

Information Bulletin

December 2021



Online Energy Debate on Mainstreaming RES in industry



Summary of past Online Energy Debate



Summary of past Online Briefing Session



New energy events for 2022 soon in the EEF pipeline

On the EEF Programme

Mainstreaming renewable energy in industry

Tuesday 7 December | 11:30 - 13:00 (CET)

Online Energy Debate via Webex — registration required

EEF Gathering

Time to Re-Connect! - 1 December

The EEF members had the occasion to meet in person after one year and a half of online meetings.

The gathering was the opportunity for the EEF family to discuss the future perspective of the energy world.



Past Online Energy Debate

The EU gas infrastructure: fostering a secure, safe, and affordable hydrogen economy - 9 November

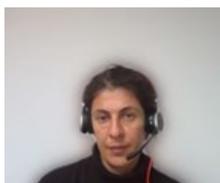
After exchanging on the EU demand for hydrogen in our October event, the EEF Members met virtually to discuss how to design a safe, secure, and cost-effective pan-European hydrogen Market.



Torben Brabo, President of Gas Infrastructure Europe (GIE), told us existing European gas infrastructure's readiness to contribute to creating an EU hydrogen market can help save money and time. GIE members are doing their best to get their infrastructure ready, although different European areas move at different speed. A coherent and dynamic legislative framework, flexibility for Member States, guarantees of origin, networking planning between gas and electricity and a level playing field are all key elements to proceeding even faster. On the legislative framework, Mr Brabo suggested in the first phase it could rely on existing natural gas regulation, taking the best parts of roles and responsibilities from the existing markets, with



Thierry Trouvé, CEO of GRTgaz, first shared insights on the French hydrogen strategy for 2030, which aims to make France a frontrunner in green hydrogen. The H₂ market is expected to develop in three phases: from local ecosystems to hydrogen valleys via a regional pipeline transport network, to an interconnected network at EU scale for pipeline transport integrating storage infrastructures. Massifying hydrogen production capacity and connecting industrial basins would bring down costs, while the development of the H₂ market would benefit security of supply, competitiveness and the energy system's resilience. Mr. Trouvé finally shared expectations that the upcoming Hydrogen and Gas markets Decarbonisation Package will bring clarity and visibility to interested stakeholders.



Camilla Palladino, Executive Vice-President Strategy & Investor Relations at Snam, explained Italy is ideally suited to become a hydrogen hub as it has good production potential, access to excellent resources, an extensive network connecting it to North Africa – expected driver of H₂ production globally – and a good export potential. While hydrogen development will start from pilot projects, the long-term expectation is a centralized model where green H₂ production is done at scale in the best suited areas and transport and storage are central, similarly to what is now the case for gas. According to Ms. Palladino, to encourage the system to develop, there is a need to define hydrogen standards, facilitate hydrogen transport and imports, promote the increase of demand, clarify the regulatory environment and make sure desirable investments are not precluded.



After listening to these initial remarks, panellist **MEPs Jerzy Buzek** - EEF President, **Massimiliano Salini** and **Ondrej Knotek** - EEF Directors, and **Radan Kanev** - EEF Active Member, in turn shared some personal thoughts and asked several questions to the industry representatives, particularly focusing on the need of ensuring hydrogen access to all EU countries, the technical adaptations required for the gas infrastructure to accommodate hydrogen, the potential and limits of blending, as well as the cost-efficiency of retrofitted vs newly built H₂ infrastructure. The discussion they had with the speakers also touched upon many different legislative initiatives - either already on the table or foreseen in the future – and the contribution they could bring to designing a well-functioning and well-integrated hydrogen market.

Past Online Briefing Session

Understanding Carbon Capture and Storage: what's its role in getting us to net-zero? - 19 November

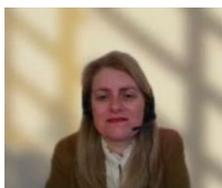
In her speech at the Carbon Capture, Utilisation and Storage Forum, launched in October, Commissioner for Energy **Kadri Simson** underlined, among other things, the need to step up awareness raising on Carbon Capture Storage (CCS) and Utilisation (CCU), one key technology to help us get to net-zero which still suffers from myths and misconceptions.

Building on that, the EEF decided to offer a technical online briefing session aimed to provide MEP Advisers and Assistants with an opportunity to get to know more on different technical aspects of carbon capture, transport and storage, with another session dedicated to carbon utilization to follow.



In welcoming our participants, the chair **MEP Radan Kanev**, Active Member of the EEF, said that when discussing EU climate and industrial policies, among which all new provisions under the Fit for 55 Package, a “technology-first” approach is the best to adopt. Making sure the right, affordable and viable technologies are in place is necessary for a successful transition. When it comes to CCS, this is key to allowing for emission reduction, especially in hard-to-abate sectors, which are very vulnerable to global competition yet extremely important for the EU economy.

Studying, assessing and understanding this technology is thus a priority and MEP Kanev said it was very glad to see EEF Associate Members’ experts willing to share their knowledge on that.



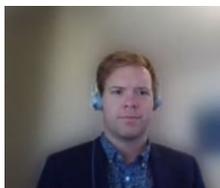
Lucie Boost, EU Affairs Manager at Equinor, offered a comprehensive overview on the story and state of play of CCS, explaining how the business case has evolved over time. When the CCS Directive was created in 2009, there was one single value chain: carbon capture was applied to a plant and transported via a dedicated pipeline to a dedicated storage, yet projects based on this model failed to reach mature stage. Today, different emission sources as well as transport and storage options have emerged, along with different operators. Concerning the CCS legal framework, Ms Boost explained there is quite a bit already available, yet the change in the business case should be reflected in new legislation as well.



Hugues Foucault, CO₂ Capture R&D Manager at TotalEnergies, presented different capture technologies, starting from clarifying the difference between post-combustion, pre-combustion and oxy-fuel combustion technologies. He then explained that any fuel burning produces a limited amount of CO₂, with a first challenge consisting in getting to high purity CO₂ in order for that CO₂ to be captured; the lower the CO₂ content, the more the energy required to capture it – he specified. Mr. Foucault then offered an overview of what CO₂ cost depends on, adding the cost issue remains one of the key hurdles to CO₂ capture development. New solvents and technologies are currently being either studied or developed, which could enable CO₂ capture uptake at lower costs.

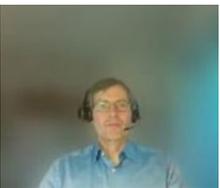


Once captured, CO₂ needs to be transported and this may happen through different modalities, as we were told by **Alistair Tucker**, General Manager CCUS Europe at Shell. In Europe, CO₂ transport is only at an early stage. CO₂ first needs to be compressed to be transported and work in terms of pressure management is required before injecting it into storage reservoirs. While pipelines are best suited for large volumes, shipping is more flexible: a combination of both is thus the preferable option. Mr Tucker presented two projects being good examples of CO₂ transport development: the Northern Lights - where CO₂ from capture sites is transported by ship to a terminal in western Norway for intermediate storage – and the Aramis project in the Netherlands, based on the development of integration between pipeline and shipping transport solutions.



Andrew Lightfoot, Strategy and Advocacy Advisor, Low Carbon Solutions at ExxonMobil and **Peter Zweigel**, R&D Task Lead CO₂ storage integrity and monitoring at Equinor focused on CO₂ storage options.

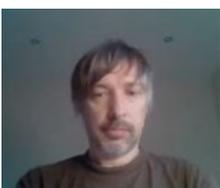
Injecting CO₂ deep into the ground is the only way of permanently store it. Today, there are two possible storage options, both under development in Europe: depleted former oil and gas reservoirs and deep saline formations. If the first enable to reuse existing infrastructure and facilities, saline formations can store much larger volumes. Europe has enough storage capacity to satisfy future demand, but as this is not evenly distributed, a good transport network will be key. Mr Lightfoot also told us injected CO₂ can be monitored through seismic data, which helps ensure storage safety and increase confidence in the system.



Following up on storage theory, **Mr Zweigel** exemplified some aspects of storage – namely monitoring and safety – by presenting the Sleipner and Snøhvit CCS projects in Norway. The Sleipner is the longest ongoing project in history (25 years) and was the first offshore project globally. Storage is monitored through time-lapse seismic data, that Mr Zweigel shared with us explaining how it confirms CO₂ is safely stored in the Sleipner gas reservoir. In the Snøhvit CCS project, CO₂ is stored at greater depth – around 2,5 km beneath the sea. Even if the rock is much harder over there, image monitoring is still possible to investigate where CO₂ is distributed: the data shared with us showed more standard storage conditions and confirmed storage safety.



Luke Warren, H₂ & CCUS External Advisor at bp offered some insights on CCS in the UK, where the technology is perceived as being key not only to reaching climate goals, but also for economic growth and industrial competitive transformation. After telling us about the UK approach to CCS, he presented us with two projects where many emitters forming industrial clusters are tied together to common CO₂ infrastructure. The UK government has put forward different regulated economic instruments and targeted mechanisms to support the development of the technology and our speaker gave us a snapshot of some of them. This has enabled much to happen in a relatively short period of time, yet substantial further developments are required to meet the UK climate ambitions.



Last but not least to share insightful remarks was **Chris Bolesta**, CCUS Policy Lead at DG ENER, European Commission. Starting from the very first mention of CCS in official EC papers in 2006, he guided us through the evolution of the Commission's vision on and support to this technology. Back at the beginning, several tools were put in place by the EC to foster CCS projects development, but eventually no project materialised as expected.

Mr Bolesta shared some thoughts on why this was the case, saying many were the lessons learned. Today, he is confident that conditions are there for a second CCS dawn: a strong push from the market with a high carbon price, a climate neutrality objective, a better funding mechanism and a focus on small, viable projects. What is important is to realise where the EC sees CCS having an impact – in hard-to-decarbonise industrial processes, in generating net carbon removals when combined with biomass and in some power generation cases before 2050. He concluded by saying research continues on the topic, as well as work on new tools and measures to come next.