

FORTUM'S FEEDBACK ON THE DRAFT METHODOLOGY TO DETERMINE THE GREENHOUSE GAS EMISSIONS SAVINGS OF LOW-CARBON FUELS

Fortum welcomes the opportunity to provide feedback on the draft Delegated Act concerning low-carbon hydrogen. We would like to encourage and support the Commission to proceed with the Delegated Act as fast as possible to provide clarity to the industry and truly enable the take-off of the European hydrogen economy.

1 POSITIVE ELEMENTS

1. We welcome the possibility to produce low-carbon hydrogen from low-carbon grid electricity, as described in the Annex, paragraph 6 (a).
2. It is positive that carbon captured and permanently bound in a product can now be deducted from the carbon footprint of produced fuels.
3. It is positive that inputs qualifying as a carbon source for the production of RFNBO and low-carbon fuels are the same and that biogenic CO₂ is considered a long-term sustainable input for carbon based RFNBO and low-carbon fuels.
4. It is also positive that the fossil fuel comparator for low-carbon fuels and the RFNBO is the same, which reduces the risk of market fragmentation caused by having multiple emission thresholds for different fuel types.

2 ELEMENTS IN NEED OF FURTHER CLARIFICATION

The draft Delegated Act introduces ambiguities that should be dealt with directly in the final proposal, instead of relying on future Q&A documents and guidance. The draft text contains significant shortcomings that could hamper the uptake of low-carbon hydrogen projects.

1. Flexibility and competitiveness for hydrogen producers

The draft proposal provides options to count electricity emissions but does not clarify whether hydrogen producers can combine methods (b) and (c) based on operational needs. It remains unclear if producers can switch between methods (a) (b) and (c) within the same production year or if they can use all three methods simultaneously to achieve the highest GHG savings. For instance, a producer could use method (c) when the marginal unit is clean and switch to method (b) during periods of higher production efficiency. Since the Commission wishes hydrogen production to be flexible and not only baseload, the means to achieve this flexibility should be supported by the legislation.

2. Additional methodology to be considered under Annex, paragraph 6

The draft overlooks the benefits of Power Purchase Agreements (PPAs) by not considering the emission intensity of contracted energy assets. Fortum regrets that a methodology for sourcing nuclear power through a PPA is missing and recommends that the Commission does not unnecessarily postpone adding such a possibility by multiple years. Emissions from contracted

assets via PPAs should be allowed as an option, not as an obligation, to address the following shortcomings:

- **Business case uncertainty based on annual grid emission:** Hydrogen producers face risks in building a business case for investments based on method (a). The grid emission intensity can vary annually due to factors outside the producers' control. As an example, the emission intensity of generated electricity in a Member State could rise in one year and not allow the production of low-carbon fuel when for example nuclear plants are in a prolonged outage.
 - The emission intensity of generated electricity in Member States (table 6) needs to be updated frequently. This applies to both RFNBOs and low-carbon hydrogen.
 - Even with a yearly average emission intensity close to 18 g CO₂/MJ, as seen in Member States such as Finland, liquified hydrogen produced using the low-carbon grid electricity may still fail to meet the 70% emission reduction threshold. This means that, despite hydrogen being produced with low-carbon grid electricity, the additional emissions from other processes such as compression or liquefaction can raise the total emissions, resulting in hydrogen that no longer qualifies as low-carbon.

Example calculation:

Process	Electricity Required (MJ/kg H ₂)	CO ₂ Emissions per MJ H ₂ (gCO ₂ /MJ) assuming emission intensity of grid electricity is 18 g CO ₂ /MJ
Electrolysis	180 MJ/kg H ₂ (electrolyzers typically consume 180 MJ to produce 1 kg of H ₂)	27 gCO ₂ /MJ Hydrogen gas fulfills the 70 % threshold
+ Liquefaction	Liquefaction process typically consumes electricity between 36 and 43 MJ/kg H ₂	between 32 and 34 gCO ₂ /MJ liquified hydrogen exceeds 70% threshold. Liquefaction adds emissions because it is an energy-intensive process

- **Using of up-to-date emission factor for nuclear electricity:** Fortum recommends that the framework establishes an appropriate emission factor for nuclear electricity based on the latest studies, with upstream emissions valued between 0.2 to 0.3gCO₂e/MJ.
- **Regulatory inconsistency regarding long-term electricity agreements:** There is a notable inconsistency in how European legislation treats electricity agreements and does not reflect the actual market situation, where industries, including the hydrogen industry, want both nuclear and renewable electricity agreements. The REDIII and RFNBO framework clearly defines renewable PPA and its requirements and mandates the use for the production of RFNBOs, whereas the draft in question rules out the use of PPAs in low-carbon hydrogen production. This creates regulatory confusion: one part of the legislative framework mandates obligations to specify the energy assets from which electricity is sourced via PPAs, while the other key legislative piece does not recognise their emissions savings potential. The lack of recognition of renewable and low-carbon electricity agreements, notably with nuclear assets as well as renewables that do not qualify for RFNBO, undermines the coherence of the regulatory framework and the certification schemes that audit and verify the origin of electricity.

- **Creating a risk for double-counting:** Allocating emissions based on yearly grid emissions without considering renewable and low-carbon electricity agreements creates a significant risk of double-counting emissions. Especially in cases of co-producing RFNBO and low carbon hydrogen, attributed emissions do not reflect the reality of the emissions associated to the electricity used. If a producer of RFNBOs sources electricity via dedicated renewable asset PPA, while low-carbon fuels are assigned emissions based on the annual emission intensity of the grid, it affects the emissions attribution to both the RFNBO and low-carbon fuels. In this scenario, the same renewable electricity emissions are counted for both products, leading to an inaccurate representation of their respective carbon footprints. By incorporating renewable and low-carbon electricity agreements into the regulatory framework, we can ensure that emissions are assigned accurately to the source of energy actually consumed, avoiding this overlapping attribution.
- **Unpredictability caused by marginal unit emissions method (c):** The marginal unit emissions method introduces significant uncertainty. Marginal units can be located in neighbouring countries that may have a completely different energy mix. As a result, the emissions attributed to low-carbon fuel producers in one country could be based on generation from an entirely different bidding zone or a different country. This could penalise if the marginal unit has high emissions. In the hydrogen business, it is difficult to predict which marginal unit will set the price at any given time, resulting in uncertain emission outcomes. This unpredictability makes it challenging for hydrogen producers to plan and make long-term investment decisions.
- **Better allocation of emissions with PPAs than with marginal emissions:** Methods (b) and (c) do not accurately reflect emissions associated with renewable and low-carbon electricity agreements. Hydrogen producers often seek baseload electricity and secure long-term contracts through PPAs, making the arbitrary application of marginal unit emissions misleading regarding the environmental performance of hydrogen production.
- **Ensuring fairness:** Business cases for hydrogen projects, especially those requiring high running hours, often depend on the reliability provided by baseload renewable and nuclear electricity agreements. While **we do not recommend making PPAs obligatory**, hydrogen producers who have secured these agreements for low-carbon electricity should be given the option to have the emission intensity of their electricity contracts considered. This would avoid penalising producers who take proactive steps to secure renewable and nuclear electricity for the production needs and support the clean energy transition.
- **Complicated certification for low carbon fuels:** RFNBOs have Guarantees of Origin (GO) for renewable hydrogen that are verified by voluntary certification schemes at the European level, GOs are widely used in the market. However, it is unclear what are the provisions made for the certification of low-carbon hydrogen at the European level and how to verify the type of electricity used for low-carbon fuels.
- **Unclear calculation and data collection with methods (b) and (c):** Marginal emissions methodology in (b) and (c) are not used in the market. More clarifications are needed on how the marginal cost of specific electricity production methods is calculated: This is particularly relevant for hydropower, which has a highly variable market value. We also seek clarification on which production forms should be considered and whether the values

should be European or specific to bidding areas. In the case of marginal emissions, where does the data come from: is it already available in Member States or if new data collection will be necessary. How are the methods (b) and (c) to be used in certification schemes. There needs to be a plan and guidance for the TSOs on providing marginal unit information to be obtained in real time.

- **Conflict between marginal unit emissions and bidding zone emissions:** The marginal unit emissions method (c) can conflict with the bidding zone average emissions method (a). For instance, Finland generally has a low grid emissions intensity due to its clean energy mix but if marginal units from gas imports or biomass-based CHP plants are used to calculate emissions, the results could be artificially inflated. Considering an **additional method (d)** that incorporates renewable and low-carbon electricity agreements would help resolve these inconsistencies by linking emissions directly to the source of generation.
- **The recognition of nuclear PPA** could be done by bringing the review year 2028 much earlier. To bring forward the 2028 review for recognition of nuclear PPA, the Commission and JRC could initiate a study in early 2025, working with Member States and industry to collect relevant data. Establishing a dedicated task force to monitor trends and assess impacts would streamline the process. A mid-term review in 2026 could evaluate the data and progress, enabling more timely decisions on nuclear PPA recognition and its role in supporting decarbonisation.

3 ADDITIONAL ELEMENTS

- **Recognition of natural (geological) hydrogen:** While natural hydrogen fits within the definition of low-carbon fuels, the methodology would benefit from making a more explicit reference to this hydrogen production pathway and the GHG emission value to be associated with natural hydrogen.
- **Cases of failure to meet the 70% threshold:** Clarification is needed on what happens to the hydrogen that fails to reach the 70% threshold for a specific year. What happens when the hydrogen fulfills the threshold but then its derivative does not fulfill the threshold and cannot be certified?
- **Level playing field between the strict measures for production within the EU and outside:** The treatment of CO₂ stored and bound in a product in a third country should be accurately monitored and correspond to reality. Regarding the requirements for CCS outside the EU, it should be clarified who will verify that the applicable law in third countries is in line with legal provisions in the EU. Will there be the verifiers under the approved Certification Schemes or will the EU Commission be responsible?
- **Prompt approval of voluntary schemes for LCH and inclusion in the European Hydrogen Bank:** Following the adoption of the Delegated Act in question, Fortum urges the Commission to swiftly approve European voluntary certification schemes for LCH and to open the upcoming European Hydrogen Bank auctions for low-carbon electrolytic hydrogen projects in a different basket or category than the one dedicated to RFNBO production. Since the LCH and RFNBO projects have different funding gaps and subsidy requirements, they should not compete against each other.

Fortum

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Contact

Narimane Boulefred, Manager – regulatory analysis, narimane.boulefred@fortum.com

Sara Viitanen, Manager – EU affairs, sara.viitanen@fortum.com