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Feedback on the delegated act of REDII

Specifying the methodology to determine the renewability of electricity used in the production of renewable liquid and gaseous transport fuels of non-biological origin (RFNBOs)

Large electricity inputs are necessary for the production of RFNBOs[1]. As mentioned in your work presented on the Stakeholder workshop, these electricity inputs determine the climate footprint of RFNBOs to a significant extent. Examples given by the Federal Ministry for Environment, Nature Conservation and Nuclear Safety of Germany estimated that a RFNBO diesel produced with current German electricity would emit more than 330 gCO_2/ MJ (around 3.5 times more CO_2 intensive then fossil diesel, 94,1 gCO_2/ MJ).[2][3]

Synthetic hydrocarbons need an even cleaner electricity input to breakeven with their fossil counterparts while providing the same energy service. Creating fuels such as synthetic kerosene and diesel requires an even lower carbon intensity of the grid due to the additional efficiency loss in the process. For instance, for synthetic aviation fuel, the literature estimates a breakeven of less than 100 g CO_2/KWh with grid electricity. Bringezu and Turnhau (2018) estimate that reaching a break-even point with conventional fossil products requires a minimum 86% renewable power input[4] (other estimates by Giesen et al. and Falter et al.[5]).

We fully support the precautionary principles already outlined in the REDII which should be reflected in the final delegated act on the methodology for the calculation of the emissions from the electricity use for RFNBO production.

The following recommendations seek to support these arguments and ensure that indirect emissions from electricity are fully counted.

General recommendations

Requirements for RFNBO production should reflect physical indirect emissions from the onset. The criteria have to reflect the physical emissions caused by the RFNBO production. Transitional

[1] JRC. 2020. Current status of Chemical Energy Storage Technologies; The Royal Society, "Policy briefing: Options for producing low-carbon hydrogen at scale," 2018. ; National Research Council; National Academy of Engineering, "The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs," THE NATIONAL ACADEMIES PRESS, Washington, D.C., 2004.

[2] BMU. 2018. Renewable fuels of non-biological origin in transport decarbonisation. T&E breakfast event, European Parliament.

[3] Assumed 50% conversion efficiency for synthetic RFNBO hydrocarbon production.

[4] Bringezu, Stefan and Sebastian Turnau. 2018. Life Cycle Assessment of CCU technologies, 17 September 2018.

[5] van der Giesen et al, Energy and Climate Impacts of Producing Synthetic Hydrocarbon Fuels from CO2. Environ. Sci. Technol. (2014); Falter et al, Climate Impact and Economic Feasibility of Solar Thermochemical Jet Fuel Production. Environ. Sci. Technol. (2016).

interpretations of geographical and temporal concepts are not in line with the Directive, as the text does not mention any transitional measures.

If there was to be a transitional phase to ease RFNBO production development the reduction target of -70% can be lowered, but the GHG accounting should remain the same to reflect physical flows of GHGs to the atmosphere (through the temporal and geographic correlation of electricity use).

The REDII mandates a reduction of 70% in comparison to a fossil fuel comparator for RFNBOs by January 2021. If producers are to meet this requirement, they need to use low-carbon electricity (approximately 70gCO2/kWh).; different interpretations of the methodology cannot all achieve a 70% emission reduction over the same period. Hence, the methodology should remain the same throughout the period of the implementation of the Directive. These strong requirements are reflected in the work presented and form a solid basis for the assessment of the climate footprint of RFNBO production.

Potential issues with grandfathering investments which do not meet climate goals

The proposed phase one (transitional period until 2024), is likely to be extended to the majority of the period to reflect realistic investment considerations, as no large investments will be made for short-term scale-ups. This risks a lock-in into production units which are not compatible with the initial REDII goal and requirements for RFNBO production. The initial inclusion of temporal and geographic correlation into the REDII was to guarantee with a high certainty that renewable electricity is being used; the delegated act should ensure that this intention is followed.

Producers operating with a loose interpretation of the sustainability criteria might be able to request grandfathering and would remain operating with suboptimal sustainability conditions far in the future . While they operate, they will distort competition for producers of truly low-carbon hydrogen.

Keeping tight temporal and geographic correlation and additionality is key

Reliance on low-carbon electricity in the future or other deviations from physical emissions caused by the production of RFNBOs should not be allowed by the methodology. Some methodologies, such as the one developed for the Innovation fund, assume low-carbon electricity is used for the production of RFNBOs. The methodology for this delegated act should avoid such an approach, in order to ensure that the indirect emissions from electricity are fully accounted for. As mentioned in the presentation, the specificities of the principles of temporal and geographic connection and additionality are already outlined in the REDII, and their strong interpretation is supported by several EU Member states[6].

[6] Additionality in Renewable Hydrogen Production, Joint Contribution From AT, DK, ES, IE, LU, PT. 2020. Available here.

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The temporal and additionality requirements currently outlined for Phase 1 are not prescriptive enough to effect the actual day-to-day operation due to real-world changes in renewable electricity generation. Therefore, the operation of the plant could effectively be identical to Case 1, which would require the calculation of average grid electricity.

RFNBO imports

The EU should establish the same criteria for imported RFNBOs as for the RFNBOs produced in the EU. Monitoring and verification of RFNBO production processes abroad will be challenging, but a lack of controls risks imports of RFNBOs with high indirect emissions. To learn from experiences such as biofuel production, the EU should maintain the set sustainability standards for both domestic and foreign RFNBO production. Nevertheless, this should not discourage imports, as many proposed projects abroad have a direct connection to RES, in which case it is easier to calculate the overall emissions of the produced RFNBOs.

1. Case 1: Average grid electricity

When calculating the emissions of RFNBOs, we concur with the conclusion that the carbon intensity of the electricity used to produce the fuel, in gCO2/kWh of respective national grid should be taken into account (as stated in the presentation, the average RES-E share, measured two years before the year in question, should be used to determine the share of renewable energy). Guarantees of origin or similar instruments should not be considered as proof of renewable electricity consumption. Standard Guarantees of Origin without any proof of temporal and geographical correlation should not be used as proof of RES consumption for the RFNBO production facility.

2. Case 2: Direct connection to RES generation

When calculating the emissions of hydrogen from electrolysis, the carbon intensity of the electricity used to produce the fuel, in full lifecycle emissions of gCO2/kWh of RES should be taken into account. The emissions should also include construction emissions from the RES directly connected to the RFNBO production facility.

3. Case 3: Renewable grid electricity with temporal and geographic connection

To ensure that the electricity used for RFNBO production can be counted as truly renewable, the production and consumption of electricity should be connected as much as possible. This requirement is in line with the PPA requirements outlined in the REDII:

Temporal aspect

- If only this calculation for electricity is used, **the PPA must cover the full consumption of electrolysers producing RFNBOs**. The temporal correlation can be day-ahead forecasts (e.g. for wind power), but **RFNBOs should not be produced when the assets are not generating renewable electricity** (e.g. night time production connected to solar power generation)
- By providing more accuracy and a stronger temporal connection, RFNBO production facilities can help balance out RES oversupply in the system.

Geographical aspect

- As stated in the REDII, there **must be a geographical correlation between the electricity production and use**. If there is none, the RFNBO producer risks creating baseload electricity demand for local electricity generation capacities, which might have a high emission intensity (e.g. example provided on slide 9).
- To ensure geographical proximity, **physical PPAs should be used**. Virtual or financial PPAs sell the power into the wholesale market, while the buyer continues to purchase electricity from its traditional supplier[7], which could sell electricity with high indirect emissions.
- Double counting with other RES support must be prevented. RES generation already covered by feed-in-tariffs, Guarantees of Origin or similar support systems cannot be used for creating PPAs and should not be considered additional.

Additionality

The RES used in the process should be additional to what would have otherwise been consumed in the power sector. Otherwise, the fact that RES could've been used elsewhere should be accounted for (e.g. diverted from households, where it might've achieved more emission reductions per electron). The additionality clause was included in the REDII to prevent this, which is why it should not be overlooked in the requirements for RFNBO production. As with temporal and geographic corelation, additionality should not be minimised in the transitional phase (Phase 1).

The PPAs used in Case 3 should ensure that the projects develop support new RES developments. Making this a strong element in the methodology will also ensure that any competition between RFNBO production and direct electrification is avoided. More of the arguments outlining the importance of additionality can be found in the joint contribution from AT, DK, ES, IE, LU, PT to the Hydrogen Strategy.

[7] Edison. 2018. Renewable Energy, Additionality, and Impact.

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