



HYDROGEN EUROPE RESEARCH

Policy Working Group 19/11/2021

Agenda

1. Welcome & Approval of the agenda

2. Updates on activities

- *Technical paper*
- *State aids revision*
- *Skills consultation*
- *PFAS*

3. Latest updates on EU institutions' activities

4. Studies and news from stakeholders

5. Funding opportunities

Updates on Activities

Technical Paper

The draft technical paper is being finalised by TC Leaders and the Secretariat.

- Once available it will be circulated to all Policy Working Group members for comments
- The deadlines to submit comments might be tight as we aim at having it published by the end of November.
- Foreseen publication: TBD



Technical Paper – Hydrogen Production

Specific research priorities currently included:

1. Advanced materials for electrolysis cells

- Cell and stack design
- Non-conventional manufacturing technologies
- Optimisation of Balance of Plant

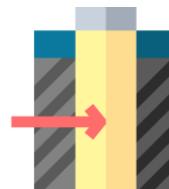
2. Novel processes to produce hydrogen via photo-induced processes

- Photosynthesis and photocatalytic hydrogen production

3. Hydrogen from conversion processes, as a direct carrier or as a cross link between renewable energy sources and sustainable fuels

4. Novel methods of analysis

- Cross-cutting research priority



Technical Paper – Hydrogen Logistics

Specific research priorities currently included:

1. Novel cost-competitive liquid hydrogen carrier solutions for massive hydrogen transportation including the whole carrier chain
2. Development of advanced materials and technologies for creating the future gas grid infrastructure for transporting and distributing hydrogen
 - Mitigation technologies
 - New materials for pipelines
 - Injection technologies
3. Development of novel materials and concepts for efficient and cost-competitive hydrogen storage
 - New materials for underground and aboveground storage
 - Hybrid redox flow batteries
 - Safety



Technical Paper – Hydrogen End-Uses

Specific research priorities currently included:

- 1. Ammonia as a hydrogenated fuel – *to be kept as it will finally be included in CH JU?***
- 2. Advanced materials for on-board hydrogen generation vehicles**
- 3. Sustainability of non-ferrous materials under hydrogen atmospheres**
 - To be further elaborated
- 4. New end-uses**
 - General aviation, UAVs
 - Military and spatial applications
- 5. Understanding and predicting how materials, when processed into electrodes, membranes, and cells behave in terms of performance and lifetime**
- 6. Development of hydrogen refuelling protocols for transport end-uses**
- 7. Support the industry to build the next generation products**
 - New methodologies for advanced design and manufacturing



Technical Paper – Education & Training

Specific research priorities currently included:

- 1. A strategy for lifelong learning to address the needs from industrial partners**
 - “Upskilling” and “reskilling”
- 2. Tailor-made training tools**
- 3. Public awareness on FCH would benefit from local promotion and demonstration**



State aids

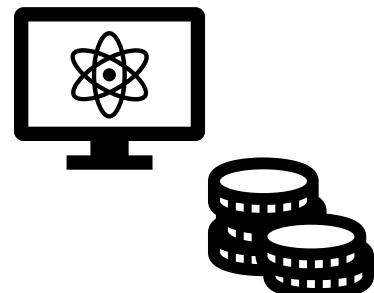
Draft revision of the State aid General Block Exemption Regulation (GBER). An aid fulfilling the conditions established in the regulation is **exempted from the requirement of prior notification and Commission approval**.

Main take aways from Hydrogen Europe:

- *Investment aid for green hydrogen projects and hydrogen infrastructure, including operating aid for small scale-installations*
- *Reduced tax rates for large energy-intensive businesses meeting “green” conditions*
- *Support to zero-emission vehicles and HRS*
- *Storage projects directly connected to new/existing renewable energy generation facilities*
- *Green bonus for ambitious building renovation projects*

Asking for our comments on points linked to RDI.

- *Testing and experimentation infrastructures*
- *Aid for research and development and innovation*
- *Transparency of aid (for SMEs), aid for start-ups, aid for innovation clusters*



State aids

- **Testing and experimentation infrastructures**
 - Definition of testing and experimentation infrastructures – also known as technology infrastructures – 98a
 - Investment aid for testing and experimentation infrastructures – Article 26a
 - *§1 [...] Construction and upgrade of testing and experimentation infrastructure is considered to be compatible with Article 107(3) and shall be exempted by Article 108(3) TFUE. The price charged for the operation of use of the infrastructure shall reflect markets prices.*
 - *§3 [...] Undertakings which have financed at least 10 % of the investment costs of the infrastructure may be granted preferential access under more favourable conditions.*
 - **§4 Eligible costs:** *investment costs in intangible and tangible assets*
 - **§5 Aid intensity:** *shall not exceed 25% of eligible costs*
 - Aid for testing and experimentation infrastructures limited to EUR 15 million per infrastructure before mandatory notification – Article 4 § 1j

State aids

- Aid for research and development and innovation - Article 25
 - *§3 (e): additional overheads and other operating expenses, including costs of materials, supplies and similar products, incurred directly as a result of the project; without prejudice to Article 7(1) third sentence, indirect R&D project costs may also be calculated on the basis of a simplified cost approach in the form of a flat-rate of up to [15 %], applied to total eligible direct R&D project costs. In this case, both categories of direct and indirect costs shall be established on the basis of normal accounting practices, shall comprise only eligible R&D project costs listed above in points (a) to (d), and shall be duly justified."*
- Transparency of aid - Article 5 §2 g
 - **3 conditions for "aids for SMEs in the form of reduced access fees or free access to innovation advisory services and innovation support services [...] offered for example by RTO, research infrastructures, testing and experimentation infrastructures"**
- Aid for start-ups - Article 22 §6
 - Lays down **conditions for "start-up aid can take the form of a transfer of intellectual property rights (IPR) and related access rights, from a research organisation where the underlying IPR has been developed"**

State aids

- Aid for innovation clusters - Article 27
 - *§2: Investment aid for the innovation cluster should be granted exclusively to the entity owning the cluster facilities. Operating aid for the innovation cluster shall be granted exclusively to the owner of the facilities unless the facilities are rented out, against a market fee, to an entity operating the cluster and bearing the financial risk of its operation. In the latter case, the operating aid shall be granted exclusively to the entity operating the innovation cluster at its own risk. In cases where the cluster operator is also the owner of the cluster or a user of the cluster, or both, and in cases where the cluster operator is a consortium of actors without a separate legal personality, the financing, costs and revenues of the activities as cluster operator shall be accounted for separately, on the basis of consistently applied and objectively justifiable cost accounting principles, from all other types of activities of the same legal entity.”;*
 - *§4: The fees charged for using the cluster’s facilities and for participating in the cluster’s activities shall correspond to the market price or reflect their costs including a reasonable margin.”*

Skills - answer to a consultation

Answer to a [call for evidence](#) of the European Commission on a **Council Recommendation on addressing social and labour aspects of the just transition towards climate neutrality.**

Key recommendations underlined:

- Build a European Hydrogen Skills strategy that is supported at Member state's level, ensuring that the competent workforce follows the pace of hydrogen deployment
- Unleash the full potential of available funds: enhancing synergies between European, national, and regional funds on education and trainings
- Support to scale up best practices and build a knowledge sharing community on hydrogen skills
- Ensure that the hydrogen dimension of skills is considered across relevant ecosystems in a coherent manner

PFAS Consultation

2nd Stakeholder Consultation on a Restriction for PFAS launched by the competent authorities for the **European chemicals regulation (REACH)** of the Netherlands, Germany, Denmark, Sweden and Norway

Survey to be filled in by different stakeholders – mainly targeted towards industry

Electronics and energy are considered, and by extension hydrogen as PFAS are used in fuel cells and low-temperature electrolyzers

Both HE and HER responded to the survey on **15th of October**.

Follow-up

- The drafting of a **joint letter with HE** is under consideration
 - The letter would include aspects that could not be provided in the survey (lack of space or lack of a clear question)



Latest updates on EU institutions' activities

FIT for 55 - update

Carbon Border Adjustment Mechanism

- Further criticism from the European Centre for International Political Economy - [report](#).
- Risk that it will not be sufficient to incentivise third countries to introduce a carbon pricing system.
- Only a small share of European imports are covered by the CBAM, and of exports to the EU.
- Worries regarding the compatibility of the system to the WTO.
- Recommendation to plan compensatory measures for developing countries that will be negatively affected by such a system.

FuelEU Maritime

- [First compromise](#) sent by the Slovenian presidency on 12 November.
- It includes minor modifications not relevant for H2 specifically.

COP 26 - overview

The COP 26 took place in Glasgow until mid-November. 197 countries were represented.

- Adoption of the Glasgow Pact for Climate which *Calls upon Parties [to accelerate] efforts towards the phasedown of unabated coal power and phase out inefficient fossil fuel subsidies*. The initial proposal was the “phase out” for both but the formulation was softened under the pressure of coal resilient countries (China, India).
- The objectives of the Paris agreement were maintained and a rulebook was adopted to define the rules for the carbon market.
- The number of countries pledged to reach net-zero emissions passed 140.
- 27 countries committed to stop funding fossil fuel operations abroad.
- The governments of 24 developed countries and a group of major car manufacturers committed to "work towards **all sales of new cars and vans being zero emission globally by 2040, and by no later than 2035 in leading markets**". However major nations and companies did not pledge (US, DE, etc.)

Several high level events on hydrogen were part of the COP 26 (Offshore renewable energy and green hydrogen, EC and Irena)



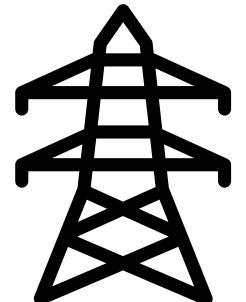
Energy Market - political discussions

Pre-evaluation by the Agency for the Cooperation of Energy Regulators (ACER)

- The ACER has not detected any manipulation of the wholesale electricity market that would explain the recent surge in energy prices.
- Final evaluation expected in 2022 and possible recommendations for long term changes could be included.

Proposals tabled

- Proposal to decouple electricity prices from gas prices (ES, FR), opposed by many Member States (LU, AT, DE, EE, FI, IE, LV, NL, SE). *The ACER evaluation points out that electricity prices have been cheaper than they would have been without such a system.*
- Proposal to set up a maximum price for gas. (ES)
- Proposal to create a strategic gas reserve through a joint procurement (supported by PT, IT, FR, HU, RO). Other Member States would rather improve storage capacities of the EU (DK, LU).



Impact on the Taxonomy:

- Many Member States (FR, RO, CZ, PL, NL, BU, SK, HU) have asked the Commission to include nuclear in its forthcoming delegated act on the EU taxonomy.
- Opposition from others (LU, AT, DK, DE, PT)
- Some Member States also asked for fossil gas to be included in the act as "transitional energy" (PL, HU, RO, CZ, BG, SK, GR, MA, CY)



Studies and news from stakeholders

Reports

ETS

- According to the European Commission, emissions from sectors covered by the ETS have fallen by around 43% since its introduction in 2005. The objective set was 21%. (See the [report](#))

European Environment Agency - 26 October

- The EU has outperformed its 2020 climate and energy targets (20% reduction in GHG emissions, 20% renewable energy and 20% energy efficiency compared to 1990).
- Great improvements will be needed to meet the 2030 targets [55% reduction of greenhouse gases emissions]

Opening of the European H2 Week registration

29 November to 3 December

- Day 1: Hydrogen Forum and FCH JU Awards
- Day 2: R&I Priorities
- Day 3: Hydrogen Strategy
- Day 4 and 5: Programme Review Days (PRD)

You may register and find the agenda [here](#).



120+ speakers **5 days** **285+ projects** **34+ sessions** **4 award categories** **1115+ beneficiaries** **271+ EU SMEs**
24 EU

Funding Opportunities

Funding

€1.1 billion were granted to seven large-scale innovative projects under the **Innovation Fund**. Several projects in the field of hydrogen were funded:

Energy-intensive industries:

- ❖ A project in Sweden aims to entirely eliminate greenhouse gas emissions from **steel production** by using renewable hydrogen.
- ❖ A project in Finland, will demonstrate two ways of **producing clean hydrogen at a refinery**, through **renewable energy and by capturing CO2** and permanently storing it in the North Sea.
- ❖ A project will capture unavoidable emissions in a cement plant and in part store the CO2 geologically in the North Sea and in part integrate it into concrete.
- ❖ A project in Belgium will develop a complete carbon capture, transport and storage value chain in the Port of Antwerp to reduce the emissions in the production of hydrogen and chemicals.

Find out more [here](#).

On 26 October, the Commission launched the [second call for large-scale projects](#) with a deadline of 3 March 2022. All the projects that were not successful in the first call are encouraged to re-apply.

Funding

EU-Catalyst Partnership

- The European Commission, the European Investment Bank and Breakthrough Energy Catalyst associate in the EU Catalyst Partnership
- **What?** The partnership will mobilise up to €820 million (\$1 billion) between 2022-2026 to accelerate the deployment and rapidly commercialise innovative technologies that will help deliver on the [European Green Deal](#) ambitions and the [EU's 2030 climate targets](#).
- **4 sectors covered:** clean hydrogen; sustainable aviation fuels; direct air capture; and long-duration energy storage
- **What type of projects?** Large scale, pre-commercial demonstration projects for clean technologies, funding up to 20%.
- As of 2022 all types of organisation based in Europe (EU and associates countries) can apply. More details to come.

Next meetings

- Meeting on 17 December might be postponed to 15 December due to conflicting meeting with the Governing Board.
- Invitations for meetings in 2022 to be sent out - are Friday morning meetings at the end of the month a good fit for you?

Thank you for your participation!

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