



HYDROGEN EUROPE RESEARCH

Policy Working Group 10/03/2021

Agenda

14:00 – 14:05 – Welcome & Approval of the agenda

14:05 – 14:15 – Feedback on the ToR

14:15 – 14:25 – Technical paper - creation of a subgroup

14:25 – 14:50 – Latest updates on EU news

14:50 – 15:05 – State aids: what will change – Evaluate the interest of HER

15:05 – 15:20 – ERA – details on the upcoming initiatives – Evaluate the interest of HER

15:20 – 15:55 – Feedbacks and comments on HER's paper

15:55 – 16:00 – Next steps and AOB


Terms of Reference

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Goal: to have clear rules for the functioning of the WG.

Shared ahead of the meeting via email.

Approved by the Executive Board.



Hydrogen Europe Research Policy Working Group
Terms of Reference
(February 2021)

Purpose and function

The Policy Working Group (PWG) of Hydrogen Europe Research (HER) has been established to make the association active on the European policy stage. The PWG aims at:

- Defining the association's position on targeted topics by finding a consensus between members.
- Influencing EU policies in shaping the future of research and hydrogen.

Principal responsibilities

The principal responsibilities of the PWG will be to:

- discuss European political developments of interest for HER's community
- identify potential issues stemming from existing or upcoming European policies
- voice the opinion of members by drafting position papers and/or organising events or meetings with political stakeholders

Composition and Membership

All full members of Hydrogen Europe Research are welcome to participate in the PWG. There is no restriction on the number of participants per organisation. This can be reviewed in case an unbalance situation occurs and to ensure that a fair representation of the institutions is given. Members joining the PWG are expected to have time to dedicate to the activities organised in this framework.

If their participation is consensually accepted by the members of the Working Group, associate members can be associated to specific work of the PWG.

Working group processes and modalities


Structure and meetings

All members of the policy working group meets once a month between September and July, to discuss ongoing and foreseen activities. Meetings are held online. Invitations are sent by the Secretariat.

Subgroups can be created on demand to fulfil a specific mission or task assigned by the PWG. The goal is to have a subgroup working on one activity that is better manageable with less participants (e.g. drafting a position paper).

Within these subgroups, there cannot be several participants from the same organisation.

The work undertaken in these subgroups is then presented and discussed in the general PWG with all members.



the strategies defined by the Executive Board. The Board informed of the PWG's activities and ensuring

position paper

on paper is streamlined as follow:

WG agree to launch a task/activity on a specific topic.

ted to draft the paper.

submitted by a subgroup to the PWG.

or comments to all PWG members.

PWG.

Board for approval. The Board has a right to ask the if some positions are not consensual.

Terms of Reference - *in practice*

POLICY WORKING GROUP *(all members)*

Activities:

- Discussing policy updates presented by the Secretariat
- Sharing of information by members
- Defining priorities and activities
- Commenting/endorsing the work of sub-groups

Sub-group x

- 6-7 persons maximum
- 1 Sherpa in charge of coordinating the work
- 1 specific task/mission
- Regular meetings/exchanges until the task is done

EXECUTIVE BOARD

Regular exchange on the WG activities throughout the Secretariat

Terms of Reference - *implementation*

Creation of **2 subgroups** to have exchanges on the ongoing work in-between the meetings:

- **Communication paper - missions**
 - 1) Updating the paper according to comments
 - 2) Discussing its publication
- **Programmatic guide for research on hydrogen in the EU - missions**
 - 1) Populate the table of content
 - 2) Identify an opportunity for publication

Functioning of the WG- *collaboration with HE*

HE adopts many position papers within their respective WGs (advocacy, mobility, maritime, RED II, funding & financing...)

- Historically, it has been agreed that unless HER objects, HE can speak on behalf of everybody (HE and HER members).
- Request from HE to discuss whether HER members can attend their WGs and in which conditions.

Now that HER has as policy WG, four options regarding topics of common interest need to be discussed:

1. Should the topic be handled within the HER WG?
 2. Should the topic be handled within one of the HE WGs with invitation to some representatives of HER?
 3. Should a common WG be set up?
 4. Should the topic be discussed in parallel?
- Avoid the risk of duplication of work or the risk of inconsistency and create added value.
 - Bear in mind the time that the HER policy WG can dedicate.

Comments and questions on the functioning of the WG?



Technical paper - Creation of a subgroup

Technical paper - General

Key message: HER's vision on EU research on FCH goes beyond the activities undertaken within the CHE partnership.

This paper proposes a brief overview of research areas that should be further funded in the EU and in Member States, beyond the scope of the CHE partnership.

Structure:

- **Introduction**
- **Key Enabling Technologies and competence centres**
- **Strategic R&D&I priorities**
- **Research Topics in SRIA**
- **Research Topics in a wider EU picture**
- **Key drivers and priority actions at support of the R&D&I ecosystem**



Technical paper - *Table of content*

- 1. Research topics that are mentioned in the SRIA and could be treated in more details**
 - a. Proton conducting ceramics (PCC) cells for: electrolysis, hydrogen purification, hydrogen pumping, and hydrogenation and ammonia synthesis
 - b. Thermochemical H₂ production
 - c. Photochemical H₂ production
 - d. Photoelectrochemical H₂ production
 - e. Biological methods for H₂ production
 - f. Reversible fuel cells operation
 - g. LOHCs
 - h. Carbon fibres for H₂ storage
 - i. H₂ carriers for H₂ storage

Technical paper - *Table of content*

- l. Ammonia synthesis
 - m. No use of CRM or PGM for electrolysers and fuel cell components
 - n. Accelerated stress tests and understanding of degradation mechanisms to improve durability of electrolysers and fuel cells, and mitigation approaches
 - o. Cradle to wheel LCA on the whole H2 value chain integrating the CRM resources: impact on materials/energy EU imports
 - p. Development of a Societal Readiness Level (SRL) on hydrogen technologies
 - q. System design, hybridisation, and optimisation, including process intensification
 - r. Sensors and other technologies needed to ensure storage of hydrogen is safe, efficient, and secure
 - s. Additive and automated manufacturing/assembly processes and Technologies for in-line diagnostics and quality control/quality assurance
-
- **Would you agree that these topics could be elaborated outside of the work undertaken within the partnership?**
 - **Have you identified further topics which could be elaborated?**

Technical paper - *Table of content*

2. Research topics not mentioned in the SRIA
 - a. Metal supported electrolysis cells (hydrogen Utilization Process Lab – Advanced Hydrogen Energy System Lab²⁷)
 - b. Metal hydrides for H₂ storage ²⁸ (HyMARC²⁹)
 - c. Carbon based hydrogen sorbent materials for hydrogen storage (NREL³⁰)
 - d. Co-electrolysis
 - e. Fermentation for H₂ production (NREL – [Pin-Ching Maness](#))
 - f. Artificial photosynthesis and research on photo-electrodes for hydrogen production
 - g. Natural hydrogen capture and storage
 - h. FCH for portable applications
 - i. Systemic approach of H₂ integration in an intercoupled European energy system



Call for interest to participate in a subgroup - Raise your hand

Monthly news

Monthly news

Single Basic Act (SBA) proposal published by the European Commission (23/02)



State of play: the EC proposed 10 PPPs in the SBA. The proposal needs to be adopted by the Council of the EU after consultation of the EP & the Economic and Social Committee.



Budget: 10b€ for all PPPs, **Clean Hydrogen 1b€**
(roughly 50% increase compared to the FCH2-JU)



Timeline: unclear, expected start of the PPP Q3 2021

Monthly news

Update on the Initiative Report on Hydrogen of the European Parliament



Renewable hydrogen and low carbon hydrogen

- Underlines the need to increase the production of renewable electricity
- Frames the use of low carbon hydrogen to short and middle term and **ask the EC to evaluate in which cases, for how long and in what quantity, would low carbon H2 be necessary**

Hydrogen classification

- Calls on the Commission to conclude its work on a **hydrogen terminology** and to base it on an independent scientific assessment (colour approach to hydrogen)
- Calls for the **establishment of sustainability criteria** taking into account greenhouse gas footprint of the entire value chain, including transport emissions, in the revision of RED II.
- Calls on the **creation of guarantees of origin** for consumers.
- Divisions regarding the use CCUS



18 March: vote in ITRE committee
April: vote in plenary session

Monthly news

The European Commission wishes to establish a complete certification for renewable gases and fuels

Speech by Commissioner Simson at the 10th High-Level Meeting of the EU Refining Forum (18/02)



- "By 2050 transport fuels will be a mix of electricity, hydrogen, biofuels, biomethane and e-fuels.(...) By 2050, technologies like renewable hydrogen that now seem a distant dream will be an everyday reality."

- **Next big step: Fit for 55 package coming in June, to align legislation with the climate ambitions**
- Revision of the RED II Directive - "***will include a comprehensive certification for renewable and low-carbon fuels and gases. And it will come with an updated set of incentives to promote the use of these fuels in various sectors;***"



Monthly news

The Portuguese presidency plans to adopt conclusions on the promotion of researchers' careers (3/02 - Competitiveness Council)

 Scope: improving and reinforcing careers in the field of research. 3 key issues highlighted:



- The importance of **collecting data**, both on our researchers and on their mobility patterns.
- The need to **review the [code of conduct](#) for the recruitment of researchers in Europe** within one year.
- Strengthening **alliances between European universities** under the scope of the Erasmus+ programme.



Timeline: adoption expected by May

Monthly news

Stakeholders' news - Publications of the ACER - CEER



EU Agency for the Cooperation of Energy Regulators



Council of European Energy Regulators

- Regulation of Hydrogen Networks : When and How to Regulate Hydrogen Networks? (9/02, [link](#))
- Regulatory Treatment of Power-to-Gas (11/02, [link](#))
- Long-Term Storage (15/02, [link](#), CEER only)

CONTENT:

- Non-binding recommendations
- Market oriented, no major implications for research
- Publication in view of the preparation for a legislation on hydrogen and energy system integration.

Monthly news

Stakeholders news - [Renewable Hydrogen Coalition](#)

Who?

- Established in November 2020 and comprising WindEurope and SolarPower Europe, supported by Breakthrough Energy

What's new?

- Adoption of a [Policy Charter](#) for **Making Europe the Global Leader in Renewable Hydrogen**
 - Establish lead markets for renewable hydrogen
 - Scale up renewable hydrogen industry and infrastructure
 - Develop an enabling regulatory framework for renewable hydrogen

Co-signatories



State aids - Upcoming changes

State aids - *General framework*

A State aid is an **advantage conferred on a selective basis to an undertaking by national public authorities**. They can be direct or indirect (*e.g. operating a research infrastructure accessible to some economic actors*).



State aids are generally prohibited to avoid market distortions and potential indirect aid situations hindering the EU internal market.



Some state aids are compatible with EU law - Art. 107-3 TFEU

3. The following may be considered compatible with the internal market:

(b) aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;

(c) aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;

State aids - *General framework*

Prior to their implementation, **state aids must be notified** to the European Commission **unless exempted** by EU law. Exemptions are specified in:



- the **General Block Exemption Regulation (GBER)**: sets out conditions and limits for aid measures that Member States can implement without prior formal Commission approval – including for R&D&I-aid
- other secondary legal tests exceeding the GBER limits of non notification (e.g. the **R&D&I framework**)

*More than **97%** of all State aid measures are implemented by Member States **without the need for prior approval by the Commission.***

State aids - *General framework*

RDI performed as non-economic activity is normally allowed.

3 possible scenarios for Research organisations:

- **Outside the scope of EU state aid control** - the publicly funded activity concerned is of a non-economic character;
- **Recipient of State Aid** – the organisation qualifies as an ‘undertaking’ in relation to the publicly funded activity concerned;
- **Grantor of State Aid** – the organisation provides an advantage to an undertaking (e.g by running a research infrastructures).

State aids - *Upcoming changes*

January 2019 - the EC launched a fitness check to evaluate the state aid rules.

- Extend the state aid rules implementation time (expiration 2021 for most)
- Align the rules with the new policy priorities (Green Deal, Industrial and Digital strategy)

In the context of the **national recovery and resilience plans** being drafted, these changes are relevant to ensure that the legal framework will allow their implementations

Relevant changes for research and/or for the H2 sector:

- **Framework for State aid for research and development and innovation (Q4 2021)**
- **Communication on IPCEI (Q4 2021)**
- **Guidelines on State aid for environmental protection and energy (Q4 2021)**
- **New guidelines for regional state aids ([draft published](#))**

State aids - *Upcoming changes*

- **Framework for State aid for research and development and innovation:**

- 1) Simplification of the text
- 2) Incorporate the technical definition of technology infrastructures (to incentivize RDI investments into such infrastructures)
- 3) Clarify and simplify the practical application of those provisions (less administrative burden)

<https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12777-State-aid-rules-for-Research-Development-and-Innovation->

- **Communication on IPCEI**

- 1) Clarifying certain notions and providing further guidance on certain criteria set out in the Communication;
- 2) Facilitating the involvement of SMEs, in line with the Industrial Strategy and SME Strategy;
- 3) Ensuring the European character of important projects of common European interest by enhancing their openness and consistency with EU policies.

<https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12661-Revision-of-the-Communication-on-important-projects-of-common-European-interest>

State aids - *HER's views*

Main take-aways:

- State aids rules are a complex legislative block
- The activities of research organisations benefit from a dedicated exemption framework
- The changes foreseen in the revision are not greatly affecting RDI but would impact the industry H2 sector

Interest

- Do you wish to work on the topic of state aids?
- What activities would you suggest in this area?

Expertise

- Do you have experience(s) in dealing with state aids?
- Did these experiences ever highlighted an issue stemming from the European RDI state aid framework?

Common position in reach

- Could we find a common vision among HER's members?



European Research Area - proposals to
come

European Research Area

The ERA is the ambition to create a single, borderless market for research, innovation and technology across the EU.

It aims to help countries be more effective together, by strongly aligning their research policies and programmes. The free circulation of researchers and knowledge enables:

- Better cross-border cooperation
- Incentivisation of investments in research and innovation
- Enhancing of cooperation among universities, business and other research and innovation actors

ERA was launched in 2000 and a process to revitalise it began in 2018.

European Research Area

Four strategic objectives:

1. Prioritise investments and reforms in research and innovation, to support the digital and green transition;
2. Improve access to research and innovation for researchers across the EU;
3. Translate results into the economy to ensure market uptake of research output and Europe's competitive leadership in technology;
4. Make progress on the free circulation of knowledge, researchers and technology through stronger cooperation with EU countries.

➤ **To accomplish the objectives the Commission has proposed a set of actions to be implemented in collaboration with Member States and stakeholders**

➤ **This where the HER policy WG can contribute**

European Research Area

14 keys actions foreseen by the EC from 2021 to 2024

1.	Re-affirm the 3% GDP EU R&I investment target and propose a new EU 1.25% GDP public effort target to be achieved by Member States by 2030	Starting in 2021
2.	Launch of ERA Forum for Transition, to support Member States in the coordination and prioritisation of national R&I funding, and reforms	Starting in 2021
3.	Support Member States who are below the EU average R&D investment over GDP to increase their total investment in R&D by 50% in the next 5 years	Starting in 2021
4.	Set up a dedicated work stream in the ERA Forum for Transition for access to excellence and support less performing R&I Member States in increasing their number of highly cited publications by one-third over 5 years	Starting in 2021
5.	Develop common industrial technology roadmaps	By the end of 2022
6.	Develop and test a networking framework in support of Europe's R&I ecosystems, building on existing capacities, in order to strengthen excellence and maximise the value of knowledge creation, circulation and use	By 2022
7.	Update and develop guiding principles for knowledge valorisation and a code of practice for the smart use of intellectual property	By the end of 2022

8.	New toolbox in support of researchers career development	By the end of 2024
9.	Launch, via the Horizon Europe Programme, a platform of peer-reviewed open access publishing; analyse authors' rights to enable sharing of publicly funded peer-reviewed articles without restriction; Ensure a European Open Science Cloud that is offering findable, accessible, interoperable and reusable research data and services (Web of FAIR); and incentivise open science practices by improving the research assessment system.	Beginning in 2021
10.	Implement the EFSRI White Paper and establish an updated governance structure for research and technological infrastructures	By the end of 2021
11.	Develop a roadmap of actions for creating synergies between higher education and research, notably building on the dual role of universities	2021
12.	Develop inclusive gender equality plans with Member States and stakeholders in order to promote EU gender equality in R&I	Starting in 2021
13.	Organise with Member States and stakeholders Europe-wide participatory citizen science campaigns to raise awareness and networking	Starting in 2021
14.	Develop with Member States an approach to set and implement strategic priorities that deliver on the ERA agenda through the ERA Forum for Transition and by means of a Pact for R&I in Europe.	2021

European Research Area

Identified actions of potential interest listed by the EC for 2021:

- 2021 – Launch of ERA Forum for Transition
 - Support MS in the coordination and prioritisation of national R&I funding and reforms
 - Promote and monitor access to excellence of researchers and institutions, support MS to better integrate researchers in smart specialisation strategies in cooperation with industry and support low R&I performing countries to increase the excellence of their R&I systems
- End of 2021 – Implementation of the EFSRI White Paper
 - Support EFSRI to work towards a world-class research infrastructures ecosystem focusing on the broader range of the EU's policy priorities and improve its governance to address the broadened focus of its activity, and establish a new governance structure for Technology Infrastructures

European Research Area

Identified actions of potential interest listed by the EC for 2021 & 2022:

- 2021 – Development of a roadmap of actions for creating synergies between higher education and research, notably building on the dual role of universities
- 2021 – Organisation of a Europe-wide participatory citizen science campaign to raise awareness and networking
- 2022 – Implementation of the New Industrial Strategy
 - Support to this Strategy by jointly developing common industrial technology roadmaps to align and link key partnerships under Horizon Europe with industrial ecosystems, so as to ensure that efforts team up and that research results are known and rolled out faster in the economy

European Research Area

- **No concrete actions identified yet but we should remain on the lookout for topics of interest**

Any comment or questions?



Discussion on the Communication paper

Position paper - General

Key message: HER is a pertinent interlocutor for policy makers on research in FCH

- To legitimise our expertise to policy makers
- To share broad policy recommendations of researchers in the field of hydrogen

Target audience:

- European Commission (DG Clima, DG Ener, DG Env, DG Move, DG RTD)
- European Parliament (Committees ITRE, TRAN)

Content:

- Hydrogen: a growing topic on the European scene
- Who we are
- Our impact in Europe's Hydrogen landscape
- Our key recommendations

Position paper - General



Publication:

- On a specific platform? Through an event?
 - Research and Innovation Days 23-24 June: one participant in a panel, managed by the EC?
 - Ad-hoc event organised by HER on its own calendar?



Call for people wishing to participate in a subgroup to:

- 1) Update the paper according to comments
- 2) Discuss its publication

Next steps

Next steps

- The Secretariat will share the presentation and the minutes of the meeting
- Discussions will take place within the subgroups before the next meeting to progress on the papers presented
- Comments and suggestions?

Thank you for your participation!

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