ZEP response to REDII consultation – Questionnaire

Note: These are the answers provided to the Questionnaire on the review of the REDII Directive. The numbers are a reference to the questions that were answered.

1.2 Do you think REDII needs to be modified?

The REDII should be amended in order to be consistent with the objective of net-zero GHG emissions by 2050 and with other relevant pieces of legislation. Coordination among different pieces of legislation is critical to deliver a cost-efficient transition to higher 2030 targets, as well as to the objective of climate neutrality by 2050.

1.3 If you answered 'yes' to the previous question, which parts of RED II do you think should be amended?

CCS can play a crucial role in delivering early, large-scale volumes of low-carbon hydrogen from reformed natural gas, which will be needed to achieve the higher EU 2030 emissions reduction target. These volumes will be pivotal in the decarbonisation of energy-intensive industries and of the power sector, preparing the infrastructure and the market for the future uptake of renewable hydrogen as soon as larger volumes will become available.

The electrification of many sectors and introduction of green hydrogen production will drastically increase demand on the electricity infrastructure and generation capacity. New electricity generation capacity will need to be built to accommodate this demand and give resilience to a 'peakier' energy system. To build new facilities and upgrade the electricity network will require planning, which could take several decades. Low-carbon hydrogen can be deployed relatively quickly and utilise retrofitted energy infrastructure – ensuring network planning and generation capacity construction can occur in the most cost effective and joined-up way nationally and between member states.

2. Technical questions on Transversal Energy System Integration Enablers

2.1 How important do you consider the following measures to build a more integrated energy system?

ZEP emphasises the importance of the strategic development of CO_2 infrastructure to ensure the large-scale decarbonisation of European industrial and power generation sectors, while continuing to invest in the scale up of renewable energy sources. CO_2 transport and storage infrastructure is also instrumental in delivering early, large-scale volumes of low-carbon hydrogen produced with CCS, which will enable many industrial processes to be redesigned to avoid CO_2 emissions.

In the shorter term, hydrogen produced with CCS can already be applied on a large scale as a climate-neutral energy carrier before 2030 as part of the energy supply for high-temperature heating in the chemistry industry, oil-refining industry, and electricity production. In the longer-term, hydrogen can be produced based on renewable energy via electrolyses, and subsequently expand the hydrogen market created by the frontrunner projects based on blue hydrogen.

2.4 How do you consider that "low carbon" fuels that are not renewable but provide significant GHG emissions reduction compared to fossil fuels, such as non-renewable hydrogen and synthetic fuels with significantly reduced full life-cycle greenhouse gas emissions compared to existing production, should be treated?

ZEP believes that the European Commission should provide further clarity on the definition of sustainable biomass and a certification system for bioenergy, including associated GHG and sustainability criteria, based on a robust life-cycle approach and traceability system. This approach is essential to determine which economic activities can effectively contribute to the EU's climate objective of net-zero GHG emissions by 2050.

CCS and CO_2 infrastructure can also enable the production of early volumes of low-carbon hydrogen to be dispatched to industries and homes within this decade. In a previous paper for the delegated act on climate mitigation of the European Taxonomy for Sustainable Finance, ZEP addressed the matter of hydrogen manufacturing, stressing that the electricity used in the process should be correlated both temporally and geographically with the production of hydrogen. The former criterium would be based on when the electricity is produced and when it is consumed in the manufacturing; the latter would ensure that the electricity production purchased is dispatched in the same integrated electricity grid.

Low-carbon hydrogen will be needed in order to kick-start a clean hydrogen economy, paving the way for renewable hydrogen as soon as larger volumes will become available.

2.5 Do you think the use of hydrogen and e-fuels produced from hydrogen should be encouraged (multiple answers possible)?

- Yes, but only if produced and used in a way that leads to no or low GHG emissions along their life cycle, compared to the fossil fuel they are replacing.

Both renewable hydrogen and low-carbon hydrogen from reformation of methane with CCS have important roles to play in an EU hydrogen economy. Low-carbon hydrogen production from Steam Methane Reformers (SMR) is well understood, and production from both Auto-Thermal Reformers (ATR) and Partial Oxidation (POX) are in the states of early to medium commercial deployment. Reformers with CCS also offer future carbon removal potential using biomethane to create 'biohydrogen'.

The development of shared CO_2 infrastructure networks between hydrogen producing industrial regions underpins the future of an effective EU hydrogen economy. Without which, renewable hydrogen will struggle to reliably produce hydrogen volumes required to enable at

scale deployment of end-use sectors such as industry, transport, heating and power generation.

Low-carbon hydrogen production with CCS (including upstream emissions) will have a lower carbon footprint than electrolysis using electricity until electrolysis can supply hydrogen below at least 22.4-46gCO_2/MJ. Hydrogen production from electrolysis only has a lower carbon footprint than low-carbon hydrogen in a handful of locations.

The repurposing of existing natural gas infrastructure will be a key enabler for a hydrogen economy.

Importantly, low-carbon hydrogen is critical to bridge the gap and prevent stranded assets, as low-carbon hydrogen can utilise the infrastructure networks as renewable hydrogen capacity expands. Without which, assets would become stranded, or maintained without any use, resulting in higher energy system costs.

2.7 How important do you think the following principles are for a robust and comprehensive certification and verification system covering all renewable and low carbon fuels?

- The certification and verification system should ensure that the GHG impact of energy conversions along the value chain (e.g. renewable electricity used to produce renewable hydrogen) are fully taken into consideration, while avoiding double counting.
- Where CO_2 is used in the production of a fuel, the certification system should distinguish between fuels using CO_2 of fossil origin and CO_2 of non-fossil origin.

A revised and robust EU ETS directive, coupled with incentives to support timely large-scale deployment of all parts along the CCUS value chain, are needed to support the ongoing development of European CO_2 infrastructure and to reach the climate objectives. Currently, there are no incentives to capture and permanently store biogenic CO_2 emissions, despite the clear climate benefit of doing so. This is effectively hampering the necessary development and diverting investments in the different parts of the CCS value chain from the industry and energy sectors.

The European Commission should incentivise carbon dioxide removals (CDR) – which can be delivered at a large-scale by the deployment of CCS and CO_2 infrastructure – in addition to efforts aimed at climate change mitigation. CDRs need to be verified through robust life-cycle analysis. Captured CO_2 must be kept away from the atmosphere and stored in a manner that is intended to be permanent.

2.8 In the current system, only electricity suppliers are required to certify to consumers the share of energy from renewable sources by guarantees of origin. Do you think that this obligation shall be extended to suppliers of renewable fuels (such as biogas, biomethane or renewable hydrogen) as well, and possibly of "low carbon" fuels?

- Yes, for renewable fuels and low carbon fuels

2.10 Carbon-capture and storage/usage in the EU should play a prominent role in…

	Strongly agree	Agree	Disagree	Strongly disagree
Decarbonising the power sector	●	○	○	○
Decarbonising energy intensive industries (e.g. chemicals, cement, steel)	●	○	○	○
Production of hydrogen (i.e. based on natural gas with CCS)	●	○	○	○
Creating negative emission / carbon removal, e.g. via CCS applied to bioenergy[1] (BECCS) or direct air capture and storage	●	○	○	○
Providing captured CO2 as a feedstock for other industries	●	○	○	○

2.11 In addition to how CCS and CCU are treated in other EU legislation, do you think REDII should be revised to encourage the uptake of CCS and CCU?

- Yes

ZEP made reference to the input provided to the European Taxonomy's delegated acts and the consultation on a European Hydrogen strategy.

3.1 RENEWABLES IN ELECTRICITY

3.1.1 How would you rank the appropriateness of the following measures in tackling the remaining barriers for the uptake of renewable electricity that matches the expected growth in demand for end- use sectors?

[*Link to document 'Input to DG CLIMA on the Innovation Fund – Challenges for CCS projects and lack of alignment with the Taxonomy'*]

The average carbon footprint of the European electricity grid is very high. For installations that use grid-connected electricity, there is a need for Power Purchase Agreements (PPAs) to make the electricity input sustainable.

ZEP stresses the need for PPAs to be set up according to a methodology that ensures both temporal and geographical correlation between the unit producing the threshold-compliant

electricity and the hydrogen manufacturing unit that is using it, in the same manner as currently described in the Renewable Energy Directive:

- A temporal correlation – based on when the electricity is produced and when it is consumed in the manufacturing.
- A geographical correlation – ensuring that the electricity production purchased is dispatched in the same integrated electricity grid.