ZEP response to the Roadmap on 'an EU Hydrogen strategy'

The Zero Emissions Platform (ZEP) is a European Technology and Innovation Platform (ETIP) under the Commission's Strategic Energy Technology Plan (SET-Plan), and acts as technical adviser on the deployment of Carbon Capture and Storage (CCS), and Carbon Capture and Utilisation (CCU) under Horizon 2020 R&I programme.

ZEP invites all interested stakeholders to download the appended report for an extended response. A summary is provided hereafter.

ZEP supports the EU's commitment to climate neutrality by 2050, defined as net-zero greenhouse gas (GHG) emissions by 2050. Clean hydrogen will be a key technology for reducing emissions and achieving climate neutrality, since it provides a stable and flexible energy system, whilst meeting the needs and demands of the electricity, heat, transport and industrial sectors.

Clean hydrogen production is central to the development of several proposed industrial decarbonisation projects in the Netherlands[1] and the UK[2]. The estimated cost of production of clean hydrogen from natural gas with CCS at scale up to 2030 is approximately USD 6 billion, compared to unabated hydrogen production. In comparison, producing the same volumes of hydrogen with electrolysis would cost approximately USD 20 billion, based on the assumption of a 100% renewable electricity grid[3].

To ensure that hydrogen can be deployed at scale in Europe before 2050, investment in CO2 infrastructure will be required[4]. Cross-border CO2 transport and storage infrastructure will connect industrial clusters – including clean hydrogen production facilities, creating an infrastructure backbone to which industrial emitters can plug in to benefit from the applications for CCS. This shared infrastructure is a strategic policy decision; safeguarding jobs, industrial activity, and economic growth, thus preserving Europe's welfare and future-proofing Europe for a climate-neutral economy. Enabling early, large volumes of clean hydrogen will provide a strong signal to industry and member states to invest in hydrogen infrastructure, supply chains, appliances, and industrial fuel switching.

In the shorter term, hydrogen produced from reformed natural gas with CCS can already be applied on a large scale as part of the energy supply for high-temperature heating in the chemical industry, oil-refining industry and electricity production. In the longer-term, hydrogen can also be produced based on renewable electricity via electrolysis, and subsequently join the hydrogen market created by the frontrunner projects based on

[1] List of projects: H-Vision, Nuon Magnum, Athos, PORTHOS
[2] HyNet, Zero Carbon Humber, Net Zero Teesside, Acorn
[3] Hydrogen Council, Pathway to hydrogen competitiveness, 2020
[4] Navigant, Gas for Climate: The optimal role for gas in a net-zero emissions energy strategy, 2019

reformed natural gas with CCS. ZEP calls on the European Commission to clarify how it will encourage and integrate the clean hydrogen economy – from production, to wholesale markets, regulation and end-use.

There is no "one size fits all" solution for clean hydrogen, and a technology-neutral approach is crucial. However, for any electricity grid-connected clean hydrogen manufacturing to be defined as sustainable according to the Taxonomy, there is a need to correct an obvious error in the screening criteria for hydrogen manufacturing in the technical annex to the Taxonomy report[5]. The third threshold, *"Average carbon intensity of the electricity produced that is used for hydrogen manufacturing is at or below 100 gCO2e/kWh*", will effectively exclude all electricity grid-connected hydrogen manufacturing sites, regardless of technology used. ZEP suggests the third threshold be deleted, as it is redundant, and the first threshold delivers the environmental benefit.

If this third threshold will be preserved in the delegated act, ZEP recommends to introduce guarantees of origin to ensure that grid-connected manufacturing of clean hydrogen and aluminium receives renewable electricity, and thus can be deemed as sustainable by the Taxonomy. RED II allows for several options for origin of electricity for production of renewable fuels of non-biological origin, of which one is electricity from the grid, if it can be proven that it is fully renewable.

[5] European Commission, Report on European Taxonomy for Sustainable Finance, 2020