



Denmark's position paper on deploying a European framework for CO₂ transport infrastructure

Denmark's main priorities for transport infrastructure for a single market of CO₂

Carbon Capture, Utilisation or Storage (CCUS) are important tools for meeting climate goals, both globally and at the EU level. The European CCUS market is at an early stage, and it is important to support market development at the EU level to ensure that Europe becomes a global frontrunner in CCUS. This requires establishment of a framework for all necessary parts of the CCUS value chain.

Reaching net-zero emissions by 2050 and negative emission thereafter will require CCUS to deliver substantial reductions and removals well before 2040. This will require a massive scale up of all parts of the CCUS value chain – capture, transport and storage or utilisation. In this context, timely establishment and regulation of transport infrastructure will be critical for a successful CCUS implementation. With capture plants and storage facilities already being prepared or built in many Member States and with the adoption of the Net Zero Industry Act (NZIA), the first steps have been taken to develop a European market for storage. However, to prevent CO₂ transport infrastructure becoming a bottleneck in the development of the full CCUS value chain and a common European CCUS market, it is crucial to establish a European framework for CO₂ transport infrastructure.

Sufficient European CO₂-transport infrastructure is a key enabler for the successful large-scale deployment of CCUS. It is necessary to develop the requisite cross-border infrastructure for transporting CO₂ from its sources to suitable storage- or use sites. Whereas multiple modes of CO₂ transport - in particular shipping and CO₂ terminals - will likely play an important role in maturing the CO₂ market, a coherent transboundary pipeline will most likely over time bring down transportation costs, where large volumes of CO₂ for storage or utilisation will be transported.

A regulatory package for CO₂ transport infrastructure should:

- Support a market-driven development and rollout of CCUS.
- Establish a framework for regulation of cross border transportation.
- Take caution when regulating an emerging market and keep a flexible approach during early stages to prevent ill-suited regulation of frontrunners.
- Provide access to financial de-risking to enable backbone infrastructure.
- Establish a platform for coordination and knowledge-sharing among market actors to help the development of the infrastructure.

Time is of the essence:

- Denmark urges the Commission to launch its CO₂-transport package announced in the Industrial Carbon Management Strategy as soon as possible and no later than 2025.

A framework for CO₂ transport infrastructure is a necessity for a single European market for CCUS

With the agreement on the Net Zero Industry Act (NZIA), the target has been set for the EU to have the injection capacity to annually store 50 million tonnes of CO₂ by 2030. While this is an important step in kickstarting a European CCUS market, it is equally important to establish a framework for transport infrastructure as a key enabler for successful market development. Although the target set in the NZIA ensures the availability of storage capacity by 2030, it is crucial that a transportation framework follows suit in a timely manner in order to avoid stranded assets.



In the Industrial Carbon Management Strategy, the European Commission has announced a forthcoming CO₂ transport regulatory package that will address many key factors, such as market structure, cross-border integration, technical harmonisation, etc. While this is a positive and important step, it is imperative that regulation is in place at an early stage. If the regulation is presented too late, it risks hindering the emerging market and ongoing front-runner projects. Additionally, a lack of clarity in the regulatory framework at the EU level could lead to an unclear framework for investments in transport infrastructure at the national level. **Therefore, Denmark urges the Commission to present its CO₂ transport regulatory package as soon as possible and no later than 2025.**

To enable a widespread large-scale implementation of CCUS in Europe, it is necessary to develop a cross-border CO₂ transport network comprising pipelines, ships, and vehicles for transporting CO₂ from its sources to suitable storage sites. This framework should establish the right conditions for the market to develop a cost-effective CO₂ transportation network. To avoid hampering an emerging market, all relevant means of transport should be included, depending on each business case. **Generally, it is important to exercise caution and not overregulate an emerging CCUS market too early on**, as this may negatively impact development and ongoing front-runner projects. Moreover, it is not necessary to regulate the transport infrastructure to the same extent as electricity infrastructure, since CO₂ does not play a role in the energy system when it comes to for example, security of supply.

Furthermore, sector-specific contributions to CCUS should be avoided, as the development of CCUS should be driven by all relevant market actors. Therefore, CO₂ transport regulation should only set the necessary key enablers to support the development of the CCUS market, such as cross-border coordination, technical harmonisation of CO₂ standards, and incentives for investments. However, it will be important to strike the right balance, where hesitation to not overregulate does not lead to no regulation. It is important to send a clear signal to the market about regulation and direction of the framework for CO₂ cross-border transportation.

The regulatory framework should primarily address transportation via pipelines. CO₂ transport by ship, by truck or by rail does not come with the same inherent market failures as pipeline infrastructure. This is due to the unique nature of pipeline transport (large CAPEX investments, low OPEX costs, low flexibility, long lead times, and a monopoly-like situation), which does not characterise the other modes of CO₂ transport to the same extent. Another aspect that the regulation needs to focus on is safety. Safe transport of CO₂ is crucial. Hence, safety requirements should be ambitious and ensure that no pipelines are allowed to be built in the EU where there is a risk of significant leaks.

Establish an EU-approach for financial de-risking

Current financial EU instruments such as the Connecting Europe Facility (CEF) and the Innovation Fund provide funding at a project specific level. However, one of the main hurdles of developing a cross-border CO₂ infrastructure is de-risking. It will therefore be necessary to look into **how the EU could best contribute to financial de-risking of operators of CO₂ transport in the EU**. In order to mitigate the financial risks in the first stages of infrastructure development and ensure a long-term cost efficiency of transport infrastructure, it is necessary to consider the financial security for operators and investors in transport infrastructure and secure that owners of the infrastructure ensure that it is dimensioned for future needs.

Cross-border infrastructure coordination

The current development of the CCUS market is planned and constructed, often with a project-based approach depending on Member State or EU subsidy funds. These networks include various means of transportation, such as pipelines, ships, and vehicles. In the long term, these networks can be expanded and interconnected across Europe, connecting CO₂ sources with distant storage sites across borders. In order to ensure the best possible conditions for the market actors to invest in large cross-border infrastructure projects, there will be a need to increase coordination among relevant market actors.

Coordinating CO₂ pipeline infrastructure can also provide security to industries with hard-to-abate emissions across Europe, ensuring access to CCUS infrastructure and preventing ad hoc strategies that could slow down the progress of a trans-European transport network. The industrial emission sources across the EU are fairly well known at this point, which could serve as a starting point for coordinating a pipeline infrastructure that connects them to already identified storage sites. Such coordination could also provide clarity for producers of methanol



and e-fuels on where to place their facilities to achieve the best access to a CO₂ transport network. This can be supported at European level by coordinating forums where the industry can exchange views and possibilities. onto provide clarity on where pipeline routes are needed, coordination at the EU level, including between market actors, should be initiated as soon as possible.

Addressing CO₂ quality standards

In the long term, when a pipeline infrastructure is sufficiently developed to constitute a backbone of a trans-European transport network, it will need to handle CO₂ streams from different sources. CO₂ for storage and utilisation should be able to be transported in the same pipeline infrastructure. Therefore, **it should be possible to mix CO₂ of fossil origin and CO₂ of biogenic origin in the same transport infrastructure** in order to ensure harmonisation and avoid market fragmentation. To this end, it is necessary to establish a certification scheme, where CCU actors will be able to document that the origin and source of the CO₂ they receive is of biogenic origin, in line with relevant EU legislation¹. Experiences with the European Guarantees of Origin and Certification Schemes for green gases could be utilised in the design process. Furthermore, it is necessary to develop a common minimum CO₂ stream quality standard in order to ensure that transportation through an interconnected pipeline infrastructure can handle CO₂ streams from all relevant sources without causing market fragmentation.

Finally, this also raises the questions of setting common CO₂ purity standards for transport in a trans-European pipeline infrastructure. In this regard, **CO₂ purity standards should be set at a level** that on the one hand, takes into account that the requirements should not lead to disproportionate costs for purification at the capture sources, while on the other hand not allowing for so many impurities that the pipelines themselves become disproportionately expensive to build.

¹ Commission Delegated Regulation (EU) 2023/1185 of 10 February 2023 supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a minimum threshold for greenhouse gas emissions savings of recycled carbon fuels and by specifying a methodology for assessing greenhouse gas emissions savings from renewable liquid and gaseous transport fuels of non-biological origin and from recycled carbon fuels.

