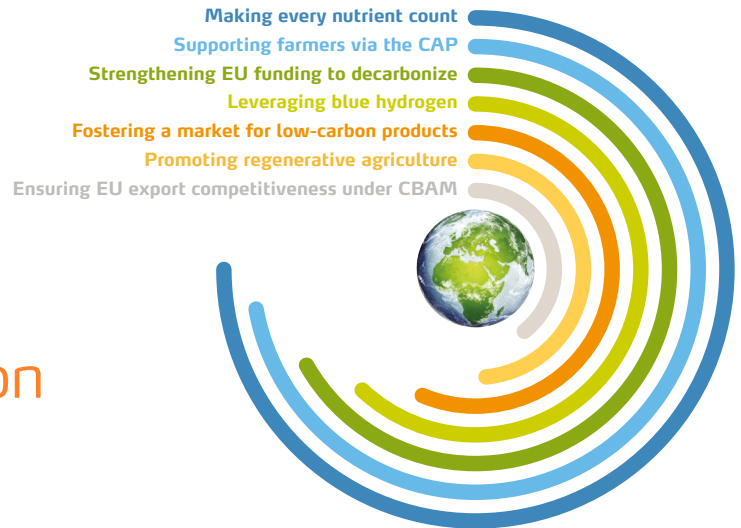




Knowledge grows

# Fostering a market for renewable and low-carbon shipping fuels



## Introduction

Renewable and low-carbon ammonia are crucial for decarbonizing hard-to-abate sectors, such as fertilizers, energy and transport. By using electrolysis or carbon capture and storage (CCS) technologies (see fact box), hydrogen, and its derivative ammonia, can already be manufactured today with close to zero or significantly lower greenhouse gas (GHG) emissions.

Initial steps, such as the implementation of the EU Emissions Trading System (ETS) for maritime transport and the FuelEU Maritime regulation, which focuses on the GHG intensity of the fuel, are already driving demand for low-emission shipping fuels. However, significantly more demand is needed to accelerate investment in new production facilities and bring renewable and low-carbon products based on ammonia, such as shipping fuel, to market. To unlock the potential of these low-carbon products and mobilize investment, we must boost demand.

## Renewable and low-carbon ammonia – game changers for shipping

The maritime transport sector is vital for critical supplies of energy, food, and commodities as over 80% of international trade volumes are transported by sea<sup>1</sup>. However, at the same time, maritime transport accounts for around 3% of the world’s GHG emissions.<sup>2</sup> If action is not taken to decarbonize shipping, emissions related to maritime transport could soar by 130% by 2050 compared to 2008 levels.<sup>3</sup> Inaction is not an option. We must decarbonize shipping – and renewable and low-carbon ammonia are key to achieving this.

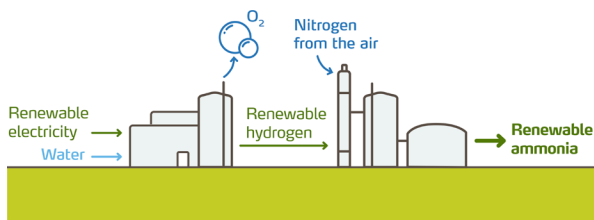
Ammonia is a fuel that does not generate CO<sub>2</sub> when burned. Renewable and low-carbon ammonia are game changers for shipping because of their suitability for long-haul, deep-sea routes and their high scalability. Ammonia does not require cooling to extreme temperatures, and it has a higher energy density than liquid hydrogen, making it more efficient to transport and store. For shipping, this high energy efficiency means longer distances can be covered at a lower cost.

### What is renewable and low-carbon ammonia?

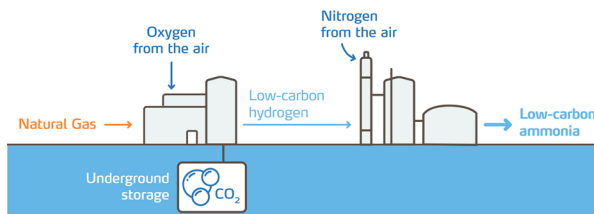
**Renewable ammonia** is produced using renewable hydrogen by switching the production method from natural gas to renewable electricity and water electrolysis (splitting water into hydrogen and oxygen).

**Low-carbon ammonia** is produced using low-carbon hydrogen via carbon capture and storage (CCS) technology to capture and sequester the byproduct CO<sub>2</sub> in the conventional production process.

#### Renewable ammonia production



#### Low-carbon ammonia production



## Unlocking ammonia’s potential as a shipping fuel for the green transition

While the FuelEU Maritime initiative provides the right kind of incentives to deploy alternative sustainable marine fuels, its short- to mid-term impact on the market needs to be evaluated. Notably, the targets are only kicking in slowly, with a 2% CO<sub>2</sub> intensity reduction target in 2025 and only a 6% reduction target from 2030, incentivizing predominantly the use of onshore power supply (OPS) and liquefied natural gas (LNG).

From 2034-35, there will be clearer incentives for using alternative fuels, such as renewable fuels of non-biological origin (RFNBO) and low-carbon ammonia, under FuelEU Maritime. The Commission will monitor and report the share of RFNBOs in the yearly energy used on board by ships falling under the scope of this regulation. If the share of RFNBOs, such as renewable ammonia, is less than 1% for 2031, a sub-target of 2% will apply for these fuels from 2034. At the same time, the CO<sub>2</sub> intensity reduction target will increase to 14.5% in 2035.

Furthermore, by the end of 2027, and every five years thereafter, the Commission will report on the functioning of the FuelEU Maritime regulation. The first report in 2027 will be an important milestone for assessing the effectiveness of this regulation.

<sup>1</sup>The Review of Maritime Transport 2021 | UNCTAD

<sup>2</sup>European Commission: Reducing emissions from the shipping sector, [online here](#).

<sup>3</sup>UN trade & development: Review of maritime transport 2022, [online here](#).



## Fostering a market for renewable and low-carbon shipping fuels

While investments in the shipping value chain must start early to speed up decarbonization, ship owners are concerned about insufficient **bunkering<sup>4</sup> infrastructure**, while ports and alternative fuel producers are uncertain about demand,

at least until 2035. Thus, investing early in port bunkering infrastructure, supported by EU and Member State funding, is important. This will encourage ship owners to confidently invest in making ship engines ready for new zero-carbon fuels.

### OUR RECOMMENDATIONS

- 1.** Apply a zero VAT rate to renewable ammonia fuel purchases for shipping companies, ensuring it remains price competitive with traditional fuels. Establish market incentives or tax breaks for shipping companies using ammonia-powered vessels to encourage early adoption.
- 2.** Work closely with international organizations like the International Maritime Organization (IMO) to harmonize ammonia fuel regulations and certification globally. Develop and enforce safety standards for handling, storage, and transport to ensure ammonia is safely integrated into maritime operations and in line with international efforts to decarbonize shipping.
- 3.** Support and fund large-scale demonstration projects for infrastructure and ammonia-fueled vessels to showcase the feasibility and benefits of ammonia as a maritime fuel. Collaborate with shipbuilders, fuel producers, and port authorities.
- 4.** The European Commission should include bunkering infrastructure for zero-carbon fuels in its guidance for Alternative Fuels Infrastructure Regulation (AFIR) mandated national policy frameworks. When assessing the draft AFIR national policy frameworks by June 2025, the Commission should evaluate the effectiveness of Member States' plans for developing bunkering infrastructure and issue recommendations.
- 5.** In future AFIR iterations or complementary policies, the Commission should explicitly mandate the deployment of clean ammonia bunkering infrastructure in core Trans-European Transport Network (TEN-T) ports to ensure a gradual rollout and enable early adoption. The focus should be on prioritizing ports that serve major shipping routes and areas of high shipping traffic, which have a high potential for aggregating demand across ammonia segments to maximize the impact of ammonia infrastructure and encourage uptake among ship operators.

<sup>4</sup>Bunkering means the refuelling of cargo vessels.