

Green Hydrogen and Green Shipping

The context at COP 28 and our call for further action

Achieving global climate change goals of keeping warming below the Paris target of 1.5 degrees and reducing emissions to net zero by 2050 requires action across all sectors. It also requires solutions that cut across sectors, to enable the fastest possible action and uptake.

IMO's 2023 revised strategy secures international shipping as a key offtaker of green hydrogen in the 2030s

The need for multi-sector/stakeholder collaboration is particularly true in the case of the maritime and green hydrogen sectors. The adoption of a new 2023 GHG strategy by 175 member states of the International Maritime Organization (IMO) in July 2023 represents a major leap forward in ambition, sending a clear signal to phase out fossil fuels in the maritime sector. To achieve the targets set out in the Strategy, the average ship's GHG intensity will need to be reduced by 86% by 2040.¹ Achieving this requires large-scale and rapid growth in the use of zero-emission fuels², notably green hydrogen-derived fuels with a GHG intensity reduction of 90-100% relative to existing fossil-based fuels on a full lifecycle (well-to-wake) basis. The 2023 Strategy³ also sends a signal that corporate, national and regional action needs to be strengthened in the immediate near-term (2024-2028), in preparation for international mandatory global measures that will enter into force in 2027. This will enable the mass-market transition and rapid diffusion of zero-emission fuel use throughout the maritime sector, thereby enabling it to reach near-zero GHG emissions by 2040.

Shipping is positioned to be a key offtaker of zero-emission fuels because, unlike in any other sector except aviation, its global regulator (the IMO) has committed to implement legally binding regulations that will mandate demand and use of fuels with near-zero and zero GHG emissions. The most prominent options to meet this will use hydrogen and particularly green hydrogen as a feedstock. This avoids the patchwork and competitive disadvantage risk of national action/policy that will face other sectors and produces a predictable and large-scale demand (see below) for green hydrogen into the global economy. Depending on the final design of policy, there may also be additional early support and incentives for green hydrogen to support immediate scaling.

¹ Implications of the Revised IMO GHG Strategy for national, regional and corporate action. UMAS (Sept 2023)

² Definition of Zero emission energy sources, Getting to Zero Coalition
https://www.globalmaritimeforum.org/content/2019/09/Getting-to-Zero-Coalition_Zero-carbon-energy-sources.pdf

³ IMO 2023 GHG Strategy

“Shipping will need large volumes of hydrogen ~5Mt p.a. of green hydrogen (feedstock) by 2030, scaling to ~90Mt p.a. by 2040”

It is estimated that positioning the global shipping sector on the least cost 1.5-aligned pathway requires the use of green hydrogen-derived fuels starting in the middle of this decade, beginning with a relatively modest green hydrogen volume of 5 million tonnes by 2030, (equates to around 29.8 Mt of ammonia or 28.1 Mt of methanol) and growing rapidly to up to 90 million tonnes by 2040⁴. During this period of ramp up in green hydrogen towards 2040, there is also expected to be a role during this period for low carbon⁵ hydrogen derived fuels (e.g. hydrogen produced from natural gas using CCS). This may be able to scale faster initially, leverage existing production capacity, and enable significant well-to-wake reductions - albeit not to the levels of green hydrogen, thereby limiting the period for which it will be a viable solution. Longer term, a decarbonized global shipping sector will become one of the largest demand sources for green hydrogen, projected to account for approximately 15 percent of total green hydrogen demand by 2050, providing a clear long-term dependable demand signal to the industry⁶.

Actions since COP27

Spurred on by the previous statement⁷, a number of key steps, in addition to the developments at IMO's MEPC 80 meeting, have been taken;

- Ship owners are taking deliveries and placing further orders for dual-fuel zero-emission fuel capable ships. More than 215 methanol fuelled vessels have been ordered⁸ with the first methanol fuelled container ship, the Laura Maersk, having conducted its first journey earlier this year⁹. However, zero-emission vessel ordering is assessed as 'not on track'¹⁰, assessed as ~20% of what is needed, and rapid acceleration of planning and ordering on the fleet side is now needed.
- 41 governments have now formulated national hydrogen strategies¹¹, primarily for supply/production, but also in some cases referring to demand/use.
- There has been continued and rapid growth of production/supply project announcements, both intended projects and investment, and the production scenarios are increasingly clarifying with certain projections showing a clean hydrogen pipelines of 47 million tonnes by 2030¹². However, the volumes available specifically for maritime decarbonization use remain unclear and constitute a large part of the uncertainty of supply.
- There are clear commitments by governments both to support end-use¹³, and end-use in lower income countries.
- Strong market demand signals from shipping customers have appeared, like the announcement of the Zero Emission Maritime Buyers Alliance (ZEMBA) to procure ocean shipping services powered by zero-emission fuels for 600,000 twenty-foot containers (TEUs) over a three year period¹⁴ give further confidence.

⁴ Five percent zero emission fuels by 2030 needed for Paris-aligned shipping decarbonization. (2021, March). Getting to Zero Coalition.

⁵ Natural gas plus CCS

⁶ Making the Hydrogen Economy Possible. (2021, April). Energy Transitions Commission.

⁷ <https://climatechampions.unfccc.int/wp-content/uploads/2022/11/Joint.Statement.pdf>

⁸ <https://www.manifoldtimes.com/news/dnv-methanol-fuelled-vessel-orderbook-picks-up-again-in-sep-after-no-orders-in-aug/>

⁹ <https://www.ship-technology.com/news/maersk-methanol-ship-arrives-in-europe/>

¹⁰ <https://www.u-mas.co.uk/wp-content/uploads/2023/10/UMAS-GMF-RtZ-2023-Climate-Action-in-shipping-2023-report.pdf>

¹¹ <https://iea.blob.core.windows.net/assets/8d434960-a85c-4c02-ad96-77794aaa175d/GlobalHydrogenReview2023.pdf>

¹² <https://about.bnef.com/blog/2h-2023-hydrogen-market-outlook-the-demand-question/>

¹³ <https://www.energy.gov/oced/articles/us-department-energy-seeks-independent-entity-new-demand-side-initiative-accelerate>

¹⁴ <https://www.cozev.org/initiativesfeed/join-zero-emission-maritime-buyers-alliance>

The current status of shipping's hydrogen transition, and arising key needs

As we approach the halfway point of the 2020s, we are at an inflection point. Cross sectoral action and international cooperation have increased significantly in the last 12 months, but now need to be strengthened and move away from announcements and feasibility studies to increased tangible action and investment.

This requires faster and bolder action. This can be achieved by technological innovation, supportive policies and collaboration across the value chain leveraging what has emerged as a clear opportunity for the shipping sector and green hydrogen producers to mutually and symbiotically reinforce each other's actions.

The IMO's 2023 revised Strategy sends a strong signal and has significantly reduced the risks, and raised the opportunity for those at the forefront of transition. The Strategy also creates a window of opportunity in the period from now until 2027 to maximize preparedness and alignment to the rapid transition to zero emissions the IMO's mid-term measures are expected to drive. Specific needs to maximize the momentum built during this period include:

- Rapid growth in positive investment decisions, both by suppliers (producers) and users (fleet owners/operators), related to zero emissions fuels.
- Initiatives for further early adopter demand aggregation, both within sector and across sectors.
- Auction mechanisms for the buyer-side of green hydrogen.
- Further development of regional markets with a public sector actor linking early supply and early demand to improve both price and demand volume certainty.
- Scaling up volumes to enable global spot prices for key green molecules (e.g., green hydrogen and green ammonia).
- Both public funding capex support, especially for lowering green hydrogen production cost, but also demand-side opex support (e.g., support for use of green hydrogen and hydrogen-derived fuels).
- National and regional actions that support lower income country opportunities (both for supply and demand side), and clarification from development banks as to how they will support early zero and near-zero GHG maritime production and use in lower income countries.

In particular, close collaboration between green hydrogen producers, shipping actors and policy makers - exemplified by these joint statements - is therefore vital to engender the confidence of actors on the ground - whether national governments or ports - to further build the enabling conditions and investments that will deliver the transition.

The signatories of this joint statement include some of the largest green hydrogen producers and some of the largest and most influential actors in the maritime value chain. Through our collective action and cross sector cooperation we are committed to ensuring shipping's zero emission transition happens smoothly and swiftly.

Our commitments to decarbonization of the maritime sector

“We, the undersigned members of the global shipping sector, are committed to full decarbonization of the maritime sector, beginning with a shift to use of at least 5% - striving for 10% - scalable zero-emission fuels in 2030, providing a dependable and ambitious demand signal that will help catalyze investments in at-scale green hydrogen production. In turn, we, the undersigned members of the green hydrogen value chain, will provide at-scale green hydrogen/hydrogen-derived fuels to ensure an affordable and minimally disruptive transition for the global shipping sector.

More specifically:

- We, companies that work across the shipping value chain, are committed to the targets outlined in the IMO’s revised GHG Strategy, which we understand will require ~90% lower¹⁵ GHG intensity in international shipping by 2040, and which will drive steep demand for zero-emission fuels. We will implement and use green corridors in the near-term to demonstrate zero-emission shipping and enable a mass-market transition to zero-emission fuel use starting in 2030.
- We, ship owners, operators, and financiers will send a demand signal by:
 - Investing in vessels capable of operating on the most competitive zero emission fuels, and the production of zero emissions fuels to meet the goal of at least 5% aiming for 10% zero-emission fuels use by 2030 and rapid scaling thereafter.
 - Developing and sharing a strategy for fleet decarbonization in line with IMO’s “striving for” GHG reductions, and/or SBTi¹⁶.
- We, ports and port enablers (storage, distribution/logistics and supply/bunkering players, bunker suppliers, storage terminal operators), will support investment in green hydrogen (hydrogen-derived fuel) infrastructure and safety projects to support re-fueling of ships, and to become part of green corridor projects which help further incentivize the production of green hydrogen and hydrogen-derived fuels for use in shipping.
- We, equipment manufacturers, commit to accelerating the RD&D efforts of machinery and equipment that enables the on land and onboard use of green hydrogen and hydrogen-derived fuels, and ensuring that manufacturing volumes will be available both for newbuilding and retrofit, in-line with the IMO’s revised strategy “striving for” ambitions.
- We, cargo owners, aim to only use ocean freight services powered by zero emission fuels by 2040.
- We, green hydrogen producers, pledge to supply sizable shares of the 5.5, striving for an 11 million-ton 2030 production target for use by the shipping sector.

We are confident these collaborative actions will have lasting implications for both shipping and green hydrogen, as well as for the global climate.”

¹⁵ Implications of the Revised IMO GHG Strategy for national, regional and corporate action. UMAS (Sept 2023)

¹⁶ For example, signing up to SBTi/Race to Zero and submitting for accreditation/approval a plan to the relevant initiatives. Including in ESG reports (or equivalent), the intent and plan for a fleet/portfolio/operation which is aligned with the UN High-Level Expert Group’s guidance on voluntary net zero commitments.

Our call for action in support of these commitments

Recognising the current status and key needs, we also call on national governments and the International Maritime Organization (IMO), which regulates international shipping, to match and support our actions and help us collectively maximize the success of the 2030, 2040 and 2050 goals of the IMO's 2023 GHG Strategy, and minimize the cost of shipping's transition.

We call for:

- The IMO and member States to adopt an ambitious mid-term measure package in 2025 for entry into force in 2027, including a GHG Intensity fuel standard on a well-to-wake basis.
- The IMO and member States adopt a GHG pricing mechanism, for example a levy, as the most appropriate mechanism to achieve a just and equitable transition.
- That in combination, a levy and fuel standard creates strong policy support for 5% striving for 10% use of zero and near-zero emission fuels in 2030 and enables rapid scaling to achieve 70-80% emissions reductions by 2040.
- National governments to align supply side policy incentives with demand policies and ensure access to these for maritime actors, including mechanisms to provide long-term price certainty for producers while reducing risk for offtakers.
- Local and national governments put in place incentives to rapidly advance and scale green shipping corridors that include the infrastructure and workforce required to use zero-emissions fuels and support the pre 2030 operation of vessels on zero emission fuels.
- Alignment of global standards for well-to-wake GHG accounting frameworks that focus on cost-effective absolute emission reductions.

Signatories



Supporters

