



Hydrogen Europe

Research

HYDROGEN EUROPE RESEARCH

Policy Working Group 25/10/2021

Agenda

1. Welcome & Approval of the agenda

2. Updates on activities

- *Meeting with MEPs - handing over Communication paper*
- *Technical paper*
- *PFAS consultation*
- *State aids revision*
- *Reminder - Last week to apply for the Young Scientist Award*

3. Latest updates on EU institutions' activities

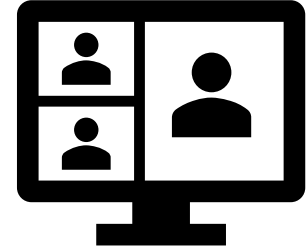
4. Studies and news from stakeholders

Subgroup updates

Meeting with MEPs

Meeting of Laurent Antoni with:

- MEP Mauri PEKKARINEN (Finland, Renew Europe) - 8/10
- MEP Josianne CUTAJAR (Malta, S&D) - 21/10



Objectives:

- Make Hydrogen Europe Research known and be identified as a point of contact for expertise on FCH related questions
- Share our key messages developed in the Communication Paper

Comments:

Both MEPs were interested in the possibilities offered by hydrogen and in the expertise HER can offer.

- MEP Mauri PEKKARINEN asked about where we stand in the innovation chain on hydrogen technologies and how the deployment of hydrogen is linked to the development of renewable energy.
- MEP Josianne CUTAJAR had questions relating to the cost-competitiveness of green hydrogen; the hydrogen infrastructure gaps; the good practices for H2 islands; H2 for maritime transport.

In the Parliament the SBA opinion was adopted on 21/10.

Technical Paper

The technical paper is being populated by TC Leaders and Board members.

- As soon as a complete first draft is 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 mid-November.
- **Foreseen publication:** 17 November / 22 November (tbc depending on progress)



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

Deadline to respond to the survey: **17th of October**

Outreach to HER members

- 4 feedbacks received – they were consolidated into a common document for HE-HER (ad-hoc working group set up), sent on Friday 15th
- HE and HER are aligned on the message to share in the consultation



State aid consultation

Ongoing public consultation on a targeted **review of the State Aid General Block Exemption Regulation** ('GBER'). The revised State aid rules should make it easier for Member States to support 'green' and 'digital' investments.

Background:

- ❖ **Aid measures described in the GBER are exempted from obligation of prior notifications to the Commission.**
- ❖ GBER were amended in July to enable synergies between EU-funding instruments, including to complement actions under a European institutionalised Partnership.
- ❖ A new review is foreseen for adoption in the first half of 2022.

Why is it relevant for us?

- ❖ Inclusion of a dedicated framework for **green hydrogen projects and investments in hydrogen infrastructure.**
- ❖ Inclusion of specific measures linked to R&D-aid – e.g. investment aid for Technology Infrastructure/testing and experimentation infrastructures

**This will set the basis for public investments in the coming years.
Common answer with Hydrogen Europe foreseen.**

Deadline to contribute to the consultation:
8 December 2021.

State aid consultation

GENERAL

- Inclusion of **low carbon hydrogen** eligible for specific state aids without prior notification [investments in equipment, machinery and industrial production]
- Aid for storage projects should be exempted from the notification requirement only if storage and renewable energy generation facilities are connected.

ARTICLE 2 - introducing or updating several definitions:

- innovative enterprise
- industrial research
- innovation clusters
- refuelling infrastructures
- renewable hydrogen
- smart gas grid (inclusion of hydrogen and biomethane)
- testing and experimentation infrastructures [See annex]
- hydrogen infrastructure (see next slide)

State aid consultation

ARTICLE 2 - Definition of hydrogen infrastructures (in the category energy infrastructures)

concerning hydrogen:

- | | |
|-----------------------|--|
| Transmission | (i) transmission pipelines for the transport of hydrogen, mainly high-pressure hydrogen, as well as pipelines for the local distribution of hydrogen, giving access to multiple network users on a transparent and non-discriminatory basis; |
| Storage | (ii) underground storage facilities connected to the high-pressure hydrogen pipelines referred to in point (i); |
| Distribution | (iii) dispatch, reception, storage and regasification or decompression facilities for liquefied hydrogen or hydrogen embedded in other chemical substances with the objective of injecting the hydrogen into the grid; |
| Safety and efficiency | (iv) any equipment or installation essential for the hydrogen system to operate safely, securely and efficiently or to enable bi-directional capacity, including compressor stations. |
| New / Repurposing | (v) Any of the assets listed under points (i), (ii), (iii), and (iv) may be newly constructed assets or assets converted from natural gas to hydrogen, or a combination of the two. Assets listed under points (i), (ii), (iii), and (iv), which are subject to third party access shall qualify as energy infrastructure; |

State aid consultation

ARTICLE 5 - Transparency of aid

- Insertion of possible aids for SMEs in the form of reduced access fees or free access to innovation advisory services and innovation support services offered for ex. by RTO, research infrastructures, testing and experimentation infrastructures [conditions for support detailed in annex]

ARTICLE 22 - Aid for start ups

- Insertion of conditions for start-up aid in 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 aid consultation

ARTICLE 36a - Investment aid for publicly accessible recharging or refuelling infrastructure for zero and low emission road vehicles

Refuelling infrastructures

- Before excluded: Costs of local production or storage units generating or storing the electricity and the costs of local hydrogen production units
- NEW: Integrated on-site production and the costs of storage units are eligible in the GBER
- NEW: Electrical cables and power transformers as well as related technical equipment, civil engineering works, land or road adaptations, installation costs and costs for obtaining related permits (to connect to the grid or to a local hydrogen production or storage unit) now included.
- Aid intensity: EUR 20 million per undertaking per project and, in the case of schemes, an average annual budget of EUR 150 million;

Introduction of investment aid for the acquisition of clean vehicles or zero-emission vehicles and for the retrofitting of vehicles.

State aid consultation

ARTICLE 41 - Investment aid for the promotion of energy from renewable sources

- Addendum to the article's name: [...], **renewable hydrogen and high-efficiency cogeneration**
- Exempted from notification: Investment aid for the production of renewable hydrogen (exclusively renewable)
- The investment aid may cover dedicated infrastructure for the transmission or distribution of renewable hydrogen, as well as storage facilities.
- Cogeneration exempted of state aid: only if provide overall primary energy savings compared to separate production of heat and electricity.
- Aid intensity: 30% of eligible costs; 15% for projects involving electricity storage

State aid consultation

ARTICLE 43 - Operating aid for the promotion of energy from renewable sources and renewable hydrogen in small scale installations

- Addendum to the article's name: [**...and renewable hydrogen...**] **and for the promotion of renewable energy communities**
- Exempted of notification: Aid to renewable energy communities and for the production of renewable hydrogen
- **Aid intensity**: **Max. EUR 250 million per year** taking into account the combined budget of all schemes falling under the respective Article. **Max. EUR 20 million per undertaking per project.**

ARTICLE 48 - Investment aid for energy infrastructures

- Introduction of exemption for gas infrastructures dedicated to the use of hydrogen and/or renewable gases, or mainly used for the transport of hydrogen and renewable gases
- **Eligible costs**: total investment costs.
- **Aid intensity**: up to 100% of the funding gap

State aid consultation

❖ What messages do we want to share with the EC?

- Support to a facilitated state aid framework for hydrogen.
- Framework for RTO providing services SMEs and start-ups, relevant for the sector.
- Support to industry development, position paper to be drafted together with Hydrogen Europe

❖ Do you have specific inputs for this work?

- Do you have relevant experience you would like to share on state aids?
- Are there red flags or elements we should keep an eye on in the text?

❖ Interest of WG members to support this activity?

Young Scientist Award



Last week to participate to the Young Scientist Award Competition!

Conditions for participation:

- Being a researcher in one of the member organisation of HER (including students, PhDs, postdocs)
- Being 35 years old or less
- Having personally contributed to a FCH-JU project

3 Categories:

- Transportation Systems;
- Energy Systems;
- Cross-cutting Activities

The prizes will be handed out during the Hydrogen Week **by the Commissioner Mariya Gabriel**. The awardees will also receive €500 and a recognition certificate.

Latest update on EU news

FIT for 55 - update

Update on the latest discussions linked to the Fit for 55 Package:

European Parliament:

- The distribution of the proposals to the competent committees in the European Parliament has been repeatedly postponed. The final distribution can be seen in the ppt annexe (shared between ENVI / ITRE / TRAN, mainly, implication of ECON / EMPL / BUDG)
- 27/09 the ENVI Committee discussed the **Regulation setting CO2 emission standards for cars and vans**
 - EPP: the proposal is not respecting the principle of technology neutrality; **hope that the EU will remain open to hydrogen**; worried for employment; inequalities in terms of access to recharging infrastructures if not all member states can fund them
 - ECR: clearly against, similar arguments than the EPP
 - S&D Greens/ALE groups: wish for a more ambitious proposal for a zero emission fleet before 2035

FIT for 55 - update

Council:

- Poland called on reporting the proposal of FIT for 55 due the energy price increase.
- Meeting on 6/10 to discuss 5 of the proposals, below are the different positions stated/grasped:

	Rather supportive to the EC proposal	Mixed positions / Amendments wished	Opposed
ETS 2 [buildings and road transport]	AT, PT, SE, DK, FI, DE	NL GR, RO, HR FR, ES, LT LU	HU, CY, SK, CZ, PL, LI, MT, BG, IE
Forbid the sale of new petrol cars and vans from 2035 <i>(Part of the Regulation setting CO2 emission standards for cars and vans)</i>	BE, GR support for 2035	AT, SE, DK, NL, LU, FI recommended to move the ban to 2030	HU, BG, CZ estimate that 2035 is too early

Efforts sharing regulation

AT, BE, DK, FI, NL, LU asked for more convergence of national objectives
 HU, RO insisted that GDB per capita should remain the main criteria to set the objectives
 CZ underlined that its objective seems unreachable (X2)

Methane emissions

24 additional countries joined the Global Methane Pledge adopted on 18 September to reduce global methane emissions. The topic is now **growing in importance at EU level**.

- The European Parliament adopted on 21/10 an [initiative report](#) (non binding) entitled An EU strategy to reduce methane emissions. MEPs:
 - Calls on the Commission to propose a fair, comprehensive and clear legislative framework, setting **binding measures and methane reduction targets covering all sectors**;
 - Supports, the **establishment of an independently audited and globally applicable certification system that would provide a credible assessment of the methane emissions performance of all fossil gas production around the world**; believes that this certification should be audited and verified by an independent third party and based on a uniform approach to measurement based on detailed information from the relevant facilities, assets and countries;
 - Believes that a credible system has to be put in place to **ensure that imports are compliant with EU requirements** and that the Commission should therefore develop a robust independent methodology to assess the compliance of imports with EU requirements;

Methane emissions

- Several NGOs and think tanks [urged](#) the Commission to address the core problem of methane emissions in the EU by implementing rules on energy imports (See the [letter](#)).



Curtailing Methane Emissions from Fossil Fuel Operations

Pathways to a 75% Cut by 2030

- [Report from the International Energy Agency](#) on Curtailing Methane Emissions from Fossil Fuel Operations - 7 October
 - 1/3 of the 75% decrease in methane emissions between 2020 and 2030 is the result of a reduction in the consumption of fossil fuels, mainly coal
 - Most of the decrease comes from the rapid deployment of measures and technologies to eliminate avoidable methane emissions by 2030.
 - Over 70% of current fossil fuel emissions can be avoided with existing technologies, and about 45% at no net cost.

Council response to soaring energy prices



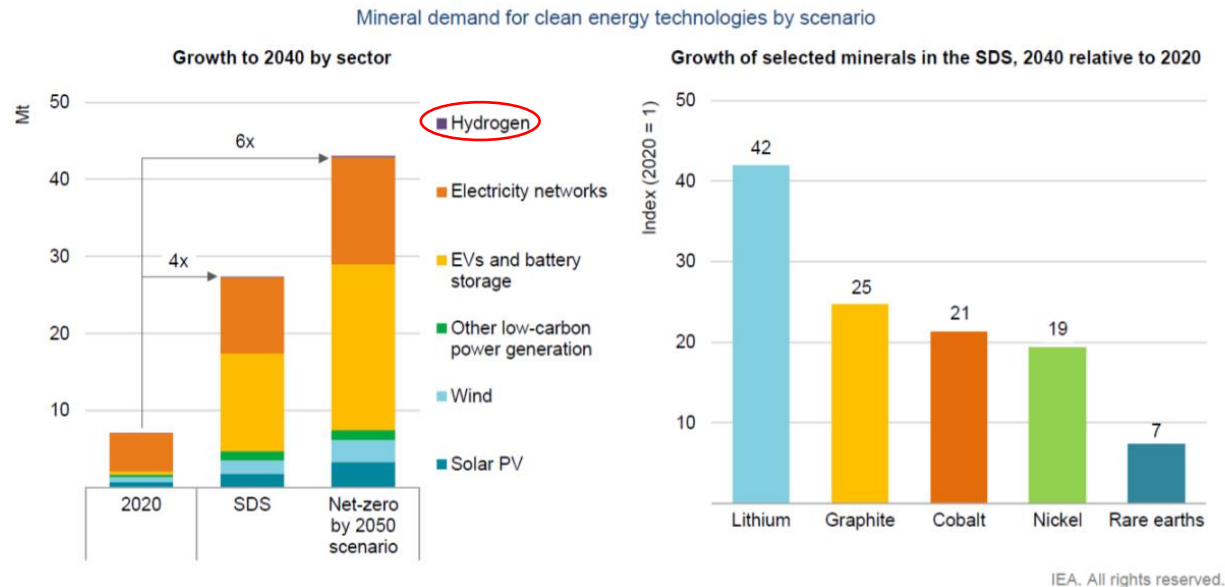
- Following the soaring energy prices, the EU council met on 22/10 and adopted [conclusions](#) to calling on :
 - the Commission to study the functioning of the gas and electricity markets, as well as the EU ETS market [...]. Subsequently, the Commission will assess whether certain trading behaviours require further regulatory action;
 - the Commission and the Council to swiftly consider **medium and long-term measures that would contribute to energy at a price that is affordable for households and companies, [...]**
- Agreement on a "toolbox" of measures for governments, including: targeted support for low-income households; tax breaks on electricity; state aid for small businesses; etc.
- This discussion have led to many divisive issues such as the role of nuclear energy and gas, and consequently their inclusion in the taxonomy.
- Proposal from Spain to create a strategic gas reserve through a joint procurement.

Reports and stakeholders

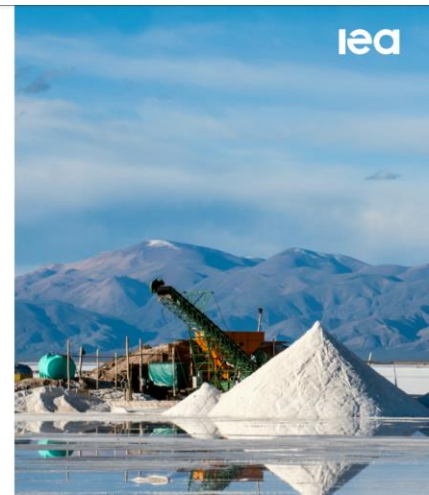
Report

IEA - The Role of Critical Minerals in Clean Energy Transitions, World Energy Outlook Special Report

- The shift to a clean energy system is set to drive a huge increase in the requirements for CRM – The energy sector should soon become the leading consumer of minerals as energy transitions accelerate (Li, Co, Ni, Cu, rare earths...)
- The report suggests that a concerted effort to reach the goals of the Paris Agreement would mean a quadrupling of mineral requirements for clean energy technologies by 2040. An even faster transition, to hit net-zero globally by 2050, would require six times more mineral inputs in 2040 than today.
- IEA expects hydrogen mineral demand to be limited in the big picture – however the sector is very reliant on less abundant minerals (Ir, PGMs...)



The Role of Critical Minerals in Clean Energy Transitions



Report

- Hydrogen electrolyzers and fuel cells could drive up demand for nickel, platinum and other minerals, but the market effects will depend on the shares of the different electrolyser types
- Alkaline and PEM have very different mineral requirements, whilst solid oxide electrolyzers present fewer mineral concerns
 - AEL: high Ni demand (Reductions in nickel demand for alkaline electrolyzers are expected, but nickel is not expected to be eliminated from future designs). Nonetheless, demand for AEL should remain much lower than that for batteries. Zr and Al are also used in AELs.
 - PEMEL: very high Ir and Pt demand. AEMEL could avoid the use of these metals.
 - SOEL: Ni and Zr demand, but much lower than AEL.

➤ The Strategic Research Challenge currently drafted for AWP22 for CH JU will aim to address the reduction of CRM and PGM use in electrolyzers and fuel cells, as well as the reduction/avoidance of PFAS.



Thank you for your participation!

Contacts

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Annex - FIT for 55

Package of legislative proposals proposed by the European Commission on 14 July

Updates to existing EU laws	Policy field	Lead EP Committee
Revision of the EU Emission Trading System (EU ETS), including revision of the EU ETS Directive concerning aviation, maritime and CORSIA	Emissions	ENVI
Effort Sharing Regulation (ESR)	Emissions	ENVI
Amendment of the Renewable Energy Directive to implement the ambition of the new 2030 climate target (RED)	Energy production	ITRE
Amendment of the Energy Efficiency Directive to implement the ambition of the new 2030 climate target (EED)	Energy efficiency / Buildings	ITRE
Revision of the alternative fuels infrastructure directive (AFID)	Transport	TRAN
Amendment of the regulation setting CO2 emission standards for cars and vans	Transport / Emissions	ENVI
Revision of the energy taxation directive	Taxation	ECON
New legislative proposals		
A carbon border adjustment mechanism (CBAM)	Emissions	ENVI
Social Climate Fund	Fund	ENVI & EMPL
ReFuelEU Aviation – on sustainable aviation fuels	Transport	TRAN
FuelEU Maritime – on greening Europe’s maritime space	Transport	TRAN

Annex - Other legislative proposals

Other EU law review planned	Policy field
RED II delegated act on Renewable Fuels of Non-biological Origin (<i>planned for end 2021</i>)	Energy / Fuel
EU Taxonomy - possible inclusion of nuclear and natural gas	Taxonomy
Hydrogen and decarbonised gas market package (<i>planned for Q4 2021</i>)	Gas market
Reducing methane emissions in the energy sector	
Commission Communication: restoring sustainable carbon cycles	
Legislative proposal on carbon removal certification	
Legislative proposal on an EU framework for harmonised measurement of transport and logistics emissions	
EU Action Plan on Digitalising the energy sector	

One of the topic identified as relevant by the WG would be to follow the discussions around the method to measure carbon footprint. This aspect is transversal and would be relevant across policies.

Annex - State aids

ARTICLE 2

Testing and experimentation infrastructures

*"testing and experimentation infrastructures' means facilities, equipment, capabilities and related support services required **to develop, test and upscale technology to advance through industrial research and experimental development activities from validation in a laboratory to a validation representative of the operational environment, and the users of which are mainly industrial players, including SMEs, which seek support to develop and integrate innovative technologies for the development of new products, processes and services, whilst ensuring feasibility and regulatory compliance***. Testing and experimentation infrastructures are sometimes also known as technology infrastructures;"*

Annex - State aids

ARTICLE 5

Insertion of possible aids for SMEs provided by RTO or through infrastructures.

“(ga) aid for SMEs in the form of reduced access fees or free access to innovation advisory services and innovation support services, as defined in Article 2, points (94) and (95) respectively, offered for example by research and knowledge dissemination organisations, research infrastructures, testing and experimentation infrastructures or innovation clusters based on an aid scheme provided that the following conditions are met:

- (i) the advantage consisting in reduced fees or free access acquired is quantifiable and demonstrable;
- (ii) the full or partial price discounts for services and the rules in accordance with which SMEs may apply for and be selected and granted discounts are made publicly available (through web sites or other suitable means) before the service provider starts offering the discounts;
- (iii) the service provider shall keep records of the amounts of aid granted to each SME in the form of price discounts to make sure that the ceilings set out in Article 28 (3) and (4) are complied with. Such records shall be kept for 10 years from the date on which the last aid was granted by the service provider;”;

Annex - State aids

ARTICLE 22 - Aid for start ups

the following paragraph 6 is added:

“6. [...] 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, if the transfer is:

- (a) to a small and innovative enterprise;
- (b) necessary to bring a new product or service to the market; and
- (c) the value of the IPR is set at market price, which is the case if it has been set according to one of the following methods:
 - (i) the amount has been established by means of an open, transparent and non-discriminatory competitive sale procedure;
 - (ii) an independent expert valuation confirms that the amount is at least equal to the market price;
 - (iii) the amount is the result of arm’s length negotiations between the research organisation and the start-up;
 - (iv) in cases where the start-up has a right of first refusal as regards IPR generated in collaboration with the research organisation, where the research organisation exercises a reciprocal right to solicit more economically advantageous offers from third parties so that the collaborating start-up has to match its offer accordingly.

The absolute amount of the value of any contribution, both financial and non-financial, of the start-up to the costs of the research organisation’s activities that resulted in the IPR concerned may be deducted from the market price.

While the value of the IPR established as described above can exceed EUR 0.8 million, the additional aid amount under this paragraph must not exceed EUR 0.8 million. The additional aid amount refers to the value of the IPR transferred and established as described above, including the above-mentioned deduction, that is not covered by own funds and/or other means.”

Annex - State aids

ARTICLE 41 - Investment aid for the promotion of energy from renewable sources

3. Investment aid for the production of hydrogen shall be exempted from the notification requirement of Article 108(3) of the Treaty only for installations producing exclusively renewable hydrogen. For renewable hydrogen projects consisting of an electrolyser and one or more renewable generation units behind a single grid connection point, the capacity of the electrolyser shall not exceed the combined capacity of the renewable generation units. The investment aid may cover dedicated infrastructure for the transmission or distribution of renewable hydrogen, as well as storage facilities for renewable hydrogen.

4. Investment aid for new or refurbished high-efficiency cogeneration units shall be exempted from the notification requirement of Article 108(3) of the Treaty only to the extent that they provide overall primary energy savings compared to separate production of heat and electricity as provided for by Directive 2012/27/EU or any subsequent legislation replacing this act in full or in part.”;