

ZEP's feedback to the Industrial Carbon Management Strategy

The Zero Emissions Platform (ZEP) welcomes the opportunity to provide input to the European Commission regarding an EU Strategy for Industrial Carbon Management. An EU strategy is crucial to lay the right basis for the many carbon capture and storage (CCS) and carbon capture and utilisation (CCU) projects that are in the planning phase and are expected to be operational within the next five years. As stated in an open letter signed with other stakeholders ZEP urges the European Commission to ensure the publication of this strategy this year and its fast implementation¹.

ZEP is pleased to contribute to this work and remains available to expand on any element of this response.

EU support for the deployment of CCS and CCU

The transition to climate neutrality will require a significant transformation of energy- and carbon-intensive industries, such as cement, lime, steel, and chemicals. CCS and CCU are an important component of climate toolbox and essential for the decarbonisation of industry and to enable carbon dioxide removals (negative emissions), contributing to sustaining industrial activity, preserving and creating jobs.

ZEP welcomes targeted support to the deployment of these technologies, both at EU and national level. We further note that deployment support must take into account the relative climate contribution of the different technologies and potential trade-offs (e.g., energy use, land use, biomass use). This should be based on best available scientific evidence and full life-cycle assessment. Support to CCU should target, primarily, those applications where CCU is intended to be permanently stored (e.g., long-term storage in products).

Supporting the development and deployment of industrial carbon removals

Tackling climate change will require a plethora of approaches. While removals must never be used as a substitute to emissions reductions, carbon removals are an essential part of that portfolio and necessary to counterbalance both residual and historical CO₂ emissions. It is thus essential that removals do not preclude the much-needed increased efforts in emission reductions. With this in mind, ZEP considers that carbon removals play an important role, albeit at a limited scale.

Support measures to industrial carbon removals should prioritise the types of removals with higher climate benefit potential and that are more technically advanced (including the development of monitoring, reporting and verification methodologies). ZEP notes that further research is needed on enhanced mineralisation processes, biochar and ocean-based removals^{2,3}. The inclusion of environmental safeguards (e.g., biomass use, energy use) is also important to maximise the environmental benefit of the technologies and avoid harmful impacts.

¹ [Open Letter: Support for the Publication of an Industrial Carbon Management Strategy](#), July 2023.

² Intergovernmental Panel on Climate Change (2022). [Climate Change 2022: Mitigation of Climate Change](#).

³ Smith, S. M., Geden, O., Nemet, G., Gidden, M., Lamb, W. F., Powis, C., Bellamy, R., Callaghan, M., Cowie, A., Cox, E., Fuss, S., Gasser, T., Grassi, G., Greene, J., Lück, S., Mohan, A., Müller-Hansen, F., Peters, G., Pratama, Y., Repke, T., Riahi, K., Schenuit, F., Steinhauser, J., Strefler, J., Valenzuela, J. M., and Minx, J. C. (2023). [The State of Carbon Dioxide Removal - 1st Edition](#).

ZEP welcomes the potential integration of industrial carbon removals in the EU ETS, as outlined in the revised EU ETS Directive and looks forward to cooperating with the European Commission regarding the timeline for integration and market design. The merits of a phased-approach could be explored, e.g. where a separate compliance market for CDR is implemented alongside the EU ETS, before full integration.

Voluntary carbon markets can play a role alongside compliance markets, stimulating early demand for carbon removals. ZEP notes that the work developed under the certification framework is essential to make sure that VCMs are supporting high integrity carbon removals.

Main barriers for CCS development

Limited information on the potential for CO₂ storage across the EU/EEA is a key barrier to the scale up of CCS. While the CO₂StoP database provides pan-European coverage of CO₂ storage potential, this is largely outdated as new storage assessments have become available since publication. More recent estimates paint an optimistic picture, showing that Europe has enough potential storage capacity to match projected demand⁴.

ZEP welcomes the injection capacity objective set out in the proposed Net-Zero Industry Act, seeing that, while storage potential may not be a barrier to CCS development, converting that potential into effective storage/injection capacity is essential to enable investments along the CCS value chain. Adopting a value chain approach is essential to ensure that the CO₂ capture and transport infrastructure are developed in parallel with storage capacity to avoid the so-called ‘chicken and egg’ problem. Streamlined permitting procedures are required to support swift infrastructure development and reinforce CCS as a net-zero technology.

Developing the ‘business case’ is essential and urgent to drive investments by providing revenue certainty and de-risking projects.

Developing CO₂ transport infrastructure

While some aspects of CO₂ infrastructure are covered by the EU Taxonomy for Sustainable Activities, the TEN-E Regulation, and the CO₂ Storage Directive, there is no overarching policy framework for CO₂ transport infrastructure development. ZEP considers that introducing a [regulatory framework for CO₂ transport](#), focused on the development of non-discriminatory, open-access CO₂ transport infrastructure, is essential to complement the CO₂ Storage Directive and to establish a clear legal and regulatory basis for planned projects, in particular for cross-border cooperation.

ZEP supports the development of such regulatory framework, with the following elements:

- Integrated network planning.
- A dedicated EU level regulatory authority responsible for CO₂ transport infrastructure, a role that could be taken by an existing regulatory body.
- A regional approach to network development, with coordination between relevant competent authorities and industry, with a particular focus on integration between cross-border CCS systems.

⁴ Clean Air Task Force (2023). [Unlocking Europe’s CO₂ Storage Potential: Analysis of Optimal CO₂ Storage in Europe](#).

- Regulated tariffs at national level (and EU level for transport infrastructure where the EU steps in, cross-border connections beneficial from an EU perspective) for onshore pipeline transport, aimed for both public and private owners/operators.

A range of funding options should support CO₂ transport infrastructure development, including private and public investment (national and EU), and complement the regulatory framework for CO₂ transport. The market will likely develop, at first, with point-to-point connections and bilaterally negotiated fees. ZEP considers that public funds are needed in order to kick-start the market, including EU-level funding for the full CCS value chain, along with the possibility to fund each component of the value chain separately. In addition, Carbon Contract for Difference (CCfD) schemes and other business models should be explored to de-risk projects and incentivise investment in projects. Finally, it is important that Connecting Europe Facility (CEF) funding is sufficient to support cross-border transport and storage of CO₂.

Developing common CO₂ standards

The development of an international standard for CO₂ specifications is essential and urgent to complement the regulatory framework for CO₂ transport, enabling the development of the CO₂ transport network in a safe, cost-efficient, interoperable, and accessible manner.

The CCUS Forum Expert Group on CO₂ specifications has developed a report to complement the work of the CCUS Forum Working Group on CO₂ infrastructure which provides recommendations on specifications for CO₂ transport focusing on CO₂ composition, pressure, purity, and temperature, and summarises the knowledge base on which stakeholders can base their convergence efforts for a network code. ZEP urges EU legislators to consider the findings of the Expert Group to determine further work on CO₂ standards.

Mapping CO₂ storage across Europe

Limited information on the potential for CO₂ storage across the EU/EEA is a key barrier to the scale up of CCS. While the CO₂StoP database provides pan-European coverage of CO₂ storage potential, this is largely outdated as new storage assessments have become available since publication.

An updated and maintained [European Storage Atlas](#) is essential to map both capacity and distribution of CO₂ storage potential, enabling CCS project developers to identify storage resources for further appraisal and prepare for the development of larger storage capacities. In addition, the Atlas would be an essential component of integrated infrastructure development, supporting the efficient development of transport networks.

Updated National Energy and Climate Plans (NECPs)

ZEP welcomes the guidance provided by the European Commission on the development of the CCS elements in the NECPs and supports the development of NECPs at member state level through an inclusive approach, involving stakeholders.

ZEP notes, however, that only a limited number of draft updated NECPs have been submitted. Further efforts are needed, as NECPs are essential to promote the development of CCS and CCU projects at national level and to stress the role of these technologies in cost-efficient industrial decarbonisation.

More efforts on public perception and awareness of CCS are also needed, along with capacity building at national authorities. The Industrial Carbon Management Strategy should complement the NECPs and include a focus on capacity building at a national, regional, and local level, as well as activities aimed at raising awareness among national and regional administrations. There is a need for member state authorities to support project promoters in the implementation of CCS and CCU projects.

Industrial partnership

ZEP has introduced a new Network Projects operating in parallel to the Networks Policy & Economics and Technology. The Network Projects creates a forum where CCS and CCU project developers and European, regional, national, and local policymakers exchange information, discuss enablers and good practices, hurdles and de-risking on planned and ongoing projects across Europe.

There is an urgent need to support projects that are being developed across Europe by facilitating project-to-project exchanges. There is currently no EU/EEA-wide platform that specifically gathers and allows information sharing between the many projects being developed in Europe. By introducing this Network, ZEP establishes an important tool to efficiently support projects and, at the same time, actively support the European Commission and European governments regarding necessary policy/regulation, funding and actions linked to public perception.

The Network Project creates a framework strengthening the sustainability of the CCS/CCU industry and promote its large-scale deployment throughout Europe, by:

- De-risking projects. The Network will aim to highlight insights on practices, business models, framework conditions, policy and infrastructure enabling CCS/CCU deployment, considering varying institutional contexts and geographies. Both financial and technical de-risking issues will be addressed, looking at supply and demand of CO₂.
- Accelerating projects. The Network will aim to reduce project development time throughout the industry by enabling in-depth exchanges on proper applications of project management, policy and needs requirements as well as best practices on stakeholder management.
- Enabling cost-effective realisation of projects. The Network will aim to improve cost-effectiveness of CCS/CCU deployment by promoting practices enabling economies of scale and conducive contractual structures.

Through this work, the Network Project' objective is to make a timely and significant contribution to the EU's CO₂ emissions reductions goals and to the elaboration of its relevant European and national policy packages such as the Net-Zero Industry Act and RePowerEU.

Public awareness and perception

A crucial role for the EU strategy is to foster public awareness and social acceptance of CCS and CCU by involving societal actors and promoting education through effective communication strategies. Supporting public awareness and perception should be seen as a shared role for the EU, Members States, local authorities and projects.



International cooperation

A Europe-wide approach is essential to maximise the benefits and minimise the costs of climate mitigation. Cooperation with the UK and EEA is crucial to maximise potential and drive efficient CO₂ market development.

The EU as an important role to play as a global player – and should aim for the role of global leader on the development and deployment of CCS and CCU technologies, addressing the barriers to development and large-scale deployment.

About the Zero Emissions Platform

ZEP is the advisor to the EU on the deployment of CCS and CCU – a European Technology and Innovation Platform (ETIP) under the European Commission’s Strategic Energy Technologies Plan (SET-Plan).

ZEP supports the European Union’s commitment to reach climate neutrality by 2050, defined as net-zero greenhouse gas (GHG) emissions by 2050. To this end, CCS technologies represent readily available and cost-efficient pathways for the decarbonisation of industrial and energy sectors in the European Union. Some applications of CCU – where CO₂ is stored in a manner intended to be permanent – can also contribute to this goal.