

# Callidus News

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## FORGING THE FUTURE WITH ALTERNATIVE FUELS



Merchant vessels carry more than 80% of trade items throughout the world. Presently the shipping sector consumes more than 330 Metric Tons of fuel in a year and it accounts for global emission of 2-3% of Carbon dioxide, 4-9% Sulphur oxides, and 10-15% of Nitrogen oxides. It has been estimated that by 2050 the shipping industry could contribute to 17% of carbon emissions in the world. The maritime or shipping sector being international in its operation and outlook is regulated by the International Maritime Organization (IMO) under the United Nations (UN). IMO is actively involved in international shipping

issues such as safety, security and pollution.

A major issue of pollution in this century, which has gained momentum and attention, is the particles emitted due to the high levels of sulphur in the fuels. In the wake of this reality and to mitigate global damages, IMO, on 15 July 2011, adopted its first set of internationally applicable mandatory measures to improve ship's energy efficiency. IMO's Initial Strategy was to cut the annual greenhouse gas (GHG) emissions from international shipping in half by 2050, and work to phase out GHG entirely from ships as soon as possible

and within the century. The Initial GHG Strategy envisions a reduction of 40% by 2030 and 70% by 2050, in comparison to the emissions in 2008, which is due for revision by 2023.

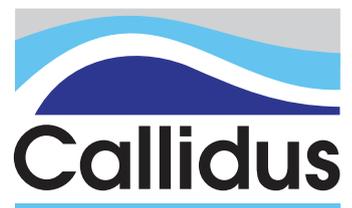
In order to attain the short term measure of 40% by 2030, in 2011, IMO introduced a new chapter on "Energy Efficiency" in The International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI, by incorporating mandatory energy efficiency regulations for ships. Thereby the Energy Efficient Existing Ship Index (EEXI) was given effect, which is a means to calculate the energy efficiency of the ship based



THOUGHT  
for the MONTH

START WHERE YOU ARE, USE  
WHAT YOU HAVE, DO WHAT  
YOU CAN

ARTHUR ASHE



on a required reduction factor expressed as a percentage relative to the Energy Efficiency Design Index (EEDI) baseline for new ships in a specific category; additionally ship's also required to comply with annual operating carbon intensity indicator (CII) and its rating. The CII is the annual reduction factor needed to ensure continuous improvement in the ships operational carbon intensity. The ratings for each category of ship's are calculated and determined and the each ship is categorized into A, B, C, D or E. With "A" being the best and "C" being average, ships with "D" rating for 3 consecutive years or in the "E" category, would have to submit a corrective action plan to achieve the "C" rating. The performance level of the ship would be recorded and reviewed in the Ship Energy Efficiency Management Plan (SEEMP); all these data are collected and managed by the IMO.

The amendments and strategy of the IMO has led the shipping industry to turn to alternative forms of fuel with either low carbon emission or zero carbonation. Some of these options as fuels or for propulsion include biofuels, marine methanol, LNG, electric energy, ammonia, fuel cells, wind power, hydrogen etc.

In this Article we will mainly focus on the use of Biofuels and other alternative forms of fuel in the shipping sector.

The brand "bp" who is a world renowned leader for quality gasoline, transport fuels, chemicals and alternative sources of energy such as wind and biofuels; bp also being a major global marine fuel and lubricants supplier as well as an operator and charterer of tankers and other vessels worldwide, has tied up with Maersk Tankers, who commercially manage the largest tanker fleet in the world, along with the support from the Danish Maritime Authority, and have been successful in completing trials using biofuel blended marine fuel in product tankers. This has been a major leap in confirming that biofuels can be used to help reduce carbon emissions in the shipping and actively contribute in decarbonization of this industry.

The trials were carried out initially on two of Maersk' product tankers, that were on time charter to bp, namely Maersk Cirrus and Maersk Navigator, wherein each of the vessels was supplied with bpMarine B30 biofuel. This was a composition of 30% fatty acid methyl esters (FAME) and very low sulfur fuel oil (VLSFO). FAME is supposedly a renewable biofuel mainly from recycled oils and renewable oil sources, which is non-toxic and biodegradable. FAME is internationally certified for its sustainability standards.

It is bp' great mission and ambition to be a net zero company by 2050.

Similarly, with the Sustainable Marine Methanol (SUMMETH) project, wherein the overall objective of the project was to advance the technological development and to provide recommendations for introduction of methanol as an alternative fuel for coastal and inland waterway vessels to reduce their emissions and carbon footprint. The basis of the project was to investigate methanol combustion concepts and ship fuel systems that will in turn lead to cost effective alternatives for use by ships.

In early 2015, Stena Germanica, belonging to the Swedish ferry company Stena Line, in collaboration with a Finnish technology company Wärtsilä, and Canadian supplier of methanol Methanex Corporation, was the first in the world to run on methanol as a marine fuel. The event marked a milestone in the industries quest for more sustainable future for commercial shipping.

Since then Wärtsilä has continued to invest in methanol for marine fuel applications, and further development work and testing procedures are planned.

By late 2021 there were 13 dual-fueled methanol ocean-going vessels in operation the world over.

In a first of its kind for the Navy, Ecofining enabled Eni to supply biodiesel for the Italian navy's offshore patrol vessel, Foscari.

Liquefied Nitrogen Gas (LNG) as a Marine Fuel is also gaining ground with Qatar Petroleum, the world's largest LNG producer, in a Joint Venture with Shell, is

producing fuel for use by Maersk Line.

According to A.P Moller – Maersk, the industry leader, they want to run a climate neutral business operation, as fast as possible.

In July 2021 the European Commission presented the 'Fit-for-55' Package in its efforts to combat climate change. A key element of the Package is the FuelEU Maritime Regulation which introduces requirements to reduce the GHG intensity of the energy utilized by vessels. A.P. Moller - Maersk supports the FuelEU Maritime proposal, and believes that in shipping, renewable fuels of non-biological origin (RFNBO) have a key role to play in decarbonizing maritime transport.

To conclude there is no doubt that the Shipping industry will need to explore more avenues and technologies, while being creative in experimenting with ways to adhere to the GHG targets set by the IMO. While the IMO is strategically reviewing and sphere heading various projects and supporting developing nations in implementing the measures, it is crucial for the developed nations and those with the means and technology to widen their search for newer fuel options, without forgoing the need to consider issues such as safety, regulation, pricing, infrastructural availability, lifecycle emissions, supply chain constraints, barriers to adoption and related factors. In the meantime ship operators and owners can also do their bit to improve their rating by hull cleaning to reduce drag; speed optimization; installation of low energy light bulbs; installation of solar/wind auxiliary power for accommodation services, etc. It is remarkable what a few world leaders have commenced as a journey in taking responsibility for their actions and striving to negate the damages to the environment. Leading by example is never easy, it takes time, money, effort, commitment, conviction and guts, in convincing others to follow; hats off to the ones who are paving the way for the shipping sector in achieving the IMO' goal for a brighter and sustainable future.



# IMPACT OF WAR ON GLOBAL MARITIME TRADE

**Steffy Skaria**  
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War has always been among the biggest dreads in the history of every society and its aftermath is beyond one's imagination. The planet has witnessed numerous battles, both big and small, which rendered its land dirty from bloodshed and its trade, economically unfeasible. Whenever a war breaks out, along with daily regular activities of the people, the global economy falls into a halt. This naturally brings about prolonged repercussions on the international commerce and trade. Maritime trade, is one such precinct which found its root, fighting and overcoming massive uncertainties. Weighing the combined outcome of war alongside the risks associated with the shipping and maritime industry, is highly necessary to understand its economic consequences. This article highlights the impact of war on global maritime trade, focusing on the backdrop of the recent Russia-Ukraine war.

When the unprecedented war broke out between Russia and Ukraine, following the Russian invasion on 24th February, 2022, the European continent was faced with a sudden blow. The world fell into a standstill,

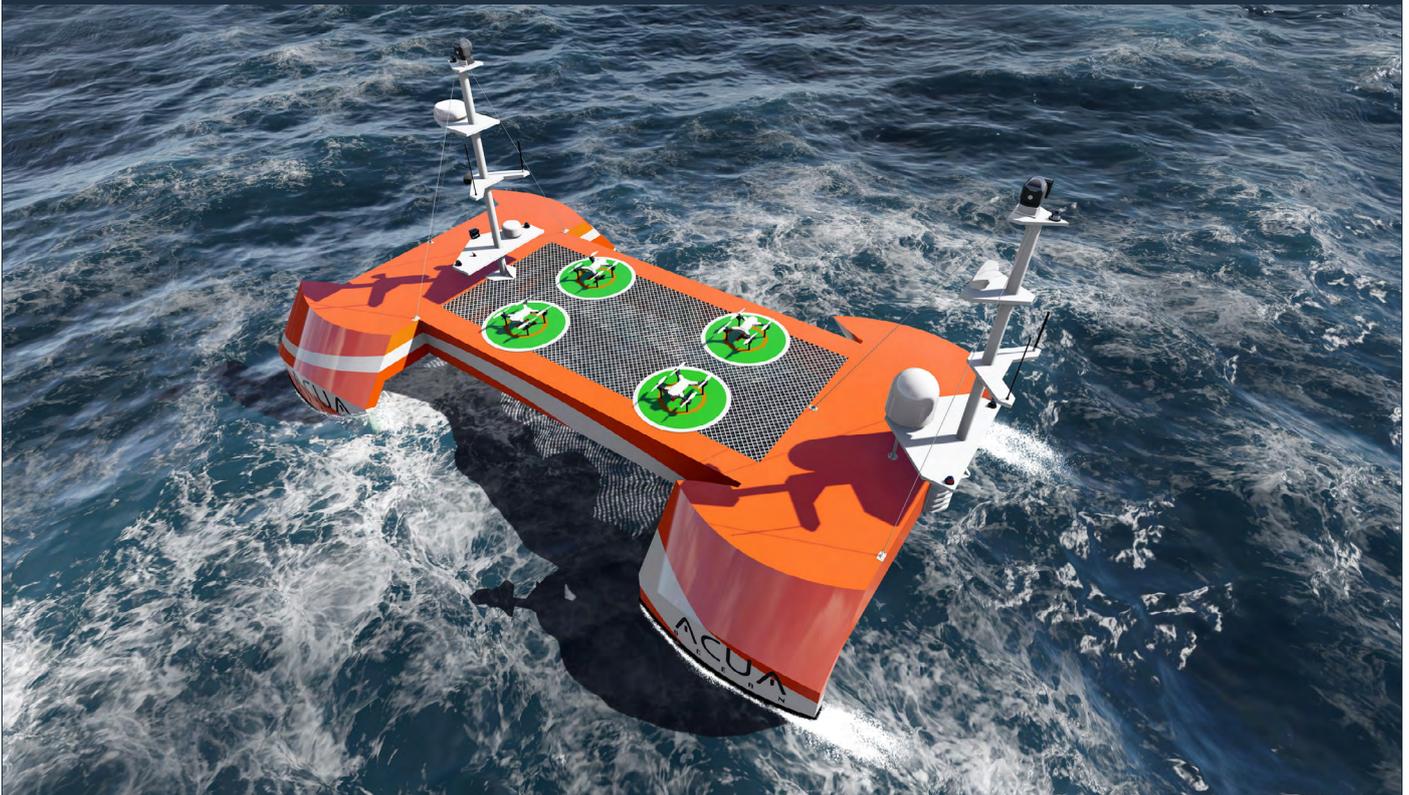
not knowing whether another world war was on its way or not. The war severely disrupted the shipping industry, with the Russian forces cutting of shipping routes, logistic firms suspending their services and the freight charges skyrocketing at an unreasonable scale. The war breakout deemed dangerous, the Black Sea and the Sea of Azov, which directly interposed the merchant vessels and other carriers who had to be stranded in the surrounding ports, unable to surpass the Kerch Strait. With over 70% of Ukraine's exports being conducted through shipping, the situation more burdensome.

The outcome on maritime trade for Ukraine or Russia wasn't the end point. Its position on the global market only worsened, when the countries worldwide started imposing sanctions upon Russian economy. The retaliatory steps designed to paralyze the Russian economy, are heaping new disruptions on supply chains, which is yet to recover from the perils caused by the pandemic. Mediterranean Shipping Co. and A.P. Moller-Maersk A/S, the world's biggest container carriers, even stopped the bookings for Russian freight, claiming

ripple effects and delays in shipping from that region. This was a huge blow for the European economies which were already suffering from higher inflation rates, clogged ports, etc. among the others. Above all, the sanction imposed by UK, banning all the Russian ships from entering the British ports, would also be a contributing factor to the same. All these are in turn, sure to affect the total maritime market in the global realm.

It is estimated that Russia accounts for nearly 11.3% of global crude oil trade and 9.7% of global refined products trade. This would raise crude supply uncertainties to a very high level. The operational problems are yet another obstacle, which is alleviated by the pandemic precautionary requirements of the labourers. It is assumed that approximately 15% of the total seafarers hail from either Russia or Ukraine, which makes it difficult to sustain the operations of the shipping activities. After all, the shipping prices along with the insurance premiums taking a toll in in the global market, pose an overall threat to the maritime industry.

# DESIGN APPROVAL FOR FIRST HYDROGEN-POWERED AUTONOMOUS SURFACE SHIP



Designs for the world's first zero-emission hydrogen-powered maritime autonomous surface ship (MASS) are progressing providing the potential to greatly enhance the applications and benefits of the technology according to a British start-up named ACUA Ocean. As per the company reports, it has completed prototype testing, receiving design approval for key components as they work to introduce commercial designs that can be manufactured at scale to reduce the capital costs of employing the technology.

ACUA reports that it is receiving the first approval in principle (AiP) from classification society, Lloyd's Register. Included in the design approval, according to the company, will be its hydrogen system, control engineering system, and electrical power distribution systems, key components that will be employed in a new class of MASS vessels.

Prototype trials were completed in March as part of the UK's Clean Maritime Demonstration Competition. The company is also working with Ad Hoc Marine Designs on the development

of its H-USV to provide monitoring and offshore data collection. ACUA Ocean's vessels will be provided with a suite of onboard sensors, communicate using VHF and LRAD systems while recording HD and thermal video for use as evidence. A rendering shows the design outfitted with four drones as part of its capabilities. They are also using a catamaran design for the increased stability.

Courtesy: [www.maritime-executive.com](http://www.maritime-executive.com)

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