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Eurogas key guiding principles on low-carbon fuels

Regulatory framework

Low-carbon fuels are defined in the Gas Directive (in its most recent version¹, yet to be formally approved) Art. 2 and include e.g. low-carbon hydrogen (and its derivatives), i.e. hydrogen produced from non-renewable energy sources and which meets a GHG emissions reduction threshold of 70%. This benchmark being calculated by using a fossil comparator referenced in the Delegated Act based on the Renewable Energy Directive Art. 29a (which is targeting transport fuels), and which currently stands of 94.1 gCO_{2eq}/MJ from its production to its use i.e. the total GHG emissions should not exceed 28.23 gCO_{2eq}/MJ equivalent to ~3.4 tCO_{2eq}/tH₂.

The Gas Directive in its Article 9 empowers the European Commissions to adopt a Delegated Act, at the latest 12 months after the entry into force of the Directive (i.e. early 2025), specifying the methodology for assessing the GHG emissions of low-carbon to ensure they meet the 70% GHG emissions reduction threshold. Associated to this threshold, the text defines multiple principles that should guide the drafting of the Delegated Act. In addition, Article 92 of the Gas Directive details the date of the review of the act and opens the possibility to introduce a new GHG emissions threshold for post-2031 installations. Eurogas supports the intention to deliver this Delegated Act efficiently and swiftly in order to support the necessary ramp-up of low carbon hydrogen (-derivatives).

Through this document, Eurogas details recommendations regarding low-carbon fuels certification for each of the principles detailed in the Articles 9 & 92 of the Gas Directive.

What should be the guiding principles for the certification of low-carbon: Eurogas recommendations

Gas Directive Art. 9, principle 1: The same requirements would apply for domestic and imports.

Eurogas recommendation: Eurogas welcomes the ambition of having a unified methodology for domestic and imported low-carbon, with an identical scope in terms of GHG emissions to be accounted. The establishment of a level playing field is an absolute necessity as hydrogen and its derivatives will be global commodities: the IEA projects in its World Energy Outlook 2023² that a share representing 14 - 21% of the global overall hydrogen demand will be traded, be it in 2030 or 2050, notwithstanding the scenario chosen.

To that end, the recognition by the EU of proofs of CO₂ storage issued by extra-EU countries is a pre-requisite to applying similar requirements to imports, but also to domestically produced low-carbon fuels. Equivalence of the rules to those established in the CCS Directive³ must in any case be ensured.

¹ [Gas Directive - EP approved version of 11 April](#)

² [World Energy Outlook 2023 - Analysis - IEA](#)

³ [Directive - 2009/31 - EUR-Lex](#)

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Gas Directive Art. 9, principle 2: The entire energy lifecycle emissions of low-carbon should be included, and indirect emissions from the diversion of rigid input should be considered. Overall, it should be consistent with the methodology adopted for RFNBO (note: which is the same for Recycled Carbon Fuels, another member of the low-carbon fuels family)

Eurogas recommendation: Eurogas considers that the scope of emissions considered for low-carbon GHG footprint calculation should be the same as RFNBOs, RCFs & fuels covered by the Renewable Energy Directive⁴ e.g. biofuels, biomass fuels.

While the establishment of a level playing field is necessary, the differences between the technologies and processes producing RFNBO and low carbon hydrogen/fuels must be underlined, as some principles cannot be mirrored. Nevertheless, some of the guiding principles developed in the context of the RFNBO Delegated Act on GHG Methodology⁵ should be applied, such as the indirect emissions from the diversion of rigid input.

Overall, Eurogas underlines the importance of defining a robust and transparent GHG emissions calculation methodology for low-carbon. This is a critical component of the EU hydrogen (derivatives) ambition, and Eurogas believes that doubts around the environmental performance of low-carbon hydrogen and its derivatives will directly damage the trust put in them to achieve decarbonisation goals, which in turn would hinder their deployment.

Gas Directive Art. 9, principle 3: Credit for avoided emissions is not given for carbon dioxide from fossil sources the capture of which has already received an emission credit under other provisions of law.

Eurogas recommendation: Avoiding double credit toward the same regulatory target is a prerequisite of any GHG emissions calculation. Nevertheless, there are two issues that need to be considered in the upcoming Delegated Act:

1. The wording of the Article is limited to carbon dioxide, which does not include solid carbon, for example for hydrogen from pyrolysis (“turquoise hydrogen”) – a pathway that would however correspond to the definition of low-carbon and theoretically allow significant GHG emissions reductions compared to unabated fossil-based ones.
2. The accounting of any captured carbon, with the two approaches being downstream and upstream accounting⁶ is a topic of critical importance. This discussion will be partly addressed during the 2026 review of the ETS. Depending on the approach chosen, the uptake of certain fuels may be privileged.

While Eurogas fully supports an in-depth assessment of this critical topic - for which the overall benefit for climate should be the guiding principle - Eurogas underlines the urgent need for clarification for the low carbon certification Delegated Act, which is aimed to be published ahead of the 2026 ETS review.

⁴ [Directive – 2018/2001 – EUR-Lex](#)

⁵ [Delegated regulation - 2023/1184 - EUR-Lex](#)

⁶ Upstream accounting = emissions priced at the point of the initial capture, downstream accounting = emissions priced at the point of emission to the atmosphere.

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Indeed, for low carbon, the allocation of the carbon capture credit should be clarified in the case of a process relying on CCU, be it for the source of CO₂ for the production of the low carbon, or because the low carbon process is capturing CO₂ to be used for CCU purposes (other than permanent CCU to be defined in the upcoming ETS Delegated Act).

This request for clarification stems from the difference of approach between the EU Emissions Trading System (ETS)⁷, the Delegated Act defining a GHG methodology for RFNBO/RCF and the recent Industrial Carbon Management Strategy (ICMS)⁸. While the ETS and the Delegated Act defining a GHG methodology for RFNBO/RCF indicate that the CO₂ used for the production of RFNBO stemming from and ETS process should have been accounted under the ETS (i.e. allowances should have been surrendered), the ICMS indicates the contrary by not requiring the surrendering of allowances:

ETS, revision 2023, recital (68)	RFNBO Delegated Act, GHG Methodology, 2022, Annex A 10. (a)	Industrial Carbon Management Strategy, 2024, page 4
<p><i>“Where recycled carbon fuels and renewable liquid and gaseous fuels of non-biological origin are produced from captured CO₂ under an activity covered by this Directive, the emissions should be accounted for under that activity.”</i></p>	<p><i>“the CO₂ has been captured from an activity listed under Annex I of Directive 2003/87/EC and has been taken into account upstream in an effective carbon pricing system and is incorporated in the chemical composition of the fuel before 2036”</i></p>	<p><i>“Furthermore, allowances for emissions considered to have been permanently captured and utilised do not need to be surrendered¹⁸, providing more options for emitters to capture CO₂” and footnote 18 “This includes the CO₂ used for the production and use of renewable fuels of non-biological origin.”</i></p>

Eurogas considers that any changes in the regulatory framework stemming from the discussions related to the ETS/ICMS should be carried out while maintaining alignment across the regulatory framework and Delegated Acts for RFNBO and Low Carbon.

In general, Eurogas considers if the industry generating the carbon being captured does not surrender the ETS allowances or is not accounted for under an effective carbon pricing system, no credit could be claimed for the production of the fuels.

Gas Directive Art. 9, principle 4: Methane upstream emissions should be taken into account. treatment of emissions due to the leakage of hydrogen should also be considered. On the latter, the EC would submit a subsequent and separate report on hydrogen leakages, potentially introducing a specific cap in the methodology in the future.

Eurogas recommendation: Eurogas underlines that any methodology aiming at calculating the entire (energy) lifecycle emissions of low-carbon would have in any case considered the level of methane emissions, carbon capture and hydrogen leakages (the latter, with the same level of consideration as for RFNBO).

⁷ [Directive - 2023/959 - EUR-Lex](#)

⁸ [Industrial carbon management – carbon capture, utilisation and storage deployment](#)

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In general, Eurogas considers that the overall GHG reduction benchmark (-70 % GHG emissions vs. fossil comparator) should be the sole benchmark to assess the GHG credentials of low carbon fuels. To that end, economic operators should be free to optimize their own process/sourcing as long as they meet the overall GHG reduction benchmark.

When it comes to each parameter e.g. carbon capture rate, methane upstream emissions, Eurogas recommends to adopt the following approach:

- Default values should be set for each parameter.
- As an alternative to default values, economic operators should be able to demonstrate better performance through the use of actual/project values. It will incentivise better performance, support the deployment of detection technologies and the sourcing of lower GHG footprint feedstock.
- A review process for these default values should be implemented. Through this review process, a possibility to define default values at a more granular level, e.g. at Member States level instead of unique EU values, should be included.

Additional recommendations for specific parameters:

- Regarding methane emissions, the level of requirements between the Delegated Act and the EU Methane Emissions Regulation should in any case be aligned. Also, actual values calculation and default values review for methane emissions should notably reflect the latest information of the Methane Transparency Database from the Methane Emissions Regulation, which will gradually improve data availability and reliability.
- Regarding hydrogen leakages, Eurogas underscores the importance of considering the market availability of hydrogen leakages detection technologies in time for this Delegated Act (2024-2025). This market availability should also be considered in the context of the definition of default values: Eurogas considers that their initial definition is tied to the possibility of demonstrating better performance through actual values.

Similarly, considering the ambition of the European Commission to also consider hydrogen leakages for the GHG emissions calculation of RFNBO⁹, Eurogas underlines the need to ensure alignment between the requirements for RFNBO and low carbon fuels.

Finally, it should be noted that the Gas Directive is referencing the concept of “unabated” gas in the context of a limit in the conclusion of long-term contracts. It should be clarified if the European Commission intends to clarify this term through this upcoming Delegated Act and how both provisions would be ultimately linked together.

⁹ See question 64 of [Q&A implementation of hydrogen Delegated Acts](#) (14 March version)

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Gas Directive Art. 9, principle 5: Economic operators should rely on a mass balance system and enter in the Union Database or (or through national database as per Art. 31a (2) of the RED) information about transaction and sustainability characteristics. If Guarantees of Origin (GO) are issued for low-carbon, they should follow the same rules of GO for renewables.

Eurogas recommendation: Eurogas welcomes the alignment with the rules in place for fuels covered by the RED. In particular, Eurogas underlines the need to ensure that the provisions related specifically to mass balancing for gaseous fuels as per the Union Database Implementing Act¹⁰ are also applicable to low-carbon hydrogen production, notably the concept pertaining to interconnected infrastructures being considered as single mass balancing systems. Nevertheless, Eurogas encourages the European Commission to monitor the actual implementation of the Union Database to ensure that the integration of low carbon fuels is being carried out when the Union Database is fully operational.

Gas Directive Art. 92, principle 6: By 31 Dec. 2030, the EC shall review the application of Art. 9, and related definitions in Art. 2, to assess whether facilities that begin operation from 1 January 2031 should demonstrate higher greenhouse gas emission savings from the use of low carbon fuels and low carbon hydrogen to receive certification pursuant to that Article.

Eurogas recommendation: Regulatory certainty is a prerequisite for an efficient investment framework. Industrial projects' lifetimes usually extend beyond the period of 5 years foreseen before the planned review of the Act. At least, it should be made sure that facilities that begin operation before 1 January 2031 should be able to continue to use the same GHG emissions savings threshold benchmark for the entirety of their lifetime.

¹⁰ [Implementing Regulation - 2022/996 - EUR-Lex](#)

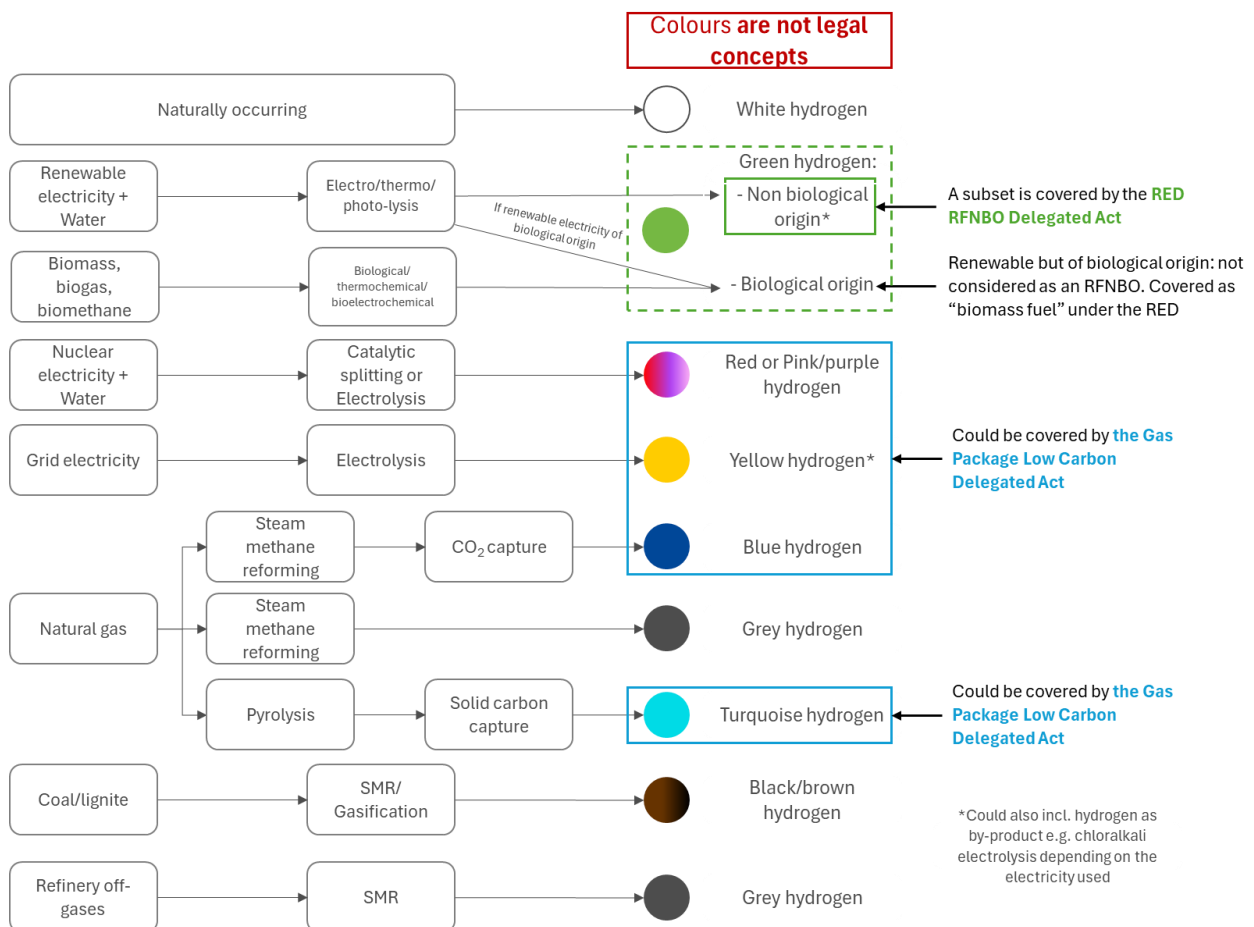
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Annex: Introduction to low-carbon hydrogen, what importance for decarbonisation?

What is low-carbon hydrogen?

There are multiple production pathways of hydrogen. So far, only certain renewable non biological electricity-based hydrogen meeting stringent requirements (under the term Renewable Fuels of Non-Biological Origin (RFNBO)) and renewable hydrogen produced from biomass sources (under the RED term “biomass fuels”) meeting sustainability requirements, are regulated in the EU¹¹. Two Delegated Acts detail the requirements in terms of e.g. electricity sourcing (the “Additionality” Delegated Act) and their GHG emissions calculation methodology, both stemming from the Renewable Energy Directive (RED).

Against this backdrop, discussions are now starting on other production pathways allowing the production of **low-carbon hydrogen**. Low-carbon hydrogen is based on non-renewable energy sources, and which meets a certain GHG emissions reduction threshold.



Illustrative, numerous possible pathways are missing – notably certain sources of by-product hydrogen e.g. acetylene/styrene production - and colours, while being used commonly, are not legal concepts.

¹¹ See answer to Question 2 in [EU Delegated Acts on Renewable Hydrogen](#)

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The importance of low-carbon hydrogen and its derivatives

Contrary to RFNBOs, low-carbon fuels have only been indirectly incentivized in EU legislation, notably through policies at consumption level (e.g. FuelEU Maritime, ReFuelEU aviation). Nevertheless, as noted in the Gas Package, imports of renewable and low-carbon hydrogen are likely to complement domestic production, and certain sectors are already foreseeing consumption of low-carbon hydrogen and its derivatives. Indeed, low-carbon hydrogen also opens the way for low-carbon derivatives, such as low-carbon methanol and low-carbon ammonia, both representing important pieces in the decarbonisation of hard-to-abate sectors, such as maritime and aviation transport, chemical and power generation.

Globally, low-carbon hydrogen is likely to represent a major source of hydrogen supply and demand especially in the transition toward net zero. The IEA, in its World Energy Outlook 2023, considers that hydrogen from fossil fuels with CCUS – a subset of low-carbon hydrogen vs. EU definitions as it does not include electrolysis based hydrogen from low-carbon electricity – will represent around 26-32% of the hydrogen produced in the world in 2030 and 21-27% of the hydrogen produced in the world in 2050 across the various scenarios, from *Stated Policies* and *Announced Pledges* to *Net Zero Emissions by 2050*.

Eurogas believes that low-carbon hydrogen will represent an important part of the EU hydrogen mix and will have a crucial role in the development of the hydrogen market and infrastructure, providing the volumes necessary to materialize the overall and renewable hydrogen ambitions of Europe as stated in the REPowerEU¹². Low carbon hydrogen and its derivatives can deliver GHG savings, and as for all renewable and low carbon energy, these GHG credentials should be the main benchmark when determining their value in a net zero future.

Beyond the sole benefits of hydrogen, low-carbon hydrogen produced from natural gas with CCUS has co-benefits be it in the development of CCUS technologies or more generally for the growth a CCUS economy/infrastructure and in the overall abatement of GHG emissions of natural gas. Indeed, as low carbon will be certified according to its GHG emissions performance which account for the GHG emissions of the natural gas being used, it will also incentivise the reduction of upstream methane emissions, creating an additional incentive for the initiatives already underway to reduce methane emissions.

¹² [REPowerEU \(europa.eu\)](https://europa.eu)