The Delegated Act on GHG Savings calculation methodology for RFNBO's

$\frac{E_F - E}{E_F}$

The GHG emission savings from the use of RFNBO's need to exceed 70% savings against the fossil fuel comparator E_f of 94 gCO_{2eq}/MJ, where **E** is the total emissions from the use of RFNBO.

CO_2

→ The GHG emissions must be below 28.2 gCO_{2eq}/MJ of RFNBO

Calculation of the RFNBO emissions E, is done through 5 main variables and 3 sub-variables

$E = E_i + E_p + E_{td} + E_u - E_{ccs}$, where E_i= Elastic + Rigid – Existing use input emissions

\+ **Elastic inputs** can be adjusted to achieve emissions reductions without sacrificing the quantity or quality of output. A change in the quantity of the input leads to a proportional change in the quantity of output. *For example, the amount of electricity used in the RFNBO production process.*

\+ **Rigid inputs** cannot be substituted or changed, regardless of changes in their price or availability. These inputs are often essential to the production process, and alternative substitutes are not readily available. *Example: blast furnace gas that was previously used for power generation. All RCF sources.*

− **Existing use inputs** are the avoided emissions when an emission input is utilized in RFNBO production instead of its existing use. For example: *the carbon utilized in RFNBO production was taken from an existing process that is defined as a valid source of CO_2 or for example direct air capture.*

\+ E_p describe emissions from the process including leaks and waste management. *For example, wastewater leakages at the effluent plant of an RFNBO production facility*

\+ E_{td} are emissions from the transportation and distribution of the RFNBO to the end customer i.e., product logistics. *For example, ICE truck emissions when transporting RFNBO to a fuelling station.*

\+ E_u means the emissions that occur when the RFNBO is combusted. *For example, the emissions that occur when e-Diesel (RFNBO) is combusted in a conventional ICE vehicle.*

− E_{ccs} describes the emissions reduction from capturing and storing the emissions from the RFNBO process or its end use. *For example, tailpipe CCS on a ship combusting eMethanol (RFNBO).*

*The methodology to calculate GHG emissions savings should be able to derive the actual emission savings from **co-processing**, which may yield a mixture of different fuel types. **To determine the share of each fuel type in the output, divide the relevant energy input for that fuel type by the total relevant energy inputs into the process.***

THE DA STATES CONDITIONS FOR CAPTURED CO_2 AND ELECTRICITY USED IN RFNBO PRODUCTION

Valid and eventually **invalid** carbon sources

CO_2 from the combustion of biofuels, bioliquids or biomass fuels not considered savings in RED II GHG.
Captured CO_2 from RCF/RFNBO combustion.
Direct air capture of CO_2.
Captured CO_2 from geological sources.

CO_2 captured from industrial activities in Dir. 2003/87/EC such as cement, oil or steel production — 2041

CO_2 captured from industrial activities for electricity production — 2035

! Dates reviewed for 2040 climate targets.

If the electricity in the process is fully renewable, then emissions from it equal to zero. Art 27 (6,7) of REDII.

Grid electricity, which is not fully renewable. Emission data from Eurostat or national statistics can be used.

The number of hours the electrolyzer is producing ≤ hours in which marginal price of electricity was set by renewable or nuclear power plants in the preceding calendar year
→ If yes, GHG emissions = 0 gCO2/MJ
→ If not, GHG emissions = 183 gCO2/MJ

GHG emission value of the marginal unit generating electricity at the time of the RFNBO production in the bidding zone.

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