RED II Biomass Requirements for EU ETS Participants February 2025

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RED II Requirements for Biomass

- The EU Emissions Trading Scheme (ETS) rules have been aligned with the RED II requirements set out in Directive (EU) 2018/2001 and for an ETS operator to claim zero rating of emissions from a bioliquid, biogas or solid biomass the operator will have to supply proof of sustainability and GHG savings. Article 38(5) of the ETS Monitoring and Reporting Regulation (MRR) see: EUR-Lex - 02018R2066-20250101 - EN - EUR-Lex applies from 01 January 2023.

- The MRR was updated most recently in September 2024 to take account of changes to the ETS Directive, and it now aligns more closely with RED II in relation to mass balance approaches for mixed fuels and extends the requirements to regulated entities under the new ETS 2 for buildings, road transport and additional sectors as well as taking account of the use of sustainable aviation fuels. (In the future, the MRR will most likely be amended to align with the amended RED (RED III)).

- *In the context of EU ETS **'zero-rated fuels'** means biofuels, bioliquids, biomass fuels, synthetic low-carbon fuels, RFNBO or RCF or fractions of mixed fuels or materials which comply with the criteria as specified in Articles 38(5) or 39a(3) or 39a(4) of the MRR, as applicable;*

- Currently the ETS operator will have to provide proof of certification of the fuel in accordance with RED II. Since there is no national certification system in Ireland an operator will use one of the schemes recognised by the Commission which can be found here: https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en

Update of the Monitoring Plan to add biomass as a source stream

- The GHG permitted Operator requires approval from the EPA to use the new fuel source biomass by submitting an updated monitoring and reporting plan
- Update all the relevant sections of the monitoring plan to include the new fuel source including section C5, C6, outlining monitoring and reporting procedures to bring them into compliance with the requirements listed below. This should include monitoring requirements in section D for the source stream, list of information sources for calculation factors (NCV and preliminary emission factor) in section D, details of the applied tiers for activity data and calculation factors etc, in section E. Summary detail of the procedures for biomass must be included in sections D7(k) and (j) and the actual procedures submitted as an attachment.

Zero rating biomass under the EU ETS MR Regulation

- **Article 38(5)** of the MRR **applies from 01 January 2023.**
- Biofuels, bioliquids and biomass fuels shall fulfil the sustainability and the greenhouse gas emissions savings criteria laid down in paragraphs 2 to 7 and 10 of Directive (EU) 2018/2001 (RED II), in order to be counted towards the zero-rated biomass fraction of a source stream
- Where the criteria apply and are not met for biofuels, bioliquids and biomass fuels, the carbon content shall be considered as fossil carbon, reported as non sustainable biomass (non-sust.BioC:) and allowances surrendered for annual emissions.
- **The burden of proof concerning a biofuel, bioliquid or biomass fuel meeting the requisite sustainability and/or GHG savings criteria remains with the EU ETS operator.**

How the Operator demonstrates compliance with RED II for EU ETS only

- The only method currently available to demonstrate compliance to the EPA and the Verifier is by using a voluntary national (from other Member States) or international scheme recognised by the Commission for RED II which covers the type of biomass to be zero rated and covers sustainability and GHG savings criteria for the whole biomass chain of custody.
- The certificate issued under the voluntary scheme must demonstrate that the economic Operator is certified and can manage sustainability information, GHG savings data and mass balance and is capable of issuing proof of sustainability for each batch.
- The Operator maintains proof of sustainability and mass balance information (ensuring completeness of information) for each batch on-site for review by the Verifier to confirm compliance. The biomass fraction (BioC:) is 100% where information is available for al batches combusted in a year.

How the Operator demonstrates compliance with RED II for EU ETS only

- The proofs of sustainability for each batch must cover the whole biomass chain of custody, include GHG savings information and confirm compliance with RED II sustainability criteria. The chain consists of several stages from the point of origin (where biomass is harvested from), the first point, various transport and storage stages through to the processing and combustion of the biomass on-site. All of these stages must be covered by a mass balance system to ensure that there are no data gaps or double counting in biomass quantities
- GHG savings calculations must include emissions from transport to the site and from the fuel in use (N_2O, CH_4). If the GHG savings are above the applicable threshold the biomass can be zero rated.
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How the Operator demonstrates compliance with RED II for Biogas EU ETS only

- Art 39(3) and (4) of the MRR sets out requirements for biogas (biomethane) fed into a national grid. See also section 5.3 of Biomass Guidance Document. See also 6.3.11 of Guidance Document 1.

- In principle, a monitoring approach using purchase records is allowed. However, in order to avoid double counting, it is not allowed to determine by laboratory analyses whether any biogas is physically delivered via the gas grid to the EU ETS installation.

- For the purchase based approach, Article 39(4) requires that the following conditions are met:

  - there is no double counting of the same biogas quantity, in particular that the biogas purchased is not claimed to be used by anyone else, including through a disclosure of a guarantee of origin as defined in Article 2(12) of Directive (EU) 2018/2001;

  - the operator and the producer of the biogas are connected to the same gas grid.

  - the applicable sustainability and GHG savings criteria have to be fulfilled for the biogas in question.

How the Operator demonstrates compliance with RED II for Biogas EU ETS only

For the purpose of demonstrating compliance with RED II, the operator may use the data recorded in a database set up by one or more Member States which enables tracing of transfers of biogas. Compliance with REDII may be considered demonstrated if the operator provides evidence for a purchase of a quantity of biogas connected to the cancellation of the respective quantity in the Union Database set up pursuant to Article 31a of Directive (EU) 2018/2001 or a national database set up by the Member States in accordance with Article 31a(5) of that Directive. In case of subsequent non-compliance regarding the proof of sustainability of the quantities cancelled in the aforementioned databases, the competent authority shall correct the verified emissions accordingly.';

Zero rating current MRR

- The concept of zero-rating has been extended from biomass to other types of fuels in the 2024 revision of the MRR. Zero rating may be applied to:
- Biofuels, bioliquids and biomass fuels which fulfil the sustainability and the GHG savings criteria of the RED II;
- Renewable Fuels of Non-Biological Origin (RFNBOs) or Recycled Carbon Fuels (RCFs) that comply with the GHG savings criteria of the RED II;
- Synthetic Low-Carbon Fuels (SLCFs) if they meet the criterion given in Article 39a(4) of the MRR

Current MRR and Union Database

- The 2024 amendment of the Commission Implementing Regulation (EU) 2024/2493 of 23 September 2024 amending Implementing Regulation (EU) 2018/2066 simplifies providing the relevant evidence:
- By allowing the use of evidence from the Union Database (UDB) (or a linked national database), the “no double counting” requirement and compliance with the sustainability and GHG savings criteria set out in RED II can be automatically complied with, since the UDB covers the whole European gas grid with a single mass balance in accordance with Article 30 of the RED II, and prevents effectively a separate use of Guarantees of Origin. Further guidance on the application of these criteria are given in section 5.3 of Guidance Document No. 3 (“Biomass issues in the EU ETS”)
- Union Database for Biofuels - Public wiki - Union Database for Biofuels Info-site - EC Public Wiki

GHG savings calculations

- Section 3.4.6.2 GHG savings of Guidance document No. 3 states:
- When the RED II requires GHG savings to be demonstrated, it means that the energy produced from biomass must lead to lower **life cycle emissions** than the use of comparable fossil fuels. The methodology for calculating GHG savings from biofuels and bioliquids is given in section C of Annex V to the RED II. For biomass fuels (biogas and solid biomass), the methodology is given in section B of Annex VI to the RED II. A short summary of the methodology is given here:
- First, the emissions from the biomass use is calculated using the formula:
- $E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} – e_{sca} – e_{ccs} – e_{ccr}$
- Where
- e_{ec} = emissions from the extraction or cultivation of raw materials; e_{l} = annualised emissions from carbon stock changes caused by land-use change; e_{p} = emissions from processing; e_{td} = emissions from transport and distribution; e_{u} = emissions from the fuel in use; e_{sca} = emission savings from soil carbon accumulation via improved agricultural management; e_{ccs} = emission savings from CO_2 capture and geological storage; e_{ccr} = emission savings from CO2 capture and replacement.
- For e_{ec}, e_{p} and e_{td}, Annexes V and VI provide typical and default values for many feedstock types and processes for biofuel and biomass fuel production.

GHG savings calculations

- Annexes V and VI of the RED II clarify: “Emissions of the fuel in use, e_u, shall be taken to be zero for biofuels and bioliquids. Emissions of non-CO_2 greenhouse gases (N_2O and CH_4) of the fuel in use shall be included in the e_u factor for bioliquids. Emissions of CO_2 from fuel in use, e_u, shall be taken to be zero for biomass fuels. Emissions of non-CO_2 greenhouse gases (CH_4 and N_2O) from the fuel in use shall be included in the e_u factor
- As a second step, the GHG savings are calculated as follows:
- <u>For the production of heating (and cooling) and electricity:</u>
  - SAVING = $(EC_{F(h\&c,el)}) – EC_{B(h\&c,el)})/EC_{F(h\&c,el)}$
  - Where:
  - $EC_{B(h\&c,el)}$ = total emissions from the biomass fuel or bioliquid;
  - $EC_{F(h\&c,el)}$ = total emissions from the fossil fuel comparator for heating, cooling or electricity, as applicable
  - The generation efficiency η for heating, cooling or electricity has to be taken into account as follows:
  - $EC = E / \eta$

GHG savings calculations

The following fossil fuel comparators apply[58]:

Purpose	Value of the fossil fuel comparator
Transport fuels (liquid): $EF_{(t)}$	94 g CO_2eq/MJ
Production of electricity: $EC_{F(el)}$	183 g CO_2eq/MJ ([59])
Production of useful heat, and heating and/or cooling: $EC_{F(h\&c)}$	80 g CO_2eq/MJ ([60])

GHG savings criteria applicable to 2025 only for biomass fuels

GHG savings criteria

- For **biofuels, biogas consumed in the transport sector and bioliquids**, savings must be
  - at least 50% if produced in installations in operation before 5 October 2015,
  - at least 60% for installations starting operation until 31 December 2020,
  - at least 65% for installations starting operation from 1 January 2021.
- For **biomass fuels** (i.e. solid and gaseous biomass) consumed in EU ETS installations, GHG savings must be
  - at least 70% in installations starting operation from 1 January 2021 until 31 December 2025,
  - 80% for installations starting operation from 1 January 2026.
- Savings relate to *life cycle emissions* compared vs. a given fossil comparator.

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GHG savings criteria after 2025

- For “biomass fuels”, i.e. solid or gaseous biomass, the GHG savings threshold depends on the starting date of the installation using them. However, the 2023 amendment of the RED II introduced this criterion also to installations starting operation 1 January 2021. Therefore, older installations (more exactly: installations which used biomass already before 2021) also have to carry out further assessment. This new need for assessment applies from the date the Member State implements the 2023 amendments of the RED II, at the latest from 21 May 2025, see Directive - EU - 2023/2413 - EN - Renewable Energy Directive - EUR-Lex

How the starting date affects the GHG savings required

Table 10: Greenhouse gas savings required for installations using biomass fuels depending on their starting date[125]. The letter in brackets indicates the point in Article 29(10) of the RED II which defines this threshold.

Start date	Biomass fuels in general	Biomass fuels Installations >= 10 MW	Gaseous biomass fuels <=10MW[128]
after 20 November 2023	(d) 80%	–	–
between 1 January 2021 and 20 November 2023	–	(e) 70% until 31 December 2029; 80% from 1 January 2030	(f) 70% for first 15 years; 80% after 15 years operation
before 1 January 2021	–	(g) 80% after operation of 15 years; at earliest from 1 January 2026, at latest from 31 December 2029	(h) 80% after operation of 15 years, at earliest from 1 January 2026

GHG savings calculations

Answer Q4: How does GHG savings calculation work? – Step 1

- $E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} - e_{sca} - e_{ccs} - e_{ccr}$

e_{ec} = emissions from the extraction or cultivation of raw materials;

e_{l} = annualised emissions from carbon stock changes caused by land-use change;

e_{p} = emissions from processing; [assumed not applicable in example]

e_{td} = emissions from transport and distribution;

e_{u} = emissions from the fuel in use;

e_{sca} = emission savings from soil carbon accumulation via improved agricultural management;

e_{ccs} = emission savings from CO_2 capture and geological storage;

e_{ccr} = emission savings from CO_2 capture and replacement.

GHG savings calculations

Answer Q4: How does GHG savings calculation work? – Step 2

- $E = e_{td} + e_u$
- e_{td} = emissions from transport and distribution: *shall include emissions from the transport of raw and semi-finished materials and from the storage and distribution of finished materials → In this case all transports from waste collectors to the installation, starting from the primary waste collectors*
- e_u = emissions from the fuel in use; Here the total biomass material's CO_2 emissions are set to zero, but emissions from N_2O and CH_4 (default values in the RED II) are then added

EU Commission Guidance

Commission Guidance

- The following Commission guidance notes are available for Operators and Verifiers.
- Guidance Document 1 (See section 6.3 and 6.3.11)
- Biomass Guidance (to be updated shortly)
- Guidance for Verifiers on biomass compliance
- Bioenergy
- Union Database for Biofuels - Public wiki - Union Database for Biofuels Info-site - EC Public Wiki
- Further Commission guidance in the form of training presentations has been published on DG CLIMA website for EU ETS and can be found under the heading Training documents- Training