

Transposition of RED II into national law (amending BImSchG/BImSchV)

INTRODUCTION

The rapid entry into a climate-neutral hydrogen economy, which is necessary to meet the climate protection targets, requires a rapid ramp-up of electrolyser production in order to achieve the necessary economies of scale and thus reduce costs further. An important building block in this process is the ramp-up of demand in a consumption sector in which there is a sufficiently high willingness to pay in order to finance this type of learning curve. This consumption sector should also have to meet demanding climate targets, should not be in international competition (if possible) and should be able to rely on existing infrastructures for using hydrogen and hydrogen-based fuels to make this introduction a fast one. The German road transport sector ticks all these boxes, meaning it is suitable for a timely, early market ramp-up of hydrogen in Germany. In addition, in order to prepare the developments needed to use hydrogen in other applications such as in the industrial and heating sectors, these must also be supplied with climate-friendly hydrogen at an early stage.

The transposition of RED II (Renewable Energy Directive) into national law is one of the few instruments to be implemented in the current legislative term that is designed to set the course for greater climate protection in the short term and to boost demand for climate-neutral electrolysis hydrogen in Germany. The necessary law must provide investment and planning security within the possible framework: the necessary investments have long lead times (at least three to four years, depending on the complexity of the planning procedures) and must be planned early if they are to contribute to achieving the climate targets quickly enough. For this reason, there must be particular focus on defining a roadmap that spans to at least 2030 to achieve greenhouse gas reduction targets as quickly as possible. This roadmap will achieve these targets by introducing fuel cell and battery-electric drive concepts, as well as by using hydrogen-based renewable fuels in transport. The current draft bill falls short of the possibilities that current technological developments allow, especially in terms of hydrogen production and use, and it does not meet the National Hydrogen Strategy's requirement for ambitious implementation. Seeing as the planning horizon only extends to 2026, the draft prevents strategic decisions and investments being made in innovative technologies such as electrolysis, in particular. Follow-up action would have to be taken by the middle of the decade at the latest, as announced in the draft bill and necessitated by the forthcoming revision of RED. However, critical investments must be made in climate protection during these five years.

INITIAL SITUATION

The European Union has prescribed an increase in the share of renewable energies in final energy consumption in the form of Directive 2018/2001 (RED II) in order to achieve the EU 2030 climate protection targets. Section 25 of the Directive sets out a minimum quota of 14 per cent of renewable energy for road and rail transport, which is to be achieved by 2030 through an obligation on fuel distributors for each EU Member State. Some energy sources can be credited multiple times and a minimum quota of advanced biofuels is prescribed for this. This will be implemented through national laws and ordinances that must be adopted by June 2021 at the latest.

In Germany, as with the previous directive (RED I), the requirements of RED II were implemented by 2009 via amendments to the German Federal Emissions Control Act (Bundes-Immissionsschutzgesetz, BImSchG) and the related ordinance (the German Federal Emissions Control Ordinance (Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes, BImSchV)). As part of this, the fuel distributors themselves do not have to fulfil a quantity quota for renewable energies, but they do have to fulfil a greenhouse gas reduction quota. The current draft bill retains the current reduction quota of 6 per cent up to 2025 and 7.25 per cent from 2026. At the same time, the amount of conventional biofuels that may be credited will be reduced from 6.5 per cent to 2.7 per cent in 2026. Higher targets for 2030 have not been set yet. Being able to credit advanced biofuels (twice, limited to 1.75 per cent) and the use of renewable electricity in road transport (four times) multiple times is intended to create special incentives to meet the greenhouse gas reduction quota with the desired energy sources.

In this manner, the implementation draft ensures formal target compliance with RED II, but results in the physical share of renewable energies in the transport sector being significantly below 14 per cent. The draft bill also provides for a mandatory quantity quota for electricity-based fuels in aviation. This will increase from an energy share of 0.5 per cent in 2026 to 2 per cent in 2030.

Hydrogen that is produced in a climate-friendly way is a building block for achieving the German and European climate protection goals. Both RED II and the draft German Federal Emissions Control Act/German Federal Emissions Control Ordinance include what are referred to as renewable fuels of non-biological origin, that is, climate-friendly electrolytic hydrogen or climate-friendly electricity-based fuels, as options for meeting quotas.

However, there are no further provisions in European and German law. According to RED II, the EU Commission must develop a method for this by December 2021 at the latest. The draft bill of the German Federal Emissions Control Act first refers to an amendment of the 37th German Federal Emissions Control Ordinance, which is yet to be drawn up, in which the implementation provisions for renewable fuels of non-biological origin drawn up by the EU Commission are incorporated into German law. The German government is recommended to submit correspondingly ambitious proposals for the design of the delegated acts of the EU-COM within the framework of the current Council Presidency. Exemptions should be provided for in the 37th German Federal Emissions Control Ordinance in the meantime so as to avoid a delay until the legislation is implemented.

Germany is obliged to achieve much higher greenhouse gas reductions compared to the EU average, based on the requirements of the EU Effort Sharing Regulation and its own national climate protection targets. Furthermore, RED II still does not take into account the climate protection targets for 2030, which are likely to be tightened by the 'Green Deal'.

RECOMMENDATIONS OF THE GERMAN NATIONAL HYDROGEN COUNCIL

The small quota increase in road transport proposed in the current draft bill, combined with credit certain energy sources multiple times, is expected to result in the GHG target being met without any use of hydrogen or hydrogen-based energy sources in transport, with the exception of aviation. Therefore the German National Hydrogen Council advocates that the greenhouse gas reduction quota for the energy sources that can be credited multiple times recommended by the National Hydrogen Council should be raised to a range of 7.3 per cent to 9.3 per cent¹ for 2026 due to the German climate protection targets, which will be further tightened as part of the planned European target increase, and the potential of a market ramp-up for electrolysers, climate-friendly hydrogen and electromobility. The draft bill for the amendments to the German Federal Emissions Control Act and German Federal Emissions Control Ordinance must thus also be tightened.²

Hydrogen that is produced in a climate-friendly way can present a significant contribution to achieving the target. In addition to directly used renewable electricity, hydrogen will become the most important energy source in the medium term, especially in road-based HGV transport, aviation, shipping and rail transport. Electrified drives will be the dominant solution for vehicles. Some manufacturers have announced or even already launched fuel cell vehicles for longer ranges. The use of hydrogen or hydrogen-based fuels is an important solution wherever many people or heavy goods are transported over long distances. Several commercial vehicle manufacturers have therefore announced series-production vehicles with fuel cells, especially for long-haul HGVs, in the next few years.

The current CO₂ fleet limits, especially for heavy-duty commercial vehicles, require large numbers of fuel-cell or battery-electric vehicles to be used as early as the second half of this decade. The planned tightening of targets through the Green Deal will increase the required number even further. This means that an electrolysis capacity of approximately 2 GW³ will be necessary by 2030 for HGV traffic alone, taking the quantity structure used as a basis. In its work, the National Hydrogen Council will deal more intensively with the possible or necessary production quantities of climate-neutral hydrogen.

In this context, the inclusion of additional electricity generation from renewable sources outside Germany's borders can and must play a role. In addition to being used directly vehicles, hydrogen can also be used indirectly in refinery processes for conventional fuels, second-generation biofuels or as a raw material for electricity-based liquid fuels.

It should be noted that the EU's even more ambitious climate protection targets also require solutions for the large existing fleet, as renewing the fleet is too slow, and avoiding traffic and shifting modes of transport to bus, rail and bicycle is not being advanced far enough. This applies in particular to road transport, which accounts for over 97 per cent of greenhouse gas emissions in the transport sector.

In 2030, 75 per cent of all existing vehicles will probably still be equipped with an internal combustion engine. Electricity-based fuels could also be used for all applications that are difficult to electrify, where neither vehicles nor infrastructure for direct hydrogen use are available, or where avoiding traffic and

¹ The range specified is the result of different opinions within the National Hydrogen Council regarding the availability of advanced biofuels from sustainable production for crediting towards the greenhouse gas reduction quota.

² The National Hydrogen Council would recommend a target GHG reduction quote of 8.5 per cent to 10.5 per cent based on the provision to credit some energy sources multiple times set out in the draft bill.

³ The specified electrolysis capacity of 2 GW refers to an annual number of operating hours of approximately 7,000 h with a location in Germany.

shifting modes of transport are not possible. It is important here that the standards for hydrogen use are established in Germany and Europe. Green hydrogen and electricity-based fuels also enable the global potential of renewable energies to be utilised in the future. We can only achieve the climate targets with imports that do not run counter to development and climate protection in the producing countries and by using domestic potentials of renewable energies. These types of fuels are also necessary for shipping, as the direct use of hydrogen (or even the direct use of electricity) will not be possible for the foreseeable future, at least for ocean-going shipping.

In aviation, existing aircraft could increasingly use second-generation bio-based aviation fuels in the short term and electricity-based synthetic kerosene in the long term. We welcome the fact that the current draft provides for the use of up to 1 GW of electrolyser capacity for aviation. In addition, an aircraft supplier recently published significant development work in the field of hydrogen use in aircraft, which will hopefully be ready for series use from 2035.

The provision to credit some energy sources multiple times set out in the draft bill provides attractive, targeted incentives for options to fulfil the greenhouse gas reduction quota. To ensure technology neutrality between the options of renewable fuels of non-biological origin (including the hydrogen in refineries), electricity in road vehicles and advanced biofuels (for the quantities above the minimum quota), the National Hydrogen Council recommends that the German government credits the energy quantities of these energy sources in the greenhouse gas reduction quota twice throughout. So as not to limit the steering effect of the multiple crediting, the GHG quota for 2026 should instead be increased to the values mentioned above and an indicative target of 23.5 per cent⁴ should be set for 2030 based on the quantity structure used, which will be reviewed no later than 2024.

There are different views on the introduction of a sub-quota within the National Hydrogen Council. A group of members recommends a universal energy sub-quota of at least 7.6 per cent for hydrogen and synthetic fuels in 2030. A minimum energy quota of 1 per cent for hydrogen and hydrogen-based fuels should have been achieved by 2026. An ambitious market ramp-up of hydrogen technologies is referred to as a 'no-regret measure'. We will need these products in large quantities in the chemical industry, as energy storage, and in aviation and shipping. Should synthetic fuels not enter the market quickly enough, the quota would nevertheless remain unchanged and would have to be met increasingly by hydrogen.

According to the other view, in view of the high level of ambition, the asymmetrical crediting of certain energy sources or areas of application through different crediting factors (which the Council has recommended harmonising) or additional minimum sub-quotas would be neither necessary nor sensible.

In our view, these ambitious targets urgently require regulatory measures to establish national hydrogen production in Germany within a few years. Implementing a competitive domestic hydrogen economy is vital, as international hydrogen transport chains by ship or pipeline have yet to be established.

⁴ The indicative target for 2030 recommended by the National Hydrogen Council would be 25.5 per cent based on the provision to credit some energy sources multiple times set out in the draft bill.

ANNEX

The National Hydrogen Council bases the derivation of the proposed greenhouse gas reduction quotas on the following key data:

	2026	2030
Battery-electric cars (incl. PHEV) – M1	2.8 million vehicles	10 million vehicles
Electric HGVs (N2, N3) and buses (M2, M3)	27,000 vehicles	92,000 vehicles
Electric light commercial vehicles (N1)	150,000 vehicles	350,000 vehicles
Hydrogen cars – M1	20,000 vehicles	250,000 vehicles
Hydrogen HGVs (N2, N3) and buses (M2, M3)	2,500 vehicles	34,000 vehicles
Hydrogen light commercial vehicles (N1)	5,000 vehicles	50,000 vehicles
Refinery operation	1 TWh H ₂	3 TWh H ₂
Advanced biofuels⁵	1 TWh to 10 TWh	Up to 16 TWh
Conventional biofuels	15 TWh	12 TWh
Residue-based fuels	7 TWh	9 TWh
E-fuels (excluding aviation fuels)	Up to 1.5 TWh	Up to 5 TWh

⁵ There are different opinions regarding the availability of advanced biofuels in the transport sector within the National Hydrogen Council.

If you are interested in finding out more or have any questions, please contact:

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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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