

# Certification criteria for low-carbon hydrogen

The hydrogen segment in a climate-neutral energy and industrial system will be based on renewable hydrogen and its derivatives in the long term. Low-carbon hydrogen can also play a role in the ramp-up phase. The draft Delegated Regulation of the European Commission on the methodology for calculating the greenhouse gas savings of low-carbon hydrogen closes one of the last gaps in the creation of the central prerequisites for the hydrogen ramp-up in its entirety. The German National Hydrogen Council (NWR) emphatically welcomes this important step. The planned regulations will also enable the certification of hydrogen from production routes that do not meet the requirements of the Renewable Energy Directive (RED III) or the corresponding Delegated Regulations 2023/1184 and 2023/1185, but that can nevertheless make important contributions to reducing emissions and also enable business models in combination with the production of renewable hydrogen and its derivatives. On the one hand, this involves hydrogen produced from water electrolysis using electricity drawn from the grid, which is characterised by a low-carbon load. On the other hand, hydrogen produced from natural gas is relevant here, as the release of greenhouse gases into the atmosphere (leakages, transport, capture) for it is so low across all stages of the production process (from natural gas extraction to hydrogen production) that the corresponding threshold values are not exceeded or are undercut as far as possible.

However, the experience already gained with the Delegated Regulations on the definition of renewable hydrogen should also be taken into account when finalising the Delegated Regulation. It has been shown here that definitions that appear to make sense on an abstract level for a stabilised market can prevent projects or lead to significant cost increases in the ramp-up phase in practical application or in the real-world business models of hydrogen producers. Pragmatic and learning-orientated approaches along the entire value chain for low-carbon hydrogen are needed, especially for the first phase of the market ramp-up, but ultimately also with a view to adapting the existing regulations for renewable hydrogen as well. It should be ruled out that investments are further delayed or prevented by renewed and increased planning uncertainties.

The NWR sees an area of tension between very demanding certification criteria for renewable and low-carbon hydrogen and its derivatives and the uncertainties arising for the market if these regulations have to be adapted in the light of current practical experience. Avoiding uncertainty in the market and complying with the general requirements of RED III and the Gas Market Directive should be given high priority. However, it is also important to design pragmatic and internationally compatible certification systems based on sustainability and proof of origin in order to establish a liquid hydrogen market. Small-scale, overly complex and, above all, nationally orientated certification should be avoided. The European Union Database introduced at EU level should be the central instrument that views the pan-European transport system as a mass balancing system and thus enables trade between as many suppliers and consumers as possible.

The NWR sees a staggering of requirements for the various criteria and the corresponding proofs as a target-oriented approach, but above all on condition that the corresponding regulations are applied for the economic life of a project and thus create legal and planning certainty for project developers and investors.

### LOW-CARBON HYDROGEN AS AN ENABLER FOR HYDROGEN RAMP-UP

Some members of the NWR consider the specifications for low-carbon hydrogen discussed in the current draft to be partially unsuitable, impractical to implement and cost-driving. This would massively impede the market ramp-up for low-carbon hydrogen, although it is of great importance for the ramp-up of the hydrogen economy and the transformation of Europe as an industrial location towards climate neutrality, given the expected supply of renewable hydrogen and the limited subsidies.

As a central requirement of the Gas Market Directive, the guiding criterion for the certification of low-carbon hydrogen should be an initial reduction in greenhouse gas emissions of at least 70 per cent. Compliance with these savings should be kept as technology-neutral as possible by ensuring equal and fair competitive conditions for all market participants.

### SELECTING TARGETED APPROACHES FOR UPSTREAM CHAIN EMISSIONS

The NWR welcomes the stringent inclusion of upstream chain emissions, also and especially with regard to the release of methane emissions, which are particularly harmful to the climate, with regard to the production of low-carbon hydrogen primarily from natural gas. However, before the project-specific monitoring regulations of the EU Methane Regulation (yet to be created) come into play here, it should be prevented that natural gas with particularly high upstream chain emissions is used for the production of low-carbon hydrogen through the strategic use of standard (default) values on the one hand and, on the other hand, that unrealistic values for upstream chain emissions have to be used for the specific projects via flat-rate values (or surcharges). A fundamental requirement to collect project-specific data (also for upstream chain emissions beyond methane) or at least standard values differentiated by supply region (especially for methane, possibly also within the relevant countries) is a target-oriented and pragmatic approach here.

As provided for in the Renewable Energy Directive (RED III) for renewable energy sources, it must be possible to calculate upstream chain emissions consistently with project-specific values and, where applicable, with default values (see above) for all emission-relevant greenhouse gases and process steps that reflect the actual emissions. The fundamental use of project-specific data would promote the most efficient technologies or projects and provide incentives for further emission reductions.

And when it comes to upstream chain emissions for low-carbon hydrogen produced from natural gas in particular, the carbon capture rates of the reforming plants and the leakage emissions of methane and carbon should be given special consideration and verified during certification.

## APPROPRIATE APPROACHES FOR ASSESSING THE CARBON LOAD AND THE RENEWABLE SHARE OF GRID ELECTRICITY

Similarly, the electricity procurement criteria over the life cycle of low-carbon hydrogen have not yet been defined in a targeted manner. The carbon load or the shortfall of the corresponding threshold value should be determined on an hourly basis and hydrogen produced in an electrolysis plant over the respective annual period should be recognised as low-carbon, instead of using the annual average carbon load of the electricity supply.

Along with this, the recognition of hydrogen produced from grid electricity as renewable hydrogen should be based on the hourly share of renewables in the electricity mix of the respective year or the resulting annual utilisation of the electrolysis plants instead of on an annual average basis, as was previously planned.

In addition, opportunities for the use of low-carbon or non-RFNBO-compliant renewable electricity from power purchase agreements (PPAs) should be opened up or secured in the long term beyond 31 December 2027. To this end, it should be possible to conclude project-specific PPAs that have a demonstrably lower emissions intensity than the electricity mix relevant for the respective reference area (bidding zones) and ensure a 70 per cent reduction in greenhouse gas emissions, which can improve the greenhouse gas intensity of electricity procurement on a project-specific basis.

## CREATING INVESTMENT SECURITY

The situation resulting from some of the regulations proposed so far creates major uncertainties and would significantly jeopardise both domestic production and imports of low-carbon hydrogen, especially in the critical first years of the ramp-up.

Investment security and the financing capability of projects and business models are of paramount importance when designing the Delegated Regulation in general and the aspects mentioned above in particular. In addition to the predictability of requirements over time and transparent revision points, the validity of the respective regulations for investments over the economic life of the projects and the 'freezing' of requirements at meaningful points in time (approval, final investment decision, etc.), that is, broadly understood grandfathering regulations, are important enablers for the broadest possible and diverse project development (grandfathering).

The problematic experiences from the regulations for RFNBOs in particular show that careful preliminary analyses of the effects on the quantity and prices of certifiable hydrogen and its derivatives as well as a high auditing frequency in the first phase of the market ramp-up can be of great importance.

## GREEN HYDROGEN – UTILISING THE WINDOW OF OPPORTUNITY

The aim is to create fair competition with comparable conditions between low-carbon and renewable hydrogen in the long term, with carbon reduction targets taking centre stage.

The NWR supports the calls for the postponement of the regulatory requirements on additionality and temporal correlation in electricity procurement in the Delegated Regulation on renewable hydrogen (2023/1184), which were put forward by Federal Minister Habeck in a letter to Energy Commissioner Simson in September 2024. However, the NWR expressly points out that the corresponding adjustments must not lead to protracted renegotiations, which ultimately result in major planning uncertainties and delayed investments. However, this also applies if the extension of the transitional regulations is so significant that the projects can actually be realised in terms of the preparation and implementation periods.

When revising the Delegated Act on renewable hydrogen, it would be important for the process to be harmonised as far as possible with the Delegated Act on low-carbon hydrogen in order to ensure the necessary planning security for projects at the same time.

## ENSURING TARGETED REGULATIONS AND MAXIMUM CONSISTENCY

It is extremely important to ensure maximum consistency in both the legislative processes and the audit dates between the two sets of regulations both in the finalisation of the Delegated Regulation on low-carbon hydrogen and the adaptation of the Delegated Regulation on renewable hydrogen described above.

In conclusion, the German National Hydrogen Council emphasises the necessity, but also the potential of the certification regulations for both low-carbon and renewable hydrogen to underpin the rapid and cost-efficient hydrogen ramp-up with transparent, integrated, practice-oriented and internationally compatible criteria and methods and to implement them consistently and uniformly in the respective national legal systems.

It is also important to ensure that a uniform and harmonised European system of guarantees of origin is created across all sectors. Fragmentation, as is currently the case with biomethane, should be avoided; instead, the basis for liquid cross-border trading should be created and the documentation effort should be kept to a reasonable level. To this end, existing data points and a single national register with a connection and exchange of information to the European Union Database should be created.



## THE GERMAN NATIONAL HYDROGEN COUNCIL

On 10 June 2020, the German Federal Government adopted the National Hydrogen Strategy and appointed the German National Hydrogen Council. The Council consists of 26 high-ranking experts in the fields of economy, science and civil society. These experts are not part of public administration. The members of the National Hydrogen Council are experts in the fields of production, research and innovation, industrial decarbonisation, transportation and buildings/heating, infrastructure, international partnerships as well as climate and sustainability. The National Hydrogen Council is chaired by former Parliamentary State Secretary Katherina Reiche.

The task of the National Hydrogen Council is to advise and support the State Secretary's Committee for Hydrogen with proposals and recommendations for action in the implementation and further development of Germany's National Hydrogen Strategy.

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