

## HE contribution on the Inception Impact Assessment relating to the revision of the Guidelines on State aid for environmental protection and energy (EEAG) 2014-2020

### Summary

#### **Introduction:**

- ✓ *The European Green Deal, the European Recovery Plan and the European Hydrogen Strategy, all give a very strong political signal to kick-starting a clean hydrogen economy in Europe by 2030.*
- ✓ *To achieve the Hydrogen Strategy vision of 6 GW by 2024 and 2x40 GW by 2030, the total investments needed are of 430Bn Euro, with an estimated necessary support of €145Bn.*
- ✓ *Hydrogen needs strong economic incentives along with carbon price/carbon tax/regulatory framework - current State aid regime is not fit-for-purpose.*
- ✓ *Economic incentives for hydrogen should aim at compensating the higher cost of renewable and low carbon hydrogen production, as well as end-users' higher costs due to the change to renewable hydrogen and for transforming industrial technologies and processes to hydrogen.*

#### **Environmental protection and energy State aids:**

- ✓ *Adoption of dedicated guidelines on State aid for hydrogen technologies, or a dedicated chapter within the State aid guidelines for environmental protection and energy, that provide more tailored and flexible eligibility conditions (stronger Opex support), more favourable maximum aid intensities (up to 100% of additional costs) and higher aid amounts (notifications thresholds of €200M).*
- ✓ *Provisional State aid measures for hydrogen technologies should be applied during the transition period towards the new regime to avoid disincentivising hydrogen investments.*
- ✓ *Clearer and more favorable rules on cumulation with EU funds, and coherency with the other specific and relevant State aid regimes.*
- ✓ *The European Clean Hydrogen Alliance is an opportunity to finetune the needed State aid framework for hydrogen, in support of the pipeline of investment projects.*

**Hydrogen Europe** is the leading European Hydrogen and Fuel Cell association which promotes clean and low carbon hydrogen as the enabler of a zero-emission society. It currently represents 190 industry companies, 79 research organizations as well as 25 National Associations. Its member companies are of all sizes and represent the entire hydrogen value chain, from production to transport, distribution and final end-use of hydrogen. The association partners with the European Commission in the innovation program Fuel Cells and Hydrogen Joint Undertaking (FCH JU).

## Introduction : Hydrogen a key enabler of the European Green Deal and the European Recovery Plan

**The European Green Deal, the Recovery Plan and the first European Hydrogen Strategy adopted on the 8th of July, all give a very strong political signal to kick-starting a clean and low carbon hydrogen economy in Europe by 2030.** The European climate strategy and the transition to a decarbonized economy will indeed imply a deep transformation of the production, storage and consumption of energy in Europe, with carbon-free power generation, increased energy efficiency, and the deep decarbonization of transport, buildings and industry. **This transition will require hydrogen at large scale, at internationally competitive prices, and in particular clean hydrogen.**

Hydrogen is an essential lever among other technologies, that offers a versatile, clean and flexible energy vector. It makes the large-scale integration of renewables possible with the conversion and storage of energy as a renewable gas. It can be used for energy distribution across sectors and regions, and it also provides a way to decarbonise segments in hard-to-abate sectors of the economy.

At the same time hydrogen opens up business opportunities for EU industry to lead the transition towards a carbon neutral future, based on EU leadership in a number of key hydrogen related technologies. However, full-scale industrial deployment implies the need for systemic change and also requires systemic action along the whole value chain, from hydrogen production and transport to the industrial use as feedstock for energy-intensive industries or as fuel for transport or balancing the renewable electricity output.

Hydrogen Europe has estimated<sup>(i)</sup> that **in order to achieve the Hydrogen Strategy vision of 6 GW by 2024 and 2x40 GW by 2030, the total investments needed are of €430Bn, with an estimated necessary support of €145Bn.**

Economic operators are ready to launch ambitious scale up projects and investments. The high level of engagement of the hydrogen industry representing the whole value chain in the European Clean Hydrogen Alliance attests to this.

But they will not solve the equation alone. The EU political signals need now to be translated into concrete measures that support the creation of a European competitive hydrogen economy, able to face growing international competition.

**In order to create the adequate market conditions for the new decarbonised technologies, and, in particular, for clean hydrogen, the essential rise of the carbon price and the adjustment border tax, will need to be accompanied by a supportive regulatory framework as well as strong economic incentives.**

In the coming years, EU and national sustainable funding will be key in supporting the production of affordable clean hydrogen, securing the needed infrastructure, and covering the higher operating costs of clean hydrogen in the end use sectors. At a moment where Member states are finalising their Resilience and Recovery Plans, and that the EU is heading towards a higher CO<sub>2</sub> reduction target for 2030, **State aid rules should play an essential role in the acceleration of the European hydrogen industry adaptation efforts until the market develops and costs become competitive.**

## I. Need for a shift in the State aid approach in relation with hydrogen

Hydrogen Europe welcomes the upcoming review of the State aid rules and the opportunity provided for public funds to further contribute to the European Green Deal objectives.

Hydrogen Europe acknowledges the global results of the recent EC evaluation of the State aid rules which concludes that, if the State aid control system and rules are to be fit for purpose, individual rules will need some adaptation, also in the light of the Green Deal and the EU's Industrial and Digital Strategies.

State aid rules on environmental protection and energy need indeed to be tailored to support the deployment of the new Recovery and Resilience facility and its objective to dedicate more than one third to green projects.

But business as usual might not be enough. Hydrogen Europe is convinced that a **real shift will be needed to unlock the potential of the National Resilience and Recovery plans in the light of the European Green Deal. This is particularly important for the development of the clean hydrogen sector while a European supportive regulatory framework is not yet in place.**

An enhanced regime is therefore needed -and is essential in an early stage- to allow State aid into renewable hydrogen projects -individually or through dedicated Member state schemes- relating to the production, transmission and use of clean and low carbon hydrogen.

The enhanced investment support should namely aim at:

- **compensating the higher cost of renewable and low carbon hydrogen production and transport in comparison with existing hydrogen and other fuel prices**

Example:

*Currently, the production of green hydrogen is +/-6 €/kg compared to existing hydrogen (1 €/kg). In order to reduce the costs to 1'5€/kg in Southern Europe and 3€/kg in Northern Europe volumes need to be increased to Gigawatt scale.*

*Scaling up and creating large scale electrolyser manufacturing plants, green hydrogen production sites and renewable generation projects to supply electrolysers should therefore be, as an example, adequately supported.*

- **compensating end users for the higher costs due to the change to renewable and low carbon hydrogen -compared to existing hydrogen and other fuels prices- and for transforming industrial technologies and processes to hydrogen, creating thereby an additional demand**

Examples :

*1.The development of clean and low carbon hydrogen in the industry, mobility and building sectors generates additional operational expenditures due to the higher cost of fuel, that are not always eligible to State aid. For instance, only around 20% of levelised costs of renewable hydrogen production is made up by initial Capex. As a result even subsidising 100% of initial investment will not provide sufficient incentive for industry to result in a fuel switch.*

- **Industry:**  
Decarbonising energy-intensive industries requires massive investments, but the current aid intensities (often only around 20-30 %) are too low to trigger these high-volume investments. Considerable funding gaps remain uncovered, which inhibits the required decarbonisation projects necessary to enable the Green Deal. Decarbonising processes and products often requires more expensive input materials and/or energy mixes. Therefore it is crucial to allow funding for additional operation costs beyond the investment, until a working market for ‘green products’ is in place.  
Next to the review of State aid, it will therefore be necessary to adopt supportive legal measures (eg. obligatory quotas for green-products; enhancing green public procurement...) to establish a “lead market for green products”.
- **Mobility:**  
The inclusion of additional operational expenditures is especially important for rolling out alternative fuels fleets, where the sustainable fuel is usually more expensive than its fossil competitor. For example for long haul, only 21% of the TCO is made up by the initial Capex and often haulers have access to competitive diesel prices at their depots thanks to special agreements.  
Besides, a combined approach in support of both fleets (eg: vehicles/vessels) and infrastructure could significantly help accelerate the market uptake, including on corridors (eg: road, inland shipping...). An option would be to designate technologies/types of projects that qualify for state aid and base the assessment on strong business cases that include externalities.
- **Buildings:**  
There is also a clear gap between renewable hydrogen and natural gas that is used for heating in buildings, and that State aids need to address.

2. The transformation of industrial technologies and processes to clean and low carbon hydrogen though promising in the steel, chemicals, cement and glass sectors, is still in an exploration phase.

- **Steel:**  
In relation with the switch from coal based blast furnace route steel production to hydrogen based direct reduction steel making, the production cost of the GHG lean route for a site in middle Europe (Capex and Opex) amounts to roughly 170% of the conventional production (ii).  
The support to pilot tests, demonstration plants and then ramp up needs to be accelerated so as to allow these energy intensive sectors to rapidly decrease CO2 emissions. When technology is already largely available, State aid should no longer consider the degree of innovation, but rather the far-reaching reduction in greenhouse gases. Compatibility of Carbon Contracts for Difference (CCfD) can also clearly play a role in promoting the uptake of low-carbon production processes.

Finally, infrastructure is another key element that the state aid framework needs to further consider ensuring the transmission, distribution and storage of H2, including the import of H2, and connect offer and demand.

In view of the presented challenges, it is clear that limiting support for hydrogen technologies just to Capex will not create a big enough incentive to result in deployments on a big enough scale needed to reach the EU Hydrogen Strategy targets. **The eligible costs should therefore be defined as the funding gap, calculated based on a counterfactual scenario, presumed to be the situation in which the project would not take place. The funding gap should be calculated as the difference between the positive and negative cash flows over the entire lifetime of the investment (i.e. covering both Capex as well as Opex and revenues), discounted to their current value.**

## II. A dedicated State aid framework/EEAG chapter for hydrogen

Considering the challenges the hydrogen sector is confronted with in the context of the European Green Deal and the Hydrogen Strategy, and, as a newly recognised European strategic value chain, it is important to underline that **the current State aid framework is not fit for the purpose of hydrogen technologies and the development that the hydrogen market will undergo in the coming years. Promoting the hydrogen economy envisaged in the EU's Hydrogen Strategy implies systemic change and requires certain derogations from legislation and regulatory sandboxes.**

As an example, the current Energy and Environmental State Aid framework focusses mainly on the production of renewable electricity and electro-intensive sectors and has stricter rules for Members states in the RES non-electricity category, covering thereby a limited part of projects (and eligible costs) key to clean hydrogen deployment. Manufacturing of electrolyzers or fuel cells, use of hydrogen in current infrastructure and a dedicated hydrogen infrastructure, and use of hydrogen in energy intensive industries are not therefore directly eligible. Other possible supports are scattered across the State Aid rules, but there is clearly a lack of visibility and a coherent approach is missing.

In the light of the above, Hydrogen Europe supports the **adoption of dedicated guidelines on State aid or a dedicated chapter within the EEAG for hydrogen technologies, including transport and storage, that provide more tailored and flexible eligibility conditions, more favorable maximum aid intensities and higher aid amounts.**

Priorities :

- **eligibility of large-scale demonstrations projects and roll-out of hydrogen production, transmission/distribution, and end-use applications in line with the Hydrogen Strategy and EU Recovery Plan objectives and expectations,**
- **aid intensity up to 100% of additional costs for hydrogen technologies in first-of-its-kind large scale installations,**
- **a more flexible definition of eligible costs, with a stronger Opex support, including in hydrogen production/conversion and end-use application projects,**
- **presumption of market failure for hydrogen projects,**
- **notification thresholds for hydrogen technologies increased to €200M,**
- **faster and simpler notification procedures,**
- **need for clearer rules on the cumulation of aid namely with EU funding, and coherent approach of the available tools with higher funding and larger eligibility costs on Opex (eg : ETS Innovation Fund, Invest EU, CEF, Horizon Europe...).**

The support to a dedicated hydrogen framework or chapter within the EEAG, needs to be complemented by the search for synergies with the other environment protection and energy State aid rules, particularly where continuity of projects is at stake (e.g.: energy from renewable resources, energy efficiency – including cogeneration and district heating-, energy infrastructure, CCS...).

### III. Other EEAG relevant considerations

In relation to the ongoing discussions around EU Taxonomy and Sustainable Finance, the following should be taken into account:

- In determining the “green bonus” for meeting the sustainability criteria, all the sustainability criteria should be considered. Allowing green bonus to be applicable just for “any kind of environmental benefit” is clearly not enough, as it would allow for fossil fuels to obtain such bonus – for example, replacing diesel with natural gas for passenger cars, creates an environmental benefit in the form of air pollution reduction, but since the GHG emission reduction is limited, it should not receive a green bonus on the same level as a zero-emission solution.
- For all projects involving fuel switch from fossil fuels towards a more sustainable options, Capex is only a small part of overall additional costs, Hydrogen Europe strongly suggests that additional operational costs (additional compared to the fossil fuel option) over at least the first 10 years of operation should be counted towards the eligible costs.

### IV. Final remarks

The EU’s objective of achieving 6GW renewable hydrogen production in 2024 and 40GW in 2030 is already at risk. **The period between now and 2024 is crucial in scaling up volumes that can lead to the development of a sustainable and competitive hydrogen market. Before considering the use of market incentive tools (e.g. tariffs, quotas for hydrogen production – both on supply and demand side) for hydrogen uptake, the use of state aid will be crucial in getting these projects of the ground at lowest possible cost and impact for the tax payer and the consumer.**

Hydrogen Europe is very much **concerned by the current legal vacuum and its negative impact on hydrogen investments until the new State aid framework applies.** Despite the current available EU funding tools, hydrogen projects adopted before the reviewed framework will be in a fragile position. If the retroactive application of State aid rules can be a solution, this option remains too uncertain for businesses. Hydrogen Europe proposes therefore the European Commission to consider additional **provisional measures for hydrogen projects.**

Finally, as an active member of the European Clean Hydrogen Alliance, Hydrogen Europe expects the Alliance to properly address the funding and financing support to the pipeline projects and other enabling conditions. In this context, Hydrogen Europe supports a thorough discussion on the State aid rules needed to further enhance the investments in scale up projects.

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(i) 'Hydrogen 2030 : The Blueprint'

[https://hydgeneurope.eu/sites/default/files/Hydrogen%202030\\_The%20Blueprint.pdf](https://hydgeneurope.eu/sites/default/files/Hydrogen%202030_The%20Blueprint.pdf)

(ii) "Macroeconomic implications of switching to process-emission-free iron and steel production in Europe";  
Mayer et al., Department of Economics at the University of Graz; November 2017