

FuelEU Maritime - decarbonization of shipping with hydrogen and hydrogen-derived fuels

Recommendations

Hydrogen Europe recommends the following points regarding the recent proposal of the FuelEU Maritime Regulation:

1. Revise the loophole for electricity calculation in Annex I to account average grid intensity of the grid at port of call.
2. Include a sub-target for use of RFNBOs in replacing specific GHG emissions, and a multiplier for RFNBOs to provide investor certainty for the maritime sector and reward early adopters of alternative technologies.
3. Correctly account for the benefits of using low-carbon electricity for hydrogen production and accounting of renewable hydrogen in fuel cells.
4. Maintain the GHG emission reduction trajectory. Potentially increase the fleet GHG reduction targets to appropriate levels (i.e. in the short and medium term) only if the Annex I loophole remains.
5. Fixing the units for compliance balance.

Context

Hydrogen Europe welcomes the European Commission's initiative to accelerate the uptake of alternative fuels for maritime transport through the FuelEU Maritime initiative. Hydrogen and hydrogen-derived fuels, produced from renewable or low-carbon sources,¹ has a significant role to play for all waterborne transport, as it provides a number of technology pathways for all waterborne segments that can be used to achieve the deep decarbonisation of the sector.

In its current form, the FuelEU Maritime proposal has the potential to lead to the much-needed decarbonization of the maritime sector. The proposal provides a long-term perspective, the increasing in trajectory gives certainty for investment, the stringent penalty system could drive the uptake of renewable fuels and make them cost competitive. Additionally, Hydrogen Europe welcomes the pooling of ships for compliance purposes. This would allow shipowners to focus their efforts into fleets of zero-emission ships and not solely blending fuels for exiting vessels.

Hydrogen Europe supports the earmarking of the revenues from penalties towards the EU ETS Innovation Fund. Moreover, we argue for a separate Ocean Fund to be established under the EU ETS to help the maritime industry adapt to the considerable changes needed for the sector to fully decarbonise.² As an alternative, we call upon the European institutions to create a dedicated pool within the Innovation Fund solely for the maritime sector which takes into account the specificities of the maritime business environment, such as by ensuring that the sector does not face carbon leakage.

¹ Hydrogen Europe argues that low carbon hydrogen has to abate 90% greenhouse gas emissions and above, as per Hydrogen Europe's [Hydrogen Act](#) position paper.

² See Hydrogen Europe CMR Paper.

This pool would have to ensure that the penalty revenues are directed to fund R&D into zero emission technologies.

Hydrogen Europe is deeply concerned about the **loophole in the accounting of the electricity used, particularly for onshore power supply, that significantly undercuts the proposal's climate goals**. The loophole allows all uses of onshore power supply to be automatically accounted for as zero emission regardless of its origin. Therefore, **the proposal's short and mid-term ambitions will be met with fossil fuels instead of driving sustainable fuel production and usage**. We consider the inclusion of a multiplier and a specific sub-target for renewable certified fuels of non-biological origin (RFNBOs) as key to the decarbonisation of the maritime sector. We underline that these provisions will hamper the uptake of RFNBOs in the short to medium term and will encourage the demand for polluting fuels.

Shoreside decarbonisation and clean air not compatible to incentivising fossil fuels for cold ironing

Hydrogen Europe supports the Commission's intention to tackle auxiliary power emissions by introducing a cold-ironing requirement for a connection to an onshore power supply (OPS) or the use of zero-emission onboard auxiliary energy sources as defined in Annex III, which includes hydrogen fuel cells. **The uptake of OPS and other zero emission at berth technologies is vital to help cut maritime GHG and pollutant emissions at berth.**

We agree that air emissions stemming from auxiliary engines on ships in ports lead to considerable local air pollution, with OPS seen as one of the main solutions in ports. Additionally, we believe that other technologies³ outside of direct onshore power can considerably contribute to solving this issue, such as hydrogen fuel cells. Moreover, **Hydrogen Europe welcomes that the Commission will be able to include new technologies to Annex III through subsequent delegated acts**. One example of a technology that was not included on the list was alternatively fuelled internal combustion engines,⁴ a promising technology that should lead to a reduction of GHG and air pollution, particularly for retrofitting existing auxiliary power generators

On the other hand, Hydrogen Europe would like to highlight its deep concern regarding the current accounting method of GHG emissions from electricity in Annex I. This is a major loophole stemming from the way in which Annex I accounts emissions from electricity as zero emission regardless of their origin and usage. Maintaining this loophole would be significantly detrimental to the uptake of new renewable technologies and would not be in line with the overarching aims of the proposal.

Hence, we argue that the zero-emission assumption for electricity in Annex I should instead be replaced with a requirement on ports supplying electricity to calculate the average GHG intensity of the OPS electricity every 12 months. This process should be verified by a third party in line with the GHG compliance verification requirements of the FuelEU Maritime.

To illustrate the risk, we draw attention to the situation in European countries with electricity grids that are heavily reliant on fossil fuels. Shore-side electricity puts a heavy burden on the electricity grid since the power requirements are very high. This may create an incentive for port operators to set up subsidiaries or find external providers to supply dedicated onshore power generation directly in the port. Should the loophole in accounting remain, the OPS requirements in the FuelEU Maritime and the Alternative Fuels Infrastructure Regulation proposal **could encourage ports to invest into local**

³ Included in Annex III of the proposal.

⁴ These engines would need to meet strict pollutant emission guidelines, equivalent to upcoming Euro 7/VII.

coal-fired or gas-powered plants which could be counted as equivalent to the GHG emissions of renewable power generation.

Sustainable fuel production merits a specific target and multiplier

Pure hydrogen and hydrogen-based fuels (i.e. as e-methanol, e-ammonia, e-LNG/e-methane) offer tremendous potential for the maritime sector. If properly harnessed and certified,⁵ they can significantly contribute to deep decarbonisation as well as mitigation of air pollution from the worldwide fleet. We invite stakeholders to read Hydrogen Europe's [Maritime Paper](#)⁶, which discusses the wide range of hydrogen and hydrogen-derived fuels, their role in reducing GHG emissions and cutting the air pollution in the maritime sector. The sector will need to be free to decide on their optimal hydrogen and hydrogen-based pathways, as each fuel type presents its own opportunities and challenges.

While Hydrogen Europe supports technology neutrality, we also support factual climate accounting. As such, fossil fuels emissions need to be factored in. Therefore, we urge the European institutions to incentivise the creation of value chains for truly sustainable options such as RFNBOs.

Hydrogen Europe calls for a sub-target that would mandate that a certain portion of GHG emission reduction targets has to be met by using RFNBOs. We also call for the introduction of a multiplier to encourage the production of clean fuels and their respective ramp up, thus allowing the GHG targets to be met more easily through RFNBOs. Introducing both measures simultaneously creates a “push” effect in supply through a sub-target while multipliers will create a stronger demand for RFNBOs relative to the fossil alternative and create a “pull” effect that will also reinforce solutions non-drop-in solutions like ammonia and pure hydrogen.

The two instruments combined would strengthen investor certainty with first movers getting a clear signal through a clear regulatory support for the lifetime of their ships (on average 30 years). Combining these instruments would help ports decarbonise while providing them with sufficient flexibility to assess the refuelling needs of their port infrastructure based on the ships calling into port. Ports can become hydrogen hubs or “hydrogen valleys” where hydrogen can be produced or imported, stored and distributed for use in different applications to ensure a smooth transition pathway for ports.

Correctly assess the role and uses of low-carbon and renewable hydrogen

Throughout its text, the FuelEU Maritime proposal states that its main role is to stimulate demand for renewable and low-carbon maritime fuels. However, the logic of some provisions of the Regulation on how runs counter to the spirit of the proposal. **This can be illustrated by the how Article 9 and Annex II prove to be highly detrimental to low-carbon electricity and low-carbon electricity-based hydrogen.**

One of the best examples of the logic of some provisions not matching the spirit of the Regulation can be found when looking at Article 9(1)(b) and (d) on certification of fuels. Taken together, the two subparagraphs mean that all low carbon fuels not in line to the sustainability criteria of Article 27(3) of the Renewable Energy Directive (-70% GHG reductions) would have to be treated as equivalent to fossil fuel pathways. **This in practical terms would mean that hydrogen produced from grid electricity**

⁵ Under the upcoming REDII delegated act on additionality and RFNBO GHG certification.

⁶ Hydrogen Europe, *How hydrogen can help decarbonise the maritime sector*, June 2021.

in countries with very low carbon content would be treated as equivalent to grid-based hydrogen from heavily fossil fuel reliant Member States.

The bizarre logic continues in GHG accounting Annex II. First, a closer look at Annex II reveals that neither the Well-to-Tank carbon intensity of low-carbon hydrogen when used in fuel cells nor the Tank-to-Wake carbon intensity of low-carbon fuels are assessed in this annex of the Regulation. Similarly, the provisions on accounting of electricity under Annex II sets GHG intensity figures based on the EU average electricity mix, calculating the intensity of all EU grids, despite their widely varying GHG intensities, together. In practical terms this would not differentiate the actual carbon content of electricity-based hydrogen in grids which are on average heavily fossil fuel reliant from those that on average have very low GHG intensity. Thus, maintaining this means of **accounting would mean that the actual carbon content of H2 and low-carbon fuels would be overestimated in countries with low GHG intensity in their electricity grids**, which is not in line with the principles of rewarding lower carbon alternatives in the Regulation. Instead, **Hydrogen Europe argues that the accounting of electricity in Article II should be changed to account for the average carbon intensity of the national electricity mix where the port supplying electricity is located or where the low-carbon fuels are produced.**

Second, Annex II also fails to recognise the full benefits of RFNBOs in fuel cells. In particular, the GHG emission factors for the use of RFNBOs in fuel cells, which are assessed as well as fossil-based hydrogen used with fuel cells, being in contradiction of with the spirit of the proposal.

Maintain ambition unless the loophole remains

Hydrogen Europe has consistently argued for increased ambition in the maritime sector to meaningfully contribute to the European and global action needed to reach climate neutrality by mid-century. **We welcome the goal-based performance requirements based on the carbon intensity of the energy used in fleets over mandating the use of specific sustainable alternative fuels for each ship. The trajectory set out in the proposal is both realistic and achievable.**

On the other hand, Hydrogen Europe's calculations worryingly point out that **should the loophole described above (accounting of electricity use in Annex I) not be closed, the ambition in the first two decades of the FuelEU Maritime can be easily met solely by conventional fuels.**

Consequently, this would greatly limit the need for RFNBOs before 2040, the main intention of the proposed FuelEU regime. **Should the fossil fuel loophole identified in Annex I of the proposal not be fixed for any reasons by the co-legislators, the targets of the FuelEU Maritime proposal have to be adjusted upwards until 2040 to deliver the results needed.**

Other remarks

In addition, to the issues outlined above, Hydrogen Europe points out that the text contains two further inconsistencies.

Penalty calculation

First, according to Article 20 point 2 *"The company shall pay a penalty for each non-compliant port call. The verifier shall calculate the amount of the penalty by multiplying the amount of EUR 250 by megawatts of power installed on-board and by the number of completed hours spent at berth."* Hydrogen Europe would like to underline that the power installed, including propulsion, can be many times higher than electrical power requirements while at berth. Therefore, we suggest restricting the basis of this penalty to only electrical power.

Compliance balance figure correction

Second, the unit used Annex V in the Compliance balance [gCO₂/MJ] appears to be a mistake. To be coherent with the proposed formula, the unit should rather be [gCO₂].