



HYDROGEN EUROPE RESEARCH

Policy Working Group 15/12/2021

Agenda

1. Welcome & Approval of the agenda

2. Updates on activities

- *Technical paper*
- *PFAS*
- *Debunking myths / Fact checking*

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 was sent to the Policy Working, HER Board and respondents to the questionnaire on **Friday 3rd of December**.



➤ Feedback?



Technical Paper

Novel processes to produce hydrogen via photo-induced processes. These objectives are already part of some EU programmes or partnerships and focus on including breakthrough solutions with elevated risks, but potentially high gain. Among the promising directions, artificial photosynthesis and research on photocatalytic hydrogen production, or specifically on novel photo-electrodes, are among the most promising ones. This technology combined with the capacity to use seawater or greywater for hydrogen production could enable further upscale of the sector in regions where renewables are abundant while water is scarce.

Comment from Stephan Abermann (AIT): *A bit blurry in my opinion. What is in/out? PEC in or out? There are many possible technologies in this field, I think it has to be sorted out somehow. Also the connex to seawater is not 100% clear, since also classical electrolyzers may use, right (depending on needed quality)?*

- **Opinion?**
- **Should this paragraph be refined/rephrased?**

Technical Paper

Development of advanced materials and technologies for creating the future gas grid infrastructure for transporting and distributing hydrogen.

- No mention to hydrogen separation from the blend.

Comment: *What about the separating issue of the blend H₂/NG at low cost and high flow, is this not a critical challenge?*

➤ **Opinion?**

➤ **Should separation be included?**

Microgeneration sub-section is too short

➤ **Can anybody provide more details on research activities that should be tackled?**

Technical Paper

Comment from Thorsten Michler (Fraunhoffer): *Structural safety is a key point for a successful hydrogen economy. This topic is poorly addressed in the individual sectors (e.g. storage, refuelling stations, etc.).*

Proposal to include:

- Simplified and accelerated testing of structural (e.g. steels, non-ferrous alloys) and functional (e.g. coatings, catalysts) materials operating under harsh hydrogen conditions. Adaptation of test equipment for simplified qualification of materials operating in gaseous hydrogen.
- Non-destructive structural assessment of materials and components in contact with hydrogen
- In-situ assessment including in-situ measurements of ageing and degradation of materials and components in contact with hydrogen
- Development of virtual testing environments
- Multiphysical effects on material and component performance (temperature, pressure, ...)
- Up-scaling strategies for component design operating in gaseous hydrogen.
- Assessment of long term effects of hydrogen on material and component lifetime and development of accelerated tests (experimental/numerical) to define end-of-life criteria.

➤ Opinion?

PFAS

Follow-up

- A joint letter should be drafted in collaboration with Hydrogen Europe (or other form of contact)
 - To whom? To the **RIVM (National Institute for Public Health and the Environment)** – Dutch competent authority in charge of the energy sector in the consultation process
 - Saying what? Clearly indicate the position of both associations (no PFAS ban in the hydrogen sector as they are still essential for the moment and no alternatives are mature)
 - Extra info: comment on the energy sector report summary (where there were some imprecisions)
 - Bonus: highlight the consensus between research and industry
- More to follow early 2022



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport



Bundesanstalt für Arbeitsschutz
und Arbeitsmedizin



Swedish Chemicals Agency



Debunking myths – activities



Hydrogen Science Coalition
@h2coalition

A coalition of academics, scientists & engineers bringing an evidence-based view on #hydrogen's role in the #energy transition. e:media@h2sciencecoalition.com

© London ⚡ h2sciencecoalition.com Joined October 2021

29 Following 160 Followers

- New “independent coalition” consisting of a group of scientists, academics and engineers reflecting on the role of hydrogen in the energy transition.
- The coalition will volunteer its expertise to the media and policy-makers to bring “concrete evidence” back into the hydrogen debate in the UK and EU, free from industry bias.
 - The panel was composed of “close-to-hydrogen-sceptics” and very little evidence was actually provided during the conference.
 - They are rather pro-electrification and are very doubtful on the potential of hydrogen as a widespread energy vector.
- **Proposal for 2022: draft explanatory fiches on research activities on hydrogen – similar to the “debunking myths” series of Hydrogen Europe.**

Latest updates on EU institutions' activities

Feedback on the Hydrogen Week



Over 130 speakers !



5 days of conference !



Clean Hydrogen
Partnership launched !



Over 2000 participants !

“

Let's not forget, the stars are made of hydrogen, so let's reach for the stars. Or as I used to say, hydrogen rocks.

Frans Timmermans

Executive Vice-President
European Commission



Gas Package

Expected proposal on 14 and 15 December

The Package will set the common rules for the internal market of natural gas and the conditions for access to the natural gas transmission networks. The goals are:

- To establish non-discriminatory rules for the conditions of access to the natural gas and hydrogen systems;
- To establish common rules for the transport, supply and storage of gases, whether natural gas or so-called "renewable" or "low-carbon" gases and hydrogen.

➤ **Definition of low carbon gas and low carbon hydrogen** [respecting a certain threshold of GHG reduction - foreseen 70%]

➤ **Certification system to be proposed, based on an evaluation of the GHG emission across the entire life cycle - foreseen, 70%**

If a gas is certified low carbon, it could benefit from reduced transport costs in the network. The European Commission would adopt delegated acts to specify the method to evaluate the emissions savings with low carbon gases and avoid double counting of reduction.

➤ **Blending** - *The EC proposes a cap on hydrogen blending in the transnational gas flux (5%?)*

GHG emission calculation in transport

[Call for evidence](#) - Count your transport emissions – ‘CountEmissions EU’ - *closing on 17/12*

2 main problems identified:

- a) Fragmentation of methodological approaches for GHG emissions calculation and sharing in transport and logistics
- b) Limited uptake of emissions accounting in everyday business practice

Goal of the initiative:

- providing a single EU framework for calculating GHG emissions data of transport operations/services in freight and passenger sectors;
- making available reliable and comparable information on the GHG intensity of individual transport services; and
- facilitating the uptake of GHG emissions accounting in business practice.

**Next step: Q1 2022 - 12 weeks open public consultation
Is there a contact point from the WG wishing to follow
more closely this development?**

Taxonomy

The first chapters of the delegated act on the **EU taxonomy** was passed on Thursday 9 December and will come into force on 1 January 2022

- It will describe the sustainable criteria for energy production, production of steel, cement & other materials, forestry & bioenergy, transport modes, buildings, water supply, etc.
- Most notable criteria is that for electricity or heat production capacities to be labelled as “sustainable” or “green”, they must emit less than 100gCO₂eq/kWh over the entire life cycle. This excludes *de facto* fossil fuel methods of energy production (even if they are fitted with CCS).
- Another important criteria is the “do no significant harm” threshold of 270gCO₂eq/kWh.
- The criteria for the list has mainly been compiled by the Sustainable Finance Platform, a group of 57 NGOs, scientific and financial experts, making the first part of taxonomy “science-based”.

The European Commission will now likely unveil the second delegated act on 22 December, where more details on how nuclear and gas will be labelled under the taxonomy

Reminder: the EU taxonomy are implementing rules detailing technical criteria that companies need to comply with in order to win a green investment label in Europe.

FIT for 55 - where do we stand?

Not all policy files are progressing at the same pace, the ones deemed more complicated are:

- Revision of the EU Emission Trading System ([EU ETS](#))*
- The creation of A carbon border adjustment mechanism (CBAM)
- Revision of the [energy taxation directive](#)*
- A Climate Action Social Facility
- Effort Sharing Regulation ([ESR](#))*

**Policy files that will necessitate important additional technical work due to the complexity of new elements introduced and/or the scope of the file.*

AFIR - The Denmark estimated that the EU should be cautious in introducing mandatory targets for alternative fuel infrastructures for hydrogen, as this will depend of the speed with which hydrogen will come to the market.

ReFuelEU Aviation - Member States often highlighted the question of production capacity and distribution., and how to avoid intermediate supplies in third countries with different rules will be a challenge.

FIT for 55 - where do we stand?

Revision of RED II

The Slovenian presidency submitted a compromise text on the RED II Revision. Not all points are tackled yet in this draft proposal.

- **Confirmed collective objective of at least 40% of renewable energy consumption in 2030, at Union level**

Other sectorial objectives to be confirmed:

- at least a [49]% share of energy from renewable sources in the buildings sector (final consumption in 2030)
- increase by at least 1,1 percentage points by year on average, the share of renewable in the energy in the industry sector by 2030 [sources for final energy and non energy purposes]
- the share of renewable energy in hydrogen used in industry should be [50%] by 2030 in each Member States.
- greenhouse gas intensity reduction of at least [13]% by 2030 thanks to renewable fuels

Studies and news from stakeholders

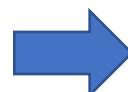
Renewable energy target

YES TO

45% RES

[Letter](#) from the Renewable energy associations in Brussels calling for 45% renewables target by 2030 - *Instead of the current 40%*

Hig impact measures are also recommended, among which some dedicated to hydrogen - ensuring the deployment of electrolyzers, unlocking the demand-side flexibility of renewable hydrogen, or establishing an internal market for renewable hydrogen



Currently the target is described in RED II, and discussion on RED III have been initiated in EU institutions.

The signatories

Anthony Patt, Coordinating Lead Author of the chapter on International Cooperation for the WGIII of the 6th Assessment Report and Lead Author of the chapter on Risk and Uncertainty to the 5th Assessment Report

Christian Breyer, Professor of Solar Economy at Lappeenranta University of Technology.

Ignacio Perez Arriaga, Review Editor of the chapter on Cross-cutting Investment and Finance Issues of the 5th IPCC Assessment Report

Joana Portugal Pereira, Member of the IPCC WG II Mitigation 6th Assessment Report.

Walburga Hemetsberger, CEO SolarPower Europe

Dirk Hendricks, Secretary General EREF

Dirk Vansintjan, President REScoop.eu

Eckart Würzner, President Energy Cities

Jorgo Chatzimarkakis, CEO Hydrogen Europe

Marcel Bial, Secretary General ESTELA

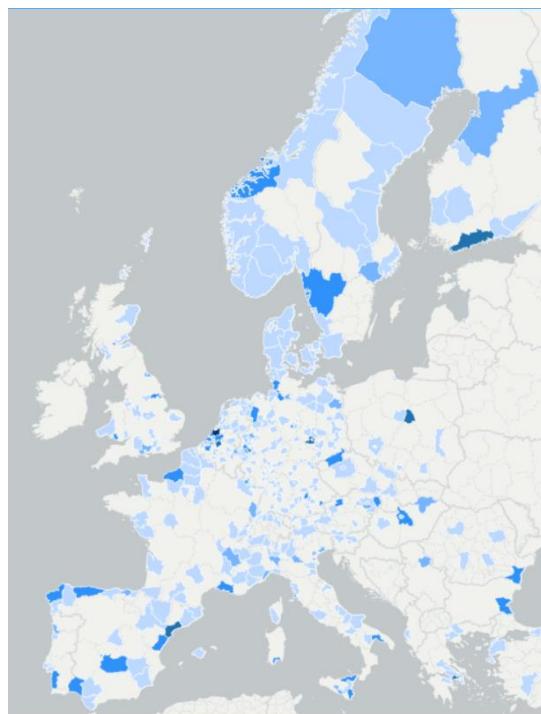
Pedro Dias, Secretary General Solar Heat Europe

Philippe Dumas, Secretary General EGEC

Rémi Gruet, CEO Ocean Energy Europe

Data - Energy and Industry Geography Lab

Launch of the [**Energy and Industry Geography Lab**](#) a tool that makes it possible to find and filter energy-related data, and create and share maps displaying this data.



Hydrogen infrastructure

Hydrogen production facilities

Hydrogen production (1000 m³ per day) per NUTS3 region

- ≤ 500
- > 500 - 1 500
- > 1 500 - 5 000
- > 5 000 - 10 000
- > 10 000 - 18 600

Liste des couches

Couches

- Borders and regions ...
- Energy infrastructure - production ...
- Energy infrastructure - networks ...
- Industrial infrastructure ...
- Hydrogen infrastructure ...
- CCS/U infrastructure ...
- Transport infrastructure ...
- Communication infrastructure ...
- Renewable energy potential ...
- Emissions and waste ...
- Land cover and land use ...
- Socio-economic data ...

Funding opportunities

Horizon Europe - Associated countries

Associated countries - confirmed in Horizon Europe on 13 December 2021:

- Bosnia and Herzegovina,
 - Kosovo,
 - Montenegro
 - Northern Macedonia
 - Serbia
- Georgia
 - Israel
 - Iceland
 - Norway

Status to be confirmed

- **UK** - safety net announced by the UK to make sure Horizon Europe grant winners receive funding if association to the research programme remains on ice
- **Switzerland** - back up system for funding researchers who want to join Horizon Europe research teams as associated partners is already up and running for 2021 calls and will be continued for 2022 calls.



Call for proposals

Horizon Europe's Work Programme for 2021-2022.

- [HORIZON-CL5-2021-D3-03-09](#): Carbon-negative sustainable biofuel production (23/02/2022)
- [HORIZON-CL5-2021-D3-03-08](#): Cost-effective micro-CHP and hybrid heating systems (23/02/2022)
- [HORIZON-CL5-2021-D3-03-03](#): Hybrid catalytic conversion of renewable energy to carbon-neutral fuels – *does not cover hydrogen but other (hydrogenated) carbon neutral fuels* (23/02/2022)
- [HORIZON-CL5-2022-D3-01-13](#): Energy system modelling, optimisation and planning tools (26/04/2022)
- [HORIZON-CL5-2022-D3-01-11](#): Demonstration of innovative forms of storage and their successful operation and integration into innovative energy systems and grid architectures (26/04/2022)
- [HORIZON-CL5-2022-D5-01-08](#): Modular multi-powertrain zero-emission systems for HDV (BEV and FCEV) for efficient and economic operation (2ZERO) (26/04/2022)
- [HORIZON-CL4-2022-TWIN-TRANSITION-01-17](#): Integration of hydrogen for replacing fossil fuels in industrial applications (Processes4Planet Partnership) (IA) (30/03/2022)

Other programmes / funds:

- [InnovFund-LSC-2021](#) - Innovation Fund Large Scale Projects (03/03/2022)
- [EIT's HEI Initiative](#) - Innovation Capacity Building for Higher Education (28/02/2022)

Thank you for your participation!



Contacts

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