

Client Alert

Energy

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Blue Hydrogen and Ammonia: EU's Rules for Low Carbon Fuels Released for Consultation

On 27 September 2024, the European Commission (“**EC**”) published draft rules defining “low-carbon hydrogen” and derivative “low-carbon fuels” in the EU (the “**Draft Low-Carbon Hydrogen DA**”). A public consultation is now open until 25 October 2024.ⁱ

Low-carbon hydrogen includes hydrogen produced from fossil energy sources (with carbon capture and storage (“**CCS**”)), colloquially known as “blue” hydrogen, or from nuclear generated electricity, known as “pink” hydrogen. The Draft Low-Carbon Hydrogen DA will therefore be very important for producers of blue hydrogen and blue ammonia targeting the EU market as well as proponents of hydrogen derived from nuclear electricity.

The EU’s Hydrogen and Gas Market Directive (adopted earlier in 2024)ⁱⁱ set the framework definition for low-carbon hydrogen. Like the EU’s requirements for renewable hydrogen and derivative fuels and feedstocks (known as “renewable fuels of non-biological origin” or “**RFNBO**”), low-carbon hydrogen must achieve a 70% emissions saving compared to the defined emissions intensity comparator. See also our [client alert on the EU’s definition of green hydrogen](#) as well as our recent [update](#).

KEY TAKEAWAYS

- For blue hydrogen, upstream methane emission factors from natural gas production will need to be based on default values – i.e. a level of emissions intensity pre-defined in the regulations – until at least 2027, when a further delegated act from the EC will be published setting out a new methane intensity methodology that may allow producers to rely on the actual emissions intensity from their natural gas sources. There is no recognition of existing voluntary initiatives for certification of low



methane intensity, or responsibly sourced gas (RSG), even where producers are already applying industry best practices (such as OGMP 2.0 level 4 or level 5, direct measurement of methane emissions).ⁱⁱⁱ

- This delay in clarifying the rules on methane intensity prolongs regulatory uncertainty for blue hydrogen and ammonia producers. The Draft Low-Carbon Hydrogen DA does not allow the use of source-specific methane intensity limits prior to the publication of that methodology. In the meantime, this will disadvantage producers of low-carbon molecules that are able to achieve lower upstream emissions intensity than the prescribed default values, and disincentivize investments that might otherwise bring methane intensity below the default values.
- Emission savings from CCS are calculated based on actual carbon capture rates and must be applied as an average across the entire fuel output of the plant. This means a producer cannot allocate all CCS emission savings to, for example, a portion of the plant's output. CCS in non-EU countries must also be "in line" with the requirements for CCS under EU law. There is, however, no guidance on how the EC will determine the equivalence of CCS regimes in non-EU countries. This will need to be clarified.
- There is no special treatment for PPAs from nuclear power generation. The EC promises to assess nuclear power as an alternative low-carbon energy pathway by 2028.
- The rules for calculating the emissions intensity of electricity consumed in low-carbon hydrogen production operations (e.g. CCS operations) are the same as under the RFNBO rules. This applies to claims of "zero emissions" for electricity consumed at any point in the supply chain (including powering carbon capture facilities, CO₂ transportation, water treatment or electrolysis). This could create challenges for low-carbon hydrogen projects in locations with high grid average carbon intensity.
- Work will be required to establish certification schemes for low-carbon fuels and their supply chain inputs as well as to integrate this with the EC's Union database ("UDB").
- Low-carbon hydrogen produced from gas commingled in pipelines outside the EU is going to present challenges. The EC currently applies accounting rules that discriminate against pipeline gas outside of the EU (in the context of the UDB rules for renewable gases). See our client alert on the [challenges facing exports of renewable gases that are transmitted through a gas grid outside the EU](#) which also provides an overview of the UDB. We are already seeing major challenges with the UDB as it applies to exports of renewable natural gas (or biomethane) using the gas grid for midstream transmission (e.g. in the U.S.). Since most, if not all, natural gas feedstock for blue hydrogen production will be transmitted through a gas network, this will be an even more significant issue for low-carbon hydrogen supply chains. This must be solved if Europe wants to benefit from exports from the blue hydrogen and ammonia projects being developed globally, particularly along the U.S. Gulf Coast.

ROLE OF LOW-CARBON FUELS IN THE EU

Low-carbon fuels benefit from several incentives under the EU's decarbonization regulations, including being eligible for the quotas applicable to the maritime sector under FuelEU Maritime^{iv} and (only for non-fossil low-carbon fuels, e.g. nuclear electricity-derived fuels) the sustainable aviation fuel quotas applicable to the aviation fuel suppliers in EU airports under ReFuelEU Aviation.^v

These rules will also be important for the treatment of these products under the EU's carbon border adjustment mechanism ("CBAM") and other incentive schemes and regulatory mechanisms in the EU.



The Hydrogen and Gas Market Directive and related Regulation also give preferential treatment to low-carbon gases to encourage the decarbonization of the EU's gas system. However, the EU does not have mandatory quotas for low-carbon gas to be blended into the gas mix, which is something particularly Asian economies are pursuing.

CALCULATING UPSTREAM METHANE EMISSIONS FOR BLUE HYDROGEN AND DERIVATIVES

A key component when calculating the overall lifecycle emissions intensity of blue hydrogen is the value to be used for upstream methane leakage during production of the natural gas from which the hydrogen is derived.

The EC is focussed on reducing methane emissions in the fossil fuel sector, both for EU-produced fossil fuels as well as for imports. It recently implemented the Methane Regulation^{vi} that aims to achieve this. It appears the EC is taking a similar approach for low-carbon fuels.

The Methane Regulation requires the EC to propose a delegated act defining the methodology for calculating upstream methane emissions intensity from natural gas production. However, this may not be adopted until August 2027, or possibly later. Under the Draft Low-Carbon Hydrogen DA, the EC requires low-carbon hydrogen producers to use this methodology when calculating upstream methane emissions intensity for natural gas used to produce blue hydrogen.

Before the publication of that second delegated act, blue hydrogen producers will need to use default methane intensity emissions figures prescribed in the Draft Low-Carbon Hydrogen DA. Stakeholders will require technical and modelling analysis to determine whether these prescribed default values are appropriate and commercially viable and how they compare to any pre-existing assumptions for methane emissions intensity values.

This means prolonged uncertainty for blue hydrogen developers on how to accurately account for upstream methane emissions, which runs the risk of holding back development timetables for developers hoping to deliver low-carbon molecules to Europe. There is no recognition for gas production that already applies the industry best practices (which the EC holds in high regard) under OGMP 2.0. Since over 140 of the largest oil and gas producing companies are members of OGMP 2.0, this is a major dis-service to the industry.

Unless the EC can propose a pragmatic interim solution, projects that are able to achieve a lower carbon intensity than the default values (because of lower upstream emissions, for example through investing in technological best practices), likely at higher cost than projects simply meeting the default values, will be dis-incentivised because their ability to "beat" the default values will not be rewarded. In addition, since the EC (unlike, for example, South Korea and Japan) does not propose any "grandfathering" protection for investments that have already been made prior to 2027, projects (and their investors) currently making development commitments face the risk that the 2027 methodology will adopt stricter assumptions than are being modelled today. The risk is particularly pronounced because there is currently very little commonality globally for the measurement and calculation of methane emissions from upstream fossil fuel production.

BORROWING THE STRICT RFNBO RULES FOR CALCULATING EMISSIONS FROM ELECTRICITY CONSUMPTION, AND NUCLEAR ELECTRICITY

The Draft Low-Carbon Hydrogen DA borrows heavily from the RFNBO delegated act for calculating the emissions intensity of electricity consumed during low-carbon hydrogen production. The RFNBO rules impose very strict (in many cases, technically or commercially unfeasible) requirements for power supply sources to be considered zero emissions. This will apply to electricity consumed at all stages of the product supply chain, including powering carbon capture equipment, CO₂ transport or cooling as well as (to the extent relevant) electrolysis.



As a result, low-carbon hydrogen projects located in regions with highly carbon-intensive grids (which do not have their own RFNBO-compliant electricity sources) will be placed at a disadvantage. There is also no extra special treatment given for nuclear electricity beyond what is already included in the RFNBO delegated act. This is causing significant controversy amongst proponents of nuclear-electricity-powered hydrogen production.

DEVELOPING A CERTIFICATION SCHEME FOR LOW-CARBON FUELS AND INPUTS

The Draft Low-Carbon Hydrogen DA indicates that all low-carbon fuels as well as raw materials used for their production will need to be traced through the UDB, in the same way as for renewable fuels. However, there is still a long way to go in this regard. The UDB is not, at the time of writing, even fully functional for renewable fuels (the gas registry is not yet operational). Significant work will be required to develop certification schemes for low-carbon fuels and their inputs, and integration with the UDB.

The EU's approach to the UDB is already creating challenges for exporters of renewable gases from non-EU countries using the gas grid. This will be an even greater potential issue for low-carbon hydrogen producers, since in most countries (e.g. the U.S.) the natural gas will be supplied through the commingled gas network. Moreover, the EU does not yet have a functional certification or tracing scheme in place for accounting and tracing the emissions intensity characteristics of consignments of natural gas.

So, how the emerging low-carbon fuels supply chain can feasibly be registered in the UDB remains unclear. Yet, without doing so, low-carbon fuels may not be able to qualify for the very quotas and other incentives that they are being produced to fulfill. The UDB requirement is therefore a fundamental bottleneck to the import of low-carbon hydrogen, ammonia and other products from key sources into Europe.

CONCLUDING REMARKS

We are supporting clients in submitting feedback to this consultation. Please reach out, if of interest.

The King & Spalding Global Hydrogen Industry Team is at the forefront of developments in the sector globally and is actively advising clients navigate these regulatory challenges on many of the first and largest low-carbon hydrogen and low-carbon fuels projects around the world.

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ⁱ *The Draft Low-Carbon Hydrogen DA and EC's consultation page; available [here](#).*

ⁱⁱ *Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen, amending Directive (EU) 2023/1791 and repealing Directive 2009/73/EC (recast); available [here](#).*

ⁱⁱⁱ *OGMP 2.0 – United Nations' Oil & Gas Methane Partnership 2.0 is “the only comprehensive, measurement-based reporting framework for the oil and gas industry that improves the accuracy and transparency of methane emissions reporting”; more information available [here](#).*

^{iv} *Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC; available [here](#).*

^v *Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation); available [here](#).*

^{vi} *Regulation (EU) 2024/1787 of the European Parliament and of the Council of 13 June 2024 on the reduction of methane emissions in the energy sector and amending Regulation (EU) 2019/942; available [here](#).*