

A strategy for the industrial management of CO2 emissions in the European Union

On 6 February 2024, the European Commission published a document 'Towards ambitious industrial carbon management in the EU', including a proposed strategy and vision in this area. It cites the goal of climate neutrality across the EU economy by 2050 and a 55% reduction in greenhouse gas emissions by 2030, followed by a 90% reduction by 2040. A shift away from fossil fuels is key, and this will be achieved through the development of RES and improved energy efficiency. In parallel, the European Union is emphasizing the development of CO2 emissions management, considering it a 'fully-fledged' part of climate neutrality policy. This will be applied in economic sectors where it is too costly to abandon the use of fossil fuels, as well as in sectors generating CO2 process emissions that cannot be eliminated, such as transport and agriculture.

The implementation of the EU's industrial CO2 management strategy will follow three pathways, namely: (1) CO2 capture and storage (Carbon Capture and Storage, CCS), (2) CO2 capture for economic use - utilization (Carbon Capture and Utilization, CCU) and (3) CO2 removal from the atmosphere (Carbon Dioxide Removal, CDR). A key element linking all these activities should be an adequate CO2 transport infrastructure. The development of a CO2 value chain is envisaged from its source (process emissions, fossil fuels, biomass) through capture (from industrial plants, energy production plants or from the air), then transport (by pipeline, sea, rail, road) to utilization facilities (synthetic fuels, construction, plastics) or permanent storage (on land or at sea).

The strategy envisages an implementation over three time horizons. By 2030, an EU injection potential of 50 million tonnes of CO2 per year is envisaged as a target, linked to the establishment of transport infrastructure in the form of pipelines, ships and, at least temporarily, rail and road transport under EU and national funding programmes. CO2 capture infrastructure hubs and industrial clusters are to be established, and contracts for CO2 capture and storage are to be concluded. In the second phase, by 2040, the economic maturity of the individual CO2 value chains should be reached and CO2 would then become a tradable commodity within the EU single market for storage or further use. This would be based on an EU-wide CO2 transport and storage infrastructure, with pipelines and maritime transport as the main modes of transport. It would operate within a single regulatory environment, with guaranteed non-discriminatory access to competitive CO2 transport and storage services (the emergence of an entirely new market for CO2 capture/collection services and its transport for storage or use). After 2040, industrial management of CO2 emissions would be an integral part of the EU's economic system, with CO2 becoming a major raw material in coal-based industrial processes or in the production of transport fuels.

The strategy envisages a number of initiatives by the Commission under the different tracks. In the area of transport, the initiation of works on a regulatory package for CO2 transport and on an EU infrastructure planning mechanism to regulate transport in the context of the EU ETS mechanism and multimodality and liability for leakage and to standardise the purity of transported CO2 streams are being proposed. The announced measures in the area of CCS are interesting. A platform for assessing and aggregating demand for CO2 transport or storage services in order to match service providers, the creation of an investment atlas of potential storage sites based on a common format, the adoption of sectoral action plans, the development of detailed guidelines for the permitting processes for strategic carbon-neutral technology projects for CO2 storage are all forecasted. In turn, Member States should include an assessment of capture needs and storage capacities/options and identify actions to support the implementation of the CCS value chain in the update of their NAPs, ensure that transparent

permitting procedures are in place, support the development and implementation of CCS in strategic carbon-neutral technology projects and enable geological services to cooperate in data collection and reporting.

The proposed measures are very ambitious and wide-ranging. They bring with them a whole series of challenges and will require huge financial outlays for both CO₂ capture facilities and transport infrastructure. However, the future CO₂ management 'market' has enormous economic potential. According to the Commission's estimates, from 2023 onwards, the CO₂ value chain management will generate a total economic value of between EUR 45bn and EUR 100bn across the EU and help create between 75,000 and 170,000 jobs.

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