2008 and 2020. Meanwhile, in 2016, the UNFCCC took a significant step forward by adopting the Paris Agreement on Climate Change, which ambitiously aims to reduce global warming to net-zero within the second half of this century.

The Paris Agreement has been widely adopted, despite the brief withdrawal of the US at the end of 2019. However, it does not expressly regulate the shipping industry. In 2018, the IMO therefore formulated the following shipping industry targets to bring shipping into line with the Paris Agreement. The first milestone is a 40% reduction in CO<sub>2</sub> by 2030 (as compared to 2008 levels) and then, by 2050, it is intended that CO<sub>2</sub> will be further reduced by 70% and greenhouse gases reduced by 50%.



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# GREEN SCHEMES

In order to achieve its emissions reduction targets, the IMO has established various schemes to promote efficiency in new and existing ships. The long-established International Convention for the Prevention of Pollution from Ships (MARPOL), which was originally established to deal with oil pollution, has been developed as a vehicle for emission reduction. The MARPOL Annex VI Regulations on Energy Efficiency for Ships were adopted in 2011 specifically to address pollution caused by greenhouse gases, and achieved particular prominence in 2020 in the context of the global cap on sulphur emissions.

## **Newbuilds – EEDI**

In 2013, the IMO introduced, by way of amendment to MARPOL Annex VI, the Energy Efficiency Design Index (“EEDI”), which applies to newbuilds. This is being implemented in phases. Under phase 1, ships built in 2015 onwards were required to have a 10% reduction in CO<sub>2</sub> levels as compared to those built in 2013. Phase 2, currently in process, requires ships built in 2020 and onwards to have a 20% CO<sub>2</sub> reduction and, under phase 3, from 2025 onwards (and from 2022 for some ship types, including LNG) a 30% CO<sub>2</sub> reduction will be required.

The Energy Efficiency Design Index is measured in terms of CO<sub>2</sub> emitted per capacity mile, though the IMO is considering whether phase four will be expanded to cover all greenhouse gases emitted from ships.

## **Existing ships – EEXI and CII**

Recognising that the EEDI scheme for newbuilds was not enough on its own to meet its targets, the IMO has determined that existing ships also need to be made more efficient. Therefore, during MEPC 75, in November, 2020, the IMO approved further amendments to MARPOL Annex VI, introducing the Energy Efficiency Design Index for Existing Ships (“EEXI”) and Carbon Intensity Indicator (“CII”) schemes. Subject to adoption in June, 2021 during MEPC 76, the requirements will enter into force in 2023.

The EEXI scheme is a single instance technical requirement to adapt existing ships to achieve new technical efficiency standards matching the newbuilding-related EEDI. The CII scheme aims to improve energy efficiency in real world operations by enforcing increasingly stricter emissions targets for existing ships



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year on year. Ships will be classified with an operational carbon intensity rating from “A” to “E” (“A” being most efficient). Efficiency is again measured in terms of CO<sub>2</sub> emitted per capacity mile. If a ship’s rating falls below “C”, a corrective action plan will have to be submitted to improve its grading before the ship can continue to trade. In a scaled rating system, a poor energy rating for a ship could lead to difficulties in getting a fixture or even trading at all.

If regular improvements are not made, a ship’s grading could drop as the CII targets will become increasingly strict every year. A consequence of this could be loss of financing and inability to trade, so there is a strong incentive to improve energy efficiency. Parties may seek to make provision in charterparties for the possibility of a ship’s rating being reduced and its trading ability restricted as a result.

As 2023 approaches, owners need to ensure that they have programmes in place to upgrade existing ships to a suitable efficiency level. The regulations are not especially prescriptive and it is largely up to owners how they seek to achieve this. We discuss some of the possible options below.

Given that the targets have only recently been decided, many existing charterparties will not cater for them and disputes may arise in relation to the interpretation of environmental compliance provisions and liability for taking a ship out of service to effect necessary upgrades. These will need to be considered in the context of the other charter terms, the date the charter was entered into, and what was known at the time. Parties should also bear in mind that improvements in efficiency may mean that ships are no longer able to attain the speeds warranted in the charterparty. Whilst this may give rise to disputes under existing contracts, charterparties being negotiated now should cater for any necessary adjustments in the future.



# GREEN SCHEMES

## EU Emissions Trading Scheme

The EU's approach to emissions reduction has been to set up the EU Emissions Trading Scheme ("ETS"). Although details are still under discussion at the time of writing, it is anticipated that from 2022, the scheme will affect the majority of ships over 5,000 grt performing voyages that start or finish in the EU. A cap will be set on emissions and the party responsible for paying for bunkers will have to purchase, via industry auction, carbon permits to allow for emissions within the cap. Penalties are likely to be imposed on companies which exceed their allowance.

At the time of writing, the details of the scheme are yet to be agreed between the EU Member States. In particular, it is not yet clear which party will be responsible for ensuring compliance with the scheme, although the draft proposals identify the party responsible for paying for the fuel as being the party obliged to obtain the applicable allowance. If this is left to the parties to decide, then it will need to be considered when negotiating fixtures, along with a number of other operational, commercial and contractual considerations.

For example, the additional cost of permits will need to be factored into any voyage and parties will need to allocate responsibility for this cost. Parties will need to determine where responsibility lies in terms of purchasing permits, liability for penalties, as well as data reporting and transparency requirements. It is likely that new bespoke charter provisions will be developed in due course to cater for such matters consistently. There may be added layers of complexity in chains of contracts, with different parties being responsible for different stages of a voyage in and out of the EU.

Disputes might also arise out of a potential clash between obligations under the scheme and commercial obligations. For example, an owner may have difficulty meeting a particular speed ordered by a charterer because of a lack of sufficient emissions permits. Questions may arise as to whether the owner is obliged to comply with the orders or, if additional permits need to be purchased, then who will pay for them. If the charterer is responsible for purchasing permits and fails to do so, then can the owner seek an indemnity if the ship receives a fine for non-compliance? The answers to questions such as these may become clearer as details of the scheme are revealed, but it is clear that consideration will need to be given to such matters in any charterparty that may involve trading in the EU.

Given the international nature of shipping, there are inevitable challenges for any operator in ensuring compliance with all applicable regulations, which are likely to be complicated further by the invariably complex nature of contractual relationships in international shipping and trade. The EU ETS is a prominent example of this.



# GETTING TO GREEN

Beneath the overarching framework that it has set out, the IMO largely leaves it up to individuals as to how to achieve efficiency within the prescribed parameters. Broadly speaking, improved energy efficiency can be best achieved by a combination of energy-saving technology and smart operating methods, together with switching to more energy-efficient fuel.

## **Efficient technology**

Clearly, an efficient ship will burn less fuel. Newbuilds need to meet high standards in order to be EEDI compliant, while existing ships will also need to be brought up to the required EEXI standards.

There is a wealth of technological and design solutions in the market. Efficiency targets are driving rapid advances in this sector, for example, more effective rudders and propellers to increase thrust and reduce fuel consumption, as well as hull enhancements and air lubrication systems to reduce friction. Futuristic innovations such as wind kites and solar sails are starting to become a real possibility.

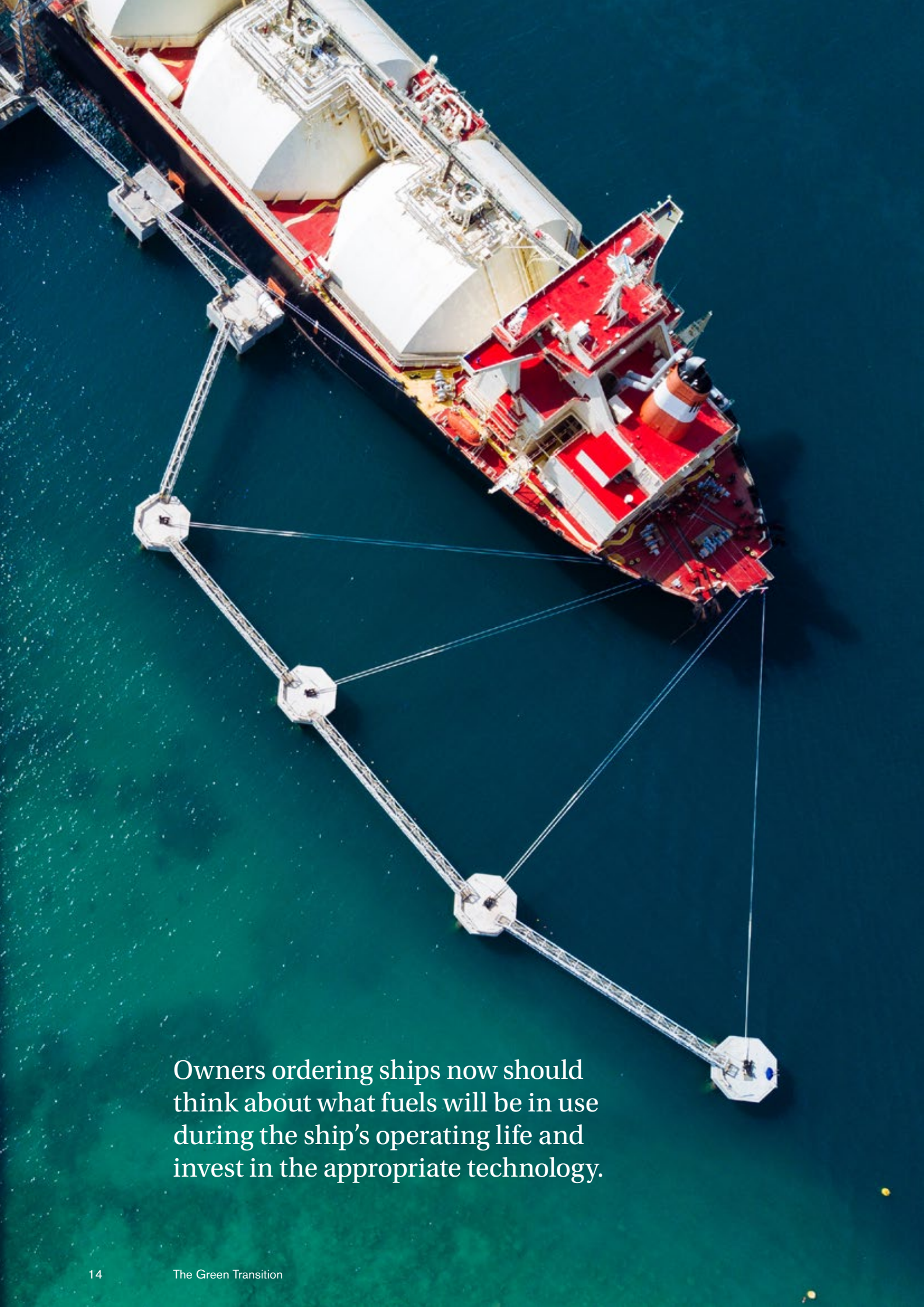
However, all this comes at a cost. Retrofitting a ship costs time as well as money and strategic planning is necessary to implement upgrades with minimal interruption to operations. New technology will necessitate training for the crew, while operating and maintenance procedures will also need to be reviewed. Nevertheless, market indications are that an increase in retro-fitting of eco-friendly technology is already under way.

There is also potential for associated design and delay disputes with yards and manufacturers as new technology is trialled. Buyers should be careful to include watertight warranties and clear dispute resolution mechanisms in shipbuilding and repair contracts. Where possible, owners may try to cater for the potential need to withdraw ships from long-term time charters for upgrades with appropriate charterparty provisions, and environmental compliance clauses and off-hire provisions may need to be reviewed in existing charters. In the absence of clear wording, disputes may arise when an owner's needs are in conflict with those of its charterer.

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# GETTING TO GREEN

## Operational efficiency

Operational measures can also assist in improving efficiency. Maintaining clean, well-coated hulls to reduce drag and burn less fuel is a basic measure. Steaming at eco-speed, adopting a "just-in-time" approach and focusing on good weather-routing practices are all helpful too. However, this must be balanced with the need for an economically viable voyage and there is potential for conflict between the wishes of owners and charterers in this respect.

Charterparty clauses may need to be tightened up in the context of the drive for operational efficiency. Parties looking to address fuel consumption levels can agree speed restrictions in their charterparties. Matters such as hull cleaning, weather routing and eco-speed are often catered for in standard boiler-plate clauses which may be outdated or not thought through in the context of the fixture as a whole and it would be wise to review and update such clauses in the drive for efficiency.

By way of example, BIMCO has recently introduced a "just-in-time" arrival clause for the bulk industry, which has ship-efficiency and emission reduction at its core. Essentially, the clause overrides the basic principle of "utmost despatch" in order to avoid ships racing to reach a port only to spend time waiting there for discharge. While "just-in-time" arrival schemes are already in common use in the liner trade, there are more challenges in implementing such schemes in the bulk sector. However, ports are becoming better prepared to deal with "just-in-time" operations and contractual concerns can be addressed with bespoke provisions such as the BIMCO clause.

Speed reduction is an area where significant emissions reductions can be made - it is estimated that a half-knot reduction in speed reduces CO<sub>2</sub> emissions by roughly 6-9%.

# GETTING TO GREEN

## Alternative fuels

Whilst the measures discussed above might achieve some reduction in greenhouse gas emissions from carbon-based fuels, in order to eliminate them significantly, the only option is to use carbon-neutral fuels. A study by the Getting to Zero Coalition, an alliance of companies within the maritime, energy, infrastructure and finance sectors committed to meeting the IMO's emissions goals, suggests that zero-carbon fuels need to account for 5% of international shipping's fuel use by 2030 if it is to decarbonise by 2050.

The main new fuels on the green horizon are LNG, LPG, bio-diesel, methanol, ammonia and hydrogen, together with the use of fuel cells and batteries. Each has its own pros and cons and switching to any of them is not straightforward. Engines obviously need to be capable of burning the fuel in question. In particular, specific safety requirements have to be met. Hydrogen, for example, has a wide flammability range and needs particular safety measures to be in place, while ammonia is highly toxic.

The energy density/calorific value of a fuel is important in terms of storage capacity. If a fuel does not have an energy density at least equivalent to what it has today, then more storage capacity will be needed on the ship. For example, ammonia and methanol have a lower density and so would require ships to have larger tanks.

There also needs to be sufficient scalability for a fuel to come into common use – in other words, the infrastructure and the demand both need to be present. This may be easier for ships on regular liner trades, but ships steaming between various ports will find sourcing the scarcer alternative fuels more of a challenge.

At the time of writing, Clarksons estimate that close to 30% of newbuilds currently on order will be equipped to burn alternative fuels. LNG has seen the biggest uptake to date and a solid supply infrastructure is starting to develop. Although it may not be the perfect fuel, it has the advantage of being available now, is scalable and is thought to offer a 20% reduction in CO<sub>2</sub> over conventional fuels.

There are numerous other considerations in relation to the various fuel options. For example, biofuel brings issues with cold flow properties and requires careful heating. There are also questions as to whether the overall impact of producing vegetable oil-based fuels actually brings a net environmental benefit.

## Owners ordering ships now should think about what fuels will be in use during the ship's operating life and invest in the appropriate technology.

Clarksons anticipate that LNG as a fuel will have the biggest uptake by 2030, followed closely by ammonia, methanol and then biofuels. By 2050, however, they predict that hydrogen, one of the most environmentally friendly fuels, will take the lead, with LNG tailing off. However, the infrastructure required to produce green hydrogen and burn it in engines or use it in fuel cells is still under development, especially for deep-sea shipping.

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There are also contractual considerations that come with the shift towards new fuels. On the supply side, new terms and standards will need to be agreed which cater for matters specific to the supply of the fuel in question. Shipowners will need to become familiar with new procedures for bunkering and verifying quantity and quality, which may also need to be addressed in charter provisions. In terms of use, there will also be new challenges to be met by training and procedural adjustments.

Fuel quality provisions will need to be carefully tailored to the characteristics of the new fuel. Charterparties currently refer to the ISO standards in relation to fuel specifications, but ISO does not yet cater for alternative fuels. Fuel quality and quantity disputes, which escalated with the introduction of low sulphur fuels, may manifest themselves in different ways with new fuels and the standard provisions for sampling and testing in order to resolve disputes may need to be adjusted. Speed and performance warranties will also need to be tailored to the new fuels and the nature of performance disputes may also change, depending on the type of fuel involved.

It is likely that revised contractual terms will emerge for use with the main new fuels in due course, but in the short-term provisions will need to be considered on a case-by-case basis.



# THE FUTURE IS GREEN

There is now a strong impetus from all industry stakeholders for progression towards a zero carbon way of life, notwithstanding the potential hurdles.

Many larger owners are leading the way in setting standards for their fleets. The Getting to Zero Coalition, referred to above, comprises over 140 major industry players, including banks, insurers and Classification societies as well as owners and charterers. An increasing number of operators are also signatories to the Sea Cargo Charter, which “provides a framework for aligning chartering activities with responsible environmental behaviour to promote international shipping's decarbonisation”.

There is also support from major banks and other financial institutions which have decided to follow the same emissions trajectory as the IMO. The Poseidon Principles have been developed by global banks in collaboration with leading industry players and experts to provide a framework for assessing and disclosing the climate alignment of ship finance portfolios. Currently, there are 22 signatories to the Principles, which include accountability, enforcement and transparency. These financial institutions will monitor fleet performance and, if a fleet fails to meet requirements, finance may be withheld.

Change is driving astounding innovations within design and manufacturing, which it is hoped will enable the advancements in technology needed to fulfil the industry's expectations. However, the use of new technologies, operational procedures and fuels will also carry inevitable challenges and potential for disputes.

By planning ahead and drafting clear contractual terms to deal with new circumstances, disputes can be avoided, smoothing the transition to a greener future for shipping.

**The Club is well-equipped to offer guidance and assistance on all these issues and Members are invited to contact us for further information.**



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**ukdefence.com**

**The UK Defence Club**

c/o Thomas Miller Defence Ltd,  
90 Fenchurch Street, London EC3M 4ST  
+44 207 283 4646

tmDefence@thomasmiller.com  
ukdefence.com

**The UK Defence Club (Europe)**

c/o Thomas Miller B.V. Cyprus Branch  
2nd Floor, Office 202, Gemini House  
37 Theklas Lysioti Street, Limassol, CY3030  
+00 357 25 375020