Renewable Energy Directive II – REDII

CO_2 Value Europe Position Paper

CCU in REDII

How to tap into the full potential of CO_2 based e-fuels?

E-fuels generated from CO_2 and renewable energy are essential to de-fossilize the transport sector and a wide range of European industries and thereby achieve the goals of the European Green Deal and Paris Agreement. Within the REDII, e-fuels are recognized as renewable liquid and gaseous transport fuels of non-biological origin (RFNBO).

As liquid and gaseous energy carriers, these CO_2 based fuels provide an immediate[1] solution to reduce or even reaching net zero CO_2 emissions in a variety of fields, including road transport, shipping and aviation. Indeed, every unit of e-fuels displaces one unit of fossil fuel.

The needed CO_2 capture and conversion technologies have predominantly been developed in Europe and have steadily matured over the last few years. Now, the RED II offers a comprehensive initial regulatory framework that could bring these essential technologies to market and unfold their vast CO_2 reduction potential. In this paper we would like to point out several considerations to bear in mind while defining and finalizing some open points in the REDII:

- *To maximise CO_2 emissions reductions across Europe, it is crucial to establish a level playing field between all low or zero emissions energy carriers for transport including e-fuels, (advanced) biofuels and electricity*
- *Every unit of e-fuels displaces one unit of fossil fuel. Therefore, REDII allows all CO_2 sources as feedstock for e-fuels. In order to reach net zero emissions, it is vital to design appropriate policies for atmospheric CO_2 capture to close the carbon cycle*
- *RED II must clearly define, how e-fuel plants can take renewable electricity from the grid. Guarantees of Origin are the best instrument to demonstrate the renewable character of the electricity*
- *In the calculation of GHG emission savings, double accounting must be avoided, in particular with respect to ETS credits.*

[1] *In the transportation sector, CCU-derived fuels can immediately contribute to reduce net CO2 emissions because they can be used in existing combustion engines and do not require any change to the existing fuel distribution infrastructure, unlike other solutions*

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Level playing field

To maximise CO_2 emissions reductions across Europe, it is crucial to establish a level playing field between all low or zero emissions energy carriers for transport including e-fuels, (advanced) biofuels and electricity. Only with technological neutrality on all renewable energy carriers, climate-beneficial and economic solutions will be maximized. Unfortunately, RED II does not treat e-fuels equal to other low or zero emissions energy carriers. E-fuels (RFNBOs) are not counted equally towards the 14% RES transportation target (art. 25). They do not benefit from a dedicated sub-target or quota such as the 3.5% sub-target for fuels produced from the feedstock listed in Annex IX-A (art. 25.1 paragraph 4). Moreover, e-fuels do not benefit from a multiplier effect such as Annex IX-based biofuels (x2) or electricity for road transport (x4) (art. 27.2).

Renewable electricity sources

RED II must clearly define, how e-fuel plants can take renewable electricity from the grid. Guarantees of Origin are the best instrument to demonstrate the renewable character of the electricity. The production of e-fuels should always be based on sustainable renewable or low carbon energy sources.

In order for Europe to fully benefit from e-fuel production, electricity grid connection is required, which can also allow e-fuels to store surplus renewable energy and thereby balance the grid. E-fuels can help to develop untapped potentials such as for example wind resources in remote areas as the liquid fuel can be more easily transported than electrons without an electricity grid connection.

According to recital 90 of the directive, the renewable character of the electricity sources should be established to ensure "*that there is a temporal and geographical correlation between the electricity production unit with which the producer has a bilateral renewables power purchase agreement and the fuel production"*. Moreover recital 90 states "*that there should be an element of additionality, meaning that the fuel producer is adding to the renewable deployment or to the financing of renewable energy"*. CO_2 Value Europe believes this does not take the realities of the energy markets into account. It might even hinder the use of renewable electricity taken from the grid altogether, which would hamper or even block the development and scale up of e-fuels.

Article 27 of the REDII states that: *Electricity that has been taken from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated, ensuring that the renewable properties of that electricity are claimed only once and only in one end-use sector*. REDII further provides that the European Commission shall adopt a delegated act, providing the methodology to comply with these requirements. CO_2 Value Europe considers that the renewable character of the electricity should be demonstrated with the use of Guarantee of Origin as defined in article 19 of REDII.

Therefore, CO_2 Value Europe highly recommends avoiding a restrictive interpretation of recital 90 as it could jeopardize the business model of electrolysers. CO_2 Value Europe recommends that the use of 'Guarantee of Origin' is the right way to demonstrate the renewable character of the electricity for the purpose of producing e-fuels.

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CO_2 sources

Every unit of e-fuels displaces one unit of fossil fuel. Therefore, REDII allows all CO2 sources as feedstock for e-fuels. In order to reach net zero emissions, it is vital to design appropriate policies for atmospheric CO_2 capture to close the carbon cycle: From a technical point of view, all CO_2 sources are suitable for power-based fuel production. Reusing CO_2 that has been emitted and converted to e-fuels – on which a reasonable life cycle assessment has been performed – always provides an emissions reduction. Therefore, a producer of e-fuels should not be hindered to capture and reuse any CO_2 that has been emitted.

From a climate policy perspective, CO_2 from industrial sources can currently be captured at a significantly lower cost and can, thus, enable e-fuels to become competitive with fossil fuels earlier.

From a long-term perspective, it is important to adopt adequate policy mechanisms for a successful ramp up of atmospheric CO_2 capture as in this way the carbon cycle can be closed. In the transition to a 'net zero 2050 economy', industrial sources of fossil origin should gradually be substituted for sustainable Biomass or Direct Air Capture CO_2 sources for e-fuels production.

GHG avoidance

In the calculation of GHG emission savings, double accounting must be avoided, in particular with respect to ETS credits.REDII (art. 28.5) states that a delegated act (by Dec. 2021) will specify the methodology for assessing GHG emissions savings from RFNBOs to ensure that "*credit for avoided emissions is not given for CO_2 the capture of which has already received an emission credit under other provisions of law*". CO2 Value Europe considers that CO_2 utilisation activities should receive a fair recognition (ensuring all CO_2 is effectively counted but avoiding double accounting) in as much as they lead to a net reduction of CO_2 emissions over the whole life cycle (cradle to grave). For example, when CO_2 is already accounted for under the ETS by the installation emitting it, and following its capture and recombination into an e-fuel, the release of the CO_2 (subsequent to the combustion of the e-fuel) should not be considered an additional emission.

The development and more importantly the support of CCU and e-fuels should start now as re-use of CO_2 will be an invaluable pillar to reach the European climate and energy goals. Promotion and wide-scale introduction of CCU- and e-fuels will have a direct effect on existing EU fleet and can therefore enable a quick-win with regards to CO_2 emissions reduction as they can be drop in fuels that comply with existing infrastructure. CCU- and e-fuels will provide easy solutions as they will be needed to tackle hard-to-electrify sectors in the near future. Moreover, in the transition to a net zero 2050 economy they can aid the crucial ramp up of atmospheric CO_2 sources as a feedstock for e-fuels and materials thereby helping Europe to build a climate neutral industry independent of fossil energy inputs.

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About CO_2 Value Europe

CO_2 Value Europe is the industry-driven European Association which is committed to coordinate and represent the CO_2 Utilisation community in Europe and to build up an integrated vision and action plan to develop CO_2 Utilisation into a new industrial sector making a significant contribution to Europe's low carbon economy.

About Carbon Capture Utilisation

CO_2 Utilisation is a broad term that covers all established and innovative industrial processes that can transform CO_2 into a variety of value-added products such as chemical building blocks, power-based fuels or building materials. Most reactions to transform the CO_2 molecule require an additional energy input; this input must come from a low-carbon source if the CO_2 conversion is to be a sustainable solution and bring a positive contribution to the climate change mitigation. CO_2 utilisation is also sometimes called CO_2 Transformation or CCU (Carbon Capture and Utilisation) or Power to X (PtX).

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