

Norwegian trade unions and employers' joint response to the European Commission's call for evidence on industrial carbon management

Referring to the call for evidence on industrial carbon management, we submit a joint response on behalf of Norway's main confederations of trade unions and businesses (LO and NHO). Our organisations welcome the Commission's work on creating a comprehensive EU strategy for carbon capture, transport, usage, and storage, as well as the ambition to create a single market for CO₂ transport and storage services by 2030, as announced to the CCUS Forum in Oslo in October 2022,¹ as well as the first steps presented in the proposal for the Net Zero Industry Act (NZIA) of March 2023.

Carbon capture and storage (CCS) as well as industrial carbon removals based on CCS technologies are essential for meeting our shared emission reduction objectives, as recognised by the IPCC,² the IEA,³ the European Scientific Advisory Board on Climate Change,⁴ and in the Commission's own analyses of possible EU pathways to climate neutrality.⁵ Captured CO₂ can also be used as a feedstock to produce different materials, chemicals or feed (CCU). Our modern economies are built on carbon, and while the primary policy objective must remain reducing emissions to the atmosphere, the sustainable use of captured CO₂ may still play a longer-term role in the circular economy.

A future CCUS value chain must be supported by a price on carbon management services relative to the costs of emitting. However, the market alone does not yet provide the necessary incentives to develop and deploy industrial carbon management solutions, as both capital costs and risks are high, and the potential for revenues in the short run is uncertain. As noted by the ENTEC-consortium, accelerating CCUS is a "chicken and egg" problem.⁶ Transport and storage operators will not invest unless they have binding CO₂ volumes from emitters, who in turn will not invest in capture technology without access to transport and storage. Hence, de-risking is needed across the value chain to support, build, and drive this much needed market. Developing a sustainable European CCUS business requires a value chain perspective, harmonised frameworks, and coordination across borders.

Norway is a global frontrunner having safely stored CO₂ since 1996 at the offshore *Sleipner* gas field, and at the front when it comes to research, capture technologies, transport and storage. Norway has ambitious industry actors eager to contribute towards the net zero economy both at home and abroad. The state-supported Norwegian *Longship* project has in many ways solved the chicken and egg problem for the first European capture projects in cement (Heidelberg Materials) and waste-to-energy (Hafslund Oslo Celsio), by securing storage for these first movers. *Northern Lights*, the transport and storage part of the *Longship* project, offer permanent CO₂ storage to European customers with an annual storage capacity of up to 1.5 million tons CO₂ in the first phase of the project, expected in operation by the second half of 2024,⁷ and 5 mt in phase two. However, the opportunities on the Norwegian Continental Shelf (NCS) are much larger,⁸ and several exploration and storage licenses have already been awarded by the Norwegian Ministry of Petroleum and Energy.

¹ See [Speech by Commissioner Simson at the CCUS Forum](#), Oslo 27 October 2022.

² IPCC (2022): [Climate Change 2022: Mitigation of Climate Change – Working Group III Contribution to the AR6](#).

³ IEA (2021): [Net Zero by 2050 – A Roadmap for the Global Energy Sector](#).

⁴ ESABCC (2023): [Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030–2050](#).

⁵ European Commission (2018): [In-depth analysis in support of the Commission Communication COM\(2018\) 733](#).

⁶ ENTEC (2023): [EU regulation for the development of the market for CO₂ transport and storage](#).

⁷ See [CCS Norway](#) for further information on the Longship project.

⁸ See the Norwegian Petroleum Directorate [CO₂ atlases](#).

The strong scope for cooperation between Norway and the EU in industrial carbon management is recognised in the EU-Norway Green Alliance, where both sides commit to working together bringing these technologies to market.⁹ In order to build a material and sustainable CCUS value chain in Europe, Norway and the EU must be seen as one CCUS market. LO and NHO together with our affiliated organisations look forward to contributing to this joint effort and build on the knowledge already created by the Longship project.

We have the following experiences and comments to the Commission's call for evidence:

- **CO₂ transport:** The Commission highlights the lack of CO₂ transport infrastructure as a barrier to the further development of a European market for industrial carbon management. There are currently several projects for CO₂ pipeline transport in progress in Europe, for example the Equinor and Wintershall Dea project of a pipeline between Norway and Germany. It could be capable of transporting 20-40 Mt CO₂ annually from 2037 for storage offshore Norway, enabling large scale benefits and cost-efficient CO₂ storage.¹⁰ In addition to fixed pipeline infrastructure, the Commission should also consider the role of flexible transport modes (including CO₂ transport by ship, barge and truck). Flexible transports may be particularly important for building up a market, as it allows transporting smaller volumes of CO₂ including to industrial use. The ENTEC-consortium identifies an EU funding gap as regards funding available to flexible transport modes, which should be addressed as part of tackling the transport barrier.¹¹ The TEN-E and CEF are good examples of frameworks necessary to establish CO₂ infrastructure, but where the role of flexible transport modes should be more clearly defined. Furthermore, bilateral agreements on CO₂ transport within the EU and between the EU and the EEA should be enabled. Work on common European standards can contribute to strong foundations of cross-border cooperation streamlining the CO₂ value chain.
- **CO₂ storage and use:** We welcome the European CO₂ storage target proposed in the NZIA. To reach the target, it is essential that capacity obligations can be met by storages on the NCS. In Norway, the industry has plans to develop further CO₂ storage projects offshore, leading to a rapid escalation of the annual overall storage to potential 40-50 million tons in 2030.¹² By connecting large emission sources in Europe with the extensive storage opportunities on NCS, Norway can play a key role in achieving Europe's climate and green industrial objectives, including the NZIA. In setting the European storage targets, it is furthermore important to consider a growing market for CCS-abated hydrogen. In Norway, it has been estimated that natural gas volumes equivalent to 16% of today's total production could be used for hydrogen in 2030, which would require additional CO₂ storage capacity.¹³ CO₂ may also be used as feedstock in numerous industrial processes to make fuel, feed, or materials. In Norway, projects to use captured CO₂ to produce e-fuel,¹⁴ algae cultivation¹⁵ and fish feed¹⁶ are ongoing. In this context, we would welcome a Commission assessment of the contribution of different CCU applications to Europe's climate policy objectives.

⁹ See the European Commission press release of 24 april 2023: [New EU-Norway Green Alliance to deepen cooperation on climate, environment, energy and clean industry](#).

¹⁰ Joint press release (2022): [Wintershall Dea and Equinor partner up for large-scale CCS value chain in the North Sea](#).

¹¹ ENTEC (2023): [EU regulation for the development of the market for CO₂ transport and storage](#).

¹² Konkraft (2023): [The energy industry of tomorrow on the NCS – status report 2023](#).

¹³ Oslo Economic, Greensight & SINTEF (2023): [Sammenhengende verdikjeder for hydrogen](#) (Coherent value chains for hydrogen).

¹⁴ See [Nordic Electrofuel](#).

¹⁵ Business Norway: [Algae: a sustainable, circular resource for the future](#).

¹⁶ See [Gas2Feed](#).

- **Hydrogen and hard-to-abate sectors:** The Commission points to certain sectors in which industrial carbon management can be expected to play a particularly important role, such as in hard-to-abate industrial segments, waste-to-energy, power production from gas, hydrogen produced from gas, and to generate negative emissions. When assessing the emission reduction potential of these technologies, it is important to recognise the role hydrogen produced from gas with CCS can play in the broader decarbonisation of the economy alongside renewable hydrogen. For example, delivering clean fuel to maritime transport by hydrogen or ammonia, in products combined with captured CO₂, or even delivering negative emissions if produced by biogas.
- **Industrial carbon removals:** Industrial carbon removals based on CCS technologies (including BECCS and DACCS) are considered necessary to reach the EU's objective of climate neutrality by 2050, and importantly, negative emissions thereafter.¹⁷ Today, there are numerous European bioenergy and waste-to-energy plants with ambitious plans for CCS and large-scale carbon removals. However, these technologies are not sufficiently incentivised in the EU and a European framework for certification and trading of carbon removal certificates is needed to realise these projects. By allowing state support and trading of carbon removal certificates on the voluntary market, public and private capital can work together to realise these crucial industrial climate projects. Norway has a large industrial sector with the ability to switch from using fossil coal in the production process to using biocarbon with CCS (BECCS), but at a significant economic cost. Still, several companies in this sector have plans to attain climate neutrality. A stable and favourable regulatory framework, allowing industry to not only survive but to thrive, is necessary for this industry to make this leap. At the same time, any incentives for emission removals should be carefully designed not to distort signals for emission reductions. Based on EU's work on carbon removal certification, the Commission should consider strengthening incentives, for example through making a fixed amount of ETS credits, or equivalent credits, available to industrial carbon removal projects. To robust technology investments and piloting, regulatory clarity is paramount. The collaborative use of CCS and DACCS should be recognised as an "emission reduction" within ETS compliance, particularly for brownfield facilities.
- **Market making:** Through our multilateral and multidisciplinary decadal work on CCS, our organisations have experienced the difficulties of identifying initial business cases.¹⁸ While a higher carbon price in principle should incentivise capture and storage rather than emitting, the cost of capturing and the lack of a market valuing low carbon products, demands EU and national funding. Uncertainty in costs and the liability and financial security issues related to transport and storage, also remain. This comes in addition to global competitiveness and carbon leakage considerations. With the inclusion of waste incinerators in the ETS, those owned by municipalities may enforce CCS costs as a waste handling levy. However, even waste is exposed to competition, hence, other requirements and incentives for choosing green solutions is also needed to avoid waste being exported out of the EU. Through tendering for carbon neutral products and services, and by using public and massive purchasing power, there can be created a market for CO₂ neutral steel, cement and waste handling services, leading to more investments in CCS technology. In Norway, CO₂ capture of the Hafslund Oslo Celsio waste incinerator is part of the government supported *Longship* project. Several additional Norwegian waste handling companies are also assessing the feasibility of capturing CO₂ from waste incineration plants. Nevertheless, even for these projects the financing is not solved and to many sectors, the lack of willingness to pay for emission free products is a barrier. The introduction of a European certification scheme of the life-cycle emissions of products, in combination with low-emission requirements in public procurement,

¹⁷ European Commission (2018): [In-depth analysis in support of the Commission Communication COM\(2018\) 733](#).

¹⁸ Multiconsult (2019): [Hvordan gjøre CO₂-fangst og -lagring lønnsomt?](#) (How to make CO₂ capture and storage profitable?)

should be assessed in this regard. Over time, with technology use and practice, increasing volumes, access and predictability, costs will fall.

- **Funding:** The funding available for Europe's green transition is still not sufficient. The European Court of Auditors has found that while the EU increased its share of spending committed to climate action to 30% for the 2021-2027 EU budget, still amounts to less than 10% of the total investments needed to reach the 2030 targets.¹⁹ The EU and EEA member states should consider increasing the funding available to CCUS projects through direct financial support for studies and development of capture projects, and a system for carbon contracts for difference. As mentioned above, credits for industrial carbon removals and low-emission product requirements in public procurement, could further strengthen incentives.
- **Industrial alliance:** A European alliance for industrial carbon management could help strengthen cross-border cooperation between CO₂ emitters and transport and storage operators in different European countries, as well as advice national policy makers in the EEA on further actions to develop the market.
- **Knowledge, public acceptance and just transition:** Knowledge of and public acceptance of CCUS differs between European countries. Our organisations' experience is that public acceptance of offshore CO₂ storage is significantly higher than of onshore storage. We welcome any attempt to further strengthen knowledge and public acceptance for CCUS in Europe and believe the Commission should take an active role in this. Social partners, including trade unions, could contribute through communicating the importance of these technologies to the just transition of European industries – both to those with few or no other options for decarbonisation, and to those who can deliver the necessary technological and geological expertise. It has been estimated that a large-scale industrial carbon management industry could employ up to 125 000 people directly in Europe by 2050.²⁰ To better ensure public acceptance, it will furthermore be important that jobs and value creation are shared across a value chain which would be spread across Europe.

¹⁹ European Court of Auditors (2023): [Special report 18/2023: EU climate and energy targets – 2020 targets achieved, but little indication that actions to reach the 2030 targets will be sufficient.](#)

²⁰ SINTEF (2018): [Industrial opportunities and employment prospects in large-scale CO₂ management in Norway.](#)