

2023 Renewable Energy Directive fact sheet

First binding target to supply green H₂ and e-fuels to the transport sector

Low ambition needs to be increased, while targeting the right sectors, aviation and shipping

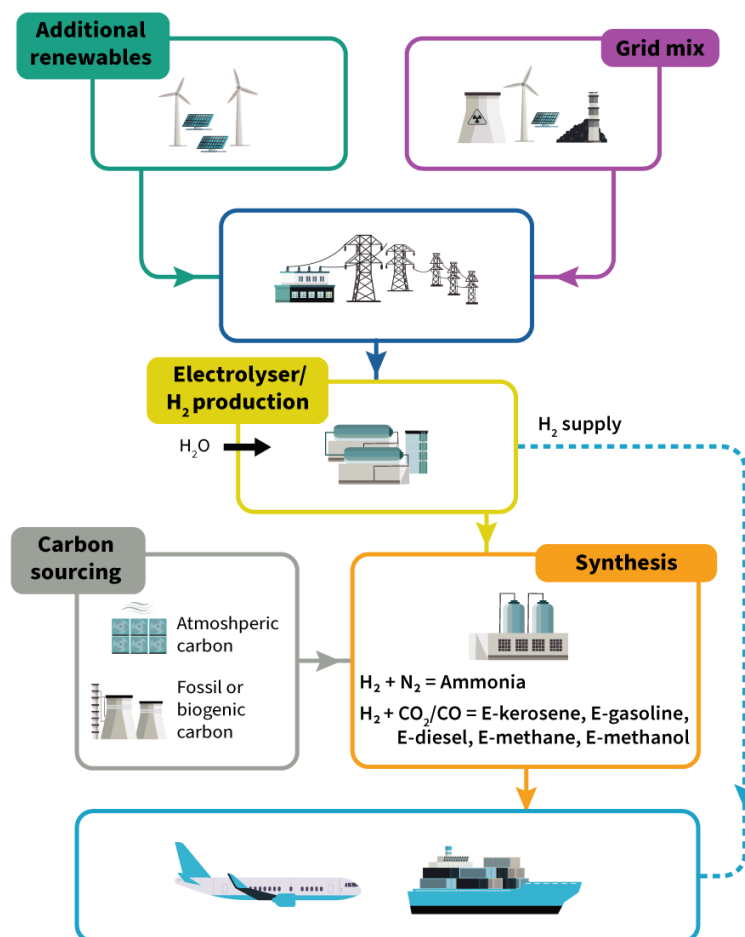
This fact sheet presents the main outcomes of the Renewable Energy Directive (and other EU regulations) in relation to hydrogen and e-fuels in transport, the so-called Renewable Fuels of Non-Biological Origin.

What are RFNBOs?

The term Renewable Fuels of Non-Biological Origin is an umbrella term for all gaseous and liquid renewable fuels that do not rely on biomass. The main technology to produce these RFNBOs is the use of electrolysis powered by renewable electricity to produce hydrogen. This hydrogen can be combined with e.g. nitrogen to produce ammonia or with carbon to produce various synthetic hydrocarbons (e.g. e-methanol, e-kerosene, e-diesel and e-gasoline AKA Power-to-Liquids or PtL).

The main advantage of RFNBOs is that scaling them up will use far less land and water compared to biofuels. Nevertheless, charging electric vehicles with (renewable) electricity directly will be far more efficient than converting the electricity in hydrogen and e-fuels. This is why RFNBOs need to be targeted at those sectors of the economy where direct electrification is not feasible. For the transport sectors, this higher energy density RFNBO (compared to batteries) will continue to play a role in deep sea shipping and aviation.

Producing H₂/e-fuels via electrolysis



The 1% RFNBO for transport: Low ambition and even less than meets the eye. Needs to be at least doubled to 2%.

For the first time, the Renewable Energy Directive sets a binding mandate for these RFNBOs. By 2030, these hydrogen and e-fuels need to account for at least 1% of all fuels used in the transport sector. Considering the large amount of additional renewables' capacity needed to produce these RFNBOs, member states were successful in watering down the level of ambition of this 1% target in two ways.

- To partly compensate for their higher cost compared to biofuels, every 1 MJ of RFNBOs can be double counted as 2 MJ towards the target.
- On top of that, the latest revision also provides a stronger incentive to steer the use of RFNBOs towards the aviation and shipping sectors. A so-called 'multiplier' allows every 1 MJ of RFNBOs to be counted as 1.5 MJ towards the target. Previously, this multiplier effect of RFNBOs used in aviation and shipping was limited to 1.2.

The combined effect of this double counting and multiplier is that the actual volumes of RFNBOs delivered to transport will be much lower than implied by the 1% target, about 1/3 of that. T&E had called for a 1.6% 'real energy' RFNBO target for transport, about 5 times higher than what was agreed in this revision of the RED. The final RED III outcome sets a combined 5.5% target for both Annex IX advanced biofuels and RFNBOs, of which at least 1% needs to be supplied by RFNBOs. T&E calls on member states to not increase the Annex IX target beyond 3.3% (in line with current supply) and to increase the RFNBO target from the minimum 1% to 2% under the combined 5.5% target.

Silver lining: Not much space for e-fuels in road transport

The (suppliers to the) automotive industry promote e-fuels as an alternative solution to the phasing out of the internal combustion engine for cars and trucks. This is a foolish idea given the poor efficiency and resulting higher costs for drivers, manufacturers and society more broadly. However, given the low ambition of the target, the multipliers at work and a push for e-fuels in aviation and shipping, there is little hope that e-fuels will ever make a significant contribution to the decarbonisation of road transport.

RFNBOs for aviation and shipping

The Renewable Energy Directive now includes a non-binding subtarget for 1.2% of the shipping fuels sold in a country to be met with RFNBOs. Again, this is less ambitious than it seems (see above-mentioned comments on multiplier effect).

Parallel to the review of the Renewable Energy Directive, there were parallel negotiations on regulations that will help to decarbonise the aviation and shipping sectors. The ReFuelEU regulation mandates the oil companies supplying jet fuel to airlines to deliver at least 1.2% of synthetic hydrocarbons in 2030 and 2% in 2032. Low-carbon fuels could also contribute to these targets. For the shipping industry, there is only a

binding obligation to use 2% RFNBOs in 2034, but whether this obligation comes into force depends on a number of factors (price of RFNBOs, sufficient production capacity, etc.). Not only RFNBOs, but also low-carbon fuels can be used to meet the targets for the aviation and shipping industry. The only difference between the shipping and the aviation regulations is that the former allows fossil-based low-carbon fuels, while the latter does not.

Do RFNBOs help the climate?

After much discussion, the rules determining whether or not hydrogen or e-fuels should be recognized as RFNBO entered into force in July 2023. The Renewable Energy Directive requires RFNBOs to reduce emission by at least 70% compared to gasoline and diesel. Several elements ensure RFNBO's climate benefits:

- All RFNBOs must be produced with additional renewable electricity (except for some early movers, who start producing before 2028). RFNBO producers will need to conclude Power Purchase Agreements for e.g. new and unsubsidized wind and photovoltaic farms.
- The electrolyzers will need to use renewable electricity when and where 'the sun shines and the wind blows'. From 2030, electrolyzers will need to adjust their consumption on an hourly basis.
- Carbon-based RFNBOs like e-methanol or e-kerosene can use fossil carbon from installations covered by the EU Emissions Trading System until 2041. After that deadline, only carbon captured from the air and from sustainable biomass (as defined by the RED) can be used.

Key recommendations

- 1** Member States can adopt more ambitious and well-targeted RFNBOs obligations. T&E advocates for a 2% RFNBO target under the combined 5.5% target for Annex IX biofuels and RFNBOs.
- 2** Two changes should be made to the non-binding 1.2% target for RFNBOs in shipping: This must become a binding obligation and the level of ambition should be increased.
- 3** In negotiations on when and how to phase out the combustion engine, Member States should not promote e-fuels (or CO₂ neutral fuels) in road transport as an alternative to zero-emission vehicles.

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