



Counting Carbon

The European Commission's vision on carbon removals

Introduction

As 2021 draws to a close, the European Commission (EC) has been busy. On 15 December 2021, it adopted several new documents in relation to environmental protection in the widest sense. These include a Proposal for a Directive on the protection of the environment through criminal law (replacing the current Directive 2008/99/EC) as part of the European Green Deal,¹ a Communication from the EC on sustainable carbon cycles (the **Communication**)² and a Proposal for a Regulation on methane emissions reduction in the energy sector.³

On 21 December 2021, the EC also endorsed the new Guidelines on State aid for climate,

environmental protection and energy (**CEEAG**), which will be adopted formally in January 2022.⁴ The Guidelines are complemented by the General Block Exemption Regulation, which (among others) further facilitates green investments to cover aid for investments in emerging technologies such as hydrogen and carbon capture and storage or usage (**CCUS**) as well as key areas for achieving the objectives of the European Green Deal.

Adding to our other publications on the European Green Deal and the EU's Fit for 55 Package,⁵ this contribution is a deep dive into the freshly published Commission Communication on sustainable carbon cycles and the creation of the long-awaited carbon removal certification system.

¹ Proposal for a Directive of the European Parliament and of the Council on the protection of the environment through criminal law and replacing Directive 2008/99/EC, available [here](#). The current Directive 2008/99/EC is available [here](#).

² Communication from the Commission to the European Parliament and the Council on Sustainable Carbon Cycles, 15 December 2021, available [here](#).

³ Proposal for a Regulation of the European Parliament and of the Council on methane emissions reduction in the energy sector and amending Regulation (EU) 2019/942, available [here](#).

⁴ Annexes to the Communication to the Commission, Approval of the content of a draft for a Communication from the Commission on the Guidelines on State aid for climate, environmental protection and energy 2022 (**Guidelines on State aid for climate, environmental protection and energy**), available [here](#); Commission Regulation (EU) 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of articles 107 and 108 of the Treaty (**General Block Exemption Regulation**), available [here](#).

⁵ See for example a webinar on the European Green Deal: Changes to look out for and impact of COVID-19 on timeline, 24 September 2020, available [here](#).

The Sustainable carbon cycles communication

The Communication, which is divided into four main sections, clarifies the EU's roadmap to the decarbonisation of its economy. As an overarching strategy, it sets out three key actions the EU must undertake to achieve its goal of climate neutrality by 2050:

- Drastically reduce its reliance on carbon;
- Increase its carbon recycling potential from sustainable sources of biomass, waste streams and from the atmosphere for sectors that inevitably remain dependent on fossil carbon; and
- Upscale carbon removal solutions that capture CO₂ from the atmosphere and store it on a long-term basis. In particular, the communication focuses on storage in ecosystems through **nature protection and carbon farming** and storage through **industrial use** (also referred to as carbon capture and storage or carbon capture and use – **CCS** and **CCU**, jointly referred to as **CCUS**).

To that end, the Communication notes that a clear regulatory framework is required to ensure and incentivise adequate uptake of these carbon removal solutions, including the complete integration of appropriately certified carbon removals into EU climate policy. It also identifies the following implementation challenges regarding current carbon removal strategies and certification:

- The quality and credibility of carbon removals in the land and industrial sectors (i.e. how carbon removals should be defined as well as how to ensure the carbon removal certificates entail actual net removals of CO₂ from the atmosphere);
- Incentivising land managers to implement carbon farming initiatives by employing public funding in addition to the private funding

generated from carbon farming credits and incentivising the uptake of industrial carbon capture, storage and use (**CCUS**) solutions;

- The establishment of reliable and transparent monitoring, reporting and verification (**MRV**) methodologies that track biogenic, fossil or atmospheric CO₂ to create a robust carbon removal certification system.

In the following paragraphs, we will look how the Communication approaches the various available and emerging carbon removal strategies, which implementation challenges it foresees and how it plans on mitigating those challenges.

Carbon farming and sustainable land management

Concept and benefits

Storage of CO₂ in plants and soil is crucial to achieve the EU's 2050 climate neutrality objective. However, net removals from the atmosphere due to storage of CO₂ in ecosystems have been steadily declining over the past decade due to a variety of factors.⁶ While the proposed amendments to the LULUCF Regulation (the EU's legislative approach to land use and forestry management)⁷ set annual removal targets for the Member States, it does not create direct incentives at the level of land managers to upscale carbon removals.

Carbon farming has received increasing attention in recent years, reflecting the need for agriculture to both contribute to meeting EU climate objectives and to adapt to climate impacts. Essentially "carbon farming" refers to farm management practices that aim to deliver climate mitigation in agriculture. This involves the management of both land and livestock, all pools of carbon in soils, materials, and vegetation, plus fluxes of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). It includes **carbon removal** (sequestration and permanent storage of carbon in soils and biomass), **avoided emissions** (preventing

⁶ These factors are discussed at length in the EU Forest Strategy and the LULUCF Impact Assessment.

⁷ Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) 525/2013 and Decision 529/2013 (the **LULUCF Regulation**), available [here](#); Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2018/841 as regards the scope, simplifying the compliance rules, setting out the targets of the Member States for 2030 and committing to the collective achievement of climate neutrality by 2035 in the land use, forestry and agriculture sector, and (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review, 14 July 2021, available [here](#).

the loss of already stored carbon), and **emissions reductions** (i.e. reductions of GHGs below current levels of farm emissions).

Carbon farming also refers to the business model that aims to upscale climate mitigation by paying farmers to implement climate-friendly farm management practices. Funding can come from public funds such as the Common Agricultural Policy (CAP), or private sources via supply chains or carbon markets. These different funding sources offer different opportunities and risks for farmers and for delivering on climate objectives. The Communication aims to provide financial incentives for the uptake of carbon farming practices to leverage direct action on the ground by setting up a carbon farming green business model granting “**carbon farming credits**” to land managers implementing land management practices that increase CO₂ storage in living biomass, dead organic matter and soil, including afforestation and reforestation, agroforestry and restoration of peatlands and wetlands. Land managers implementing carbon farming initiatives will receive those carbon farming credits (if the initiative results in net carbon removals) and can then sell them on a carbon market. Importantly though, the Communication warns that in order for the system to actually contribute to decarbonisation, the generated carbon farming credits should create a net long-term benefit for greenhouse gas emissions reduction.

Additionally, the Communication notes that carbon farming will increase carbon sequestration, but also create important co-benefits (such as increased biodiversity, flood prevention, drought control etc.). Carbon farming credits are also linked and would contribute to the implementation of other EU policies, including (among others) the EU Forest Strategy and the EU Biodiversity Strategy.

As well as carbon farming on land, the blue carbon economy (i.e. coastal and marine ecosystems) has an enormous sequestration potential in both marine plants and ocean sediments. Like on-land carbon farming, blue carbon farming would also generate co-benefits such as ocean regeneration and oxygen

production, as well as food security. However, at present, reliable information on how human activity is affecting blue carbon ecosystems is still lacking.

Barriers

Although the Communication puts forward carbon farming initiatives as crucial to climate change mitigation, it also identifies four main barriers to the large-scale deployment of those initiatives, for which it suggests a number of solutions/mitigants:

The cost of carbon farming management practices and uncertainty about revenue possibilities.

The Communication suggests that **public funding** under the Common Agricultural Policy and other EU programmes including the LIFE Programme. The Communication also suggests **state aid** may have a role to play in properly incentivising the large-scale uptake of carbon farming strategies.

Uncertainty on standards in existing voluntary carbon markets and concerns about environmental integrity, additionality and permanence.⁸

The Communication does not explicitly address this barrier in this section of the Communication, but elaborates on the issue of permanence in section 4 of the Communication (Section **Carbon removal certification: a regulatory framework**).

The availability and affordability of robust monitoring, reporting and verification tools.

As regards MRV, the Communication stresses that methodologies should be standardised in order to reassure potential buyers of carbon farming credits, provide more certainty to land managers on potential revenues of those credits and entice policymakers to allow the use of carbon farming credits. To that end, the Communication notes it intends to set up an expert group on carbon farming to establish best practices on carbon farming and monitoring, reporting and verification technologies and ensure a seamless integration with the existing framework on land use and land management (i.e. the LULUCF Regulation). Furthermore, the EC will carry out a study to assess the potential of applying the polluter-pays principle to CO₂ emissions from agricultural activities.

⁸ The Communication does not define the term “environmental integrity”.

Insufficiently tailored training and advisory services.

In order to adequately incentivise uptake by small farmers and forest holders, it is crucial to provide appropriate information, training and education on the implementation of carbon benefits. As such, the Communication suggests referring to the existing datasets and tools under the Common Agricultural Policy, increasing the exchange of information among land managers under the European Climate Pact and further fostering innovation (e.g. through Horizon Europe).

Industrial solutions

Concept and benefits

The EU's industrial economy is a significant generator of CO₂, both biogenic⁹ and fossil. In order to attain the climate neutrality objective by 2050, fossil carbon should be replaced by sustainable streams of recycled carbon from waste, sustainable biomass and CO₂ captured from the atmosphere. Furthermore, CO₂ captured from industrial processes should be reused as a resource (CCU) or stored permanently in geological sites or in new long-lasting products (CCS).

Firstly, replacing greenhouse gas (GHG)-intensive materials and fossil fuels with bio-based materials and bioenergy will contribute substantially to the climate neutrality objective (i.e. the so-called **sustainable bioeconomy**, which will help to achieve the envisaged net removal targets). However, scientific consensus on how to measure (in particular) the duration of such storage is still lacking.

Secondly, the Communication also pledges to support the development of industrial projects and emerging technologies geared towards (among other technologies) directly capturing CO₂ from the air (Direct Air Capture – **DAC**). After being captured, the **CO₂ can be used as a resource** for the production of chemicals, plastics or fuels (e.g. methanol, ethylene, propylene), **permanently stored** in geological formations in depleted oil

and gas reservoirs or saline aquifers or permanently bound in other carbon mineralisation processes (e.g. biochar).

As such, the ETS Directive already provides a financial incentive for the permanent storage of CO₂ in geological sites or in precipitated calcium carbonate (**PCC**). Likewise, the revised EU ETS Proposal broadens this incentive to all CO₂ that is stored so that it does not enter the atmosphere under normal use.¹⁰ However, under the Proposal it remains unclear in which cases captured CO₂ would actually not (re-)enter the atmosphere under normal use. Although ECJ case law (i.e. the Schaefer Kalk and Solvay cases¹¹) has established that the production of PCC could be considered a form of permanent storage, the permanence of various other applications for captured CO₂, is, at this point, less clear. As discussed, the EU ETS Proposal has attempted to distinguish between technologies for which the captured CO₂ does not enter the atmosphere “under normal use”, which we derive from the Proposal should be considered as permanent storage options. However, there is no further indication in the Proposal how to distinguish between permanent and non-permanent ways of CO₂ storage and which impact this may have on the emission allowance surrendering obligation (if any). The Communication does not offer additional clarity on this point, except suggest again that a differentiated approach toward permanent and non-permanent options may be on the table.

Concretely, the Communication sees a target of at least 20% non-fossil carbon in plastics and chemicals by 2030.

Barriers

Currently, a number of barriers still impede the upscaling of CCU and CCS technologies. Notably, the lack of sufficient capacity for transport and storage of CO₂, as well as potentially lengthy permitting processes could become important bottlenecks to the establishment of these emerging

⁹ Biogenic carbon is CO₂ released as a result of the combustion or decomposition of organic material (e.g. biomass).

¹⁰ Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/78/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU)2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 (the **Revised EU ETS Proposal**), 14 July 2021, available [here](#).

¹¹ ECJ, case C-460/15 (*Schaefer Kalk*); ECJ, order C-561-18 (*Solvay Chemicals GmbH*).

technologies. To this, the Communication suggests creating an **open-access infrastructure** and development of **CCUS hubs** to ensure all Member States have access to suitable storage sites.

Furthermore, an efficient MRV system is required to track how much fossil, biogenic or atmospheric carbon is transported, processed, stored and potentially re-emitted. To that point, the Communication hints at a potentially differentiated approach between permanent and non-permanent storage and utilisation options. This offhand comment could have a profound impact on the uptake and available incentives of certain CCS/CCU technologies when combined with the obligations of the ETS, as it remains unclear how re-emitted CO₂ should be accounted for and who should submit the required emission allowances. That being said, carbon removals will not be included in the ETS (at least not until 2030).

Carbon removal certification: a regulatory framework

To ensure that the carbon farming and CCUS strategies result in an actual net removal of CO₂ from the atmosphere and avoid as much as possible the risk of carbon leakage, the Communication stresses that it is essential to create a robust and transparent framework for carbon removal certification which, importantly, tracks and specifies the origin of the CO₂ - whether from biogenic, fossil or atmospheric origin and contains a reliable definition of carbon removals which ensures “environmental integrity”.

The Communication also identifies the technical challenges facing carbon removal certification, including:

- Carbon leakage, which occurs when a carbon removal project inadvertently creates emissions outside the boundaries of the project. In forestry, carbon, and energy-related projects, leakage can take two forms:
 - Activity shifting leakage (e.g. when forest conserved in one area leads to deforestation or degradation elsewhere); and
 - Market leakage, when mitigation policies influence commodity prices and drive changes in investment patterns towards high

emissions activities (e.g., reduced timber and crop production can lead to higher prices and inspire a shift to more intensive activities).

- The question of permanence, which assures that once removed, emissions will stay removed and not be re-emitted, and addresses the risk of uncontrolled re-emission (i.e. the non-permanent nature of certain carbon removal strategies, e.g. when afforestation or reforestation efforts are cut down or destroyed by fires, pests, or drought); and
- Measurement difficulties, requiring the accounting and certification system to be credible and reliable, and to contain scientifically robust requirements for MRV methodologies.

Overall, the Communication does not contain much more concrete information on the practical functioning of the envisaged carbon removal certification system, how it will interact with the EU ETS (e.g. whether carbon removals may be integrated into the ETS after 2030 and if so, how). In any case, the EC has stated that it will propose a framework on carbon removal certification **by the end of 2022**.

Finally, the Communication sets out the key actions toward a legal proposal for the certification of carbon removals and the integration of carbon removals into EU climate policy:

- Launch a Call for Evidence to strengthen the Commission’s understanding of carbon removals and key issues for their accounting and certification (early 2022);
- Organise a conference to exchange on sustainable carbon cycles and the upcoming legislative proposal for the certification of carbon removals (first quarter 2022);
- Propose an EU regulatory framework for the accounting and certification of carbon removals (end 2022);
- Establish an EU standard in monitoring, reporting and verifying GHG emissions and carbon removals at farm and forest holding level as well as for captured fossil, biogenic or atmospheric CO₂ that is transported, processed, stored and potentially re-emitted to the atmosphere each year; and

- Organise regular exchanges with other jurisdictions on carbon removal accounting and certification.

Reflection

While the Communication reflects the EU's ambitious vision on achieving climate neutrality by 2050 through (among other strategies) carbon removals and identifies the implementation and accounting challenges facing the large-scale uptake of the various (emerging) carbon removal strategies, it falls rather short on concrete language on how the carbon removal certification scheme will function in practice, including the standardisation of MRV methodologies and how these will apply to the scheme.

It also does not give a clear view on how the system will integrate the variety of permanent and temporary CO₂ storage applications in a way that will incentivise land managers as well as industry actors while ensuring the system remains clear, reliable and transparent, nor is there much on whether the social sustainability of carbon removals will be considered and if so, measured. Workable definitions of certain terms in the Communication (e.g. carbon removals themselves, environmental integrity etc.) are also absent.

Furthermore, the Communication remains relatively vague on how the carbon removal certification scheme and the open-access CO₂ transport network/CCUS

hubs will be financed to achieve the required scale of growth by 2030. Additionally, the proposed EU-wide removal target through permanent geological storage (5 million tonnes per year) seems a rather modest ambition compared to certain national targets (e.g. Sweden has set a target of 2 million tonnes per year by 2030). Moreover, while the Communication discusses the range of available and emerging carbon removal strategies at length, it fails to address (like in the revised EU ETS Proposal¹² and, to some extent the Sustainable Aviation Proposal¹³) the implementation and accounting issues regarding non-permanent storage and/or uncontrolled re-emissions.

Importantly, it is our assessment¹⁴ that the adoption of the EU regulatory framework for the accounting and certification of carbon removals will have an important knock-on effect on the voluntary carbon markets' evolving standards especially in relation to governance and credit-level integrity of credits in the voluntary markets.¹⁵

On the whole though and despite certain unclear language at some points, the Communication appears to be a ringing confirmation of the EU's overall ambitious stance on achieving climate neutrality and the roadmap to get there. As always, we will stay tuned for more.

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¹² Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/78/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU)2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 (the **Revised EU ETS Proposal**), 14 July 2021, available [here](#).

¹³ Proposal for a Regulation of the European Parliament and of the Council on ensuring a level playing field for sustainable air transport (the **Sustainable Aviation Proposal**), 14 July 2021, available [here](#).

¹⁴ See for more information our publication Spotlight on COP26: Is this the start of a new era for the carbon markets?, 17 November 2021, available [here](#).

¹⁵ See for instance the work of the Taskforce on Scaling Voluntary Carbon Markets, Taskforce on Scaling Voluntary Carbon Markets available at https://www.iif.com/Portals/1/Files/TSVCM_Phase_2_Report_Summary.pdf