

# IEA-Advanced Motor Fuels ANNUAL REPORT 2023

## TASK 60



## Task 60: The Progress of Advanced Marine Fuels

<b>Project Duration</b>	November 2019–October 2023
<b>Participants</b> <b>Task sharing</b>	Austria, Canada, China, Denmark, Finland, Korea, Sweden, Switzerland, and USA
<b>Cost sharing</b>	Methanol Institute, USA
<b>Total Budget</b>	EUR 1,795,000 (USD 1,980,700)
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### **Purpose, Objectives, and Key Question**

In 2013, AMF released its first Task report on marine fuels (Task 41) highlighting the fact that no alternative fuel option existed that did not add significant costs or pose other serious impediments. The preferred marine fuel, heavy fuel oil (HFO), was soon to be banned or restricted due to its high sulfur and fossil carbon content. Recent developments, however, have highlighted several new fuel options that should be assessed.

Task 60 seeks to answer the following key question: How can new forms of advanced marine fuels contribute to carbon-neutral shipping in the future?

### **Activities**

The final report was finished, and a [hybrid conference](#) was held on June 20, 2023, in Copenhagen.

### **Key Findings**

The key findings of this task are as follows:

- Ultra-low-sulfur marine fuel has become available in adequate quantities around the globe, contributing significantly to a reduction in marine sulfur emissions.
- Liquefied natural gas (LNG) as a fuel has seen a big surge in both number of ships and total amount of LNG used for shipping, reducing both sulfur and black carbon emissions.
- Scrubber installations have also surged since the introduction of the International Maritime Organization (IMO) 2020 sulfur cap. Scrubbers effectively capture sulfur but, depending on operation, are less effective in mitigating black carbon. Open-loop scrubbers are prohibited in China.
- Emissions of black carbon can be effectively mitigated through the use of advanced fuels such as methane, ammonia, hydrogen, or methanol.
- The global nitrogen oxide (NO<sub>x</sub>) regulation applies only to new ships and has no effect on existing ships. To reduce NO<sub>x</sub> pollution from older ships, local enforcement, differentiated harbor taxes, and incentivized retrofit programs are needed.
- Biofuels produced by means of fast catalytic pyrolysis or hydrothermal liquefaction are potentially promising drop-in fuels.
- Methanol dual-fuel engines are becoming an accepted option for new ships.
- Hydrogen engines are still new to the market.
- Ammonia engines are still in the research and development phase.
- Many different fuel production pathways should be considered from a well-to-wake perspective when assessing climate impact.
- Carbon capture technology is important for the decarbonization of the shipping industry.
- Electrification may be the best option for short sea shipping

### **Publications**

A final report and the key messages for Task 60 are available on the [AMF TCP website](#).