

Brussels, 23 June 2023

CO₂ Value Europe's feedback on consultation on EU 2040 climate targets

Background

CO₂ Value Europe is the European association dedicated to Carbon Capture and Utilisation (CCU) and represents over 85 members along the CCU value chain, from CO₂ producers, converters and users of CCU products to researchers and project developers.

CCU refers to established and innovative industrial processes that aim at capturing carbon – either from industrial point sources, including from biogenic sources, or directly from the air – and transforming it into value-added products such as synthetic fuels, chemicals and building materials.

About the consultation

The European Commission plans to publish a Communication to start a process to establish a 2040 climate target putting the EU firmly on a path towards climate neutrality by 2050. The Communication will be supported by an in-depth impact assessment, which will inform a draft law setting the 2040 target.

As CO₂ Value Europe, we call the European Union to set both ambitious and pragmatic targets to put the EU on track for climate neutrality by 2050. In line with the target to reduce emissions by 55% by 2030 compared to 1990 levels, we strongly invite the Commission to propose a 80% reduction target by 2040 compared to 1990 levels, which should be based on a review of sector abatement potential, fair effort sharing and underpinned by a comprehensive impact assessment.

To reach 80%, the Commission should plan for a whole array of legislations to support the reaching of such an ambitious target, building on the philosophy, targets and objectives agreed on under the Fit-for-55 legislations. Setting ambitious targets seems necessary to ensure that the sectors which are the most difficult to defossilise can prepare their trajectories to carbon neutrality, with the development of the needed additional technologies and value chains. It is imperative that the new targets build on the achievements of Fit-for-55, and that industrial projects initiated since the ETS revision and the adoption of CBAM continue to have visibility and contribute to new European ambitions. It is important that EU authorities promote energy efficiency, circularity and sobriety as inevitable to reach GHG reduction targets and focus on clear objectives to preserve climate, biodiversity and the environment as cornerstones for future EU legislations.

The Communication should also adopt a technology-neutral approach and embrace all levers that contribute to put the EU economy on track for carbon and climate neutrality, including CCU, sustainable fuels such as renewable fuels of non biological origin (RFNBOs) and recycled carbon fuels (RCFs), CCU chemicals and CO₂ mineralisation. The capacity of the EU to reach an 80% GHG reduction target will depend on its ability to deploy clean technologies like CCU and build a circular carbon economy. Another crucial enabler for CCU will be the availability of largely deployed and dense infrastructures to unlock the potential of CCU for large and small scale projects. Infrastructures for CO₂ transport should include both CCU and Carbon Capture and Storage (CCS), as they will be a cornerstone for bringing together producers and users of CO₂ and create interconnections and synergies.

The role of CCU fuels

All scientific evidence indicates that in order to decarbonise and defossilise our energy systems, the three pathways to follow are increasing energy efficiency, electrifying all processes that can use renewable/low carbon energy directly, and replacing fossil molecules with fossil-free molecules (in that order). The latter can provide additional benefits, beyond the energy transition, for instance by increasing the energy independence of Europe and its sovereignty.

In the latest World Energy Outlook, the International Energy Agency has used three projection scenarios: even with the most optimistic scenario, the world will still be using 72% of total energy consumption as fuels by 2030, and 48% by 2050, because of difficulties to electrify directly a number of processes & services.

While the percentage may be lower for Europe, it will remain paramount to enable for the use of renewable and low carbon energy in difficult-to-electrify processes, in particular through the use of CCU fuels, for example for maritime, aviation, heavy-duty or energy-intensive industries. CCU fuels are drop-in solutions which are available now and do not put significant pressure on land use. They have the advantage of using all the infrastructures already paid for their transport, distribution and use.

Fit-for-55 legislations have enabled the creation of a first complete regulatory framework for the deployment of CCU fuels in Europe for specific applications in the above-mentioned sectors, through the ETS revision, REDIII, ReFuelEU Aviation and FuelEU Maritime, as well as definitions and methodologies strengthened through the Delegated Acts for REDII.

One of the rare missed opportunities from the Fit-for-55 legislative discussions has been the lack of progress to adopt the revised Energy Taxation Directive. Creating financial incentives to make fossil-free alternatives more accessible than fossil equivalents is crucial to move away from the use of fossil fuels in Europe – for example by having zero taxation rates for CCU fuels for aviation and maritime. Progress in this space will be a cornerstone of the EU strategy to drive the climate transition.

The next step is to enable the upscaling of CCU fuels production by providing clear and systematic incentives to industry to invest into sustainable fuels, as well as providing them with visibility, legal certainty, and possibly penalties to ensure that it will be beneficial from a financial perspective to deploy fossil-free fuels rather than their fossil counterparts. Technological neutrality will be paramount to ensure that the best technical options are developed to maximise the energy efficiency, lower the cost and increase the positive climate impact of CCU fuels.

The EU approach towards 2040 targets for energy systems should be built around three actions: boost the ambition for renewable and low carbon energy deployment, dramatically increase energy efficiency and electrification, and support CCU fuels deployment for hard-to-electrify industries and transports.

The role of CO₂ mineralisation

Amongst the different CCU technologies available and in development, one is known as CO₂ mineralisation, or mineral carbonation. Carbonation is a natural phenomenon, where calcium or magnesium containing minerals react with CO₂ to produce calcium or magnesium carbonates (CaCO₃ or MgCO₃). This natural process can be accelerated by using high CO₂ concentrations and optimised reaction conditions, leading to permanent capture of CO₂.

Mineralisation can both contribute to mitigating climate change and to increasing circularity. All considered CCU technologies for mineralisation could reduce climate impacts over the entire life cycle based on the current state-of-the-art and today's energy mix, and up to 1 Gt per year of the global cement market could be substituted by mineralisation products¹. In addition, by making captured CO₂ react with mineral-rich wastes, mineralisation can also contribute to valorise waste by permanently locking CO₂ into valuable building materials such as concrete, aggregates, asphalt, construction fill, etc.

We believe it is unprecedented progress that the latest ETS revision considers that CO₂ which is permanently bound in products is not considered emitted anymore and do not require for ETS allowances to be surrendered for that CO₂. We also think it is crucial that when biogenic CO₂ or CO₂ captured directly from the air is stored via mineralisation, these are considered carbon removals.

As part of the 2040 climate targets for Europe, we see as crucial to reference systematically the role of mineralisation to avoid additional CO₂ from being emitted in the atmosphere, e.g., by making explicit recognition of mineralisation as an example of carbon removals when using biogenic or atmospheric emissions. We also consider it is important to distinguish between the different impacts of mineralisation: to reduce industrial emissions when CO₂ is captured at point sources; in complementarity, to remove carbon from the atmosphere when using biogenic or atmospheric emissions; and finally, to contribute to building a more circular economy.

The role of CCU for chemicals

The latest IPCC report underlines that *“reducing emissions from the production and use of chemicals would need to rely on life-cycle approach, including increased plastics recycling, fuel and feedstock switching, and carbon sourced through biogenic sources, and depending on availability, CCU, direct air CO₂ capture as well as CCS”*². In other words, to continue producing chemical building blocks which are central for daily products consumed by citizens, we need to switch from fossil resources to alternative carbon feedstocks, including from CCU. In this sense CCU should be developed in combination with the utilisation of biomass, within a framework of a circular carbon economy.

In the past five years, while the EU made significant progress on climate policies, it has not addressed head-on the issue of carbon feedstock and its origin. The EU should embrace the concept of carbon circularity, meaning that rather than extracting additional fossil resources from the ground to use carbon in everyday products, we should turn towards circular carbon solutions by reusing unavoidable emissions on one end to deliver essential products to another. It can and should play a central role to defossilise the production of chemicals in particular.

The European Commission, in its Communication on Restoring Sustainable Carbon Cycles published in December 2021, indicates that *“reaching climate neutrality requires capturing carbon from the atmosphere for storage and for use as substitute to fossil carbon”*. It adds that *“at least 20% of the carbon used in the chemical and plastic industry should be from non-fossil sources by 2030”*. But for now, the EU has yet to translate the 20% objective into concrete EU provisions by creating new quotas for chemical production to boost the uptake of products made from alternative carbon feedstock.

¹ Ostavari et al., 2020, Di Maria et al., 2020, Hills et al., 2020

² IPCC, 6th Assessment Report, Mitigation of Climate Change, Summary for Policymakers, April 2022, p. 33

The latest IPCC report indicates that “*up to 3.5 GtC yr⁻¹ could be displaced from chemical production by 2030 using CCU*”³. In practice, it means that by reusing unavoidable emissions or direct air capture, the carbon footprint from chemicals can be reduced dramatically by investing into replacing fossil feedstocks by renewable carbon. In practical terms, this means that ambitious EU legislations to defossilise chemical production should include mandatory targets for use of captured carbon.

We believe it is essential that defossilisation objectives are reflected and included in the approach and objectives from the EU to reach ambitious 2040 GHG emissions reduction targets.

The role of CCU in general

We strongly welcome the inclusion of CCU in the consultation as one of the important options to consider as part of ambitious objectives for GHG reductions by 2040 in Europe.

We acknowledge the unprecedented progress made at EU level in the last years to promote the CCU fuels, CCU chemicals and CO₂ mineralisation as part of the portfolio of actions needed to reduce carbon emissions.

We call EU policy-makers to reflect those pathways as part of the 2040 climate strategy and to send consistent and clear signals to industrial stakeholders on the need to invest into CCU technologies. It is through reinforcing the now established regulatory framework at EU level and continue to put in place clear policy & financial drivers that CCU projects will be deployed at scale and contribute significantly to emissions reductions.

Europe has started an unprecedented journey to regulate CCU activities. This demonstrates the importance of CCU in defossilising the continent. Nevertheless, more clarity at all levels is needed to encourage investments, and more consistency is required to promote the medium- to long-term visibility of business models. Supporting the deployment of CO₂ infrastructures and encouraging public-private partnerships will be crucial to ramp-up CCU production.

CO₂ Value Europe is calling for the EU to:

- set ambitious and science-based targets to reduce by 80% GHG emissions in Europe by 2040 compared to 1990 levels
- support the building of a circular carbon economy by upscaling CCU fuels production for hard-to-abate sectors
- incentivise mineralisation projects to reduce industrial emissions when CO₂ is captured at point sources, to remove carbon from the atmosphere when using biogenic or atmospheric emissions, and to contribute to building a more circular economy
- create legally-binding provisions to defossilise the production of chemicals through CCU, in order to drive the replacement of fossil feedstocks by renewable carbon
- reflect systematically the role and contributions of CCU to defossilise the EU economy in legislations, EU funded projects and EU climate goals

³ IPCC, 6th Assessment Report, Working Group 3, Mitigation of Climate Change, April 2022, chapter 11, p. 1186