



October 2026

KEY TAKEAWAYS FROM "THE REALITY OF MARITIME DECARBONISATION" SEMINAR

As maritime decarbonisation accelerates, the key questions facing the industry are shifting from what is technically possible to what is commercially and operationally workable. Discussions in Athens on 7 October explored how stakeholders are responding to this transition in practice. Across both vessel retrofit projects and the growing use of sustainable marine fuels, participants examined the commercial, legal and operational challenges that accompany implementation, including financing, risk allocation, fuel procurement, contractual frameworks and compliance management. The focus throughout was firmly on practical solutions to the issues industry participants are encountering today.

Welcome and opening remarks were delivered by Georgia Asimakopoulou of SH Athens, and both panels were moderated by Haris Zografakis of SH London.

PANEL 1: VESSEL RETROFITS AND THE PATH TO DECARBONISATION

Panel 1 highlighted that many of the technologies needed to improve vessel efficiency are already available, but scaling their adoption will depend on

robust performance data, credible business cases and access to financing.

While split incentives between owners and charterers remain a challenge, emerging commercial models are enabling parties to share the value created by efficiency gains, including regulatory benefits and monetised emissions reductions, helping to unlock investment in retrofit projects.

"The existing fleet is not going anywhere any time soon".

Panellists:

- + Gavin Allwright, International Windship Association
- + Stefano Scarpa, ABL
- + Rachel Hoyland of Stephenson Harwood LLP
- + Karina Kærvang Jensen, Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping
- + Shane Balani, Global Centre for Maritime Decarbonisation (GCMD)
- + Vassilios Dimoulas, Bureau Veritas | Marine & Offshore
- + Vangelis Nomikos, ABN AMRO Bank N.V.



1. The Technology Exists. Scaling Deployment Is the Challenge.

Many of the technologies required to improve vessel efficiency already exist and have reached a level of technical maturity. The challenge is less about innovation and more about accelerating deployment across the global fleet. Industry stakeholders continue to face uncertainty regarding technology selection, performance expectations and investment timing. Operators must make decisions today despite an evolving regulatory landscape and an uncertain future fuel mix.

"With retrofits, we are seeing shipyards increasingly gain experience and this expertise is bringing down the cost of installations and the amount of down time."



"Operational energy efficiency measures should be identified and implemented before investing in new technologies, to reduce the scale of those investments and maximise both decarbonisation and financial benefits."

2. Data Is Fundamental to Building Confidence

Reliable performance data was repeatedly identified as one of the most important enablers of retrofit adoption. Owners, charterers, financiers and insurers increasingly require evidence that technologies deliver measurable fuel savings and emissions reductions under real operating conditions. Establishing trusted baselines, improving data transparency and creating common methodologies for performance verification will be critical to building market confidence. The conversation also highlighted the

industry's continuing struggle with data ownership and data-sharing arrangements, particularly where multiple stakeholders have competing commercial interests.

"Measuring your baseline before the retrofit is very important [...] and apply standards that are recognisable [...] even if not perfect."

"You cannot improve what you cannot measure."

Good data transforms something that cannot be assessed, to something that can be monitored, priced, and eventually managed which can enable finance."

"Digital twins could probably work quite well when the data is set up well, delivering really high quality data that's been validated, sensors are calibrated and all the rest of it [...] But it always, always comes back to what you're putting into these models at the start."

3. Commercial Misalignment Continues to Delay Investment

One of the most significant barriers to retrofit deployment remains the misalignment of incentives between owners and charterers. In many cases, owners bear the upfront capital costs of retrofit investments, while charterers capture much of the economic benefit through reduced fuel consumption. However, energy efficiency gains can generate value beyond fuel savings alone. Regulatory benefits, such as lower ETS costs, as well as emissions reductions that can be monetised through voluntary mechanisms such as insetting arrangements with cargo interests, create additional value streams that can be shared between the parties. As a result, the focus is shifting from whether benefits can be shared to how those benefits are contractually allocated.

"There is a case to be made with charterers [...] but charterers will respond: will it perform, will I have to pay if it doesn't perform, and what if it in fact hinders performance and fuel costs go up?"

4. Financing Is Available for Credible Projects

The panel challenged the perception that capital scarcity is the principal obstacle to maritime decarbonisation. Banks, export credit agencies, infrastructure investors and specialist funds are actively seeking credible decarbonisation projects. The key challenge is demonstrating bankability



through robust performance evidence, transparent economics and clearly defined risk allocation. Participants noted that access to capital increasingly depends on the quality of project data and the credibility of projected outcomes.

"And as a class society, we're usually in between people that offer new ideas or new technologies to owners and owners come to us asking about whether or not what this guy is proposing me is credible or not."

"The technology provider, of course, has to show us details of what they are offering."

"You need to think of [financing shipping] like insurance, it is always underwritten by multiple parties. The more stakeholders involved in this process, the more attractive it is to finance it."

"It's not a question about whether we can finance it. It's more about its bankability, as we say."

"As banks, we play a role in this transition, and we want to be active partners to our clients in their journey."

"The way that we can begin to address [financing retrofits], we can begin to crowd in different sources of finance by working together with different kinds of stakeholders"

PANEL 2: BIOFUELS IN SHIPPING - PRACTICAL CONSIDERATIONS, RISK ALLOCATION AND MARKET DEVELOPMENTS

We explored the growing role of biofuels as both a decarbonisation pathway and a compliance tool, highlighting the importance of fuel quality, sustainability certification and robust chain-of-custody processes. As the value of a fuel increasingly extends beyond its physical characteristics to include associated compliance and environmental attributes, contractual risk allocation, documentation and ownership of those benefits are becoming central commercial considerations.

"It's here. It's happening. Biofuels can already be commercially viable, they can create additional value through environmental attributes, and while there are risks, the challenges today are more operational headaches than major legal disputes."

Panellists:

- + Captain Nathan Mills, Van Ameyde Marine
- + Thomas Russel, Van Ameyde Marine
- + Eleni Antoniadou, Gard AS
- + Dionysis Diamantopoulos FICS, Glander International Bunkering
- + Nicolas Degorce, Bureau Veritas | Marine & Offshore
- + Pia Rebelo, Stephenson Harwood LLP

1. Past Fuel Transitions Provide Valuable Lessons on Quality Disputes

The industry's experience following the IMO 2020 fuel transition offers important lessons for biofuel adoption. Issues relating to fuel quality disputes, sampling, testing procedures, evidential standards and liability allocation remain highly relevant. However, biofuels introduce a new contractual and operational challenge beyond traditional quality and quantity disputes: significant variation in energy content (lower calorific value, or LCV), which directly affects fuel consumption, engine performance, and compliance with charter party warranties. Because speed and consumption warranties are typically based on conventional fuel oils, biofuel use requires contractual adjustment mechanisms, such as BIMCO's LCV Adjustment Factor, to ensure performance is assessed on an equivalent energy basis. Failure to address LCV, fuel stability, degradation and storage issues in charter parties leaves substantial commercial risk unallocated, potentially leading to disputes over vessel performance, fuel consumption and voyage costs.

"When we are talking about biofuels, we get a whole new issue to consider, and that is energy content. [...] If we have a fuel with a lower LCV, we will need a greater mass of that fuel to maintain the same power output."

"The energy content of the fuel has the potential to vary significantly, and that's got a huge impact on warranty compliance, consumption and the total voyage cost."

"Speed and consumption warranties typically are produced in reference to fuel oil, and that means that they are not automatically comparable to using a biofuel with a different energy content."

"Speed and consumption warranties typically are produced in reference to fuel oil, and that means they are not automatically comparable to using a biofuel with a different energy content."



"Any charter party that doesn't have any clauses on the LCV and energy content of the biofuels means that the risk is unallocated."

"We mostly rely on the OEM to define if it's feasible to implement some kind of biofuel."

"In the end, it's the engine provider that has to decide if the engine is suitable for the biofuel."

2. Biofuels Are Becoming Strategic Compliance Assets with Increasing Commercial Value

The role of biofuels in shipping is evolving rapidly. Rather than being viewed solely as a substitute for conventional marine fuels, biofuels are increasingly being deployed as a compliance strategy under regimes such as FuelEU Maritime and the EU ETS. Fuel procurement decisions are therefore driven not only by price, availability and operational performance, but also by the regulatory and environmental value associated with a fuel's emissions profile. A central theme of the discussion was that the value of fuel now extends beyond its physical characteristics to encompass the compliance benefits and environmental attributes it generates. As a result, questions relating to the ownership, transferability and monetisation of those attributes are becoming fundamental commercial considerations throughout the fuel supply chain. This shift is transforming marine fuel procurement into a significantly more sophisticated exercise and is driving the development of new contractual structures, compliance strategies and commercial arrangements.

"I think that we are at the moment where the crucial point that biofuels will gain more and more market share..."

"There are actually projections that consumption is only about to rise and by 2030 there could be not even enough volume of feedstocks to serve the whole industry."

"We're expecting the producers and the suppliers that we're teaming up with now to be on the same page as us in matters of quality and building up a name and a reputation."

"I've got my underlying fuel and then I've got all the carbon emissions I'm saving from the use of that fuel. Now I can commodify that."

"[The voluntary carbon markets] seem like a jungle, but it's not a jungle at all!"

3. Certification and Chain of Custody Are Critical

Confidence in sustainable fuel markets ultimately depends upon confidence in certification. Participants emphasised the importance of sustainability documentation, chain-of-custody systems and verification processes. As compliance value increasingly depends on a fuel's certified lifecycle emissions profile, the integrity of supporting documentation becomes commercially significant. The industry is therefore moving toward much greater scrutiny of sustainability credentials and documentary requirements.

"The documentary chain supporting the fuel is becoming almost as important as the fuel itself, especially in the regulatory context such as Fuel EU Maritime and its underpinning Renewable Energy Directive."

"Unfortunately, we receive proof of sustainability with issues, with missing bits in the proof of sustainability."

"We are verifying six months after the fuel was actually bunkered and we end up with something which we are going to refuse because all the information is not there or some is not valid."



4. Contractual Risk Allocation Is Becoming More Complex

Traditional bunker supply arrangements were not designed to address many of the issues now arising in sustainable fuel markets. Parties must increasingly consider risks relating to fuel quality, emissions data, sustainability certification, environmental attribute ownership, compliance liabilities and regulatory change. As a result, contractual drafting is becoming a critical tool for



managing risk and preserving value. The discussion highlighted that many disputes in future fuel markets may centre not on the physical fuel itself, but on the associated compliance and environmental claims. The importance of proactive risk management and clear contractual drafting was a recurring theme throughout the discussion.

"Any charter party that doesn't have any clauses on the LCV and energy content of the biofuels means that the risk is unallocated."

"It's really early days for us. We haven't seen big numbers of biofuel disputes. We have seen only a handful."

"The consequence, at least to the vessel, has been the regular issues that we experience with off-spec VLSFOs or heavy fuel oil."

"We want to make sure that customers are designing a product that actually has integrity, that there's no greenwashing involved."

OVERALL CONCLUSION

The two panels approached maritime decarbonisation from different perspectives but ultimately arrived at the same conclusion: the principal barriers are increasingly commercial rather than technological. For vessel retrofits, the challenge is establishing credible business cases supported by reliable performance data and aligned commercial incentives. For biofuels, the challenge is managing an increasingly complex ecosystem of compliance requirements, certification frameworks, environmental attributes and contractual relationships.

Maritime decarbonisation is therefore entering a phase where competitive advantage will be determined not only by technology choices, but by the ability to structure transactions, allocate risk and capture value across an evolving regulatory landscape. The industry's next stage of progress will depend upon turning technical possibilities into commercially workable solutions.

"The story is no longer whether decarbonisation technologies and fuels work. The question is how the industry manages the commercial, operational and compliance challenges that come with them."

