

Maritime Decarbonization Monthly

September 2023

*Thought of the
Month:*

“Ammonia will be the dominant player in green fuels by 2050”

The Big Picture

A recent survey conducted by the **Global Centre for Maritime Decarbonization (GCMD)** in collaboration with **Boston Consulting Group (BCG)** indicated that a substantial portion of shipowners and operators acknowledge the necessity of reducing greenhouse gas (GHG) emissions. Notably, **73% of respondents consider achieving net-zero operations to be a strategic priority**, and 77% already have established concrete decarbonization targets. Among these, 54% have set specific net-zero goals. Furthermore, the survey highlights proactive measures being taken by ship owners and operators to align with their sustainability objectives. A significant majority, 87% of the respondents, have personnel dedicated to pursuing green objectives, with 55% having established dedicated sustainability teams. A noteworthy 25% of the participants have developed clear roadmaps for decarbonization. On average, respondents are investing approximately **2% of their revenues** in green initiatives, underlining their **commitment to advancing environmentally friendly practices in the maritime sector**.

What's New

In its 2023 report update, the **International Energy Agency (IEA)** forecasts a **substantial increase in the utilization of bioenergy, hydrogen, and hydrogen-based fuels within this sector**. It predicts that these sustainable energy sources, which currently constitute less than 1% of the total energy consumption in shipping and aviation, are poised to surge to nearly 15% by 2030 and a remarkable 80% by the year 2050. Notably, **ammonia** is poised to become the dominant player, holding an impressive **44% share of energy consumption in international shipping by the year 2050**.

Our View

In addition to the ongoing development of environmentally friendly fuels, the **collaborations and partnerships that have emerged in the industry will play a critical role** in the energy transition of the shipping sector in the coming decades. These initiatives are becoming more dynamic every year, creating a sense of confidence in the shipping industry. They not only enable the industry to **meet the challenges of sustainability**, but also allow it to **overcome obstacles** on the way to achieving realistic and achievable goals. A collaborative effort involving major ports, shipping carriers, and cargo owners has unveiled an ambitious Green Shipping Corridor Implementation Plan aimed at expediting emissions reduction along one of the globe's busiest container shipping routes traversing the Pacific Ocean. The partnership comprises prominent ports, including Los Angeles, Long Beach, and Shanghai, while the carrier partners consist of industry leaders such as CMA CGM, COSCO Shipping Lines, Maersk, and ONE.

Industry Trends

Fuels

India is poised to emerge as a premier destination for green fuels within the shipping sector. The central government is actively pursuing the goal of establishing India as the primary refueling hub for green hydrogen, ammonia, and methanol catering to the maritime industry. The Union Minister for Power has announced the government's intent to initiate pilot projects focused on the storage of green hydrogen and green ammonia. These projects are geared towards ensuring a continuous supply of renewable energy, round the clock, reaffirming India's commitment to sustainable energy solutions.

Biofuels

Monjasa, one of the world's top 10 marine fuel suppliers, is on track to provide a sustainable and scalable biofuel solution for the maritime sector in Latin America. Monjasa sees the recently revised IMO Greenhouse Gas Strategy 2050 for Global Shipping as a significant boost for the green fuels industry, but stakeholders like Monjasa are calling for more concrete and binding requirements to accelerate the transition away from fossil fuels for the global merchant fleet.

Green Partnerships

The Global Centre for Maritime Decarbonization (GCMD) and the Society for Gas as a Marine Fuel (SGMF) have signed a 2-year Coalition Partnership agreement during Gastech 2023. GCMD and SGMF plan to collaborate on standards redesign and develop guidelines for the use of ammonia as a marine fuel. These guidelines address the specific requirements for the use of LNG and establish a competency framework for the safe handling of LNG, including operational details for the relevant vessels and handling equipment.

New Vessel Designs

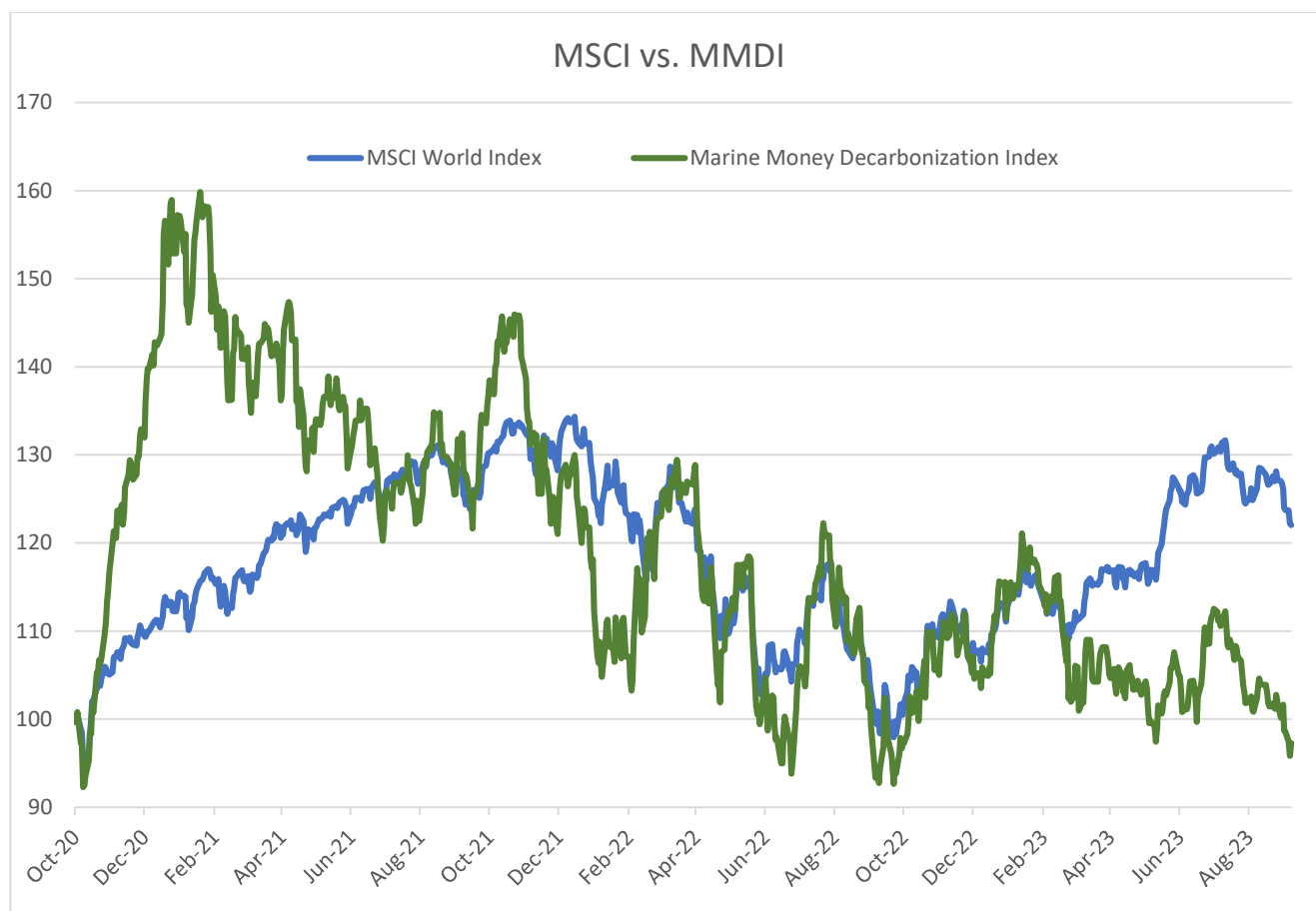
South Korean shipbuilder **Hanwha Ocean**, formerly known as Daewoo Shipbuilding & Marine Engineering Co. has received approval for key innovations at the heart of what is believed to be the world's first carbon emission-free LNG carrier. Specifically, the shipyard has received approval in principle (AIP) from ABS for its design of a liquefied natural gas (LNG) carrier equipped with an ammonia-fueled gas turbine. The 174,000 cbm vessel, described as the world's first carbon emission-free LNG carrier, can use ammonia and natural gas separately or simultaneously as fuel. If only ammonia is used as fuel, no carbon gas is emitted.

Technology

Swiss marine power company **WinGD** and shipbuilder **Samsung Heavy Industries (SHI)** have agreed to cooperate on the installation of WinGD's X-DF-A dual-fuel ammonia engines on forthcoming newbuild vessels. The cooperation will include preparing X-DF-A for integration with wider ammonia fuel systems and auxiliary machinery across a range of vessel designs, including oil tankers, container ships, and ammonia carriers.

Green Ships

Singapore has taken delivery of the world's first liquid hydrogen tanker, Suiso Frontier, designed and manufactured by Japan's Kawasaki Heavy Industries (KHI) and operated by Shell Japan. The vessel was moored at Shell Energy and Chemicals Park Singapore on Pulau Bukom from Sept. 1 to Sept. 7, 2023.



Relevant Prices

Fuel Prices

	<u>Price</u>	<u>YOY</u>
Crude Oil, Brent	95.23 \$/bbl	7.6%
Natural Gas, Henry Hub	2.92 \$/MMbtu	-57.5%
LNG, Korea/Japan	14.76 \$/MMbtu	-64.2%
Coal, Rotterdam	127 \$/mt	-55.3%
VLSFO, Rotterdam	629 \$/mt	2.9%
Methanol, China	33.90 \$/mt	-11.6%
Palm Oil, Malaysia	31.43 \$/mt	12.5%

Stock Indices

Marine Money Decarbonization Index	303	6.4%
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Carbon Emission Allowances

EU Emission Allowances	86.44 \$/kt	24.2%
UK Emission Allowances	47.16 \$/kt	-48.5%

Note: All prices as of last closing prior to the report; Sources: Bloomberg and Breakwave Advisors

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Contact:

Breakwave Advisors LLC
 17 State Street, 40th floor
 New York, NY 10004
 Tel: +(1) 646 775 2898
 Email: research@breakwaveadvisors.com