

Implementation of RED III into national law (RFNBO target for industry)

EXECUTIVE SUMMARY

The EU's Renewable Energy Directive (RED III) came into force on 20 November 2023. It provides for detailed targets for the use of renewable fuels of non-biological origin (RFNBO), including green hydrogen and its derivatives. For the first time, an industry sub-target for hydrogen meeting RFNBO criteria has been set for industry. RFNBOs should account for at least 42 per cent of hydrogen used in the industrial sector by 2030 and 60 per cent by 2035.

The German National Hydrogen Council (NWR) has named specific recommendations for action for the implementation of RED III into national law in order to enable achievement of the planned RFNBO target. The targets are already very ambitious from the NWR's point of view. In order to avoid overburdening, responsibility for target achievement should be placed with the member states and not at the level of individual sectors or even companies. The NWR recommends creating a coherent funding framework for RFNBO applications and ensuring RFNBO availability and connection to the hydrogen infrastructure for industry in order to achieve the targets. In addition, the planned exemption rules for intermediate products and co-products should be invoked, and monitoring and reporting obligations for companies should be designed to minimise bureaucracy.

INITIAL SITUATION

The amendment to the EU's Renewable Energy Directive (RED III) came into force on 20 November 2023. The aim of the directive is to accelerate the energy transition in the EU and to incentivise the uptake of green hydrogen outside the energy sector. The ambition level for the use of renewable energy has been raised significantly. Renewable energy should account for at least 42.5 per cent in the EU's gross final energy consumption by 2030; the target is 45 per cent (Art. 3). In particular, detailed, sector-specific targets will be introduced for the use of renewable energy and renewable fuels of non-biological origin (RFNBO), including green hydrogen and its derivatives.

Article 22(a) of RED III sets an indicative target for industry in terms of increasing the use of renewable energy by at least 1.6 per cent per year as an average from 2021 to 2025 and from 2026 to 2030. As a regulatory anchor for the allocation of green hydrogen in industry, an industry sub-target for hydrogen meeting RFNBO criteria used for energy and non-energy purposes has also been defined for the first time. By 2030, the share of hydrogen used in the industrial sector is expected to be 42 per cent and by 2035, 60 per cent. Excluded from the amount for the target is hydrogen that is produced as a

co-product, is used as an intermediate product in fuel production or is used to decarbonise industrial residual gases. The EU member states must implement these requirements into national law within 18 months.

The national implementation of RED III will need to clarify how this target can be achieved. It must be ensured that the implementation of the target for industry does not interact with other regulations creating unintended false incentives that could contravene the actual objective of the regulation or even inhibit the hydrogen ramp-up in industry. The achievement level of the RFNBO targets is of the utmost importance. Further questions relate to RFNBO availability and the connection to the hydrogen infrastructure for industry, the design of exemptions and, in particular, the definition of co-products and intermediate products, monitoring and reporting obligations for industry and the role of low-carbon hydrogen, which is provided for as an achievement option in the form of blue, turquoise and orange hydrogen in the German National Hydrogen Strategy, but cannot be counted towards the target in RED III. Prompt clarification and implementation creates planning security and prevents investments in the transformation from being delayed or processes from being relocated to other competitive regions outside of Europe. Distortions of competition can also arise within the EU due to different national implementations.

ACHIEVABILITY OF THE SUB-TARGETS FOR INDUSTRY

As long as renewable hydrogen is scarce, setting utilisation targets is associated with the fundamental challenge that these must be ambitious but achievable. In its last statement on RED III in December 2021¹, the NWR spoke out in favour of a target of 30 per cent for RFNBO in industrial consumption in light of the fact that as the demand for hydrogen in the industrial sector increases, the cost of fulfilling the commitment increases, in addition to the cost of converting the processes. An overly ambitious target can therefore lead to a cap on industrial production in the event of a lack of availability or excessively high hydrogen prices and thus even slow down or prevent the transformation steps in industrial applications of hydrogen.

The largest industrial user of hydrogen currently (approx. 1.1 million metric tons/36 TWh per year) is the chemical industry; this forms the starting point for important chemical value chains. However, the demand for hydrogen in all energy-intensive industries will increase significantly in the course of the transformation. New fields of application will be added in the chemical industry and other sectors by 2035, in addition to the current material use primarily in the chemical industry (ammonia and methanol production, for example) or use as a by-product or co-product. In the steel industry in particular, significant quantities of climate-neutral hydrogen will already be required in the second half of this decade as part of the switch to the hydrogen-based direct reduction process. The demand in the steel industry – with a DRI capacity of 14 to 15 million metric tons – is estimated at up to 28 TWh for 2030.

¹ NWR position paper on the 'EU Commission's proposal to amend the Renewable Energy Directive (RED)' from 15 December 2021.

Hydrogen in industry (consumption in TWh/mil. t H₂ per year)

- ◆ Current demand for grey hydrogen in the chemical industry: approx. 36 TWh/1.1 mil. t H₂
- ◆ Forecast demand in industry: up to 70 TWh/2.1 mil. t H₂ (in 2030)
- ◆ Forecast demand in industry: up to 175 TWh/5.3 mil. t H₂ (in 2035)

Based on the NWR's estimate from February 2023, the hydrogen demand for industry will increase to up to 70 TWh (including refineries) in 2030.² With a total demand of 34 TWh and thus around 48 per cent of the total hydrogen used in industry, the first use of climate-neutral hydrogen will be spread across the steel industry, refineries and individual other process industries such as paper and glass due to the use of low-emission hydrogen in the chemical industry, which will not start until the 2030s – mainly for reasons of cost-effectiveness and the necessary technological development.

The target of 42 per cent of renewable fuels of non-biogenic origin (RFNBO) in the total hydrogen used in the industrial sector is therefore possible, but subject to the following restrictive conditions. Achieving this requires, on the one hand, the almost complete utilisation of the transformation potential of the industries using hydrogen by 2030 and a rapid ramp-up of the green hydrogen supply, which must also keep pace with the resulting demand. In particular, it would be necessary for up to 15 million metric tons of primary steel to be converted to hydrogen-based direct reduction by 2030 and for natural gas to be completely replaced by hydrogen. Even under these favourable conditions, however, it would only be possible to achieve the target if other forms of low-emission or climate-neutral hydrogen could be counted alongside the use of green hydrogen.³ Conversely, the realisation of the target is increasingly out of reach if blue hydrogen, which plays a central role in the ramp-up in industry, increases the amount for the target and thus raises its level of ambition. Against this backdrop (the inflation of the amount due to the lack of recognition of blue and other forms of low-emission hydrogen), we also recommend that the national implementation of the target for industry should utilise the options provided for excluding intermediate products and co-products as far as possible.

Estimates by the NWR show that the demand for hydrogen in industry (including refineries) will increase significantly between 2030 and 2035: from 70–75 TWh in 2030 to around 175 TWh. The RFNBO required to fulfil the target would increase or more than triple from around 30 TWh to around 100 TWh without invoking the planned exceptions (listed in detail below). Therefore, the challenge of achieving the target will become even greater by 2035.

IMPLEMENT THE RFNBO TARGET AT THE LEVEL OF THE MEMBER STATES

Similar to the resolutions of the European legislator, the NWR also strongly recommends that the responsibility for target achievement should be placed with the member states and not at the level of individual sectors or the companies.

² Updated estimates by the NWR for industrial applications indicate a demand of 75 TWh for 2030, which is based on higher demand in the glass and especially the paper industry.

³ Also see the dissenting opinion of Klima-Allianz Deutschland (Climate Alliance Germany) and Friends of the Earth Germany (Bund für Umwelt- und Naturschutz Deutschland, BUND) at the end of this document.

This is due to the fact that the companies themselves only have a very limited influence on the actual availability of hydrogen at their locations or even the expansion of infrastructure and renewable energies by 2030 or 2035. For example, current plans for the core network envisage that key sections of the network will be completed between 2030 and 2032. For this reason, it would not be appropriate to directly oblige companies to fulfil a target if they are ultimately unable to fulfil the RFNBO target due to external factors. In addition, companies are already subject to requirements for an increasing share of green hydrogen as part of the funding instruments already in place, such as the IPCEI-/CEEAG-funded projects and climate protection contracts, and further target-related regulations would therefore be associated with the risk of double regulation.

Above all, however, a target that obliges companies, sectors or the industry as a whole to use green hydrogen would make hydrogen applications even more expensive. This is all the more true the lower the availability and the greater the potential competition for utilisation. It is conceivable that a requirement regarding targets could prioritise or bring forward processes and technologies based on green hydrogen to meet the targets. However, it is probable that the investments will not be made if these are not cost-efficient or sufficient availability is not guaranteed. The consequences would then be a halt to investment, particularly in the raw materials sector, as well as the closure and relocation of hydrogen-intensive plants. Failure to invest in some sectors would then in turn increase the burden and costs of target achievement in other industries and have a correspondingly negative incentive effect.

An RFNBO target set at sector or company level would also not be expedient because it would make investment in low-emission hydrogen applications (especially blue and turquoise hydrogen) considerably more difficult. This would counteract the goal of updating the National Hydrogen Strategy (NWS) – to enable the use of low-carbon blue, turquoise and orange hydrogen, in addition to green hydrogen, as part of the market ramp-up in order to accelerate the hydrogen ramp-up. The possible applications of these low-carbon forms of hydrogen are already being called into question by the requirements of RED III. The application of an ambitious industry target for green hydrogen at company level would further penalise these forms of hydrogen. This could also exacerbate utilisation rivalries over scarce green hydrogen.

COHERENT FUNDING FRAMEWORK AS A PREREQUISITE FOR TARGET ACHIEVEMENT

In the view of the NWR, the regulatory objective pursued by the RFNBO target should be achieved through a coherent funding framework for the use of green hydrogen or RFNBOs in industry and through a pragmatic implementation at national level. On the one hand, these include the funding measures that have already been implemented or will be implemented in the near future, such as support within the framework of IPCEI projects, climate protection contracts and hydrogen volumes guaranteed by H2Global at competitive prices. Particularly in the case of climate protection contracts as a central instrument for achieving the RFNBO targets, care must be taken to ensure that they can also be used by industries with high potential for H₂ demand and high CO₂, in addition to small and medium-sized industrial companies. This also applies to projects that cannot be realised until the late 2020s or early 2030s.

The NWR recommends supplementing the existing funding instruments with demand-side support for hydrogen-based products in the near future. This includes the presentation of a concept for green lead markets, the introduction of labelling for climate-friendly raw materials and the orientation of public

procurement towards sustainable products. The NWR is also in favour of adequately addressing existing gaps in the funding system. This relates to the need to minimise default risks via state hedging mechanisms and thus enable first-time users to conclude long-term supply contracts.

ENSURE RFNBO AVAILABILITY AND INFRASTRUCTURE CONNECTION

The availability of green hydrogen is largely characterised by the European legal framework (delegated act on RED II – Art. 27 and German implementation in the 37th German Federal Emissions Control Ordinance), according to which comparatively restrictive criteria apply for the recognition of green hydrogen ('green electricity criteria') with requirements for additionality and geographical and temporal correlation, which therefore make it more difficult to achieve the target.

Meanwhile, low-carbon hydrogen cannot be counted towards the sub-targets. However, the use of blue hydrogen in industry plays an important role in meeting demand, especially in the ramp-up phase up to 2035. The NWR recommends that the next amendment to RED III should consider a temporary extension of the scope of the targets for the industrial sector to include other low-emission energy sources (which are also demonstrably low-emission when the upstream chains are taken into account) or a reformulation of the targets.⁴ Otherwise, there is a risk of missing targets, which could undermine the credibility of the planned targets as a whole.

The connection to the necessary infrastructure is of essential importance, in addition to the availability of hydrogen and its derivatives. The hydrogen core network, which is to cover a large proportion of the locations and hydrogen demand in 2032, should be mentioned here in particular. For a cost-efficient connection to the core network, priority should be given to existing gas pipelines in both the transmission and distribution networks and their conversion to hydrogen. Other distribution options for hydrogen or hydrogen derivatives include transport by rail, waterways or corresponding product pipelines. To summarise, it must be ensured that all necessary infrastructures and distribution options can meet the resulting demand.

CLEARLY DEFINE INTERMEDIATE PRODUCTS AND CO-PRODUCTS

In order to fully utilise the exemption rules of the targets in Article 22(a) of the RED III, the NWR, in consultation with the industry, recommends clearly defining the concepts of co-products and intermediate products and recording relevant processes in which hydrogen is used as a co-product or intermediate product.

The legal definition of the term 'co-product' should be based on existing regulations, such as Section 4 of the German Circular Economy Act (Kreislaufwirtschaftsgesetz – KrWG), which is based on Article 5 of the EU's Waste Framework Directive (Directive 2008/98/EC). Hydrogen that fulfils these criteria should be exempt from the targets. A clear interpretation is crucial for crediting in the affected sectors and the feasibility of the sub-targets for the industrial sector. In particular, the special features of the respective production processes of the industries concerned must be taken into account, such as composite production, in which it is difficult to substitute hydrogen as a co-product.

⁴ See footnote 3.

For example, a significant proportion of the hydrogen currently used in the chemical industry is a by-product or co-product that cannot be substituted by RFNBOs without significant process changes. This includes hydrogen, for example, which is produced in steam crackers, in the production of synthesis gases or in chloralkali electrolysis. There are further applications in the petrochemical and speciality chemicals industries. The definition of by-products under RED III is therefore critical to the success of the chemical industry.

REDUCE THE BUREAUCRACY INVOLVED IN MONITORING

In the view of the NWR, the monitoring system should guarantee the core concerns (additionality, etc.) as part of a member state implementation of the targets and at the same time be designed to be practical and minimise bureaucracy. Possible reporting obligations for companies should be minimised, as the bureaucratic burden of transformation is already very high. A high level of additional administrative work for affected companies, which runs counter to the planned general reduction in bureaucracy for industry, must be avoided. A verification system should therefore be introduced with as few monitoring and reporting obligations as possible with a view to the proof of utilisation of funds by customers. The NWR recommends that the accounting period be as long as possible with regard to the mass balancing system to be introduced in accordance with Art. 30(1) of RED III, in order to be able to absorb possible supply bottlenecks at the beginning of the ramp-up. Sensitive information that allows conclusions to be drawn about individual production costs and quantities should be exempt from any reporting obligations as business secrets and should not be published.



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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APPENDIX

DISSENTING OPINION OF DR CHRISTIANE AVERBECK (KLIMA-ALLIANZ DEUTSCHLAND) AND VERENA GRAICHEN (BUND FÜR UMWELT UND NATURSCHUTZ DEUTSCHLAND, BUND)

The EU's climate architecture is based on a proven triad of targets: the greenhouse gas reduction target, the target for the expansion of renewable energy and the energy efficiency target. The directive on the promotion of the use of energy from renewable sources, or RED (Directive (EU) 2018/2001, as amended on 18 October 2023) not only aims to reduce emissions, but also to reduce dependence on imported fossil fuels and promote fair and affordable prices for EU citizens and companies in all sectors of the economy. Against the backdrop of the Russian war of aggression against Ukraine, the target for the expansion of renewable energies was raised compared to the Commission's proposal in order to make the EU independent of fossil fuels from Russia well before 2030 as part of the REPowerEU plan.

Blue hydrogen is produced using fossil natural gas, which is why it is rightly not included in the RED and should not be included. The directive covers all sectors and is intended to promote both the expansion of renewable energy production and its utilisation (electrification). The target for renewable hydrogen in industry is only one part of the directive and should therefore not lead to a softening of the policy instrument's clear focus on renewable energies. If the target for the industrial sector for renewable hydrogen is not considered achievable in the current definition, the definition of the target should be adjusted instead of just adding energy sources based on fossil fuels, in addition to intensifying support for the ramp-up of green hydrogen.