BELLONA

CONSULTATION RESPONSE

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Methodology for Assessing the Hydrogen and Electrolyser Candidate PCI/PMI Projects 2022-2023 Exercise

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METHODOLOGY FOR ASSESSING THE HYDROGEN AND ELECTROLYSER CANDIDATE PCI/PMI PROJECTS 2022-2023 EXERCISE

Bellona welcomes the opportunity to provide feedback on the methodology for assessing hydrogen and electrolyser candidate PCI/PMI projects within the TEN-E framework. Building on our previous contributions to this process on hydrogen infrastructure needs and the 1st Union List of Candidate Projects, we commend the Commission's recognition of the role of hydrogen as a decarbonisation tool for hard-to-abate sectors where alternative decarbonisation pathways may not be feasible or economic and aspiration to assess candidate projects for a trans-European hydrogen infrastructure and electrolysers against that background.

Given that selected projects will "*benefit from accelerated implementation and eligibility to apply for EU financial support*", we consider it paramount that exclusively no-regret hydrogen infrastructure projects make the cut. Such are projects which have a very low risk of becoming stranded assets and operate under conditions that are conducive to a most efficient and rapid decarbonisation of the overall energy system.

To do justice to those requirements, we recommend the following changes to the PCI/PMI assessment methodology (with our suggested changes in **bold**).

ADDITIONALITY AS A KEY SUSTAINABILITY REQUIREMENT

Considerable amounts of electricity are needed to produce electrolytic hydrogen. The targets for hydrogen production set in various pieces of legislation reflect the role that hydrogen will play in driving electricity demand in the coming decades. The European Union will require approximately 500 TWh of electricity annually to meet the ambitious goal of producing 10 Mt of hydrogen, which surpasses total annual electricity consumption of France. For hydrogen to be a climate solution and aid in our climate change mitigation efforts, it is crucial that this electricity comes from additional renewable electricity sources and does not cannibalize existing capacities. To both safeguard the energy transition and create the conditions for future large scale hydrogen production, any enabling legislation must ensure and catalyse additional deployment of renewables to meet the needs of hydrogen production. This is especially important when public funds are used to support hydrogen infrastructure deployment.

Against this background, we recommend including the following additions to the draft methodology:

> *"3. General, specific and technical criteria*
>
> *- concerning electrolyser facilities*
>
> *[...]*
>
> *(ii) the hydrogen production complies* **with the conditions set out in the Delegated Regulation on Union Methodology for RFNBOs and** *with the life cycle green house gas emissions savings requirement of 70 % relative to a fossil fuel comparator of 94 g CO2eq/MJ as set out in Article 25(2) and Annex V to Directive (EU) 2018/2001.*
>
> *[...]*
>
> *According to Articles 4(2) and 4(3) of the TEN-E Regulation, PCI/PMI candidate projects need to fulfil the following specific criteria:*
>
> *[...]*
>
> *- for electrolysers under Annex II, the candidate PCI project contributes significantly to all of the following:*
>
> *[...]*
>
> *(ii) security of supply, including by contributing to secure, efficient and reliable system operation, or by offering storage, flexibility solutions, or both, such as demand side response and balancing services* **as well as by ensuring not to increase the dependency on fossil fuels in other parts of the power system***".*

HYDROGEN END-USES MATTER

The systemic benefit of hydrogen as a decarbonisation tool depends not only on the conditions under which it is produced, but also on its application. Hydrogen presents a viable decarbonisation pathway only where alternative decarbonisation pathways, most importantly direct electrification and hence the most energy efficient use of renewable electricity, are not feasible or economically viable. The targeted use of hydrogen in hard-to-abate industries is necessary; due to its high resource requirements, hydrogen cannot be used to replace natural gas in all sectors which use it today.

To ensure that this important distinction is made in the assessment methodology, we propose the following amendment:

> *"3.1.1. Benefits of Hydrogen projects*
>
> *For this hydrogen infrastructure PCI/PMI process the following benefits are to be considered:*
>
> *1. Variation of GHG emissions through integration of renewable and low carbon hydrogen [monetised value – [MEUR]:*
>
> *- hydrogen infrastructure projects are key for integrating and enabling the consumption of renewable and low carbon hydrogen, for replacing the use of* **unabated** *natural gas* **for hydrogen production and replacing fossil fuels in hard-to-abate industries,** *enabling a cost-effective solution to provide flexibility and, when needed, store energy."*

Additionally, electrolyser benefits can only be fully understood and accounted for when the effects on the overall energy system are taken into consideration. Those effects and hydrogen's emissions reduction potential are strongly dependent on what the hydrogen is used for. Hence, we consider it essential to take the planned off-taker and end-use into account when assessing the sustainability of a given electrolyser project.

We, therefore, suggest the following addition to the methodology:

"3.1.2. Electrolysers benefits

For this electrolyser PCI process the following benefits are to be considered:

1. Variation of GHG emissions [monetised value – [MEUR]:

- electrolysers are key infrastructure projects for producing ~~low carbon and particularly~~ renewable hydrogen. This technology can affect the CO2 emissions in particular depending on what other energy carriers the produced hydrogen replaces, and on the type of electricity it consumes **and what end-use the produced hydrogen is destined for**."

RENEWABLES CURTAILMENT IS NOT AN ISSUE TO BE SOLVED BY HYDROGEN PRODUCTION

Currently, some renewables are curtailed in Europe due to a lack of grid connection and capacity to transmit electricity from the point of production to consumption areas. Given that using renewable electricity directly rather than using it to produce hydrogen is much more energy efficient, a direct use of electrons should be given priority in all directly electrifiable end-uses, while renewable hydrogen should only go to sectors without alternative decarbonisation pathways.

Consequently, the issue of renewables curtailment should be solved by expanding and upgrading the electricity grid infrastructure to accommodate the currently curtailed renewables.

Proposing the deployment of hydrogen infrastructure to deal with curtailment is, however, neither sensible from a systemic perspective nor an independent solution in and of itself. Running electrolysers exclusively on curtailed electricity at a few peak hours is not economical for hydrogen producers. Therefore, it is safe to assume that curtailed renewables would only account for a small fraction of the hydrogen production of a given electrolyser facility.

We, therefore, propose to delete the section on renewables curtailment from the methodology.

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