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Alternative fuels for marine and inland waterways transport

A recent JRC report finds that fuels like liquefied natural gas (LNG) and methanol are the most promising alternatives to drive decarbonisation of the shipping sector and ultimately contribute to the fight against climate change. Market penetration by alternative fuels has already begun with ship builders, engine manufacturers and classification societies by introducing greener ships running on cleaner fuels.

Shipping is more fuel-efficient than road transport: it requires 2-3 grams of fuel per ton per km, compared to road transport by truck which is about 15 grams of fuel per ton per km. However, its greenhouse gas emissions are substantial, representing 4% of the EUâ??s GHG emissions in 2013, and growing fast. Without action, these emissions are expected to more than double by 2050 compared to 2010 (+51% in the EU), owing to global economic growth and the associated transport demand.

A European Commission strategy on integrating maritime emissions into the EU's policy for reducing its domestic greenhouse gas emissions has led to a legislation that requires large ships using EU ports to report their verified annual emissions and other relevant information as of 2018. Other goals of the strategy include setting reduction targets for maritime transport and introduction of market-based measures.

The report gives an overview of the shipping sector, including market share, emission related issues, fuel standards and present legislation. It covers different alternative fuels, engine types and the introduction of alternative fuels. The report reviews low sulphur grade diesel fuels, biofuels, traditional fuels, gaseous fuels and battery operated propulsion, Fischer-Tropsch (FT) or synthetic diesel, pyrolysis oil, hydrogen in combination with fuel cells, solar power and wind energy as potential alternatives.

Results show that from a long-term perspective, moving to LNG and methanol is strategically attractive as each of the two fuels has a biofuel counterpart, biomethane and biomethanol. This means that ships and infrastructure built for LNG and methanol can be used to supply bio methane and bio methanol without a large overhaul of installations. This could equate to using the two fuels as transition fuels before making a major shift to biofuels. However, their potential use will depend on a number of factors, including environmentally sustainable biomass feedstock for their production, cost-effective production technologies and ultimately on their market penetration.

The EU aims to shift some of the road transport load to the more efficient marine and inland waterways systems. Hence, implementation of a specific renewable fuel mandate for the marine sector could create a synergy with the already existing mandate for the road transport. The two can complement each other in areas such as technology development, implementation, government support and deployment. In addition, with the results from the COP21 summit still fresh, this is the right time to invest in the decarbonisation of the shipping sector. The use of alternative fuels could contribute to each countryâ??s contribution to cutting emissions.

Source: European Comission
More Information and Download:
https://ec.europa.eu/jrc/en/publication/alternative-fuels-marine-and-inland-waterways-exploratory-study