

Delegated Act on Methodology for determining GHG emission savings from RFNBO/RCF (Annex I)
FuelsEurope's main points for consideration in future Delegated Act

FuelsEurope, the European Association representing the refining industry, strongly supports the EU objective of net climate neutrality in 2050 and the circular economy, and stands ready to support policy makers to reach such goals. The refining industry is actually transforming and sustainable Low Carbon Liquid Fuels, including both RFNBOs and RCFs, are the centrepiece of this transition (strategy described in the [Vision 2050](#) and [CleanFuelsForAll](#) publications). In this context, we warmly welcome the initiative of the EU COM to propose a detailed methodology with the required criteria to provide a stable framework to rule the production of these RFNBO/RCF in the close future. In view of the upcoming publication of this DA, we would like to share with the European Commission some **relevant** aspects to be considered in the future **delegated act on Methodology for determining GHG emission savings from RFNBO/RCF (Annex I)** as a result of our industry's technical analysis (summary and extended description).

Summary - Key points for kind consideration in the DA GHG savings RFNBO/RCF

- To invite the European Commission to draft the text in such a way that **avoids ambiguity and multiple interpretation**. It is essential that a clear guidance is provided for specific cases (e.g. RFNBOs used as intermediate). The absence of such can undermine the potential of RFNBO and RCF in the future.
- To follow a **Well-To-Wheels/Wake/Propeller approach** from inputs to final use:
 - **excluding** GHG emissions due to the **manufacturing / maintenance** of infrastructure linked to the electrolyzers, power generation and any **other machinery or equipment** used in RFNBO/RCF production processes
 - **including** the **counterfactual** impact of **displacing existing use or fate of feedstocks** as well as recognising the possibility to generate **negative emissions** when RFNBO production processes are coupled with Carbon Capture and Storage (CCS). **Transport and distribution until the retail station** to be included in the scope, to reflect the impact of potential use of energy carriers and subsequent reconversion to hydrogen.
- To ensure consistency between the steps included in the calculation of the GHG emission and the reference to the fossil-based value proposed for the GHG savings estimate. Therefore, **an unique fossil fuel comparator equal to 94 g CO₂eq/MJ** for both **liquid and gaseous RFNBO and RCF** is recommended.
- To minimise methodological choices (e.g. source of information) in the RFNBO GHG savings calculations especially for electricity and refer to the **most up-to-date information available** and subject to the particularities of each individual project. In the absence of reliable actual data, improvement factors are suggested to recognise the improvement of the country specific electricity mix.
- To consider **CO/CO₂ feedstock** derived from petroleum products as **rigid inputs** for the purpose of the future methodology when it is an **unavoidable** and unintentional consequence of the production processes (e.g. fuel gas) in industrial installations.
- To use **energy** or mass balance approach to allocate GHG emissions to multi-products (and to explicitly **avoid economic allocation**).
- To grant explicit **recognition** of the **benefits** from **previous/current fate or use of RFNBO/RCF feedstocks**.
 - To subtract emissions from the inputs' existing use or fate from the GHG calculation of RFNBO/RCF.
 - To include into the emissions from existing use or fate the CO₂ equivalent of the carbon incorporated in the chemical composition of the fuel or emitted during processing that was or would have otherwise been emitted as CO₂ into the atmosphere, with the exception of CO₂ stemming from a source of fossil fuel that is deliberately burnt for the specific purpose of producing CO₂. The carbon incorporated in the chemical composition of the fuel or emitted during processing also includes that from CO₂ captured from air and biogenic CO₂.
 - To ensure enough flexibility when recognising the specific source of electricity displaced when waste materials are diverted from incineration with energy recovery.
 - To recognise **landfilling as incineration without energy recovery** for the purpose of the GHG emission calculation (accordingly with the *Innovation Fund* methodology¹)
- To **recognise the multi-feedstock nature of future fuel production units and differentiate the GHG emissions from the different fractions, using energy allocation** as the main criteria to allocate process emissions as well as to determine the RFNBO and RCF fraction of the final fuel corresponding to each individual feedstock jointly processed.
 - Avoiding a single carbon intensity value for different mix of feedstocks is deemed essential to incentivise both RFNBO and RCF production, even if jointly co-processed.
 - To allocate GHG emissions associated with each input (viz. RFNBO, RCF and other fuels) to the corresponding fraction / type of fuel, e.g. emissions associated with RCF feedstock to be allocated to the RCF fraction, emissions associated with RFNBO (renewable electricity) to be allocated to the RFNBO fraction, etc to have clear recognition in the context of future RED II(I) compliance.

¹ https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/innovfund/wp-call/call-annex_c_innovfund-lsc-2020-two-stage_en.pdf

- Need to **ensure consistency with Circular Economy efforts and taxonomy** regarding the rule to allocate product outputs and GHG emission calculation in the event of multiple co-products.
- To provide an explicit mention that the electricity complying with the criteria set in Article 27 (3) of Directive 2018/2001 and the corresponding delegated act is considered as fully renewable and therefore its emissions are considered as zero.

Delegated Act on Methodology for determining GHG emission savings from RFNBO/RCF (Annex I)
FuelsEurope's main points for consideration in future draft DA

1. RFNBO and RCF – Well-To-Wheels/Wake/Propeller approach. Key methodology considerations

Summary

- To ensure consistency between the steps included in the calculation of the GHG emission and the reference to the fossil-based value proposed for the GHG savings estimate. An approach based on the whole Well-To-Wheels/Wake/Propeller path is recommended, including transport and distribution until the retail station, to consider potential impact of the use of energy carriers and reconversion to hydrogen. Therefore, a unique fossil fuel comparator equal to 94 g CO_{2eq}/MJ for both liquid and gaseous RFNBO and RCF is recommended. The use of disaggregated defaults for transport and distribution should be allowed.
- To use energy or mass balance approach to allocate GHG emissions to multi-products (and to explicitly avoid recommendations on economic allocation).
- Need to define clear rules for the mix of different feedstock leading to fuels of different nature in the context of RED II(I), recommending the use of energy allocation to differentiate between the different fractions of RFNBO and RCF.
- To recognise the multi-feedstock nature of future fuel production units and differentiate the GHG emissions from the different fractions, using energy allocation as the main criteria to allocate process emissions as well as to determine the fraction of the final fuel corresponding to each individual feedstock jointly processed.
- To perform allocation of GHG emissions associated with each input (viz. RFNBO, RCF and other fuels) to the corresponding fraction / type of fuel, e.g. emissions associated with RCF feedstock to be allocated to the RCF fraction, emissions associated with RFNBO (renewable electricity) to be allocated to the RFNBO fraction, etc.
- To establish a clear definition of the boundary conditions to allow the recognition of the amount of renewable electricity as the energy content of RFNBO, to meet RED targets.
- To minimise methodological choices (e.g. source of information) in the RFNBO GHG savings calculations especially for the electricity mix and refer to the most up-to-date information available at country level, as the first choice, and subject to the particularities of each individual project. In the absence of consistent actual data, the use of improvement factors is recommended to recognise the improvement in country specific electricity mix.
- To allow the use of best available data / estimate for water consumption as elastic input. Default values for the different pre-treatment and origin of raw water could be also considered as part of the Delegated Act when data is not available.
- To consider carbon feedstock derived from petroleum products not always as elastic feedstocks for the purpose of the future methodology.

Key points for consideration (details):

- **GHG savings estimate**
When proposing the equation to estimate the GHG emissions of a RFNBO fuel of the future Delegated Act, we would recommend:
 - a) To follow a Well-To-Wheels approach to consider all the steps from inputs to final use
 - b) To consider the counterfactual impact of displacing existing use of feedstock as inputs
In this regard, recognising explicitly the GHG savings that could be achieved from diverting the current use of the feedstocks towards RFNBO (or RCF) production would be essential (e.g. CO₂ emitted to the atmosphere in a point source for RFNBO or potential incineration for RCF).
 - c) To recognise the possibility to generate negative emission credits for example, when carbon capture and storage (CCS) is applied to the GHG emissions generated at the RFNBO production step. In the case of a RFNBO produced from gasification and Fischer-Tropsch conversion, for example, CCS would capture and permanently store part of the fraction of the CO₂ non-converted into syngas or present in off-gases generating

- **A single fossil fuel comparator shall be considered for all renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuels, including hydrogen.**

As a proposal, we would suggest to use the fossil fuel comparator of 94 g CO_{2eq}/MJ for all kind of RFNBO and RCF, including the potential compression and transport steps in between the point of production until the point of distribution at the retail station. This would avoid a distortion in the market between RFNBO produced inside Europe and the ones being transported to Europe, as final fuels.

The creation of a level playing field for all fuels, considering the total Well-To-Wheels/Wake/Propeller is deemed essential as, for example, when hydrogen carriers are used, the total GHG emissions could even double the total emissions versus direct hydrogen production and transport to the retail station, depending on the pathway, distance and energy carrier chosen for the transportation step.

- **Mass or energy balance as the allocation method in a process yielding multiple co-products**

The manufacturing of RFNBO and RCF are multi-product processes in which different fractions of fuels and non-fuel / materials products are produced. The variety of the co-products ranges from oxygen, in the most simple electrolyser step, which could be used as a material, to a wide range of naphtha (as potential feedstock for petrochemicals or fuels), solvents, waxes, chemicals, excess electricity and/or heat.

This complexity is inherent to these production processes and therefore, the proposed methodology on the GHG emission savings estimate should be specific on the allocation method to be used. In this regard, our recommendations would be:

- **To prioritise energy allocation**, when low heating values could be attributed to the multi-products
- To use mass allocation in the event of co-products such as materials with no energetic value
- **Not to use an allocation based on the economic value** (neither in absolute terms nor in relative ones).
Economic allocation is subject to both temporal and geographical volatility which could potentially lead to different GHG emissions per product depending on the moment and/or region chosen.

As an example, the chart extracted from Thomson Reuters shows not only the volatility of fuel prices (as representative examples of Fischer-Tropsch-like fuels of fossil origin in this example) but also the relative variability and amplitude of the delta between the FT derived fuels, leading to a different allocation if the economic values are used vs the energy one.



Source: Thomson Reuters (2013-2018 variability FOB/CIF prices)

Besides, it can be expected that new renewable [RFNBO] and recycled [RCF] products (fuels and non-fuels) can potentially have particularly high variations in prices. The allocation itself could also introduce price variability not due to technical but to market-driven choices, subject to commercial agreements. And what can further complicate this allocation based on economic value is that carbon intensity (CI) of these products is in itself a Customer Value Proposition, potentially making such economic allocation “circular” and very challenging to implement (e.g. higher CI means higher product value means higher % of GHG emissions should be allocated to the higher-value product, which means lower CI and hence lower value of that product).

- In the future, RFNBO/RCF conversion units would be most likely designed to enable maximum possible flexibility in the type of inputs that could be processed seeking for adaptation to potential seasonal and other variabilities, maximising the utilisation of the available resources in the most efficient way. This effectively means that different mix of feedstocks from different origin (renewable, recycled/waste, bio, CO₂, fossil) could be processed in the same conversion units leading to a mix of co-products that could qualify differently depending on the origin of the feedstock. This effectively means that combinations of RFNBO and RCF categorised in function of the origin of the feedstock, can be found in the same final transport fuel. Ensuring that these considerations and their practical implications are properly addressed in the GHG emission related methodology would be key to leverage the potential of the different feedstocks towards RED II(I) compliance, as appropriated. Clear rules are essential in this regard considering:
 - The definition of how to recognise the corresponding fraction of each type of fuel in the final product in terms of the emission intensity.

- One potential option could be to consider that, in a mix of RFNBO, RCF and other fuels, all fuels should have the same emission intensity.
However, this potential definition would be ambiguous as it does not clearly define whether it refers to the same WTW or TTW emission intensity, offering very different values (e.g. in the event of RFNBO being mixed with a fossil fuel, this could imply that the WTW intensity of the fossil fuel is used giving no incentives to the RFNBO fraction). Besides, certain feedstocks and types of fuels (like RCF or RFNBO) may be allowed only in certain sectors or jurisdictions, hence it will be important to treat them separately, including GHG emissions and counterfactuals associated with each input / feedstock.
- Therefore, we propose to recognise in the future delegated act the specificities of each feedstock (with different GHG emissions and counterfactual impacts associated with the individual inputs).
This is recognised by the European Commission stating that sustainability characteristics, including GHG figures, should remain assigned to consignments [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010XC0619\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010XC0619(01)&from=EN).

In that context, we would recommend that the future methodology recognises different aspects regarding:

- Inputs:
 - The share of RFNBOs and RCF in the final products could be done based on the energy allocation in the inputs for consistency with the definition of RFNBO in the text of the RED which refers to the energy content from renewable origin.
 - Each fraction of the input would have implicitly associated some related GHG emissions, different depending on the origin and current fate, including the positive displacement credits they may generate when diverted for fuel production.
- Process step / characterisation of fraction of different type of fuels in the final product:
The process step related GHG emissions would be the same for all fuels, as it is a common element to all feedstocks jointly processed, regardless their origin, considering that:
 - The allocation of these process related emissions to the fraction of the final products should be done on an energy basis.
 - This individual GHG allocation would allow to apply specific GHG savings thresholds (e.g. 70% for RFNBO/RCF) so that individual fractions could qualify for RED compliance accordingly to their nature and feedstock of origin.
This would maximise the recognition of the savings associated to the different fractions and minimise the risk of unduly penalise other fractions (e.g. RFNBOs) in the event of a non-recognition of RCF as fuel compliance by a Member State.
- Final use:
The same emission factor would be used to estimate the GHG emissions in the use phase as the physical composition of the final fuel would be unique.

2. Electricity, water and CO₂ as feedstock

Summary

- To establish a clear definition of the boundary conditions to allow the recognition of the amount of renewable electricity as the energy content of RFNBO, to meet RED targets.
- To minimise methodological choices (e.g. source of information) in the RFNBO GHG savings calculations especially for the electricity mix and refer to the most up-to-date information available at country level, as the first choice, and subject to the particularities of each individual project. In the absence of consistent actual data, the use of improvement factors is recommended to recognise the improvement in country specific electricity mix.
- To allow the use of best available data / estimate for water consumption as elastic input. Default values for the different pre-treatment and origin of raw water could be also considered as part of the Delegated Act when data is not available.
- To consider carbon feedstock derived from petroleum products not always as elastic feedstocks for the purpose of the future methodology.

- **Need of a clear definition of the accountability of the renewable electricity into RFNBO production processes for RED compliance.**

The initial text in RED II defines RFNBO as (36) [...] *liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, **the energy content of which is derived from renewable sources** other than biomass; [...]*. However, more clarity is needed on the boundary conditions required to account for the renewable energy as new technologies, such as the co-electrolysers, would integrate the reverse water-shift reaction within the same piece of equipment as the production of the electrolytic hydrogen, or CO₂ electrolysers producing electrolytic carbon monoxide (which is next combined with electrolytic hydrogen to form synthetic hydrocarbon fuels, e.g. via Fischer-Tropsch pathway or methanol pathway).

- **GHG emission estimate from electricity mix:**

- **Minimising impact of methodological choices (e.g. source of information) in the RFNBO GHG savings calculations especially for electricity and use actual data as the preferred option for carbon intensity estimate.**

In order to minimise the impact of methodological choices (e.g. estimation of upstream emissions for electricity, sources of information), we would recommend to use the most recent available and public information at country level. As an example, for a new electrolyser connected to the grid, our recommendations would be to **use the most actual and reliable sources** to consider the emission intensity of the electricity mix when used to estimate the GHG emission reduction of the resulting RFNBO. Using a mix of other considerations, such as improvement factors different sources of data used for the current mix, could lead to a relevant variability (~10% or higher) in the emission intensity of the grid and, consequently, potential unduly penalisation of the GHG emission savings. Therefore, **the use of improvement factors should be limited to the cases where no actual data is available.**

- **For countries outside Europe, specific actual values for electricity production should be allowed.**

RFNBO would likely be subject to international trading and specific considerations for electricity production in the country of origin should be allowed. For example, the use of an-hoc renewable electricity generation instead of the electricity mix of the country. In the event of that the electricity mix of a non-EU country is used, the specific factors, such as the upstream related values, should be used to be able to capture the specific additional benefits from the use of a less carbon intensity national mix.

- **Need to define clear rules for the mix of different feedstock leading to fuels of different nature in the context of Renewable Energy Directive (RED II(I))**

In the future, a mix of different feedstocks than can qualify for RFNBO and/or RCF and/or conventional fuels is likely to happen in the production sites to enable maximum flexibility of the conversion units. In this case, clear rules need to be defined. We would suggest to use energy allocation to differentiate between the different fractions of RFNBO and RCF.

For the specific use of **RFNBO as an intermediate product** for the production of transport fuels, replacing hydrogen from Steam Methane Reforming (for example), the final fuel will continue to be considered as either conventional or as biofuels depending on the specific case, and the renewable energy used in the RFNBO as intermediate product is fully recognised as such to comply with the proposed targets in the RED.

- **Elastic inputs: GHG emissions linked to water consumption based on best available or estimate data**

Demineralised water required for the water electrolysis will most likely require a dedicated infrastructure. Actual data over the whole supply chain up to the point of consumption could add excessive administrative data gathering burdens and may not be always available. Therefore, we would suggest that best estimate is allowed when and as required for water consumption.

- **Need for clear guidance on whether the emissions associated with utilities are to be considered.**

- **Carbon feedstock from point sources from refineries are not always elastic feedstocks**

Carbon feedstocks derived from petroleum products from refineries are not elastic when they are unavoidable consequences of specific processes (e.g. fuel gas) after efforts in minimising the CO₂ emissions and, therefore, not subject to flexibility to increase feedstock for the sole purpose of production of RFNBO or RCF production. Therefore, where applicable, they should be considered as rigid inputs for the purpose of the future methodology.

3. RFNBO hydrogen as intermediate product for the production as transport fuels

Summary

- For the specific case of use of RFNBO hydrogen as intermediate product, clear rules on the allocation of process related emissions to RFNBO hydrogen are required as well as guidance on whether utility related emissions should be considered.

When hydrogen is used as intermediate product for transport fuel production, clear rules on the allocation of process emissions need to be defined

When RFNBO hydrogen is used as an intermediate for the production of transport fuels, the future Delegated Act should be clear on the rules to allocate process related emissions (e.g. Hydrotreatment unit) not linked to the RFNBO production itself. In particular, it is deemed essential to specify whether additional GHG emissions should be allocated to RFNBO hydrogen from the production step of the conventional fossil fuel or biofuel (based on energy allocation) or whether, for example, the process related emissions should be allocated fully to the Well-To-Tank intensity of the non-RFNBO fraction. In the latter, RFNBO GHG related emissions should be considered 0 g CO₂eq/MJ when produced from fully renewable electricity.

4. Recycled carbon fuels

Summary

- Explicit recognition of the benefits from previous/current fate or use of RCF feedstock.
- Ensure enough flexibility in terms of the type of electricity displaced when waste materials are diverted from incineration with energy recovery.
- Recognise landfilling as incineration without energy recovery for the purpose of the GHG emission calculation (accordingly with the Innovation Fund methodology)

Key points for consideration (details):

- Recycled carbon fuels would follow the definition under the RED in which [...] *liquid and gaseous fuels that are produced from liquid or solid waste streams of non-renewable origin which are not suitable for material recovery in accordance with Article 4 of Directive 2008/98/EC, or from waste processing gas and exhaust gas of non-renewable origin which are produced as an unavoidable and unintentional consequence of the production process in industrial installations;* [...]
- As waste materials, the GHG methodology should explicitly recognise the benefits for displacing the previous use of these waste which could potentially be, among others, landfilling or incineration with or without energy recovery.
 - Incineration: when incineration with energy recovery was the previous (and current) fate, it is important to recognise the particularities of each specific case and ensure enough flexibility to consider the actual emission factor of the electricity imported in every specific case (e.g. electricity from the grid or renewable electricity, depending on the specific projects).
 - Landfilling: In this case, we would propose to align this methodology to the one included in the *Innovation Fund Methodology* (p. 14)² and consider incineration without energy recovery as the counterfactual scenario for GHG emission saving calculation

[...] "If it is diverted from landfill, the carbon emissions attributed to it at the point of collection will also be negative. These shall be assumed equal to those for incineration without energy recovery, because although landfill sequesters part of the carbon, it is not desirable to encourage landfill for other environmental reasons." [...]

- **Need to ensure consistency with Circular Economy efforts and taxonomy regarding the rule to allocate product outputs and GHG emission calculation in the event of multiple co-products**

In the future the production of both recycled content chemicals and recycled carbon fuels can co-exist in the same process system from the same recycled feedstock, boosting circular economy. It is deemed essential that a transparent and coherent approach and determination methodology for the allocation of outputs and GHG emission calculation is established throughout different pieces of existing and future legislation.

²https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/innovfund/wp-call/call-annex_c_innovfund-lsc-2020-two-stage_en.pdf

FuelsEurope, the voice of the European petroleum refining industry

FuelsEurope represents with the EU institutions the interest of 40 companies operating refineries in the EU. Members account for almost 100% of EU petroleum refining capacity and more than 75% of EU motor fuel retail sales.

FuelsEurope aims to promote economically and environmentally sustainable refining, supply and use of petroleum products in the EU, by providing input and expert advice to the EU institutions, Member State Governments and the wider community and thus contributing in a constructive and pro-active way to the development and implementation of EU policies and regulations.

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