Energie. Wasser. Leben.

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Position paper on the criteria for “renewable hydrogen” in the scope of the RED II (revision)

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The German Association of Energy and Water Industries (BDEW), Berlin, and its *Land* organisations represent over 1,900 companies. Its members range from local and municipal through regional and up to national and international businesses. It represents around 90 percent of electricity production, over 60 percent of local and district heating supply, 90 percent of natural gas, over 90 percent of the energy networks as well as 80 percent of drinking water extraction and around a third of wastewater disposal in Germany.

1. Introduction

BDEW supports the targets set at European and national levels for achieving climate neutrality. These targets can only be achieved if available decarbonisation options are widely used. **A key requirement for this and for the Energiewende as a whole is an ambitious and accelerated expansion of renewable energies.** Electricity generated from renewable energy sources is the basis for the production of renewable hydrogen using electrolysis of water. Renewable hydrogen, whether used directly or in the form of derived products, is needed across all sectors if CO_2 emissions are to be effectively reduced.

Hydrogen can be distributed and stored using the very well-developed and highly ramified gas infrastructure. Moreover, it can make a contribution to balancing supply and demand of renewable energies. In this context, hydrogen can also be used for energy storage over longer periods. As such, hydrogen is a key component of sector coupling. Its huge potential must now be harnessed for the benefit of the climate and the economy.

However, there is a fundamental conflict: On the one hand, politicians are demanding that the production of renewable hydrogen of non-biological origin be produced only using electricity from additional renewable energy installations. On the other hand, it is desirable, in regard to achieving stated climate goals, to define framework conditions, including technological and regulatory aspects, which do not hinder but allow the hydrogen sector in Germany and Europe to grow and develop as broadly as possible. Otherwise, the desired economies of scale will not be reached swiftly and efficiently.

Energy companies in Germany have, for many years, been actively involved in numerous pilot projects[1] which have been examining the technical potential of hydrogen production from renewables and demonstrating the existing potential in this area. Now, the intention is for production to be scaled-up. To this end, for example, "Living Labs for the Energiewende" and IPCEI[2]-projects have been announced. Many of these projects are at an advanced planning stage or are currently being implemented. Planning certainty and reliable investment conditions for business decisions as well as speedy permitting procedures are essential to avoid delaying the ramp-up of a hydrogen industry. This is important not only in terms of energy policy but also in terms of economic and industrial policy as – by taking advantage of economies of scale and learning curves – a future-oriented sector could be created in which Germany/Europe would have a pioneer role.

To create planning certainty and reliable investment conditions for the business models of market actors and to establish a cross-sectoral hydrogen industry, **uniform and proportionate criteria for the use of renewable electricity for the production of "renewable hydrogen"** must be defined so that a liquid and scalable market is, under ongoing monitoring, able to develop. In order for such a hydrogen market to emerge, hydrogen producers and suppliers as well as hydrogen users/customers have to be able to utilise the entire field of application and have flexible access to the storage, transport and

1 See BDEW hydrogen campaign: https://www.bdew.de/energie/wasserstoff

2 Important Projects of Common European Interest – IPCEI

distribution infrastructure. This would also allow technological innovation to take place – in the hydrogen industry and beyond.

2. Background

The European Commission is currently preparing a delegated act setting out the following criteria for counting electricity-based fuels towards the renewable energy targets in the transportation sector, as already laid down in Article 27(3) and Recital 90 of the Renewable Energy Directive (RED II):

- Electricity obtained from renewable energy sources,
- Element of additionality,
- Temporal correlation,
- Geographical correlation,

These criteria are intended to ensure that the deployment of fuels of non-biological origin actually contributes to lowering greenhouse gas emissions and that the increase in demand for electricity from renewable energy sources is met with additional renewable energy generation capacity. Essentially, the aim is to avoid an indirect increase in utilisation of fossil fuel plants.

The RED II draws a further distinction between the criteria for electricity obtained directly from installations and the criteria for electricity obtained from the grid. Where electricity is obtained directly, the core issue is the temporal proximity between the renewable energy installation and the electrolyser coming into operation. If electricity that has been taken from the grid, the central question is whether the electricity comes solely from explicitly contracted, new installations. It is therefore unclear as to whether guarantees of origin (GO) suffice as a means of proof. How these criteria are structured in detail will be one of the decisive factors regarding the profitability of the generation of renewable hydrogen as well as the quantity available.

As part of the "fit for 55" package and the revision of the RED II, the European Commission also intends to extend to other sectors the criteria for whether renewable hydrogen is eligible for being counted towards renewables targets to other sectors. The revision of the RED II and the associated delegated act will therefore be of key importance for the ongoing development of the entire hydrogen market.

They are significant at a national level in a number of aspects, one example being the reference to the additionality criterion. The legislature decided, in the German Renewable Energies Ordinance, to limit the EEG-levy (EEG = German Renewable Energy Sources Act) on renewable electricity used to produce renewable hydrogen, where the electricity in question does not come from installations receiving support under EEG, i.e. to favour electricity that is generated additionally and outside of the EEG regime. However, the German Federal Government has also already announced that the requirements on renewable hydrogen, in the scope of the statutory exemption from payment of the EEG-levy, will be revised in line with the requirements set out in the expected delegated act from the European Commission.

3. BDEW positions and proposals

A central requirement for the production of renewable hydrogen is the continued expansion of renewable energies. Constraints on the growth of renewables are automatically also constraints on unlocking the potential of renewable hydrogen.

Excessively narrow provisions on counting renewable hydrogen under the RED II would carry the risk of impeding the necessary establishment of the hydrogen industry before it can even gain traction. It is important that renewable hydrogen is not a rare good which is only used in a small number of isolated areas. This is because the investment decisions in the sectors in which the hydrogen is to be used must, in light of the decarbonisation agenda, be made as soon as possible and require a sufficient degree of planning certainty. BDEW is therefore against a too-rigid interpretation of the requirements set out in the RED II and recommends a targeted application of the relevant criteria, also in light of the possible extension of the criteria to other sectors.

Moreover, a technology-neutral deployment of renewable hydrogen across all sectors must be enabled. To this end, a cross-sectoral definition of renewable hydrogen is key to allowing uniform price signals to emerge and to avoiding a fragmentation of the hydrogen market. A uniform definition is an essential requirement for the business models of the market actors and for the long-term prospects of the projects. In addition, the definition will also be a deciding factor in the potential volumes of renewable hydrogen which can actually be unlocked in the long term and in the marketing of that hydrogen. As such, it essentially determines the success and speed of a real-world development of the hydrogen industry.

Considering the potential for developing a hydrogen market and the increasingly dominant role of renewables in the energy supply system, BDEW would like to address the following, specific requirements.

On the criterion: "electricity obtained from renewable energy sources"

GOs as defined in Article 19 of the RED II demonstrate that the electricity has been produced in a renewable energy installation. The cancellation of the GO by the operator of an electrolyser ensures that the "green" property is only claimed once and that double-selling is prevented.

- The potential of German and European generation of renewable hydrogen must be utilised to a greater extent if the ambitious CO_2 reduction targets are to be achieved. Renewable hydrogen needs electricity generated from renewable sources. We therefore need to considerably accelerate the expansion of electricity generation from renewable energy and adjust the expansion plans to reflect the expected increased electricity consumption. Every additional obstacle to the expansion of renewable electricity generation is also an obstacle, in particular, to the establishment of a market for climate neutral gases in Germany and Europe. The infrastructure planning for the electricity, hydrogen and gas energy grids needs to be more integrated in future to allow efficiency gains to be harnessed. More than anything else, the hydrogen grid should be looked at on a European scale.
- Where electricity is obtained from the grid, it should be possible for GOs to be used as proof of the exclusive use of renewable electricity for the production of renewable hydrogen. In this context, GOs ensure that hydrogen production does not cause any additional greenhouse gas emissions – a

key goal of the European Commission. The GO system is a proven instrument, established across Europe, which enables trade to take place separately from the physical electricity supply. GOs demonstrate how and where electricity from renewable energies was produced. At the same time, they ensure that this quality can only be marketed once. A superordinate, EU-wide register of quantities also provides – unlike a national register – additional certainty, in particular by ensuring cross-border applicability.

On the criterion: "element of additionality"

At a fundamental level, we need market-based incentives for the use of both new and existing renewable energy generation capacity across all usage sectors on a level playing field. Any additional demand for electricity will trigger a price effect which will in turn lead to additional renewable energy supply being created. Therefore, any additional production of renewable hydrogen and the associated increased demand will also trigger an increased supply of electricity generated from renewables. A strict interpretation of "additionality" as meaning only new installations is therefore not necessary – proof by way of GOs will suffice. Moreover, an onshore wind farm takes on average 4-5 years to build and an offshore wind farm takes 7-10 years. With the criterion of additionality being limited to new installations, the earliest an electrolyser could start to operate would be the middle or end of this decade. In addition, the criterion of "additionality" can be directly reflected in the national expansion pathway for renewable energies. The decisive factor in this respect is the improvement of the approval and land-use planning systems.

- Numerous current business models for electrolysis projects are based on the use of existing renewable energy installations. It is hard objectively to justify renewable electricity only being considered "green", in relation to the production of hydrogen, if the installation concerned is a new installation. A limitation solely to new installations in this way considerably reduces the renewable electricity potential available for hydrogen production and thus the availability of renewable hydrogen. Moreover, the production costs for green hydrogen using existing installations could be considerably lower than from new renewable energy installations, depending on the market situation. Therefore, it is important that all renewable energy installations and/or all electricity quantities generated from these installations which do not claim any financial aid, are afforded the "green" property, including:
    - Renewable energy installations for which financial supports have ended, irrespective of how long the financial support was received
    - Renewable energy installations that participated in renewable energy tendering procedures with surcharges of less than or equal to "zero"
    - Renewable energy installations which choose to permanently or temporarily waive any financial support for the respective supply of electricity.

    The latter also specifically covers installations which supply electricity to an electrolyser prior to feeding-in power to the grid, for example in times of production peaks ("excess electricity") and thus do not receive any financial support for the quantity of electricity supplied as it is not feed into the grid, even if the renewable energy installation generally has a right to receive financial support. This is because the electricity used prior to feed-in to the grid is explicitly not subsidised. As such, the electricity from that type of installation meets the criterion of

additionality as it is generated outside of the existing support regime and is not subsidised under the EEG.

- BDEW therefore believes that requiring a temporal proximity between the time the renewable energy installations and the electrolyser units begin operating to be counterproductive. This would not only exclude the existing installations described above but would also – given the (current) challenges of obtaining permits and acceptance for constructing renewable energy installations – jeopardise the inclusion of new installations.
- As renewables are increasingly playing the dominant role across all sectors, the discussion around the element of "additionality" is becoming less and less relevant. The expiry of possible "additionality" provisions should therefore be incorporated in the legislation to take place immediately after the market has become established.

On the criterion: "temporal correlation"

Electrolysis projects can make a key contribution to improving flexibility in the electricity system and to integrating renewables into the energy system. The main purpose is still the production of hydrogen in order to contribute, through sector coupling, to the decarbonisation of all sectors. BDEW therefore believes that, as a rule, electrolysis projects must not create any new network congestion or worsen existing congestion. In the course of the development of a hydrogen market, the system benefits must be taken into account in terms of flexibility and location. The expected decrease in costs for electrolysers over time can, in the medium to long term, help ensure that electrolysers can be profitably operated even at much lower full-load hours and using an approach which is much more oriented towards providing relief to the network. Moreover, the potential of electrolysis installations for providing ancillary services can be tapped.

- In order to increase the capacity utilisation of the electrolysers and the production of renewable hydrogen using the available capacity while reducing the costs of hydrogen production, a less rigid temporal correlation between the generation of electricity from renewable energies and its use in the electrolyser is necessary, with a balancing period considerably longer than a quarter of an hour. The balancing of the renewable energy fed-in with the renewable energy consumed will still ensure that this does not lead to a systematic increase in greenhouse gas emissions as a whole.

On the criterion: "geographical correlation"

Market-based incentives are also critical for the selection of locations for electrolysers. In this context, electrolysis installations should be viewed as a part of a more integrated grid planning, for example in the scope of grid development plans, in order to reduce the need for additional grid expansion or network congestion risks. BDEW takes the fundamental view that, as far as choice of location is concerned, the same connection conditions should apply for electrolysers as for other electricity consumption sites (e.g. in industry).

Other proposals:

- In addition to the definition of green electricity criteria for producing renewable hydrogen and the use of GOs for renewable electricity, a uniform guarantee-of-origin system, harmonised at

European level, for all climate neutral gases (including renewable hydrogen) for the purpose of maintaining liquidity in cross-border trade (including imports from third countries) needs to be established for the marketing of renewable hydrogen – as well as in support of the goals set out in the RED II – (for additional detail on this point, see BDEW position paper[3]).

- Electrolysers currently being planned or going through a permitting procedure need the delegated act under Article 27(3) of the RED II to be passed as soon as possible and require clarity regarding a possible future development of the certification system and any transfer of the criteria for renewable hydrogen to other sectors as part of the revision of the RED II. These European guiding principles are needed urgently for national and EU-wide financial support programmes to be developed with legal certainty and in conformity with state aid rules; any further delays will hinder project development and thus the overall establishment of the renewable hydrogen market.
- For projects which have already been implemented and the investment already made, as well as for projects in which a final investment decision will be made before the EU-wide definition of the "green" property, grandfathering arrangements and reliable investment conditions in the form of transition periods are essential. It must be ensured that the rules in effect in the year an electrolyser becomes operational continue to apply for the entire operational lifetime of that installation. In addition, however, it must also be possible for existing installations to use newly created business models.

In light of the drafting of the delegated act under Article 27(3) of the RED II and the ongoing revision of the RED II, BDEW calls for a framework to be created for the production of renewable hydrogen, providing uniform criteria which promote the ramp-up of the hydrogen market across all sectors. GOs should be used to prove the exclusive use of electricity from renewable sources for the production of renewable hydrogen. Any double counting of the electricity has to be effectively prevented by law. The additionality of the electricity generated from renewable energies has to be ensured based on the provision that the relevant electricity used is not financially supported by the existing support regimes (e.g. EEG). This would allow price signals to have a greater effect and the creation of additional renewable energy generation capacity to be incentivised. The pivotal factor for the ramp-up of a hydrogen industry remains the accelerated expansion of renewable energies. Steps must be taken to ensure that renewable hydrogen is available in sufficient volumes to achieve the climate and energy policy targets in each sector. To this end, the expansion pathway for renewable energies must be modified to take into account the additional demand for renewable electricity from the electrolysers, which would ensure that the additionality requirement is met. An extensive and rapid ramp-up of the hydrogen industry in a strong European internal market is the basis for achieving the industrial policy goals of the European and national hydrogen strategies. This is essential so that the necessary economies of scale and learning effects for the key technologies involved in the hydrogen industry can be generated, in order to create scope for innovation and support Europe's technological leadership.

3 BDEW-Positionspapier „Eckpunkte Handelssystem für erneuerbare und dekarbonisierte Gase"

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