Statement on the European Commission's draft of the Delegated Act to Article 28 REDII[1]

Methodology for Assessing the GHG Emission Savings from RFNBOs

The **Global Alliance Powerfuels** welcomes the opportunity to comment on the European Commission's proposal for the methodology to assess the greenhouse gas (GHG) emissions savings from renewable fuels of non-biological origin (RFNBOs) and recycled carbon fuels, which can provide much-needed regulatory certainty by setting out rules for the eligibility and accounting of different inputs, establishing a fossil fuel comparator, and hence defining the maximum life cycle GHG emissions of different RFNBOs.

In consequence, the methodology laid out in the Delegated Act (D.A.) to Art. 28 of the revised Renewable Energy Directive (REDII) will determine whether certain production pathways or inputs are admissible in order for the end product to be classified as 'renewable'. It will further establish the basis for the calculation of GHG emission reductions from RFNBOs that can be credited towards the EU's targets for the deployment and use of renewable energy sources.

The details of the methodology will have a significant impact on the future development of the powerfuels market within the EU and in non-EU countries. Therefore, the provisions therein need to be transparent and comprehensive, and ought to ensure that adverse incentives leading to unsustainable production practices are avoided.

The **Global Alliance Powerfuels** was founded in 2018 and is backed by 13 member organisations and an international network of 20 partner institutions. It is coordinated by the German Energy Agency (dena). The strategic objective of the Alliance is to foster the development of a global market for powerfuels.

The term **powerfuels** denotes not only renewable hydrogen but all gaseous and liquid fuels from power-to-X processes that draw their energy content from renewable electricity. This includes, but is not limited to, synthetic gas (e.g. methane, hydrogen) and synthetic liquid fuels (e.g. methanol, ammonia, and Fischer-Tropsch products).

Powerfuels complement the direct use of renewable energy and are crucial where direct electrification is not technologically feasible or economical. By offering climate-neutral options to applications with no viable alternatives, powerfuels allow for more far-reaching de-fossilisation of all end-use appliances, across all sectors – thus enabling system-wide emissions reductions in a technology-neutral approach. Powerfuels can also accelerate the integration of the energy system by replacing fossil energy sources in existing end-use consumer equipment in the short term and offering flexibility as a long-term storage option.

[1] The positions outlined in this statement do not necessarily reflect the view of all individual members of the Global Alliance Powerfuels

This is central as standards and requirements set in the current early market development phase have the potential to determine the degree to which powerfuels can contribute to meeting climate targets in the future. Among other aspects, strategic decisions concerning the preference for certain carbon sources need to be reflected in the methodology.

The Global Alliance Powerfuels recognises many important elements in the proposed draft of the D.A., and generally supports the defined system boundaries for calculating the total emissions from RFNBOs and suggestions made for avoiding double-counting of emission reductions. However, we see a need to add clarification, e.g. on how to assess the emission savings from RFNBOs co-processed with fossil inputs, and to differentiate further between different potential sources of CO2 for the production of carbon-based powerfuels, to exploit the full potential of the D.A. to support the sustainable market development of RFNBOs.

Detailed position on the draft of the Delegated Act to Art. 28 REDII and recommendations

In our view, **four aspects are to be highlighted** in particular to ensure that the methodology established in the D.A. is consistent with the overarching EU climate targets and best supports the goal to rapidly develop a powerfuels market while guaranteeing a sustainable development towards climate neutrality.

1. Review the fossil fuel comparator as well as the attribution of GHG emissions to electricity and the renewable share of outputs

The draft D.A. proposes a fossil fuel comparator of 94 g $CO2_{eq}$/MJ for all RFNBOs, including hydrogen (Art. 2 of the Annex). While this is in line with the fossil fuel comparator defined for biofuels and bioliquids in the REDII, the basis for determining the comparator should be the actual carbon intensity of the fossil energy carriers that are replaced. In the case of hydrogen, the suggested value of 94 g $CO2_{eq}$/MJ, equivalent to approximately 11.3 kg $CO2_{eq}$/kg H2, appears to be rather low in view of de facto life-cycle emissions of fossil-based "grey" hydrogen from steam methane reforming (SMR) of approximately 13-15 kg$CO2_{eq}$/kg H2. We therefore suggest to set out a fossil fuel comparator of 104 g $CO2_{eq}$/MJ for hydrogen, at least for those applications where renewable hydrogen replaces fossil hydrogen (e.g. in refineries and the chemical industry[2]) and not other gaseous or liquid fossil fuels (e.g. in fuel cell vehicles).

[2] The current draft of the D.A. applies only to RFNBOs used in the transport sector. However, it can be expected that it will be extended to also cover applications in other sectors following the broadening of the definition of RFNBOs as part of the revision of the REDII.

Regarding electricity used as an input for the production of renewable hydrogen, the draft of the D.A. provides that it can be attributed GHG emissions of zero under two conditions. Firstly, Art. 5 of the Annex of the draft D.A. provided that emissions of zero are to be attributed to electricity qualifying as fully renewable according to the methodology set out in the REDII, which is specified in the draft of Delegated Act to Art. 27, which was also published by the European Commission on May 22, 2022[3]. Alternatively, as laid out in Art. 6 of the Annex, electricity can also be attributed emissions of zero when the number of full-load hours the electrolyser is operating does not exceed the number of hours in which the marginal price of electricity was set by installations generating renewable electricity or nuclear power plants in the preceding year.

This additional option for sourcing electricity raises the question of whether hydrogen that is produced in accordance with these requirements, but not those of the D.A. to Art. 27 REDII, could consequently be classified as "renewable" and credited towards the EU's renewable energy targets, or whether it would solely classify as "low-carbon". To reduce such uncertainty and harmonise requirements for RFNBO production, the **criteria for attributing electricity GHG emissions of zero in the D.A. to Art. 28 REDII should be fully aligned with those in the D.A. to Art. 27 REDII.**

Further, to cover all powerfuels production pathways and use cases admissible according to the REDII, the D.A. needs to **establish rules on how to account for production processes that yield multiple outputs** (that could be partially or fully renewable) and for **RFNBOs co-processed together with fossil energy inputs**. This is particularly relevant for renewable hydrogen replacing fossil-based hydrogen in refineries for hydro treatment of conventional fuels, as well as for the Fischer-Tropsch (FT) process, which is a key technology in the powerfuels industry. Existing FT facilities produce a range of synthetic fuels and chemicals at commercial scale using predominantly fossil energy inputs. Unlike most fuel production pathways, the FT process is feedstock agnostic and can be gradually repurposed to co-process renewable and fossil energy inputs to yield a mixture of renewable and non-renewable outputs. This offers the possibility to rapidly ramp up the powerfuels market in the short-term and contribute to meeting global demand in the long-term. However, this requires clarity on the GHG emissions saving calculation methodology for co-processing facilities.

The present draft firstly establishes in Art. 3 of the Annex that if the output of a process does not fully qualify as RFNBO, the renewable share in the total output is to be determined by dividing the relevant renewable energy input into the process by the total relevant energy inputs. Secondly, for processes that yield multiple co-products, GHG emissions are to be allocated to these co-products based on rules following physical causality and energy content (Art. 15 of the Annex).

While these provisions provide some guidance, questions about how to quantify the renewable fuel content and GHG emissions savings resulting from its use when processes do not produce discrete volumes that are renewable or fossil (e.g. in the case of co-processing of renewable hydrogen and

[3] See statement of the Global Alliance Powerfuels on the draft of the Delegated Act to Art. 27 REDII for more details on our position thereon.

fossil inputs in refineries to produce conventional fuels) remain. For example, Art. 3 of the Annex appears to suggest that the output of a process with both fossil and renewable inputs could be divided into different shares that are accounted as either renewable or fossil. At the same time, recital 8 of the D.A. seems to contradict this approach by providing that if a process produces a "mixture" of RFNBOs and non-renewable fuels, they should each be attributed the same GHG intensity. To provide more clarity on how to calculate and account GHG emissions savings from co-processed RFNBOs, the D.A. should more explicitly allow for the volume of the finished product(s) to be administratively quantified into notional non-renewable and renewable portions with different respective GHG intensities. This can be achieved through the inclusion of a flexible attributional life cycle approach in the draft D.A., which allows the free allocation of the renewabl share and respective GHG emissions to a specified product in a production process that yields multiple co-products.

2. Differentiate between and prioritize different possible carbon sources

As the scope of the D.A. to Art. 28 REDII comprises the rules for accounting for GHG emissions from inputs, it should not remain agnostic about the preferability of different carbon sources for RFNBO production, given that many powerfuels such as methanol and synthetic kerosene will require CO2 as a feedstock. The D.A. can thus set the framework for the development of a market for the provision of carbon with a view of incentivising the use of CO2 from sustainable sources.

The draft of the D.A. lists eligible carbon sources for RFNBO production in Art. 11 of the Annex. While CO2 from ambient air (Art. 11 b) and from geological sources where CO2 was previously released naturally (Art. 11 d) are generally admissible without conditions for their use being specified, carbon from biogenic sources can be used if the sustainability and GHG reduction criteria set out in the REDII are met (Art. 11 c). The use of CO2 from fossil point sources is restricted to activities covered by the ETS Directive and accounted for via an "effective" carbon pricing mechanism. In addition, as carbon from these sources is generally classified as "unsustainable", its use is proposed to only be admissible for RFNBO production until 2035 (Art. 11 a).

In our view, a more granular distinction between different fossil point sources is required. We propose that the use of fossil carbon for RFNBO production should only be admitted under the conditions that a) all emissions are accounted for, b) there is no risk of fossil lock-in effects, and c) sustainable carbon is not sufficiently available. Carbon capture at **fossil energy generation plants should therefore be excluded from the get-go,** because it poses the risk of creating lock-in effects or prolonging the operation of fossil power plants.

In contrast to fossil energy generation plants, industrial point sources will remain relevant for powerfuels production in the foreseeable future as the availability of carbon from Direct Air Capture (DAC) and sustainable biogenic sources will remain limited while the ramp-up of powerfuels production requires an increasing supply of carbon. To determine which industrial sources of CO2 could potentially meet the criteria outlined above and hence be eligible for powerfuels production

beyond 2030, we suggest **differentiating between avoidable and unavoidable industrial emissions** in the D.A.

Avoidable industrial emissions, e.g. from the combustion of fossil fuels for the provision of high-temperature heat, **should only be an eligible carbon source in a transitional period until 2030,** accompanied with a clear and binding **phase-out plan**. These carbon sources can only support the development of a powerfuels market in the short-term, and only under the condition that all emissions are accounted for upstream via carbon pricing and double-counting of emission savings is avoided.

The Global Alliance Powerfuels hence suggests excluding fossil power generation installations from the get-go and bringing forward the phase-out of avoidable industrial emissions to 2030, while implementing strict criteria to allow for more **flexibility for the use of CO2 that stems from unavoidable industrial emissions**, which could remain an eligible carbon source beyond 2030.

The operationalisation of the distinction between avoidable and unavoidable emissions requires the development of a clear and concise definition of unavoidability. Specifically, the Global Alliance Powerfuels proposes to **define unavoidable industrial emissions** as "those carbon dioxide emissions that **occur in the production process of goods or raw materials**, and **do not stem from the energy consumption of an industrial process or the combustion of fossil fuels"**. The production of a given quantity of these products or raw materials would thus not be feasible without causing these emissions.

Some of the emissions occurring in the production process of the products or raw materials referred to above might be minimised through efficiency gains, switch of raw materials, and technological progress. To ensure that these reduction potentials are seized, we propose that only process emissions that do not exceed benchmark emissions set by the 20 % best performing companies in a given year by more than 10 % can be counted as unavoidable at that time.

In the draft D.A., the use of CO2 from fossil point sources is restricted to activities covered by the ETS Directive. This does not take into account differentiated industrial activities outside of the EU, and excludes fossil CO2 emissions that are effectively accounted for via carbon pricing but are not covered by the ETS Directive. We therefore propose that with the exception of fossil energy generation, fossil CO2 captured from an activity that falls under a carbon pricing system in non-EU countries should be considered an eligible carbon source. As outlined above, this should be restricted to unavoidable industrial emissions from 2030 onwards.

3. Incentivise the use of sustainable carbon

Aside from restricting the use of CO2 from unsustainable fossil sources, incentivising the scale-up of technologies to provide 'sustainable' carbon should also be part of the D.A. to Art. 28. As mentioned above, the draft D.A. lists carbon from ambient air (Art. 11b) and biogenic carbon (Art. 11c) as

eligible sources, but remains mute concerning the necessary pathway and conditions for the development of sustainable carbon.

We therefore propose that the D.A. should actively declare that only 'sustainable' CO2 is to be used for powerfuels production in the long –term, and include a definition of 'sustainable non-fossil sources' of CO2 in line with the EU 'Sustainable Carbon Cycles' strategy[4]. This should be complemented with provisions favouring sustainable carbon over unsustainable carbon from the beginning via dedicated supply and demand side instruments.

Specifically, a clear trajectory for the phase-out of avoidable fossil carbon sources could be combined with a **gradually increasing quotas for the use of DAC (e.g. as part of the ReFuelEU Aviation Regulation)** or sustainable carbon for RFNBO production, creating a demand and thus incentivising the development of DAC technologies.

Outside the scope of the D.A., provisions in other pieces of legislation and funding instruments should also actively support the rollout of DAC, which constitutes the only scalable sustainable carbon source and is needed both for carbon dioxide removals and procuring sustainable carbon. Scaling up the entire CCU/S value chain also includes capture of unavoidable emissions, a certification framework for carbon dioxide removals and the establishment of a regulatory framework for a CO2 pipeline infrastructure and geological storage.

Carbon capture technologies and in particular Direct Air Capture are characterised by high thermal and electrical energy demand, which should not be met by fossil energy sources. The Global Alliance Powerfuels therefore suggests providing that **only renewable electricity** is to be used for the operation of CCU installations to provide CO2 for RFNBO production. However, the criteria specified in the D.A. to Art. 27 REDII should not apply for these installations.

CO2 from biogenic sources can be considered to constitute a sustainable input for RFNBOs as long as proof of compliance with **strict sustainability criteria** can be provided. The Global Alliance Powerfuels therefore strongly supports the reference to these criteria in Art. 11c and Annex C of the draft D.A. In addition, it needs to be guaranteed that adverse effects of biomass production that are not addressed by these criteria, e.g. additional land use and emissions from transport and processing, are minimized. The Delegated Act should therefore also **require compliance with sustainability criteria for biomass production and use in other regulations** (e.g. the LULUCF regulation).

4. Avoid double-counting and set standards for imports

The Global Alliance Powerfuels welcomes that the proposed D.A. aims to achieve stringent and transparent accounting of the emissions from CO2 used as an input for RFNBO production and puts forward criteria to ensure that no emissions are bypassed. Specifically, as outlined above, the draft

[4] https://ec.europa.eu/clima/document/download/26c00a03-41b0-4d35-b670-fca56d0e5fd2_en?filename=com_2021_800_en_0.pdf

D.A. provides that fossil CO2 point sources are only admissible in a transitional phase if they are covered by an effective carbon pricing mechanism (Art. 11a of the Annex) and that CO2 from sustainable biogenic sources can only be used if no credits for emission savings are given at the point of capture (Art. 11c of the Annex).

We generally support these provisions, which are in line with the principles outlined in recital 13 and 40 of the proposed revision of the ETS Directive. In the case of the use of CO2 from fossil point sources for RFNBO production, surrendering of carbon certificates / allowances for the corresponding amounts of CO2 should continue to be required at the point of capture. In this case, as emissions are accounted for upstream, emission savings from "diverting" the CO2 from its original fate of being released to the atmosphere can then be credited for the production of the RFNBO (see Art. 11 of the Annex of the D.A.).

Conversely, powerfuels produced from carbon from ambient air provided by Direct Air Capture could be considered carbon-neutral in the end-use sector; to avoid double-counting of emission savings, however, **no additional negative emissions credits should be granted at the point of capture for operation of the DAC installation.** This should also be ensured for imported RFNBOs produced from carbon provided via DAC. Transparent certification should ensure that no negative emissions credits are issued upstream in the country of origin if the RFNBO is credited towards the EU's renewable energy targets.

For **biogenic carbon**, all emissions resulting from the processing or use of the biomass that are outside the system boundaries defined by the D.A. should be accounted for in the LULUCF sector or in agriculture, while emission savings from capturing and diverting the CO2 from its original fate should only be credited once, as provided in Art. 11 (a) of the Annex.

While we support admitting the use of CO2 from fossil point sources only under the condition that emissions are accounted for upstream, as outlined above, the lack of a definition of what constitutes "effective carbon pricing" (Art. 11 a of the Annex) in the draft D.A. creates uncertainty, in particular for the import of carbon-based RFNBOs. One possibility to resolve this uncertainty would be to use the carbon price in the EU ETS as a benchmark for this definition, and require exporters of carbon-based RFNBOs to purchase allowances at the border for the corresponding amount of embedded CO2. If allowances were already surrendered at the point of capture through a carbon pricing mechanism in the country of origin, the effective carbon price paid could be deducted from the amount required to pay at the border. Such a CBAM-inspired mechanism would hence be less restrictive for the production of powerfuels outside of the EU while still ensuring that embedded emissions are adequately accounted for.

A comprehensive and transparent verification and certification system is equally important when importing RFNBOs produced from biogenic carbon into the EU. The sustainability and GHG criteria in the REDII for biofuels, bioliquids and biomass fuels referenced in Art. 11 c of the D.A. should also apply for imports from outside the EU. An independent regulatory certifying body must ensure that these sustainability criteria are upheld by the biomass-processing installations from which the CO2 is

captured in order for the RFNBOs produced from the biogenic carbon to be admissible for export into the EU. While strict sustainability criteria for importing biogenic carbon or the RFNBOs in which it is embedded can restrict availability, it offers the opportunity to create additional incentives for a sustainable production of biomass in non-EU countries.

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Date: 06/2022

Please quote as: German Energy Agency (dena, 2022) “Statement of the Global Alliance Powerfuels on the European Commission’s draft of the Delegated Act to Article 28 REDII”