Hydrogen Europe Research

Policy Working Group

17 November 2022

Agenda

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1. Welcome & Approval of the agenda

2. Updates on activities
- Critical Raw Materials Act consultation and supporting paper

3. Latest updates on EU institutions' activities
- Commission Work Programme 2023
- Energy market
- Positions around low carbon hydrogen
- Update on ongoing legislative files
- Revised framework for R&I state aid
- MidCat abandoned, BarMar new project

4. Reports and Studies
- US Inflation Reduction Act & reaction from the EU
- Clean Hydrogen Monitor
- Others

Updates on activities

Consultation on the Critical Raw Materials Act

- **Consultation on the critical raw materials act (**here**)** - closing on 24/11

- Reminding the importance of materials characterization for improving hydrogen technologies
- Highlighting the role of research in this (SRC)
- Insisting on the role of reusing, recovering and recycling

Relevant materials listed:

- PGMs, notably iridium > additional information received, in PEM and in AEM?
- Scandium
- Copper > should this be removed as it is not as critical?

Policy option: setting design requirements for products containing critical raw. > to keep in the paper?

Latest updates on EU institutions' activities

Commission Work Programme 2023

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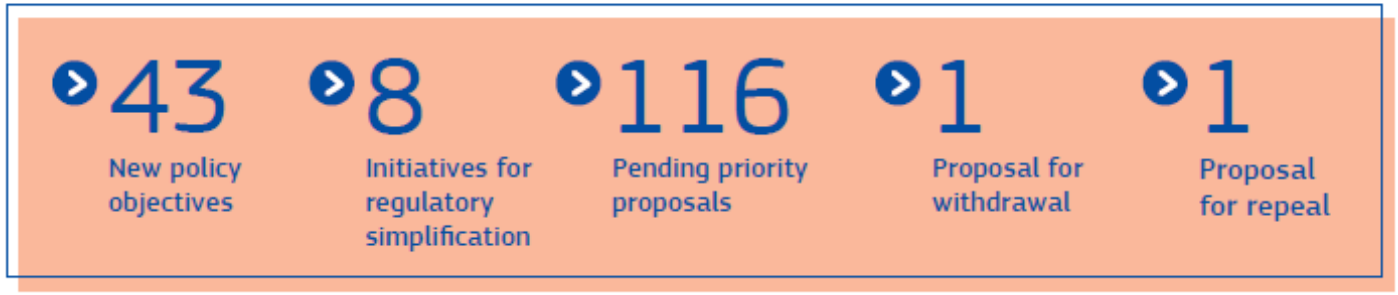
On 18 October, the European Commission adopted its work programme for the year 2023.

2023 Commission Work Programme - key figures



Commission Work Programme 2023

Date	Policy File
Autumn 2022	**Horizon 2020 programme - final evaluation**
Autumn 2022	**Horizon Europe programme - interim evaluation**
30/11/2022	Revision of CO2 emission standards for heavy duty vehicles (+16t.) – Commission proposal
30/11/2022	Regulation on carbon offset certification – Commission proposal
Q1 2023	Initiative on Critical raw Materials Act
Q1 2023	Revision of EU's internal electricity market rules
Q2 2023	Review of the functioning of the Multiannual Financial Framework *(may lead to a revision of the MFF)*
Q2 2023	Greening Freight Package
Q3 2023	EU Hydrogen Bank
Q3 2023	Greening corporate fleets initiative

Specific legislations we should follow?

Energy market

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Latest developments:

- On 21 October Member States instructed the Commission to submit "concrete decisions" on a series of measures to combat soaring energy prices, including a cap on gas prices. However the guidelines are unprecise, further discussions are expected between Member States, another meeting is planned for 24 November.
- On 9 November Charles Michel called on the Commission to put forward new legislative proposals to move forward on the idea of temporarily capping gas prices used for electricity generation.
- On 11 November the Commission announced that it will put forward a detailed outline of proposal for a market correction mechanism before 24 November.

Other news:

The estimated the cumulative fiscal stimulus that euro area countries have put in place to deal with soaring energy prices at **"*2%*" of GDP by 2022**. Around 70% of these measures benefit a large part of the population, and are not targeted.

Positions around low carbon hydrogen

On 10 October, a **group of 20 MEPs sent a letter to the Commission calling for:**

- **taking better into account the potential of low-carbon hydrogen**
- giving priority to domestic hydrogen production and expressing its concern over the 10Mt of hydrogen import objective set in REPowerEU
- keeping the delegated act approach to define the sustainability criteria for renewable hydrogen.

A similar push from 8 countries was made on 25 October (see next slide).

Positions around low carbon hydrogen

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On 25 October, **8 countries** (FR, RO, PL, HU, SK, BG, HL, SL) **sent a letter to the Commission asking it to give greater recognition to the role of low-carbon hydrogen**, provided that ambitious GHG emission threshold are met.

They propose:

- to introduce a new article in the gas package that would allow Member States to count hydrogen and low-carbon fuels towards the targets of the RED III Directive for the share of renewable energy in industry and transport.
- to count hydrogen supplied from grid electricity as contributing to the RED III targets for industry and transport, as well as the targets for aviation and maritime sectors, for each hour that the CO_2 content of the grid electricity meets the GHG emission reduction requirement of the taxonomy.
- to allow Member States to support renewables and low carbon installations in the form of operating or investment aid
- not to include binding targets on hydrogen imports
- to take into account GHG emissions from transportation and the technology of production
- they opposed the Commission's proposed cap on the mixing of hydrogen with fossil gas at gas interconnection points (up to 5% as of 2025)

Update on ongoing legislative files

- **Carbon Border Adjustment Mechanism** - trilogues negotiations are expected to be completed on 12 December. Question on the scope (H2) not yet set.

- **Alternative Fuel Infrastrcture Directive -** report adopted by the EP on 19 October, hydrogen refuelling stations should be 100 km apart by 2028, along the TEN-T network.

- **FuelEU Maritime -** report adopted by the EP on 19 October, 2% GHG emissions reduction by 2025, 20% by 2035 and 80% by2050, in comparison to 2020 levels for ships over 5000 tonnes. Provision for a 2% use of renewable fuels.

- **The European Commission published its** action plan to digitalise the energy system**.** The measures should primarily serve to promote connectivity, interoperability and the transparent exchange of energy data and provide more efficient services based on digital innovations.

- **Publication of the Commission's Council** regulation proposal **to speed up the deployment of renewables** by limiting the time for the permitting process.

Update on ongoing legislative files

- The **Commission signed the Agreement on** Reforming Research Assessment (focus on the quality and impact of research rather than bibliography or reputation of a journal).

- **REPowerEU investment framework through the RRF -** the ITRE committee of the EU Parliament have voted in favour of financing low-carbon energy sources, including low carbon hydrogen through part of the funds mobilised under the REPowerEU plan. This must be confirmed in the final report (shared competency) and in the plenary session.

Revised framework for R&I state aid

The revised framework on State aid rules for research, development and innovation was adopted on 19 October.

This ‘framework’ sets out the rules under which Member States may grant State aid to companies for RDI activities while ensuring a level playing field.

- Relevant changes: **it enables public support for the testing and experimentation infrastructures needed to develop, test and upgrade technologies.**

- Objective: to facilitate the development and deployment of cutting-edge and breakthrough technologies, in particular by small and medium-sized enterprises, while facilitating the green and digital transition of the EU economy, and contributing to the new European Innovation Agenda;

Other changes include simplification of certain rules, and the update of some definitions.

MidCat abandoned, BarMar new project

The **MidCat gas pipeline was officially abandoned** in Ocober (linking France and Spain across the Pyrénées).

- An agreement was reach between France, Spain and Portugal in October to build a **maritime gas pipeline between Barcelona and Marseille (BarMar) to transport hydrogen and renewable gases, but also a "limited proportion of natural gas" on a temporary basis.**

- BarMar could be supported as Project of Common Interest (PCI) if it is compliant with the criteria of the Trans-European Energy Networks (TEN-E) Regulation: fossil fuel projects "*are not eligible*". Therefore technical details will be important to see whether it can be included. A ratio of 15% natural gas - 85% H2 was mentioned from diplomatic sources, to be confirmed by experts.

- Furthermore, the renewable gas interconnections between Portugal and Spain will be finalised.

- Reports and studies

US Inflation Reduction Act

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The **Inflation Reduction Act of 2022 (IRA)** is a United States federal law which aims to curb inflation by reducing the deficit, lowering prescription drug prices, and **investing into domestic energy production while promoting clean energy.**

$391 billion of projected investment in energy security and climate change. $30 billion of funding are expected to incentivize domestic production of solar panels, wind turbines, inverters and others. Renewable electricity production is also boosted (tax credit as of 2025).

For the hydrogen industry, several measures are worth noting:

- A **tax credit of $3 per kilogram to produce hydrogen from renewable and nuclear energy, for 10 years** (available even if the electricity used to generate the hydrogen comes from renewable energy sources claiming existing renewable-energy tax credits)
- **An investment tax credit** for energy storage technology (including H2), from 6% to 30% depending on requirements satisfied (e.g. apprenticeship and wage agreements)
- **Clean-vehicle credits** including hydrogen-fuel-cell vehicles
- **Refuelling property for alternative fuels tax credit** worth up to 30% of the property's cost (capped at $100,000/unit)

US Inflation Reduction Act

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What about blue hydrogen?

- the IRA provides generous incentives for carbon capture and carbon removal, CCUS (tax credit)
- the federal government is directly imposing a charge, fee, or tax on GHG emissions ($900 per metric ton of methane, $1,500 per metric after 2 years)
- blue hydrogen cannot accumulate credits (unlike green hydrogen), they must decide between the hydrogen production tax credit or the CCS tax credit

The European Commission expressed concerns on the IRA and its potential impact on European businesses, as well as its compatibility with WTO rules. It submitted comments to the US consultation. 9 types of tax credits are of concern, including the Tax Credit for Production of Clean Hydrogen - subsidies to US based producers. The EU requires:

- non-discriminatory measures
- adding a cap on the subsidies (how much H2 can be produced)
- introducting public reporting and notification requirements for taxpayers availing themselves of this tax credit.

Other tax credits are also affecting the H2 value chain area also targeted (vehicles, SAF, fuel cell etc.), similar proposals are put on the table.

“The green transition is not something to be achieved at the expense of others”

Clean Hydrogen Monitor

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Hydrogen Europe recently published its 2022 Clean Hydrogen Monitor

- Free and available online.

Main elements from the Monitor:

- **Grey hydrogen still corresponds to roughly 95% of total hydrogen production in Europe** (11.5Mt of production/8.7Mt of demand) – no new facilities have been established in Europe that reform natural gas and capture the associated emissions since 2021.
- 35 MWel of power-to-hydrogen capacity came online in 2022 by August, reaching 162 MWel.
- **Renewable hydrogen for hydrogen is becoming competitive** due to the energy crisis (notably the price of natural gas):
  - The average grey hydrogen production costs for 2021 were estimated at 2.65€/kg and grew as high as 10€/kg in August 2022.
  - The estimated renewable hydrogen production costs in the EU, UK, and Norway in 2021 vary from 3.3€/kg to 6.5€/kg, while, in limited geographical locations with the best solar irradiation and wind conditions, it is possible to reduce those costs to as low as 2.2-2.9€/kg.
  - As a result, the **project pipeline for hydrogen production projects have been steadily growing in 2022** (138GWel envisaged by 2030, leading to a potential of 14Mt of clean hydrogen production).
  - However, **projects are being delayed**. The 2020 report expected 523 MW to come online in 2022, while the 2021 report only expected 253 MW for the same year. Only 35 MW came online by August 2022…

Clean Hydrogen Monitor

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Main elements from the Monitor:

- Bottlenecks will need to be overcome to achieve the current ambition, the main ones being:
  - **Increasing European electrolyser manufacturing capacity** (current water electrolyser manufacturing capacity amounted to over 3.3 GW/y. Planned capacity should increase 16-fold, reaching 53 GW/y by 2030). However, this planned capacity is still conditional.
  - The **development of transmission, distribution and storage infrastructure** (new & repurposed pipelines).
- A **new addition to this report is a perspective on critical raw materials**. It focuses on the annual production capacity of platinum and palladium, as two of the essential materials for the hydrogen economy used in fuel cells and electrolysers.

FIGURE 1

Total hydrogen production capacity by country.[4]

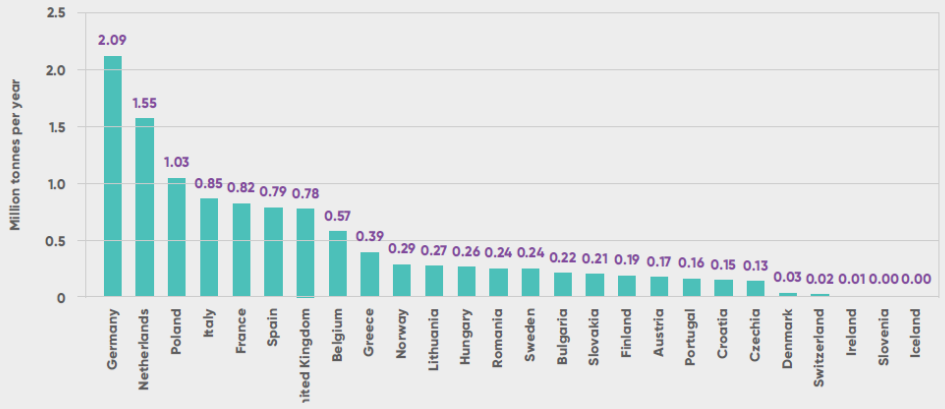


FIGURE 2

Total hydrogen production capacity of top 8 hydrogen producers by the production process

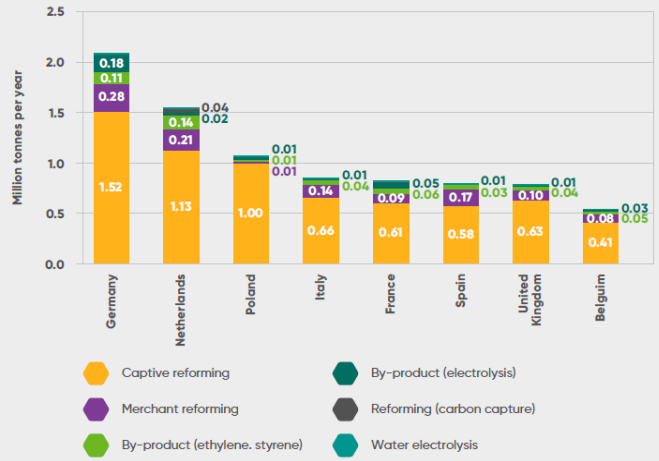
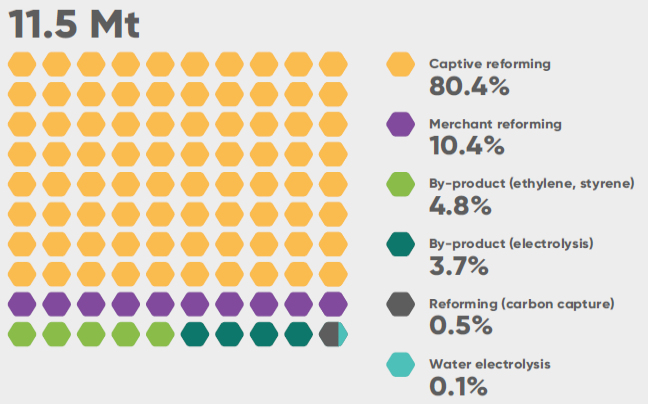


FIGURE 4

Hydrogen generation capacity by the production process in 2020[7]



Other

- **Record growth in wind and solar power helped EU avoid €11bn in gas imports between March and September 2022**, according to the report from the NGO Ember and the think tank E3G
- **EU CO2 emissions in the energy sector have decreased by 5% in the last three months** (August, September and October), compared to the same period in 2021. The Carbon Brief report provides explanations for this.
- The **IEA warns about potential gas shortage in Europe in 2023.** The EU could be short almost half of the gas needed to fill its storage sites to 95% by the start of 2023-2024 heating season.
- **The European Parliament calls for an end to fossil fuel subsidies by 2025** at the latest - this was part of a resolution for the COP27.

Opportunities:

- The **EU Innovation Fund call for clean technology innovation** in support of REPowerEU is open - €3 billion funding. Single stage applications, open until 16 November 2023. Info sessions will be organised on 29 and 30 November.
- **EIT launches EUR 12 million call to boost innovation and reskilling in European Higher Education. Deadline to apply: 28 February.**

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Thank you for your participation!

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