FACT SHEET: EUROPE

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communications@theicct.org WWW.THEICCT.ORG

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THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

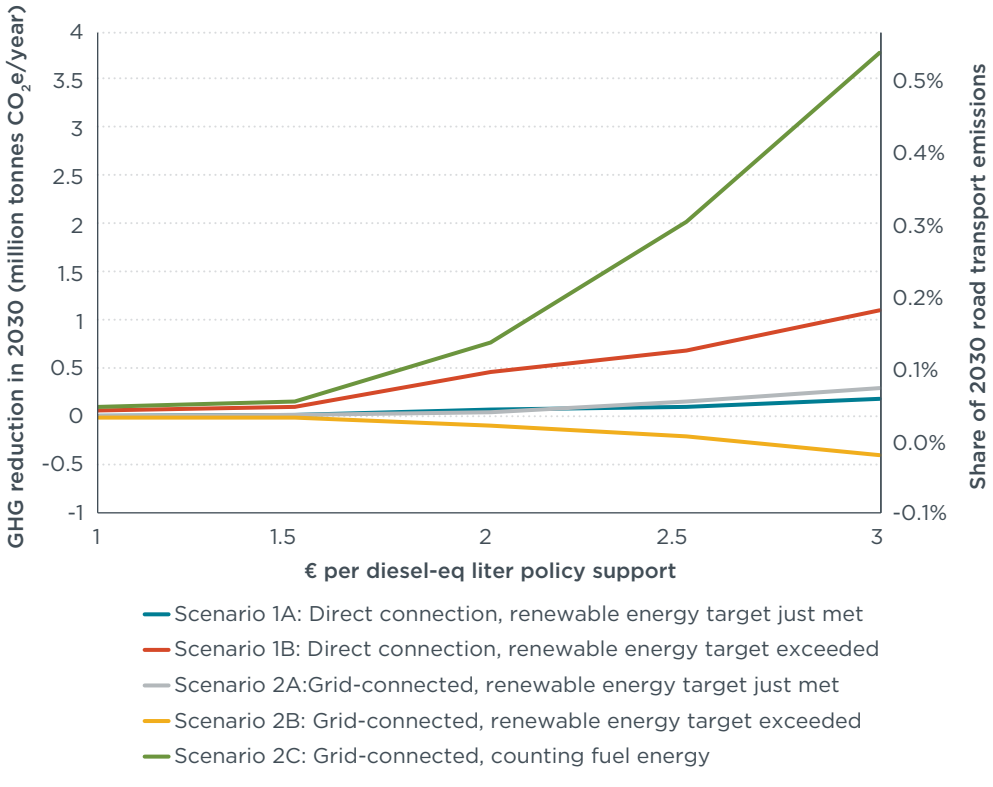
ECONOMIC AND ENVIRONMENTAL PERFORMANCE OF ELECTROFUELS IN EUROPE

Electrofuels, also known as "power-to-liquids," "power-to-gas," "e-fuels" and "e-gas," are drop-in renewable fuels that can be used in existing vehicles, aircraft, and ships. These fuels can be produced by combining renewable electricity with waste or ambient CO_2 without causing significant impacts on land use. The recast Renewable Energy Directive (RED II) for 2021-2030 includes incentives for electrofuels, and some stakeholders are advocating for these fuels to count towards vehicle CO_2 standards. However, because no electrofuels have been commercially produced to date, it is unclear whether these fuels are a realistic decarbonization strategy for the European Union (EU) in the near-term.

The study "Decarbonization potential of electrofuels in the European Union" analyzes the maximum contribution electrofuels could make to EU greenhouse gas (GHG) mitigation in the 2030 timeframe. It provides analysis of the economic competitiveness of electrofuels and an assessment of the lifecycle GHG impacts.

KEY FINDINGS

The net climate impact of electrofuels in the EU depends heavily on how they are counted towards the RED II targets. The RED II counts the amount of electricity used to produce electrofuels towards the renewable energy target, even though around



Range of potential GHG outcomes for electrofuels in the EU in 2030 by Renewable Energy Directive implementation scenario and policy incentive amount

half this energy is actually lost in conversion to electrofuels. Electrofuels thus contribute around twice as much energy to the renewable energy target as they actually deliver to the market. This effective double counting reduces the RED II incentive for other renewable energy. **Due to the way electrofuels are counted, the RED II will indirectly increase fossil fuel consumption and will not significantly reduce GHG emissions.**

Electrofuels can only deliver significant GHG reductions if EU Member States take measures to offset double counting. Member States can opt to require electrofuel producers to demonstrate additionality of renewable electricity. In a best-case scenario, electrofuels can deliver 73% GHG savings compared to fossil diesel.

Electrofuels will require very high public incentives. The equivalent of **€2.50 or €3 per diesel equivalent liter subsidies** would be needed to deliver significant volumes of electrofuels. No electrofuels could be produced economically in the EU with less than €1.50 policy support. Even at €3 per liter policy support, electrofuels would only offset at most around **0.4% of total EU road transport fuel demand in 2030.**

Even in a best-case scenario with €3 per liter policy incentives and adequate environmental safeguards implemented by Member States, electrofuels can deliver only modest climate benefits of **up to 4 million tonnes CO_2e reduction annually by 2030, offsetting 0.5% of projected road transport GHG emissions** in 2030 in the EU.

Electrofuels are an expensive decarbonization strategy, costing **€1,200 per tonne CO_2e abated** in a best-case scenario. If electrofuels were allowed to count towards proposed vehicle CO_2 standards, it would cost **€300 for each gram CO_2 reduction per kilometer**, far higher than the €95 per gCO2e per kilometer penalty fee for not complying with the standards.

PUBLICATION DETAILS

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Authors: Stephanie Searle, Adam Christensen

Contact: Stephanie Searle, +1 202 534 1612, stephanie@theicct.org