Sustainable Marine Fuel Confidence Index

Second Edition

SMF Fest 2024 report & Confidence Index

The second edition of the Sustainable Marine Fuel Fest (SMF Fest) took place on 2-3 October in Porto, Portugal, with the aim of building on the discussions about shipping's decarbonisation which began at the inaugural event in Valencia in November 2023 and creating the second SMF Confidence Index.

SMF Fest is a 'by industry, for industry' event which gathers stakeholders from across the maritime sector to think, learn and ask questions about shipping's fuel and technology options as the industry attempts to create a blueprint for its own energy transition. The event started life as GasFest and its format is a mix of small discussion groups, group exercises and fishbowl style discussions, which foster problem-solving, cross-sector engagement and collaborative decision-making.

A core group of SMF industry partners meet regularly in the run-up to the event to decide key and timely focus points which provide a springboard for the discussions and exercises. However, these are by no means prescriptive and one of the USPs of SMF Fest is that it allows discussions to evolve and offers a space where participants feel able to share their industry experiences and ask multiple questions beyond the confines of a traditional conference format. SMF Fest very much encourages 'out of the box' thinking whilst keeping a clear focus on delivering actionable insights.

The SMF Confidence Index – a unique decarbonisation 'snapshot'

One of the primary activities of SMF Fest is building the SMF Confidence Index. Votes were cast for the first Index last year in Valencia and there were two drivers behind its development. The first was the delivery of a useful and informative outcome from the Fest which could be shared with the wider maritime community. The second was to provide a reality check on shipping's decarbonisation as a counterbalance to a lot of the media and industry hype about 'the winning fuel' or the 'silver bullet' in shipping's energy transition.

The Confidence Index does something a little bit different: it doesn't take a view on whether IMO 2030, 2040, 2050 GHG emission reduction ambitions will be realised, rather it provides a moment in time snapshot of where the shipping industry is right now in terms of its fuel decarbonisation 'readiness' in relation to four distinct but necessarily interdependent categories:

- Julidé Yasar,
Director General,
France Gaz Maritime

'Compared to last year, all participants have lost that "innocence" in a way, because we have some change in awareness about some different fuels.

'I feel like everybody is more knowledgeable about technical and commercial difficulties. I feel like we have started to be on the same path; we were very separated and we have now started to converge.'

Technology

- Can the fuel be made and burned?

Infrastructure

- Is the fuel available and can you get it to your ship when you need it?

Commercial

- Is someone (i.e. a shipowner, a charterer, a cargo owner) willing to pay for it

Environmental credentials

- Does it contribute to reducing shipping's overall emissions footprint?

The 2023 SMF Confidence Index set a benchmark for these categories, so the 2024 Index was all about changes and progress – has the dial been moved in any of these focus areas in the space of a year?

SMF Fest 2024 – who we were

The industry partners for SMF Fest 2024 who collectively provided the catalysts for its discussions were: Bureau Veritas, GTT, Hapag-Lloyd, SGMF and Wärtsilä.

Participants who engaged in the many group conversations and exercises represented a broad cross-section of the industry, representing the following companies and organisations:

ABS; Ankeri Solutions; Anthony Veder; BowWave Consulting Gmbh; Bunker Holding A/S; Bureau Veritas; CEPSA (Moeve); CF Industries; Disney Cruise Line; Drew Marine; Eneus Energy Limited; France Gaz Maritime; Gasum; Haffner Energy; IKEA Supply Chain Operations; Lookout Maritime; LP Brussels; Molgas Energy Group; MSC Cruise Management (UK) Limited; newcleo; North Sea Port;

Peninsula 360; PRIO; Safetytech Accelerator, Lloyd's Register; Schulte Group; SEA-LNG; Sphera; TGE Marine Gas Engineering GmbH; Trelleborg Marine Systems UK Ltd; UMAS; Van Oord; Wagenborg Shipping; Wah Kwong Maritime Transport; WinGD; Z-Joule

SMF Fest 2024 – what we did

On Day 1 of the Fest, after a visit to the Port of Leixões facilitated by Molgas, participants heard from the industry partners about the aims and ethos of the event and some of the information 'takeaways' from Valencia in 2023.

SMF Fest is an open house in terms of dialogue and knowledge sharing. It is also structured to ensure that as many topics as possible are covered which capture the scope and challenges of shipping's potential energy pathways. As such participants had the opportunity to join discussion groups hosted by:

- Chris Thorne, Director of Strategy & Operations, UMAS
- Jonathan Flynn, Director Clean Energy Solutions, CF Industries
- Frank Harteveld, GM Sales & Strategic Development – FGSS, Wartsila Marine
- Marcella Franchi, CMO - Head of SAF, Haffner Energy
- Sophie Delannoy, Advisor Sustainable Logistics, North Sea Port
- Dr Oliver Schuller, Director Sustainability Consulting, Sphera
- Stam Achillas, Head of Business Development Decarbonisation, Wartsila Retrofit Solutions
- Ivelina Georgieva, Sustainability Leader Transport, IKEA Supply Chain Operations,
- Mark Watts, Director, LP Brussels
- Stephen Gallagher, Technical Advisor, SGMF
- Steve Price, Programme Director – MAMII, Lloyd's Register
- Giulio Gennaro, Executive Director Industrial Offshore Applications, Nuclear Reactors & Fuel Co.
- Martin Crawford-Brunt, CEO, Lookout Maritime
- Guillermo Nieva, Molgas Energy Group
- Fernando Alvarez, CEO, Z-Joule

Discussion topics included green shipping corridors, the impact of European and IMO environmental regulation and the cost of compliance, the challenges of using ammonia as a marine fuel, the role of ports in the energy transition, methane slip abatement, the investment case for shipowners, the role of the cargo owner in maritime decarbonisation, and offtake demand for sustainable aviation fuels (where does shipping sit in the pecking order?).

At SMF Fest 2023, participants had agreed that 'wild card' factors should be discussed. Although they weren't included as categories in the first SMF Confidence Index, they were seen as being influential on shipping's decarbonisation in the years ahead and could potentially be candidates for future inclusion in the Index. Including wild cards in the discussion groups also enables the event to take account

‘The Confidence Index is actually a very good benchmark and gives us every year a way to measure what is happening.

‘It created a good discussion, and I think we are all eager to go into the details. The opportunity to talk not only with the “usual suspects” in the industry, but actually talking to stakeholders who are little bit further away from where we are as OEMs and shipowners – that’s really the value of this event.’

- Mathias Jansson, Head of Gas Carriers
Marine Power, Wärtsilä

of changes or trends in industry discourse. As such, in Porto discussion group topics also included nuclear energy and workforce training and practices, and technology retrofits.

In addition to these discussion groups, to which all the attendees contributed, participants were also put into new groups, or ‘pods’, where together they chose a catalyst or factor which aligned with the overarching themes of the event (technology, infrastructure, commercial, environmental & wildcards), applied to at least one of the 12 SMF fuel categories, and at least one vessel segment (container ships, dry cargo, gas carriers, passenger, tankers).

Over the one and a half days of the Fest, participants worked towards group presentations which concluded the event. Factors to be considered included ‘what will move the dial for Fuel X’, ‘recommendations for doing the work required’, ‘who are the other players that need to be involved’ and ‘what does success look like?’

Drivers for change: Technology and infrastructure

The Day 1 discussions focused on technology and fuel production and supply infrastructure. There was close discussion about the production processes for the new fuels in shipping’s energy mix as well as the availability (and cost) of green variants of these fuels. ‘No-one will pay more than they have to for the new fuels’ was an oft-repeated phrase in conversations. Some participants also questioned the near- and longer-term future of the blue iterations of ammonia, hydrogen and methanol.

A lack of demand signals for fuels from shipowners was a key topic and a strong element of ‘uncertainty’ among different stakeholders was perceived as stymying progress in the development of a robust, global fuel supply infrastructure. Shipowners are unsure about future fuel choices because they are not getting clear messaging from charterers about fuel preferences and routing schedules. Owners may also be ‘buying time’ and opting for the cheapest fuel solutions while they decide on future fuel strategies, but there was consensus in the room that those owners and operators who can pass through fuel costs are better placed to take earlier and bolder decisions on new fuels.

OPEX and CAPEX considerations have to be weighed up carefully and decisions on these will not be the same across all vessel segments. ‘A ship is just a cash cow,’ said one participant, while another suggested that some owners may be taking a more altruistic view of the decarbonisation challenge. ‘Don’t just relate everything to ROI; maybe they are waiting until [the fuel] is good for the environment.’

Ports were also seen as being in the vanguard of decarbonisation, particularly in relation to bunkering operations and safety, and they also have a pivotal role in the success of green shipping corridors.

The role of banks and shipbrokers was also highlighted. ‘Do banks consider the energy transition in their lending portfolio? In my view, they don’t know much at all,’ said one participant.

‘And shipbrokers haven’t thought about fuel for years – they don’t know what’s going on. Brokers are waiting on owners, and vice versa.’

While much discussion centred on the absence of clear new fuel demand signals from owners, concern was also expressed over the future volumes of ‘green’ marine fuels. The decision earlier this year by Danish energy company Ørsted to call time on developing a plant for hydrogen-based fuel was seen as a worrying line in the sand. At present, only a small percentage of new fuel production projects stay the course to reach final investment decisions, and discussions on such projects are often protracted.

‘The speed is very slow – things need to speed up,’ said a participant. There was widespread agreement that shipping has reached a juncture in its decarbonisation pathway. After decades of very little global competition for its fossil-based fuel options, shipping finds itself in a race to secure supply at volume. ‘The game is changing,’ cautioned one participant.

On the technology side, there were very useful discussions about efforts to tackle methane slip onboard LNG dual-fuelled ships. Significant strides are being made in the measurement of methane slip, as well as identifying abatement technologies – at the point of combustion and in the ship exhaust – that are robust enough for a harsh maritime environment.

While OEMs are developing engines for new fuels, participants were also encouraged to look at fuel supply systems where there is the potential to build in flexibility to switch fuel choices, as well as the options for retrofits to futureproof vessels in the current global fleet. In industry forums and conferences, technology providers consistently say that the technology is ready and waiting to facilitate fuel choices, and one discussion host said that technology advances are only going to happen more quickly in future and will certainly keep pace with the demands of decarbonisation.

At the end of Day One, the SMF Fest community voted for the second SMF Confidence Index.

The commercial imperative

The opening session of Day Two explored the results of the voting and then moved on to take a deep dive into commercial and environmental challenges and drivers – as well as more wild cards.

Discussion groups focused on the role of cargo owners in decarbonisation. Their commitment to shipping their goods in vessels operating on cleaner fuels can be an effective driver for decarbonisation. However, as fuel procurement shifts from spot purchasing to long-term offtake agreements, cargo owners' willingness to lock into multi-year fuel volume agreements will be an essential link in the fuel supply chain.

Given that SMF Fest was held in Q4 2024, just before a raft of EU regulations entered more firmly into play in 2025 (including the EU Emissions Trading System (ETS) and FuelEU Maritime), there was inevitably much discussion about the use of regulation to kickstart decarbonisation and then keeping the momentum going. Questions were raised about the allocation to shipping from the EU's Innovation Fund, and with most of the ETS revenue to be channelled back to Member States, there is uncertainty as to how much of this money shipping will receive. Furthermore, as the FuelEU Maritime obligations ratchet up and penalties for non-compliance are issued, what will the fines be used for?

While the constituent parts of Europe's Fit for 55 initiative have certainly provided shipping with some regulatory 'certainties' to work with when looking at future fuel choices, it was suggested that the industry does not have the closest relationship with Europe's legislators and perhaps it should reevaluate its stance on asking for decarbonisation funding. 'Don't go with a begging bowl, but make them see the value that we bring,' said a discussion host.

SMF Fest participants were also 'warned' that Europe's Fit for 90 is coming down the line, which will require a 90% reduction in GHG emissions by 2040,

There was also discussion about the role of nuclear energy, and the group was reminded that there are already nuclear-powered icebreakers in service. Using nuclear energy for e-fuel production is also a pathway to be considered.

Training ship and land-based personnel on handling the new marine fuels was also addressed. As one discussion host commented: 'Putting ammonia in the tank – that feels very different.' However, taking a systematic approach, adopting principles and good practice from other sectors, and giving close consideration to passenger and fuel separation, combustion challenges and aftertreatment will form the basis of sound and comprehensive training programmes for all the new fuels.

Other subjects tackled included the future fuel options for tramp trades, the potential for onboard carbon capture, fuel ‘bottlenecks’ within terminals’ infrastructure, how will the fuels will get to the bunker barge and then onto the vessel, and how can mass balance transfer drive the uptake of new fuels on a wider regional or global basis.

The issue of a global carbon levy is still on the table for discussion at IMO, and was also debated at SMF Fest – albeit with a dose of cynicism in some quarters. ‘Putting the IMO in charge of collecting and distributing money – what could possibly go wrong?’ was one comment.

On the subject of regulation, the consensus seemed to be: ‘We don’t need anymore – regulation use what we have,’ While on the availability and scalability of e-fuels, opinions were polarised. ‘The problem with green power is that you have to have an excess of it,’ was one viewpoint, while there was more positivity in another part of the room: ‘The availability of green power is not going to be a challenge.’

2023	2024	Marine Fuel Options	NOT AT ALL CONFIDENT	A LITTLE CONFIDENT	QUITE CONFIDENT	VERY CONFIDENT	Previous Confidence	Previous Improvement Area	New Confidence	Change
2nd	1st ↑ 1	BIODIESEL					62.7%	Environmental	79.0%	16.3%
1st	2nd ↓ 1	LNG-BIO METHANE					78.5%	Infrastructure & Commercial	76.3%	-2.2%
3rd	3rd →	LNG-E METHANE					60.7%	Environmental	60.0%	-0.7%
4th	4th →	METHANOL-GREEN					53.5%	Infrastructure	40.6%	-12.9%
6th	5th ↑ 1	AMMONIA-GREEN					42.5%	Environmental	35.4%	-7.1%
5th	6th ↓ 1	HYDROGEN-GREEN					42.7%	Infrastructure	29.2%	-13.5%
7th	7th →	AMMONIA - BLUE					42.0%	Infrastructure	28.4%	-13.6%
8th	8th →	METHANOL-GREY					42.0%	Infrastructure	27.8%	-14.2%
9th	9th →	METHANOL-BLUE					41.2%	Environmental	25.2%	-16.0%
12th	10th ↑ 2	AMMONIA - GREY					31.7%	Environmental	22.9%	-8.8%
10th	11th ↓ 1	HYDROGEN-BLUE					34.5%	Infrastructure	18.8%	-15.7%
11th	12th ↓ 1	HYDROGEN-GREY					33.2%	Environmental	13.9%	-19.3%

The SMF Confidence Index 2024 – the results are in

Participants cast their votes on the ‘readiness’ of 12 fuels in terms of Technology, Environmental, Infrastructure and Commercial factors, and across five deep sea vessel segments. There was one change in the voting process compared to 2023 in that participants voted individually whereas last year votes were placed according to the consensus reached by small groups.

There were no seismic changes year-on-year, but there were clear and telling shifts in confidence levels which do indicate that the industry is becoming more informed about the decarbonisation process. Although decision-making on fuel strategies remains slow and cautious

‘SMF Fest is a very good way to see what the rest of the industry thinks – and what the level of knowledge is for the time being.

‘It’s a very innovative new way to interact with people – it’s a fantastic place to make new friends and colleagues’

- Johan Lillieskold, Project Manager, Bernhard Schulte

(there are some first movers but not many close followers at this stage), there are some signs of movement across the Index’s four baseline categories.

In terms of confidence levels, the index is split into four sections: not at all confident/a little confident/quite confident/very confident. When looking at the voting results, we have taken the line between a little confident and quite confident as the confidence ‘tipping point.’

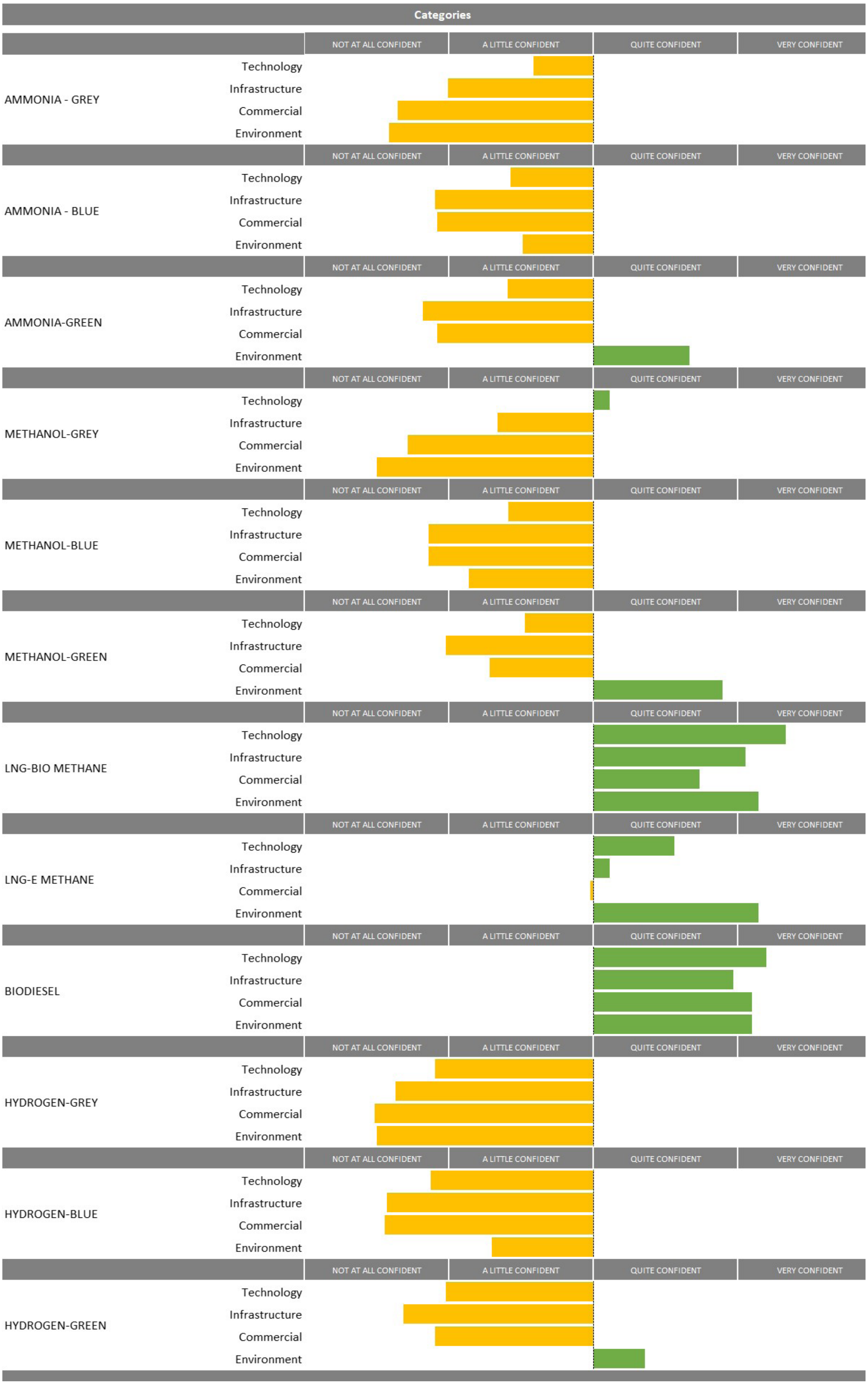
LNG-biomethane topped the Index in 2023, but biodiesel took first place in this year’s poll, with a confidence level of 78% (versus 62.7% last year). LNG-biomethane dropped to second place and LNG e-methane remained in third place with a very similar score to 2023. The green variants of methanol, ammonia and hydrogen then followed in the pecking order.

In 2023, confidence levels in methanol-fuelled shipping were very measured, in spite of a clear upswing in orders that year for methanol-shipping. However, confidence levels in green methanol now look to have been quite bullish last year in comparison with 2024 voting, as green methanol has retreated from the ‘quite confident’ category into the ‘little confidence’ zone.

In the ‘green’ fuel space, green ammonia moved up, swapping places with green hydrogen. There was little movement year-on-year between the blue fuel variants.

For the grey fuel variants, methanol retained its 2023 position, ammonia moved up two places from the bottom of the Index, while grey hydrogen dropped into last position.

Apart from the three front runners (biodiesel, LNG-biomethane and LNG e-methane), confidence levels appear to have dropped across the candidate fuels. Year-on-year, green methanol has fallen from 53.5% to 40.6% and green hydrogen, from 42.7% to 29.2%. Moving to the bottom of the Index, confidence in blue hydrogen fell from 34.5% to 18.8%, and grey hydrogen, from 33.2% to 13.9%.




Vessels
NOT AT ALL CONFIDENT
A LITTLE CONFIDENT
QUITE CONFIDENT
VERY CONFIDENT
AMMONIA - GREY
AMMONIA - BLUE
AMMONIA-GREEN
METHANOL-GREY
METHANOL-BLUE
METHANOL-GREEN
LNG-BIO METHANE
LNG-E METHANE
BIODIESEL
HYDROGEN-GREY
HYDROGEN-BLUE
HYDROGEN-GREEN
Container Ships
Dry Cargo
Gas Carriers
Passenger
Tankers

From the perspective of the four segments (Technology, Environmental, Infrastructure and Commercial), grey methanol moved into the ‘quite confident’ zone, but it was ‘behind the line’ for the other three factors.

Blue methanol was firmly to the left of the line, whereas in 2023 it was in the ‘quite confident’ zone in terms of environmental credentials.

Similarly, green methanol was in the ‘quite confident’ category for technology last year but moved behind the line in 2024.

Looking at LNG e-methane, on the commercial front it dropped back behind the line this year, but in terms of environmental credentials, it has moved from behind the line into the ‘very confident’ zone.

SMF Fest participants were also asked to identify categories where improvement is required. In the 2024 poll, infrastructure was highlighted, even for the ‘leader’, biodiesel. However, commercial is beginning to move into the conversation. In 2023, it wasn’t mentioned as an area for improvement at all, so it could be surmised that in terms of turning the dial on future fuels, the industry is starting to think about moving in a more commercial direction.

Turning to vessel segments, we saw that confidence levels in 2024 were broadly in line with those in 2023, and only biodiesel, LNG biomethane and LNG e-methane were to the right of line. One area to highlight is that in 2023 green methanol gas carriers, passenger vessels and tankers were in the ‘quite confident’ zone, but this year all these segments were to the left of the line.

In a discussion about the results of the survey, there was an element of surprise that biodiesel had clinched the top spot, but the fuel is seen as a frontrunner in terms of near-term compliance with EU regulations such as FuelEU Maritime. One participant suggested that biodiesel has a ‘short lived journey’, while another said: ‘It is a drop-in fuel, so no CAPEX, but is it available?’ Another described it as ‘a bridging fuel for those who will go to green methanol.’

A number of participants expressed the view that the Index results reflect ongoing concerns over green fuel availability, scalability and cost. ‘The commercial argument is one of the biggest reasons for the lack of adoption…and to make production viable, commitments are going to be needed,’ said one participant. Another pointed to a lack of electrolyser availability which will be a barrier to e-fuel production, and other comments indicated frustration over IMO decision-making on the introduction of a carbon levy to penalise the consumption of fossil-based fuels and accelerate uptake of near and net-zero energy sources. While some stakeholders are talking about a carbon levy as low as $30-$40, others suggest that a price

of around $800 will be needed for this market-based measure to be really effective.

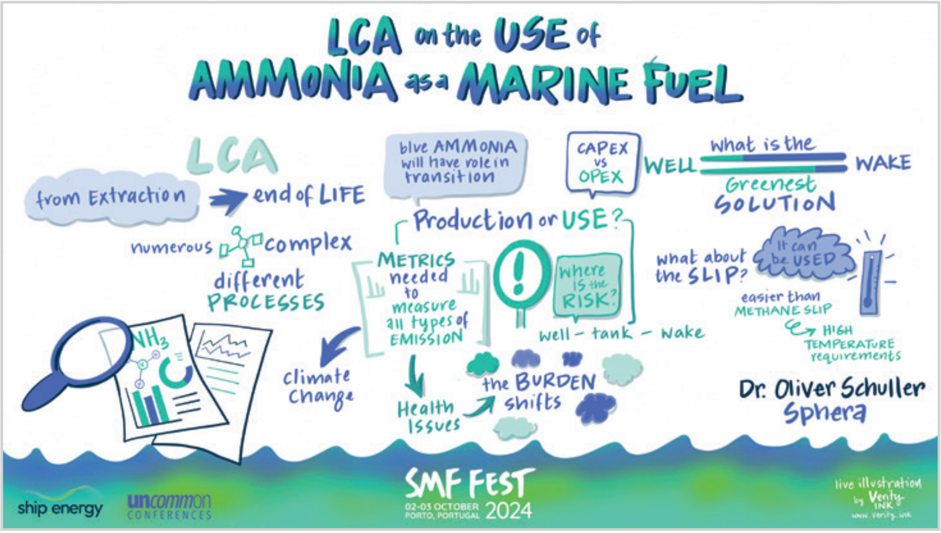
Looking at why the ‘popularity’ of the new fuels continues to wax and wane, media hype and the efforts of industry advocates were seen as contributory factors, although one discussion host took a more academic approach, suggesting that fuel trajectories are following the stages of the Gartner hype cycle, which breaks down a technology life cycle into five key phases. Having moved from the ‘technology trigger’ and ‘peak of inflated expectations’ phases, perhaps the industry is now sitting in the ‘trough of disillusionment’, where some early projects are ending in the failure, and players are falling away. It will be up to the surviving players to up their game on the technology and production front in order to attract investment to advance to the endpoint of commercialisation.

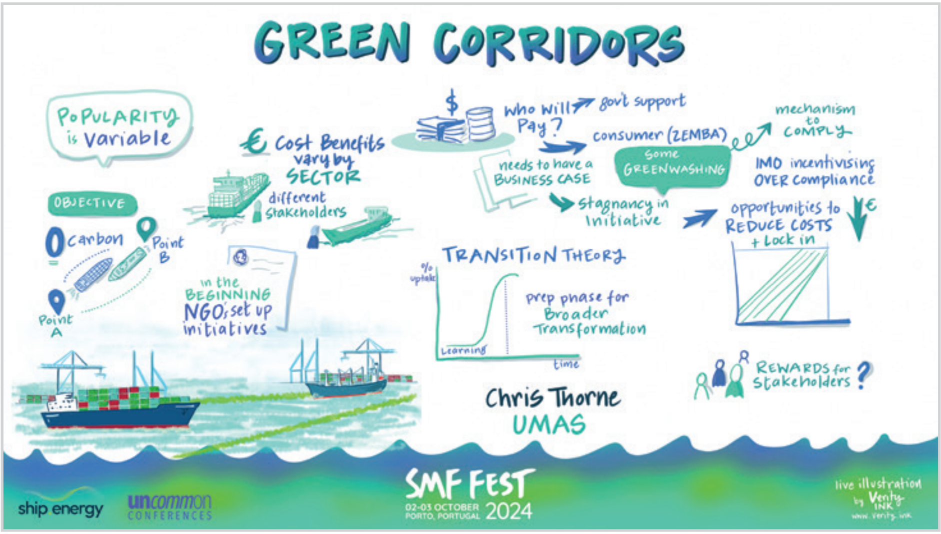
SMF Fest and the SMF Confidence Index are delivered through a collaboration between uncommon conferences and ship.energy. The content of the event’s discussion groups was captured by the visual storyteller, Verity Harrison, of Verity Ink.

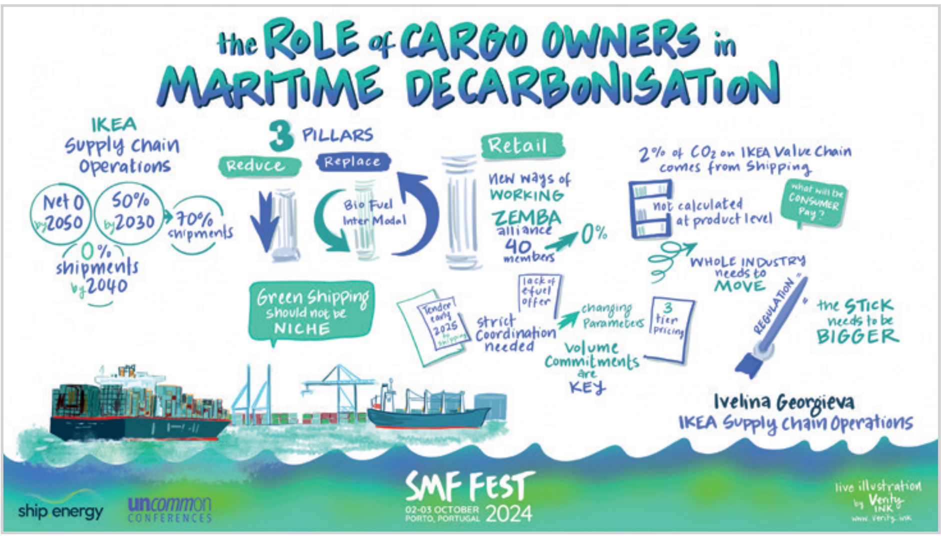
The second SMF Fest Confidence Index is being made available for wider industry use and comment.

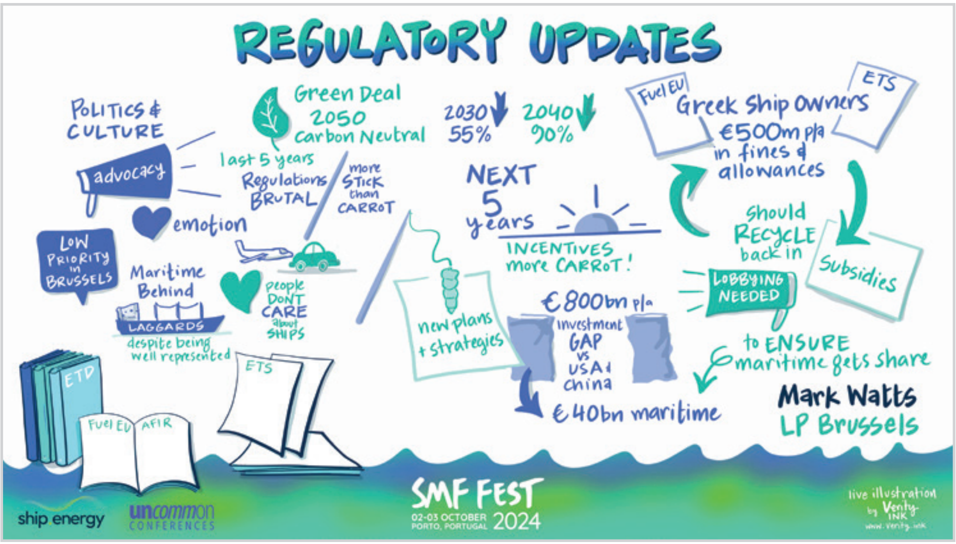
Group Discussion Topics

Commercial and Environmental









REGULATORY UPDATES
POLITICS & CULTURE
advocacy
emotion
LOW PRIORITY in BRUSSELS
Maritime Behind
LAGGARDS
despite being well represented
Green Deal 2050 Carbon Neutral
last 5 years Regulations BRUTAL
more STICK than CARROT
people DON'T CARE about SHIPS
ETD
Fuel EU
AFIR
ETS
2030 55%
2040 90%
NEXT 5 years
INCENTIVES more CARROT!
new plans + strategies
€800bn p/a investment GAP vs USA & China
€40bn maritime
Fuel EU
ETS
Greek Ship Owners €500m p/a in fines & allowances
Should RECYCLE back in
Subsidies
LOBBYING NEEDED
to ENSURE maritime gets share
Mark Watts
LP Brussels
ship energy
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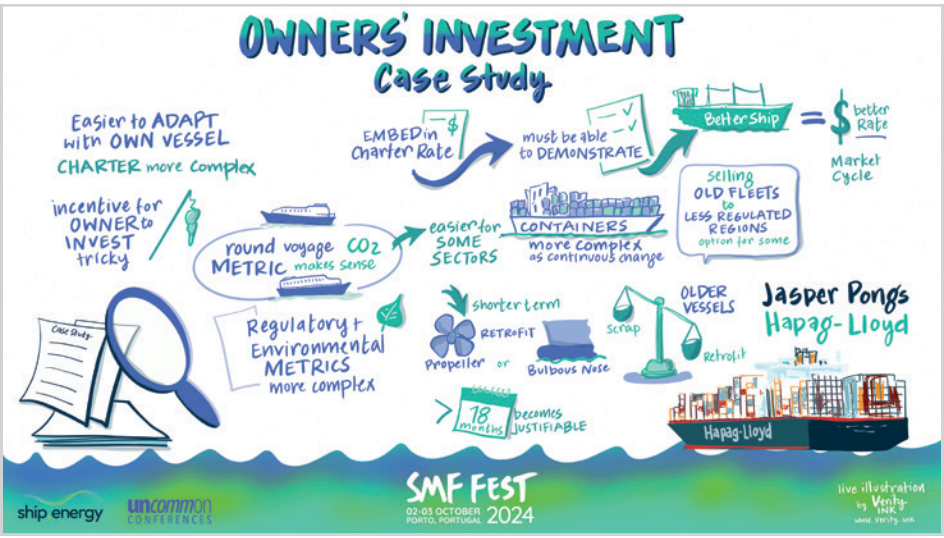

OWNERS' INVESTMENT
Case Study
Easier to ADAPT with OWN VESSEL
CHARTER more complex
incentive for OWNER to INVEST tricky
Case Study
round voyage CO2 METRIC makes sense
Regulatory + Environmental METRICS more complex
EMBED in Charter Rate
must be able to DEMONSTRATE
Better Ship
better Rate
Market Cycle
easier for SOME SECTORS
CONTAINERS more complex as continuous change
Selling OLD FLEETS to LESS REGULATED REGIONS option for some
shorter term
RETROFIT
Propeller or Bulbous Nose
18 months
becomes JUSTIFIABLE
OLDER VESSELS
scrap
Retrofit
Jasper Pongs
Hapag-Lloyd
ship energy
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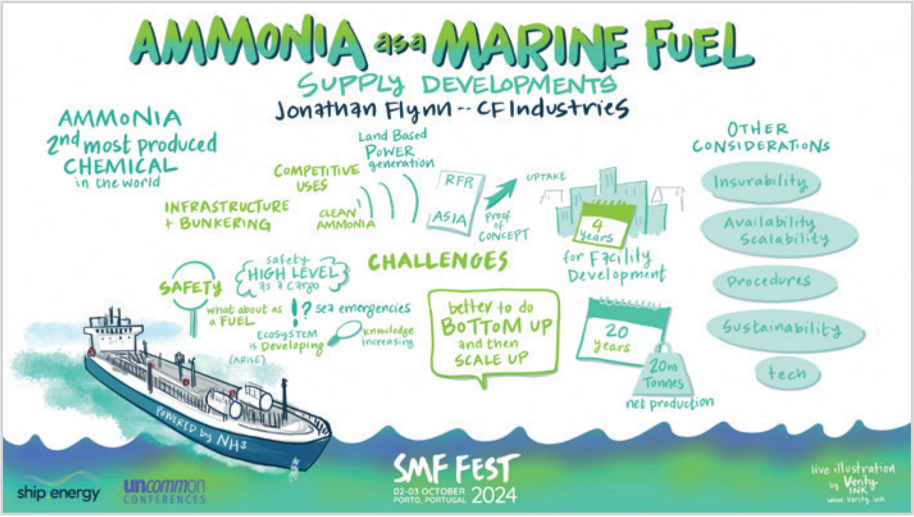
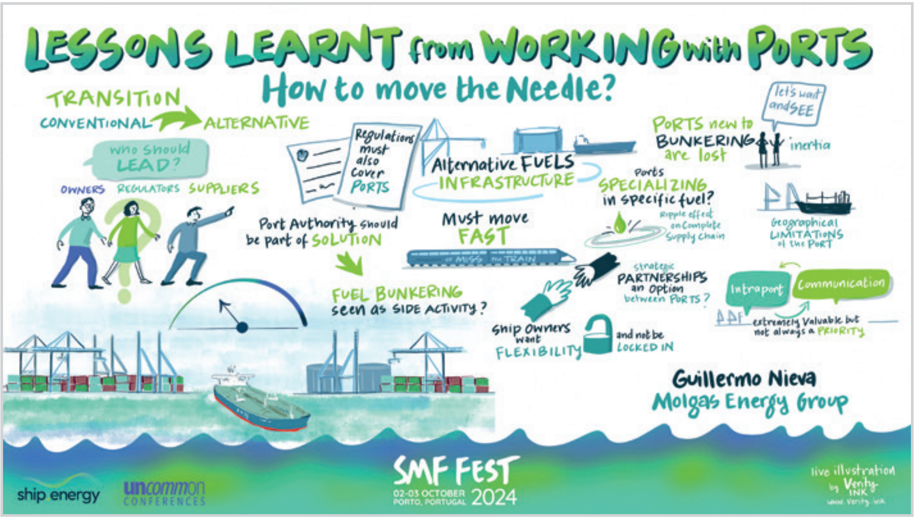
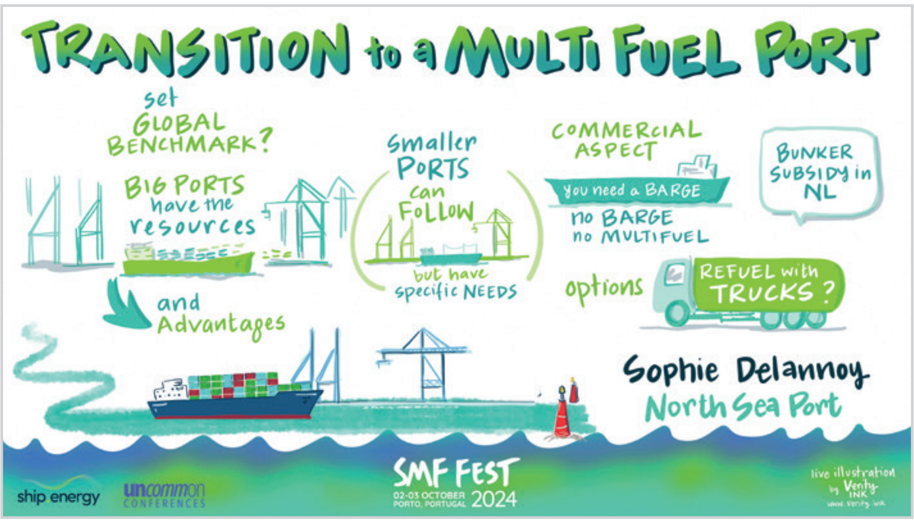
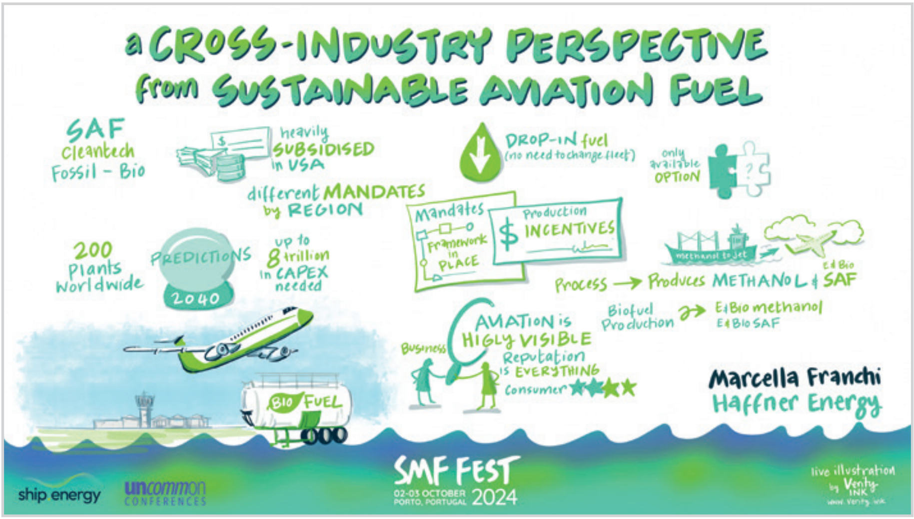
Technology and Infrastructure









a CROSS-INDUSTRY PERSPECTIVE from SUSTAINABLE AVIATION FUEL
SAF
Cleantech
Fossil – Bio
heavily SUBSIDISED in USA
DROP-IN fuel (no need to change fleet)
only available OPTION
different MANDATES by REGION
Mandates
Framework in PLACE
Production $ INCENTIVES
200 Plants Worldwide
PREDICTIONS 2040
up to 8 trillion in CAPEX needed
methanol to jet
Process → Produces METHANOL & E&Bio SAF
Biofuel Production → E&Bio methanol E&Bio SAF
AVIATION is HIGLY VISIBLE
Business
Reputation is EVERYTHING
Consumer
BIO FUEL
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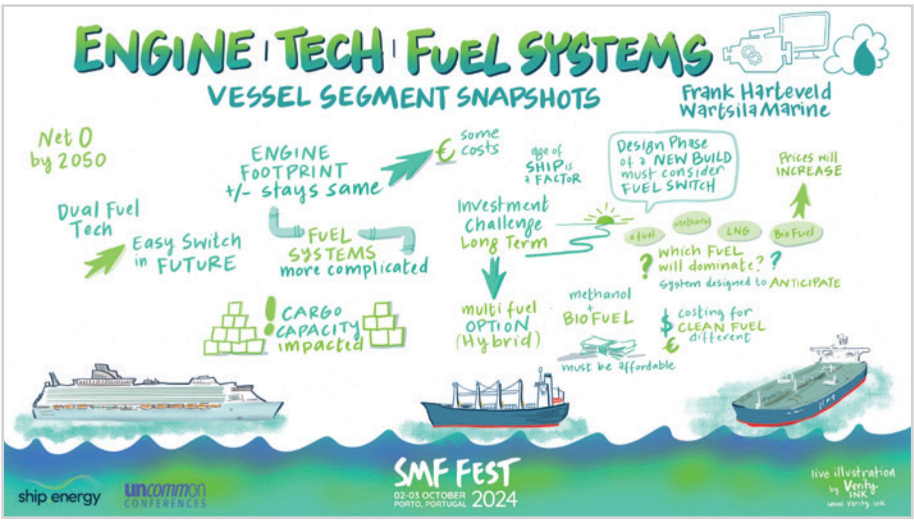

ENGINE | TECH | FUEL SYSTEMS
VESSEL SEGMENT SNAPSHOTS
Frank Harteveld
Wartsila Marine
Net 0 by 2050
ENGINE FOOTPRINT +/- stays same
€ some costs
age of SHIP is a FACTOR
Design Phase of a NEW BUILD must consider FUEL SWITCH
Prices will INCREASE
Dual Fuel Tech
Easy Switch in FUTURE
FUEL SYSTEMS more complicated
Investment Challenge Long Term
e-fuel
methanol
LNG
Bio Fuel
Which FUEL will dominate??
System designed to ANTICIPATE
CARGO CAPACITY impacted
multi fuel OPTION (Hybrid)
methanol + BIO FUEL
must be affordable
$ € costing for CLEAN FUEL different
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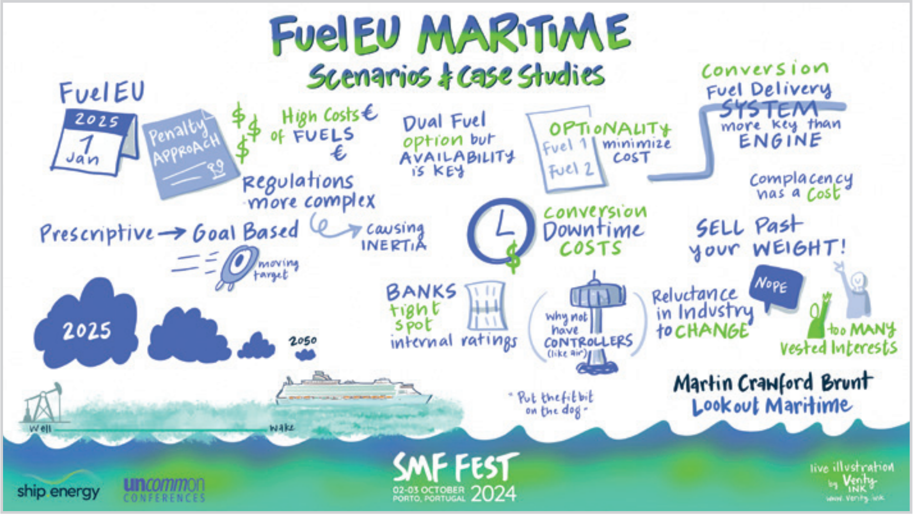
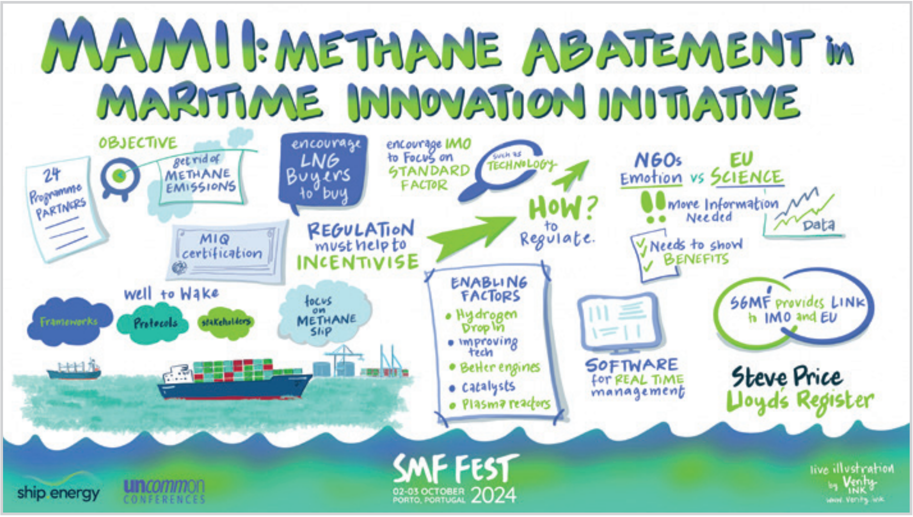
Wildcards


FuelEU MARITIME
Scenarios & Case Studies
FuelEU
2025
1 Jan
Penalty APPROACH
High Costs of FUELS
Regulations more complex
Dual Fuel option but AVAILABILITY is KEY
OPTIONALITY
Fuel 1
Fuel 2
minimize COST
Conversion
Fuel Delivery SYSTEM more key than ENGINE
Complacency has a Cost
Prescriptive → Goal Based
causing INERTIA
moving target
Conversion Downtime COSTS
SELL Past your WEIGHT!
BANKS tight spot internal ratings
Why not have CONTROLLERS (like air)
Reluctance in Industry to CHANGE
Nope
too MANY Vested Interests
2025
2050
Well
Wake
"Put the fitbit on the dog"
Martin Crawford Brunt
Lookout Maritime
SMF FEST
02-03 OCTOBER PORTO, PORTUGAL 2024
ship energy
uncommon CONFERENCES
live illustration by Verity INK


MAMII: METHANE ABATEMENT in MARITIME INNOVATION INITIATIVE
24 Programme PARTNERS
OBJECTIVE
get rid of METHANE EMISSIONS
encourage LNG Buyers to buy
encourage IMO to Focus on STANDARD FACTOR
TECHNOLOGY
NGOs Emotion vs EU SCIENCE
more Information Needed
Data
MIQ certification
REGULATION must help to INCENTIVISE
HOW? to Regulate.
Needs to show BENEFITS
well to Wake
Frameworks
Protocols
Stakeholders
focus on METHANE Slip
ENABLING FACTORS
• Hydrogen Drop in
• improving tech
• Better engines
• Catalysts
• Plasma reactors
SOFTWARE for REAL TIME management
SGMF provides LINK to IMO and EU
Steve Price
Lloyds Register
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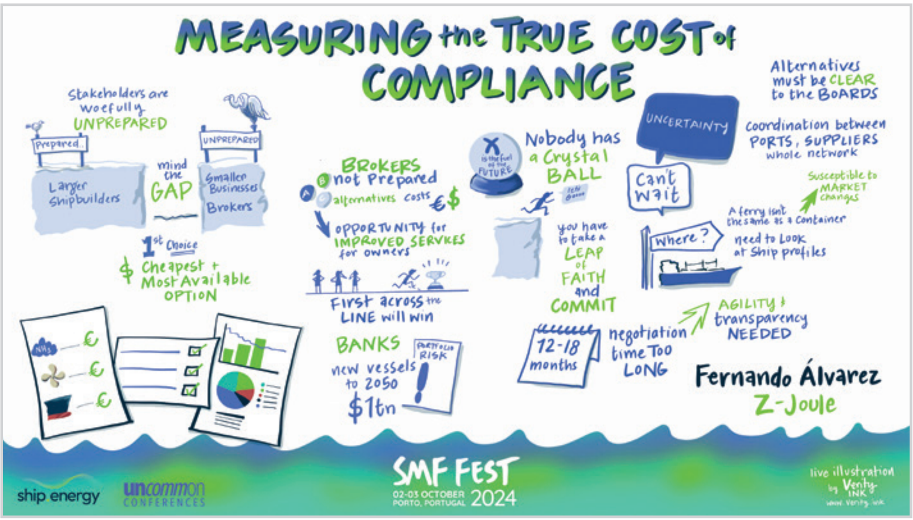
MEASURING the TRUE COST of COMPLIANCE
Stakeholders are woefully UNPREPARED
Prepared
UNPREPARED
Larger Shipbuilders
mind the GAP
Smaller Businesses
Brokers
1st Choice
Cheapest + Most Available OPTION
BROKERS not Prepared
alternatives costs €$
OPPORTUNITY for IMPROVED SERVICES for owners
First across the LINE will win
BANKS
new vessels to 2050
$1tn
Nobody has a Crystal BALL
you have to take a LEAP of FAITH and COMMIT
UNCERTAINTY
Can't Wait
Where?
Alternatives must be CLEAR to the BOARDS
coordination between PORTS, SUPPLIERS whole network
Susceptible to MARKET changes
A ferry isn't the same as a Container
need to Look at Ship profiles
12-18 months
negotiation time Too LONG
AGILITY + transparency NEEDED
Fernando Álvarez
Z-Joule
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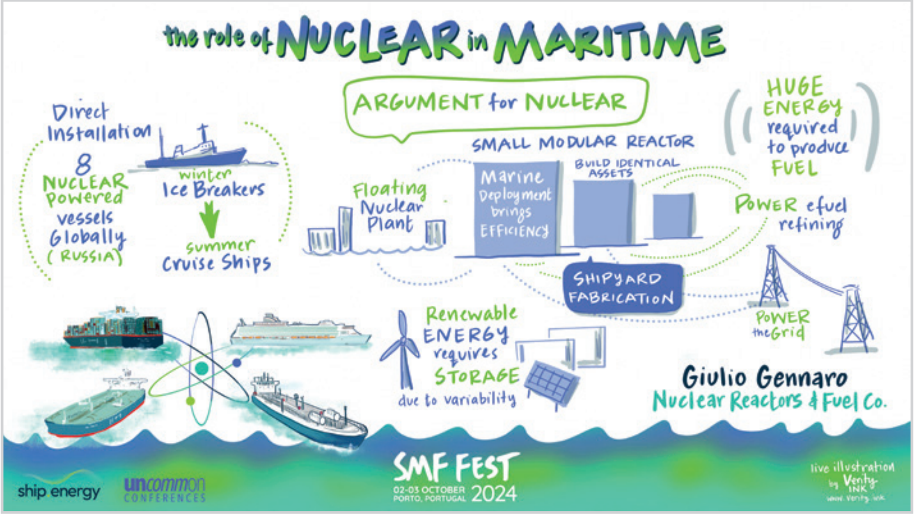
the role of NUCLEAR in MARITIME
ARGUMENT for NUCLEAR
Direct Installation
8 NUCLEAR Powered vessels Globally (RUSSIA)
winter Ice Breakers
summer Cruise Ships
SMALL MODULAR REACTOR
Floating Nuclear Plant
Marine Deployment brings EFFICIENCY
BUILD IDENTICAL ASSETS
HUGE ENERGY required to produce FUEL
POWER efuel refining
SHIPYARD FABRICATION
Renewable ENERGY requires STORAGE due to variability
POWER the Grid
Giulio Gennaro
Nuclear Reactors & Fuel Co.
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WORKFORCE & TRAINING
Merchant NAVY
1975 60000 ⇒ 2024 20000 SEAFARERS
less wanting Life at SEA despite much BETTER conditions
is there enough ENGAGEMENT ?
must feel Comfortable
PPE top
850000 officers
All need training in alternative FUELS
paper work
Increasing forms Regulations + Controls
FUELS
are they SUFFICIENTLY PREPARED
FUEL
CREW involved in DECISIONS?
I DON'T want to go
NH3 Powered
also need to be WILLING
"early adopters" LEAD the WAY
success depends on CREW
Stephen Gallagher
SGMF
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the Role of RETROFIT in DECARBONISATION
Spend $
CO2 ↓
Ship owners not USED to spending.
can't start TRANSITION with NEW BUILD
BUSINESS CASE needed
Efficiency
Fuel Saving
Fuel Change are LARGE Projects
must have CONVERSATION with all STAKEHOLDERS
owner
ship manager
charter
cargo owner
Newer ships built for CONVERSION
New approach to SHIP DESIGN
How to Measure?
FUEL
What Parameters to MEASURE
SPEED
build story to appeal
what DATA to use?
How do you Prove what you measured?
Stam Achillas
Wartsila Retrofit Solutions
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CORPORATE PARTNERS

INDIVIDUAL PARTNERS