

Green Ammonia Certification

Regulatory framework and recommendations for action

Green ammonia is considered a promising energy source for sectors that are difficult to electrify directly. It can make a significant contribution to reducing greenhouse gas emissions, particularly in shipping. In order to be recognized as a climate-friendly energy source and counted towards European and national targets, it must comply with European and national requirements on greenhouse gas emission reduction, sustainability of the energy inputs used, and verification along the entire supply chain.

How is green ammonia classified legally?

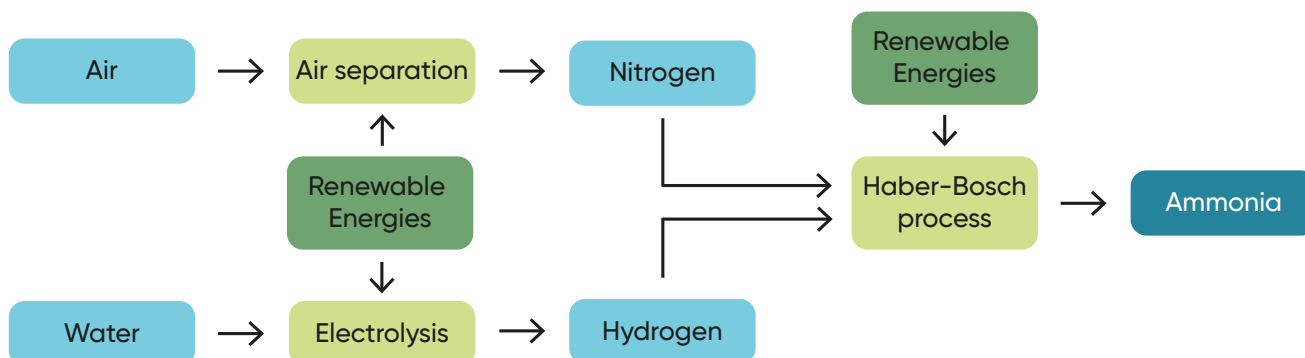
Legally, green ammonia is generally classified as a renewable fuel of non-biological origin (RFNBO). RFNBOs are electricity-based fuels whose energy content is derived entirely from renewable energy sources and which are produced without the use of biomass.

Ammonia falls within this category when it is produced from renewable hydrogen and nitrogen separated from the air. The hydrogen is generated in an upstream process through electrolysis using renewable electricity. In a subsequent synthesis process, the hydrogen is combined with nitrogen to produce green ammonia.

Classification as an RFNBO is only the first step – for green ammonia to count towards European and national targets, it must also comply with additional binding sustainability criteria.

Requirements for classification as an RFNBO

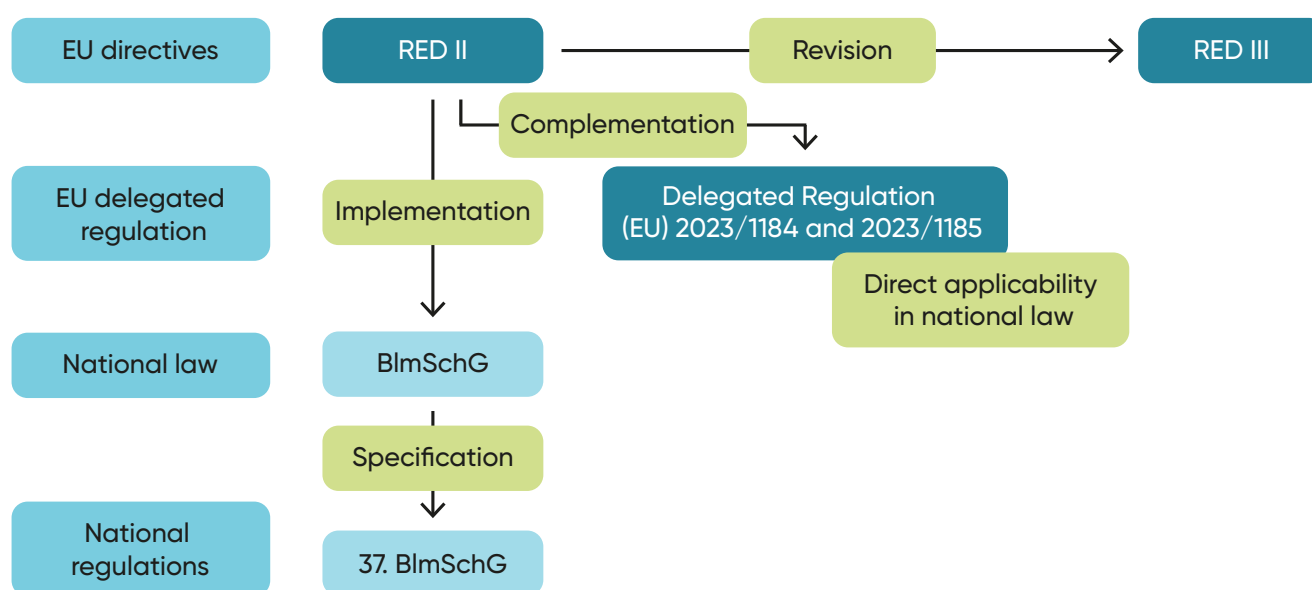
- electricity-based production
- energy content is derived entirely from renewable energy sources
- production without the use of biomass



European legal framework

The legal framework for the certification of green ammonia is established by the European Union's Renewable Energy Directive (RED). In order to implement the objectives of the European Green Deal, it requires Member States to significantly increase the share of renewable energy across the different energy sectors. The revised Directive ([RED III](#)), together with the provisions of RED II that remain in force, constitutes the central regulatory framework. It sets out the conditions under which RFNBOs such as green ammonia may be counted towards the different sectoral

targets, including requirements for greenhouse gas reduction, the origin of the electricity used, and certification. The Directive is complemented by delegated acts of the European Commission, which specify these requirements in technical and methodological terms. They contain requirements for the electricity used and a methodology for calculating greenhouse gas emissions.



Systematics of legal acts relating to RFNBO certification
Source: Own illustration

What requirements apply for green ammonia to be counted towards targets?

For green ammonia to be counted towards European targets as a RFNBO, two key requirements must be met: greenhouse gas

emissions savings and production using fully renewable electricity.

Greenhouse gas emissions savings

According to RED III, RFNBOs may only be counted towards European targets if they achieve greenhouse gas emissions savings of at least 70 % compared to the fossil fuel comparator. The methodology for calculating the greenhouse gas emissions and the fossil fuel comparator are laid down in [Commission Dele-](#)

[gated Regulation \(EU\) 2023/1185](#). The calculation covers almost the entire life cycle of the fuel, including the production of input materials (especially hydrogen and nitrogen), processing, transport and end-use.



Electricity considered to be fully renewable

In addition, RFNBOs are subject to detailed requirements regarding the origin of the electricity used for production. [Commission Delegated Regulation \(EU\) 2023/1184](#) specifies the conditions under which the electricity is considered to be fully renewable.

The regulation distinguishes between electricity supplied through a direct connection to a renewable energy plant and electricity sourced from the grid.

Direct connection (to a renewable energy (RE) plant)	Indirect connection (electricity from the power grid)			
Direct connection No use of the public power grid No grid connection or use of a smart meter	Electricity grid with high RE-share RFNBO plant is located in a bidding zone with an average RE-share > 90 %	Electricity grid with low CO₂-emissions Emissions from grid electricity < 18 g CO ₂ /MJ	RE excess electricity Power procurement prevents shutdown of RE-plant due to redispatch measures	Other grid situations Power Purchase Agreement for renewable energies
Additionality	The maximum full-load hours correspond to the RE-share in the electricity mix	Power Purchase Agreement, Temporal correlation, Geographical correlation	Evidence from the transmission system operator	Temporal correlation, Additionality, Geographical correlation

Certification schemes and proof of sustainability

For green ammonia to be counted towards European or national targets, compliance with the requirements on renewable electricity use and greenhouse gas emissions savings must be demonstrated. Such proof of sustainability is provided within certification schemes recognised by the European Commission. The schemes aim to verify and document compliance with sustainability requirements throughout the entire supply chain.

A central element of the certification framework is the use of a mass balance system. A mass balance system is a chain-of-cus-

tody model that ensures the quantitative and verifiable allocation of sustainability characteristics at all stages of production and supply, including where fuels are physically mixed or transported via pipelines. This approach is intended to prevent double counting and ensure the traceability of renewable attributes.

In addition, RED III provides for the establishment of a Union database by the European Commission, in which transactions and sustainability characteristics of RFNBO are to be centrally recorded.

How are the regulations implemented in Germany?

In Germany, the European legal requirements for the certification of RFNBOs are implemented through the Federal Immission Control Act (Bundes-Immissionsschutzgesetz, [BImSchG](#)) and the ordinances adopted under it, in particular the 37th Ordinance for the Implementation of the BImSchG ([37th BImSchV](#)). A central element of this framework is the national greenhouse gas reduction quota, which requires fuel suppliers to progressively reduce the lifecycle emissions of the fuels they place on the market. RFNBOs such as green ammonia may contribute to compliance with this obligation, provided that the EU requirements on electricity origin, greenhouse gas emission savings and certification are fulfilled.

The 37th BImSchV lays down specific requirements for RFNBOs and establishes the legal framework for the issuance of certificates and proof of sustainability under the greenhouse gas reduction quota in the transport sector. Producers and suppliers of RFNBOs must be certified in order to demonstrate com-

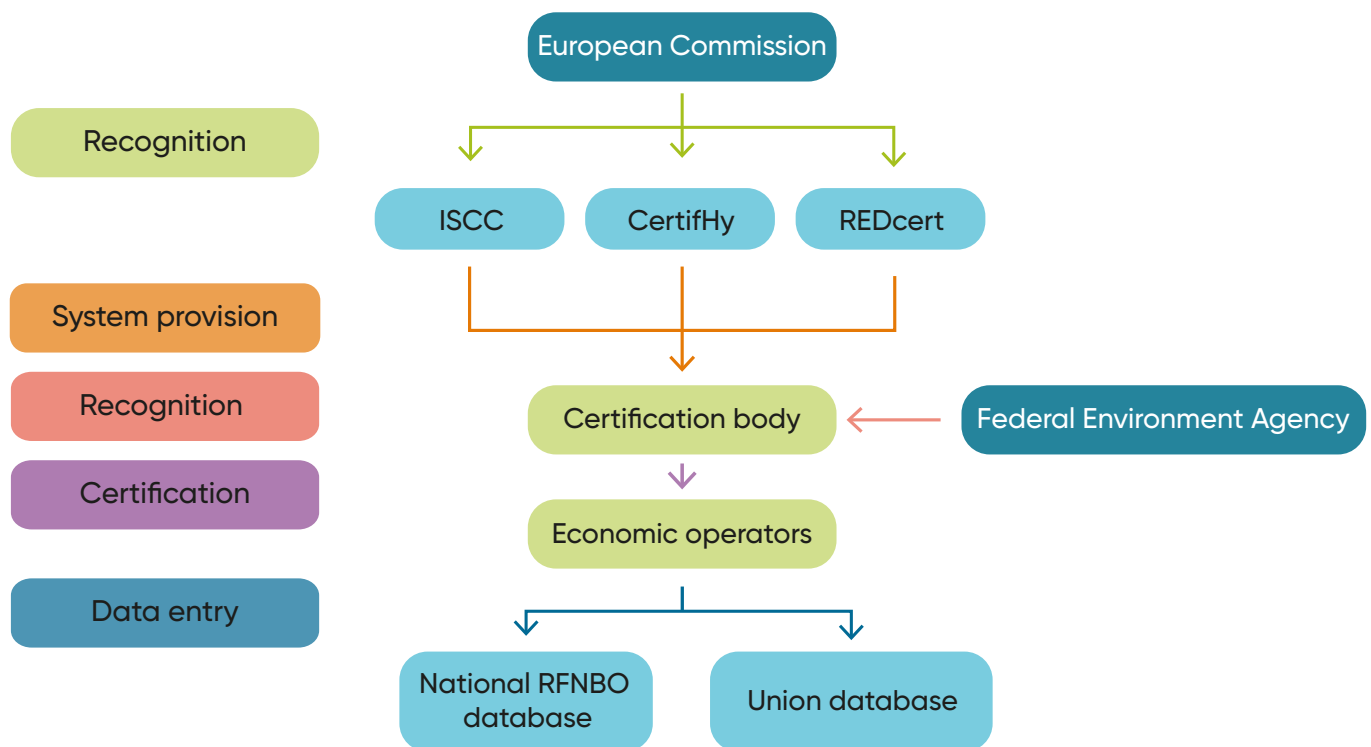
pliance with the sustainability criteria. The regulation distinguishes between:

- **Certificates**, which confirm the general eligibility of producers and suppliers to participate in the certification system by attesting their compliance with the requirements laid down in the 37th BImSchV; and
- **Proof of sustainability**, which is issued by a certified RFNBO producer and documents the compliance of individual RFNBO batches with the sustainability and greenhouse gas emissions savings criteria. This enables RFNBO volumes placed on the market to be credited towards the greenhouse gas reduction quota.

In the future, such proof of sustainability will be issued through a national RFNBO registry to be established and operated by the German Environment Agency (Umweltbundesamt).

How does RFNBO certification work?

At EU level, the European Commission recognises voluntary certification schemes. These schemes — such as ISCC, CertifHy or REDcert — specify how the legal requirements of the Renewable Energy Directive are to be implemented and verified in practice. The actual assessment of economic operators is carried out by certification bodies operating in accordance with the rules of the respective schemes. In Germany, certification bodies are recognised by the German Environment Agency (Umweltbundesamt). Where the verification process is successfully completed, certified producers may issue proof of sustainability for specific RFNBO quantities. In Germany, such proof is to be issued in the future through a national RFNBO registry. To ensure traceability of RFNBO and to prevent double counting, data on the respective fuels are also to be recorded in a central Union database.



Parties of RFNBO certification

Source: Own illustration based on TÜV NORD

Recommendations for action

Union level

Cross-sectoral clarification of Commission Delegated Regulation (EU) 2023/1185

Delegated Regulation (EU) 2023/1185 is, according to its wording, applicable only to RFNBOs used in the transport sector. With RED III, the scope of RFNBO was extended to all sectors. This creates legal uncertainty as to whether the calculation methodology set out in the Delegated Regulation, in particular

the fossil reference value of 94 g CO₂eq/MJ, may also be applied to other uses (e.g., industrial or heating sectors). To ensure coherence and legal certainty, the Delegated Regulation should be clarified or adapted for cross-sectoral application.

Full operationalisation of the Union database for RFNBO by the European Commission

Under RED III, the European Commission is required to establish a Union Database for RFNBO by 21 November 2024. The database has already been launched and is open for the registration of liquid renewable and recycled fuels. Integration of gaseous fuels, including RFNBO such as green ammonia, is under

development. Use of the database is not yet fully mandatory. As a result, there is currently no fully implemented, binding verification infrastructure for RFNBO. To enhance transparency and prevent misuse, the Union Database should be made fully operational and mandatory for RFNBO as soon as possible.

Further development of RFNBO sustainability criteria

Current certification requirements for RFNBOs focus on climate impact, in particular green-house gas emissions savings and the use of renewable electricity. Other sustainability aspects, such as social or ecological impacts, are not yet addressed in EU or national certification frameworks. Expanding the criteria, similar to the comprehensive sustainability standards for biofuels, is conceivable. This could help address potential negative side effects early and strengthen the long-term sustainability of green ammonia. At the same time, overly

broad criteria could complicate certification significantly and delay market ramp-up, particularly in the early phase. A gradual and evidence-based approach is therefore advisable. The European Commission could consider additional sustainability criteria as part of the planned review of Delegated Regulation (EU) 2023/1184 on 1 July 2028. This review could assess whether social or ecological issues have arisen in the production of RFNBO that would require adjustments to the existing certification framework.

National level

Establishment of a national legal framework for RFNBO certification and proof of sustainability beyond the transport sector

The national legal framework for RFNBO certification and proof of sustainability is currently limited to the transport sector. In particular, the 37th BImSchV links the issuance of certificates and proofs of sustainability to the national greenhouse gas reduction quota and therefore primarily covers RFNBO use

as transport fuel. Explicit rules for certification of RFNBOs in industrial applications do not yet exist. To implement RED III's cross-sectoral approach, the scope of the 37th BImSchV should be extended to cover other RFNBO applications, or a separate national legal framework should be established.

Prioritisation of RFNBO deployment in shipping and aviation

The future design of the national certification framework should reflect the climate-policy priority of deploying RFNBO in hard-to-decarbonise sectors. Synthetic fuels such as green ammonia are scarce and cost-intensive energy carriers. In contrast, large parts of road transport offer alternative decarbonisation options, in particular direct electrification.

For this reason, no additional incentives, such as multiple counting mechanisms, should be provided for RFNBO use in road transport. Implementation of RED III in Germany should ensure that mandatory RFNBO quotas are fully met through use in shipping and aviation.

Launch of a national RFNBO registry by the German Environment Agency (UBA)

In Germany, proof of sustainability is intended to be issued through an electronic database operated by the UBA. The planned national RFNBO registry has not yet been launched. In the interim, proof of sustainability is issued on paper. Until

the registry is fully operational, there is no central, digitalised tracking of RFNBO. To enhance transparency and prevent misuse, the national RFNBO registry should be launched as soon as possible and linked to the Union Database.

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Layout and graphics

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Förderhinweis

This factsheet was produced as part of the project funded by the Federal Ministry of Research, Technology and Space "CAMPFIRE – CF06.6: microstructured process-intensified Haber-Bosch reactor", funding code 03WIR2315E.

With funding from the:



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