



EUROPEAN  
ENERGY

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# 10 Recommendations for Scaling Up Carbon Capture Utilisation and Storage in the European Union

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# Introduction

Another record-breaking hot summer underlines that we need to drastically reduce CO<sub>2</sub> emissions in order to meet our global commitments in the Paris Agreement limiting global temperature increases to 1.5 degrees.

All available technologies must be deployed if the EU is to reach its goal of climate neutrality by 2050. Carbon capture, utilisation and storage (CCUS) will play a significant role in achieving this. It is of vital importance that the European Commission works to promote both utilisation and storage technologies on an equal footing in a new European CCUS Strategy and in future initiatives and legislation.

It will be essential to store CO<sub>2</sub> permanently underground using carbon capture and storage technologies (CCS), which can contribute to significant emission reductions. However, CO<sub>2</sub> is also an important feedstock in carbon capture and utilisation (CCU) technologies, which are crucial for the green transition of a number of hard-to-abate sectors. Thus, it is necessary to create incentives for CCU for off-takers as well as CO<sub>2</sub> emitters. This will stimulate demand which CCU operators are ready to fulfil.

As a leading company in Power-to-X, European Energy will contribute significantly to CCU with the world's first large-scale e-methanol plant in Kassø, Denmark. By early 2024, the plant will produce up to 42.000 tons of e-methanol annually. The e-methanol, derived from renewable hydrogen and biogenic CO<sub>2</sub> captured from a biogas plant, will serve as a sustainable fuel for shipping and a raw material for plastic production.

In this position paper, European Energy proposes key policy and regulatory measures for the European Commission to consider when formulating a strategic vision for CCUS deployment in the EU. The following 10 recommendations will support the creation of a single market for CO<sub>2</sub>, which is the fundamental first step for a thriving European CCUS industry. Unlocking the full climate potential of CCUS requires the establishment of a comprehensive framework, including targets for carbon capture securing access to CO<sub>2</sub>, the development of a European CO<sub>2</sub> infrastructure, and support targeting both CCU and CCS.

# Secure CO<sub>2</sub> availability for Utilisation and storage

Both CCU and CCS technologies can only fulfil their full potential if sufficient CO<sub>2</sub> is available in a single market for CO<sub>2</sub>. European Energy recommends the following measures that will boost the access to CO<sub>2</sub> across the EU:

## 1 Set EU targets for carbon capture towards 2050

The European Commission should set EU targets for carbon capture by 2050, including short-term targets to act as clear milestones towards 2050. In addition, Member States should be required to include carbon capture targets in their National Energy and Climate Action Plans (NECPs), along with measures for transport, use, and storage development. However, carbon capture should be seen as a transitional technology and must not become an excuse for new fossil fuel investments. Instead, carbon capture should be limited to point sources necessary for society such as waste-to-energy plants, combined heat and power plants, and cement production, as well as biogenic sources meeting EU sustainability requirements.

## 2 Require carbon capture on new installations

New installations producing or combusting biofuels and biomass as well as installations providing heating and/or electricity through waste incineration should be required to be equipped with carbon capture. The entry into force of such a requirement must be based on an assessment of technology maturity and expectations for the development of an EU-wide CO<sub>2</sub> infrastructure.

## 3 Phase-in carbon capture for existing installations

Existing biomass and waste-to-energy installations should also be required to install carbon capture. However, the requirement should be phased in concurrent with the development of a European CO<sub>2</sub> infrastructure and technology maturity.

# Establish an EU-wide CO<sub>2</sub> infrastructure

Establishing a European CO<sub>2</sub> infrastructure enabling the trade of CO<sub>2</sub> is essential to creating a competitive and profitable single market for CO<sub>2</sub>. The establishment should go hand in hand with hydrogen infrastructure and the deployment of renewable energy in order for CCUS to contribute as much as possible to achieve the European climate goals. As an example, climate benefits green fuels such as e-methanol depend heavily on the combination of biogenic CO<sub>2</sub> and hydrogen produced by renewable energy. European Energy recommends the following measures to support the establishment of an EU-wide CO<sub>2</sub> infrastructure:

## 4 Analyse infrastructure needs

The European Commission should analyse European infrastructure needs considering key point sources and possible infrastructure connections across borders. Publishing these findings will benefit all CCUS actors across Member States.

## 5 Allow multimodal transportation

To ensure a certain degree of predictability for investments, it is crucial that the regulatory framework supports multimodal CO<sub>2</sub> transportation. Cross-border and domestic CCUS projects rely on different modalities for the transport of CO<sub>2</sub> such as pipelines, rail, ships, and trucks depending on the location of the CO<sub>2</sub> source and the CCUS technology used.

## 6 Develop a European certification system for CO<sub>2</sub> sources

A certification system is central to a cost-effective deployment of a European CO<sub>2</sub> infrastructure and to ensure the free trade of CO<sub>2</sub> across the continent as well as import from non-EU countries. Uniform standards for CO<sub>2</sub> in terms of composition, purity and pressure, as well as standards for the transport value chain will ease connections between countries. Furthermore, the rules for trading CO<sub>2</sub> removals certificates are of great importance for the pricing of CO<sub>2</sub> in the current immature market. Hence, it is important for the establishment of a single market for CO<sub>2</sub> that the current work on the EU carbon removal certification framework is accelerated, which will create greater clarity for the CCUS industry.

## Support both CCU and CCS with a Technology neutral approach

Support schemes favouring CCS may distort the market and affect CCU actors disproportionately. Subsidising storage only will have a particularly severe impact on availability and the price of biogenic CO<sub>2</sub> to be used in CCU products, ultimately delaying the green transition of hard-to-abate sectors. Thus, European and national support schemes for CCUS technology should not favour either CCS or CCU. European Energy recommends the following measures to support both technologies:

### 7 Apply an open competition approach

Only the market conditions and the CO<sub>2</sub> price should determine whether CO<sub>2</sub> is stored or utilised. An open competition approach in support schemes equals the access to biogenic CO<sub>2</sub> resources in particular, while favouring one technology will lead to an inappropriate distortion of the CO<sub>2</sub> market. If support schemes only subsidise CCS, prices on biogenic CO<sub>2</sub> will increase resulting in disproportionately high end-user prices on CCU products such as e-fuels and chemicals that are crucial for decarbonising sectors such as shipping, aviation and industry.

### 8 Grant support across the CCUS value chain

Support schemes should target the synergies between CCUS technologies by ensuring a level playing field for support among actors across the CCUS value chain. When subsidies are not exclusively targeted CO<sub>2</sub> emitters, the investment risks are spread across the value chain benefitting the entire CCUS industry.

## Promote utilisation of biogenic and atmospheric CO<sub>2</sub>

The climate benefits associated with CCU largely depend on the CO<sub>2</sub> source used and the carbon intensity of the energy used in processes. In order to gain maximum positive climate effects, CCU products should substitute similar products on the market made from fossil feedstock with a more sustainable alternative. However, it is expected that biogenic CO<sub>2</sub> will become a scarce resource in the future for which CCUS players will have to compete, especially if the political and regulatory focus is directed towards underground storage only. At the same time, Direct Air Capture technologies are currently at a very early stage of maturity. Therefore, European Energy recommends the following measures to ensure the positive contribution of CCU technology to achieving net zero:

## 9 Regulate a prioritised use of biogenic and atmospheric CO<sub>2</sub>

The EU regulation must provide incentives for the use of biogenic and atmospheric CO<sub>2</sub> to replace fossil CO<sub>2</sub> in sectors that are dependent on carbon feedstock or that cannot be electrified directly. This applies, for example, to long distance aviation and shipping, where the use of non-carbon-based fuels is not foreseen in the near future. Therefore, European Commission should propose higher and binding targets for the uptake of renewable fuels of non-biological origin (RFNBOs) in future revisions of relevant legislation such as FuelEU Maritime and ReFuelEU Aviation. This will target CCU towards hard-to-abate sectors and incentivise a prioritisation of biogenic CO<sub>2</sub> that leads to replacement of fossil CO<sub>2</sub>.

## 10 Set out an EU definition of biogenic CO<sub>2</sub>

The European Commission should set out an EU definition of biogenic CO<sub>2</sub> along with appropriate sustainability requirements. The recently adopted delegated acts on RFNBOs regulates that e-fuels such as e-methanol can only be based on sustainable CO<sub>2</sub> sources in the future. However, what is considered biogenic CO<sub>2</sub> sources in the long run is not clearly defined. Biogenic CO<sub>2</sub> is expected to become a scarce resource in the future. Therefore, a clear definition of biogenic CO<sub>2</sub> sources is of great importance for all CCU operators in the long run. A definition will not only be central for a European certification system to distinguish the origin of CO<sub>2</sub> sources through documentation. This will also enable the use of biogenic fractions of mixed CO<sub>2</sub> sources, provided that the biogenic origin can be documented and the fossil share is stored.

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