



Project Name: Future of emissions trading in the EU

Report N° 4: Carbon Dioxide Removals (CDRs)

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1. Background

- Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC)[1] articulates the overarching objective of the international climate regime: “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”
 - Within this context, the principle of technology neutrality is implicitly embedded in both the UNFCCC and its derivative instruments, as the focus is on the stabilization of GHG concentrations without mandating or privileging specific technological interventions or methodologies
- The Paris Agreement [2] operationalizes this technology-neutral approach by explicitly promoting the development and transfer of technologies for both mitigation and adaptation purposes. In practical terms, the Paris Agreement commits nations to limiting global warming to well below 2°C while pursuing efforts to limit it to 1.5°C above pre-industrial levels United Nations Framework Convention on Climate Change (2015).
- The European Climate Law [3] codified Europe’s commitment to climate neutrality by 2050, establishing a legally binding framework for progressive emissions reduction. The law sets a net zero greenhouse gas emissions target by 2050, a 55% reduction target for 2030 compared to 1990 levels, and with a midway target in 2040 expected to be tabled in July of 2026.
- As mandated by Art. 30 (5) of the EU ETS Regulation [4] and highlighted in the Industrial Carbon Management Strategy [5], the Commission shall by July of 2026 present an impact assessment on if and how the CO₂ removed from the atmosphere and safely and permanently stored could be accounted for and covered by emissions trading. This could be done by:
 - integrating industrial carbon removals in the EU ETS (a single market where the generation of industrial removals to comply with surrender obligations is allowed with or without restrictions)
 or
 - creating a separate compliance mechanism for such removals, connected directly or indirectly to the EU ETS.

Sources:

[1] United Nations Framework Convention on Climate Change. (1992). Article 2: Objective. Retrieved from <https://unfccc.int/resource/ccsites/zimbab/conven/text/art02.htm>

[2] United Nations Framework Convention on Climate Change. (2015). *Paris Agreement*. Retrieved from https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[3] *Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (European Climate Law)*. EUR-Lex. Retrieved from

[4] *Directive 2003/87/EC* of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC

[5] European Commission. (2024, February 6). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards an ambitious Industrial Carbon Management for the EU (COM(2024) 62 final). EUR-Lex. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52024DC0062>

1. Background

- The Net Zero Industry Act (NZIA) [1] sets an EU target of 50 million tonnes of annual CO₂ storage capacity by 2030, indirectly reinforcing the strategic role of permanent CDR infrastructure. The European Commission’s recent decision operationalizes this target by assigning storage obligations to oil and gas producers.
- The CRCF [2], adopted in December 2024, establishes the first EU-wide voluntary certification system for carbon removals, encompassing permanent carbon removal technologies, carbon farming practices that enhance carbon sequestration in soils and biomass, and the incorporation of CO₂ into long-lasting products. The framework sets Q.U.A.L.I.T.Y criteria (Quantification, Additionality, Long-term Storage, Sustainability) to ensure environmental integrity. The CRCF mandates that methodologies for each activity be developed as Delegated Acts, which will become legally binding. These methodologies must detail conditions for certification, including monitoring, liability, and sustainability rules and prioritize mature activities with high co-benefits.
- The Article 6.4 carbon removals standard adopted under UN-supervised carbon crediting mechanism (PACM) under the Paris Agreement, in November 2024. These standards set up criteria for further methodologies development under PACM, that will enable registering projects and issuing A6.4ER credits through both technological and nature-based removal approaches. The Article 6.4 mechanism, often called the “Paris Agreement Crediting Mechanism,” creates an UN-supervised, internationally governed system for generating and trading carbon credits. The standard aligns with the IPCC’s definition of carbon removal, allowing for storage in geological, terrestrial, ocean reservoirs, or products, subject to methodologies to be developed, adopted and applied for projects implementation.
- Ongoing political discussions at both domestic and international levels—including recent statements supporting the integration of permanent removals in the EU ETS from Denmark [3], and Germany's party coalition agreement[4] —reflect the evolving landscape for the integration of carbon removals into compliance markets and the broader climate policy architecture. These debates underscore the importance of aligning CDR policy with both environmental integrity and economic efficiency as the EU and international community move toward their 2040 and 2050 climate goals.

Sources:

[1] *Regulation (EU) 2024/1735 on establishing a framework of measures for strengthening Europe’s net-zero technology manufacturing ecosystem and amending Regulation (EU) 2018/1724 (Text with EEA relevance)*. EUR-Lex.

Retrieved from <https://eur-lex.europa.eu/eli/reg/2024/1735/oj/eng>

[2] *Regulation (EU) 2024/3012 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products*. EUR-Lex. Retrieved from [https://eur-](https://eur-lex.europa.eu/eli/reg/2024/3012/oj/eng)

[lex.europa.eu/eli/reg/2024/3012/oj/eng](https://eur-lex.europa.eu/eli/reg/2024/3012/oj/eng)

[3] *Denmark’s position paper on integrating permanent carbon dioxide removals in the EU ETS* [Position paper]. Retrieved from <https://www.eu.dk/samling/20231/almdel/EUU/bilag/756/2910818/index.htm>

[4] 2025. Verantwortung für Deutschland. Koalitionsvertrag zwischen CDU, CSU und SPD. Retrieved from: https://www.koalitionsvertrag2025.de/sites/www.koalitionsvertrag2025.de/files/koav_2025.pdf

1. Background

- **Definition:** CDR is defined as deliberate human activities—encompassing technologies, practices, and approaches—that remove CO₂ from the atmosphere and store it in geological, terrestrial, oceanic, or product-based reservoirs, such that the removed CO₂ does not contribute to atmospheric greenhouse gas concentrations for a certain period, depending on the method used.
- Carbon dioxide removals can be categorized along three critical dimensions, that will be further explored below:
 - Permanence
 - **Permanent carbon removal**
 - **Non-permanent or temporary carbon removal**
 - Implementation
 - **Technology-based carbon removal**
 - **Nature-based solutions**
 - Geography
 - **Domestic carbon removal**
 - **International carbon removal**
- Discussions focusing on the integration of CDRs in a carbon market with clarity that there are also different types of market (ETS1, ETS2, and other ETSx).

2. Why CDRs in Carbon Markets?

- **Net zero / Net negative**

Achieving the EU's net-zero target by 2050 will require not only emission reduction but also the deployment of CDR to balance residual emissions. Thus, CDRs should be integrated into the system, sooner rather than later. Sectors and installations with MAC in excess of the cost of the carbon removal allowances would be allowed to decarbonise in the most efficient way. In turn this demand would drive down the price of CDRs and increase their scalability.

- **Liquidity**

The integration of CDRs will increase market liquidity by introducing additional tradable credits. The resulting increase in liquidity, as well as the diversification of tradeable credits in the market, lead to more efficient pricing and investment signals. Integration in the EU ETS can enhance liquidity but should not be seen as the sole solution to the ETS liquidity challenge.

- **Technology neutrality**

Integrating CDRs ensures that the EU ETS incentivizes all credible climate solutions equally—whether they reduce emissions or remove atmospheric carbon. This approach fosters a level playing field between mitigation and removal technologies, allowing the most effective and cost-efficient options to emerge through market dynamics. A technology-neutral ETS would allow both reductions and removals to compete based on climate benefit and cost-effectiveness.

3. Focus on removals

3.1. Definitions of the different types of removals

- **Technology / Nature-based**

Technology

- Engineered approaches that use mechanical or chemical processes to capture CO₂ directly from the atmosphere. These methods rely on human-built infrastructure and technological interventions rather than natural biological processes. Examples include DAC.

Nature-based

- Approaches that leverage natural ecological processes to remove and sequester carbon from the atmosphere. These methods work by protecting, restoring, or enhancing ecosystems that naturally absorb and store carbon. Examples include afforestation/reforestation, soil carbon sequestration, wetland restoration, and blue carbon solutions

- **Permanent / Non-permanent**

Permanent

- The United Nations does not have a single, universally agreed official definition for "permanent" and "non-permanent" carbon removals, but its main bodies and documents provide guidance and working definitions widely referenced in international climate policy. Typically, by permanent carbon removals we refer to methods that store captured carbon for long timeframes with minimal risk of reversal. As the IPCC points out, “the time horizon of 100 years is a commonly accepted normative choice” [1], utilized in multiple climate policy instruments, LCA standards, and bioenergy systems studies. However, the CRCF focuses on a longer time horizon as permanent carbon removals are defined as those that “provide enough certainties as to the very long-term duration of storage, namely a duration of several centuries” [2].

- *Non-permanent*

- Similarly, the UN does not provide a single, universally codified definition of "non-permanent carbon removals." However, its official documents and expert commentary consistently describe non-permanent removals as those where the captured carbon is stored in ways that are vulnerable to reversal—meaning the CO₂ can be re-emitted into the atmosphere over relatively short timeframes (decades to a century) due to factors like fire, disease, or land use change. [3]

Sources:

[1] United Nations Framework Convention on Climate Change. 2023. Information note: Removal activities under the Article 6.4 mechanism (v.04.0) (SB005). Retrieved from: <https://unfccc.int/documents/628258>

[2] Regulation (EU) 2024/3012 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products. EUR-Lex. Retrieved from <https://eur-lex.europa.eu/eli/reg/2024/3012/oj/eng>

[3] United Nations Framework Convention on Climate Change. 2023. Information note: Removal activities under the Article 6.4 mechanism (v.04.0) (SB005). Retrieved from: <https://unfccc.int/documents/628258>

3. Focus on removals

3.1. Definitions of the different types of removals

- **Domestic /International**

Domestic

- Domestic carbon removals in the EU refer to activities that actively remove carbon dioxide from the atmosphere and store it securely within the European Union. These activities include permanent carbon removal technologies, carbon farming practices that enhance carbon sequestration in soils and biomass, and the incorporation of CO₂ into long-lasting products (such as wood-based construction materials).
- All three categories are regulated under the CRCF.
- Each of these categories is subject to specific certification methodologies and quality criteria under the CRCF.

International

- International carbon removals refer to activities that remove CO₂ from the atmosphere and store it in locations outside the EU. However, uncertainty remains on whether removals can also be captured outside of the EU and stored within the EU. These projects can include both technological solutions and nature-based solutions implemented in non-EU countries.
- Currently, international carbon removals are primarily governed by global frameworks and voluntary carbon markets, rather than a unified EU regulatory system.
- Many international carbon removal projects are certified through voluntary carbon market standards (e.g., Verra, Gold Standard), which provide methodologies for monitoring, reporting, and verifying removals, but these are not legally binding under EU law.
- Two distinct approaches have emerged for attributing credits in cross-border operations:
 - **Storage-based:** assigns credits to entities providing storage services, typically operators of geological reservoirs. In this setup, the storage site operator receives the carbon credits directly from the relevant carbon credit registry or authority. They then enter into commercial agreements with capture operators.
 - **Capture-based** attribution models allocate credits to entities performing CO₂ capture, whether industrial emitters or direct air capture operators. In this setup, the capture facility operators receive the carbon credits directly. They then need to contract with storage operators to accept and permanently store their CO₂.

3. Focus on removals

3.1. Definitions of the different types of removals

There are currently three potential policy tools to scale up carbon removals in the EU:

1) **EU ETS**

2) **LULUCF Regulation**

3) **Financial Support**

- **EU ETS:** By integrating CDRs as compliance instruments into the ETS, companies can offset their emissions by purchasing carbon removal allowances. As a result, investment in carbon dioxide removals will be incentivised and an integrated market will be created. How such instruments will be integrated into the EU ETS market, will be further discussed in Section 6
- **LULUCF (Land Use, Land Use Change and Forestry) Regulation** [1] covers all land emissions and removals within the EU. It is the current framework natural carbon sinks—such as forests, wetlands, and soils—to offset greenhouse gas emissions. The EU has set a net removal target of 310 million tonnes of CO₂ equivalent per year by 2030 through the LULUCF sector, with specific targets assigned to each MS. While the EU's 2040 communication mentions a total of 400 Mt CO₂ of removals, it's expected that the LULUCF sector will contribute to this. LULUCF currently nature-based removals, which are generally not considered permanent due to the risk of reversal (e.g., from fires or land-use change).
- **Financial support:** it can take the form of tax credits, grants, funding programmes (e.g. Horizon Europe, Innovation Fund), public purchase agreements (PPAs), (which DG CLIMA is already considering as a short-term strategy), or favourable loans for carbon removal activities. This support can help close the cost gap between current CDR expenses and market prices. Off-take agreements in which the price is defined in advance can be important solutions for the deployment of CDRs by providing long-term stability and fixed-income security.

Sources:

3. Focus on Removals

3.2. Mapping

- We propose to classify CDR on the basis of four categories: type (technology vs nature-based); durability (permanent vs non-permanent); geography (international vs domestic); policy framework (ETS, LULUCF, financial support).

CDR Method	Type	Durability	Geography	Policy
DACCS	Tech-based	Permanent	International/domestic	ETS, financial support
BECCS	Tech-based	Permanent	International/domestic	ETS, LULUCF, financial support
Biochar Carbon Removal	Tech-based	Permanent	International/domestic	ETS, LULUCF, financial support
Enhanced Weathering	Tech-based	Permanent	International/domestic	Subsidies
Ocean Alkalinity Enhancement	Tech-based	Permanent	International (marine)	Maritime agreements, financial support
Soil Carbon Sequestration	Nature-based	Non-permanent	International/domestic	LULUCF, financial support
Afforestation/Reforestation	Nature-based	Non-permanent	International/domestic	LULUCF, financial support
Ocean Fertilization	Tech/nature hybrid	Semi-permanent	International (ocean)	Maritime financial support
Coastal Blue Carbon	Nature-based	Semi-permanent	International/domestic	LULUCF, financial support
Mineral Carbonation	Tech-based	Permanent	International/domestic	ETS, financial support

4. CDRs integration in non-EU Carbon Markets

ETS	Integration Status	Types Considered	Key Challenges
UK ETS	Consultation concluded (Aug 2024), awaiting policy decisions [1]	BECCS, DAC, afforestation, soil carbon [2]	Robust MRV, cost disparities, market volatility[3]
New Zealand ETS	Forestry-based CDR included; exploring engineered solutions	Afforestation, reforestation, exploring BECCS, DAC	Permanence, robust MRV
China ETS [4]	Potential future inclusion	Nature-based, interest in CCUS, BECCS	MRV protocols, sectoral integration, policy alignment
Korea ETS [5]	Considering inclusion	Forestry, soil carbon, BECCS, DAC	Methodology development, regulatory integration
Japan GX-ETS [6]	Integrated in voluntary GX-ETS	DACCS, BECCS, bio-CCUS, coastal blue carbon	Methodology development, regulatory integration
California AB32 [7]	Nature-based offsets allowed; evaluating engineered CDR	Forestry, soil carbon, BECCS, DAC	Regulatory clarity, MRV gaps
UN Article 6	CDRs allowed as ITMOs	BECCS, DAC, afforestation, soil, ocean-based	Standardized MRV, integrity, fraud prevention

Sources:

[1] [GOV.UK](https://gov.uk)

[2] [GOV.UK](https://gov.uk)

[3] [Clean Air Task Force](https://cleanairtaskforce.org/)

[4] ICAP China ETS Factsheet (2024), <https://icapcarbonaction.com/en/ets/china-national-ets>

[5] ICAP Korea ETS Factsheet (2024), <https://icapcarbonaction.com/en/ets/korea-emissions-trading-system-k-ets>

[6] <https://www.spglobal.com/commodity-insights/en/news-research/latest-news/energy-transition/042224-japans-gx-ets-to-accept-international-removal-voluntary-credits-for-compliance-obligations>

[7] California Air Resources Board (CARB) – 2022 Scoping Plan, <https://ww2.arb.ca.gov/resources/documents/2022-scoping-plan-documents>

4. CDRs integration in non-EU Carbon Markets

United Kingdom – Advancing CDR Integration into the UK ETS

- **Public Consultation & Policy Support**

- Between May and August 2024, the UK ETS Authority launched a public consultation titled “*Integrating Greenhouse Gas Removals into the UK ETS*” [1], seeking stakeholder feedback on how both engineered (e.g., BECCS, DACCS) and select high-quality nature-based removals could be included.
- The consultation addressed core design choices such as allowance issuance, permanence, cap setting, and pathways for phased integration—highlighting the need for upfront support mechanisms like CCfDs to bridge gaps in cost and MRV readiness

- **Complementary Business Model Frameworks [2]**

- In parallel, the UK government advanced business model pilots (e.g., ICC, Power BECCS & DACCS contracts), structured as Carbon Contracts for Difference, to provide revenue certainty during early deployment.
- These models are explicitly designed with the UK ETS in mind, aiming to secure offtake agreements tied to ETS compliance demand once removals reach scale

Sources:

[1] <https://www.gov.uk/government/consultations/integrating-greenhouse-gas-removals-in-the-uk-emissions-trading-scheme>

[2] <https://www.gov.uk/government/consultations/proposals-for-greenhouse-gas-removal-and-power-bioenergy-with-carbon-capture-and-storage-regulations/ggrs-and-power-beccs-business-models-amending-revenue-support-regulations-relating-to-directions-to-a-counterparty-publication-of-information-count>

4. CDRs integration in non-EU Carbon Markets

New Zealand – Expanding the NZ ETS to Include Engineered Removals

- New Zealand’s ETS integrates forestry-based carbon removals. These units are fungible with emissions reductions, allowing participants to meet compliance obligations via afforestation and reforestation projects [1] .
- In 2023, the New Zealand government released a draft Carbon Removals Strategy [2], which aims to expand the scope of recognized removals beyond forestry. It outlines proposals to recognize a broader set of CDR pathways—including direct air capture (DACCS), biochar, and enhanced weathering—and assesses whether the NZ ETS, a separate market, or procurement schemes (e.g. CCfDs) would be the most appropriate integration route.
- In parallel, the government launched the “Enabling CCUS” regulatory framework, which for the first time creates a legal basis for permanent geological CO₂ storage to be credited under the NZ ETS [3]. Approved in early 2025, the framework establishes:
 - Legal provisions to recognize 1 tonne of permanently stored CO₂ = 1 NZU, creating a direct ETS incentive for engineered removals;
 - Requirements for **long-term liability transfer**, secure storage site approval, and post-closure MRV standards;
 - Alignment with global best practices, enabling safe, permanent removals to qualify alongside nature-based solutions

Sources:

[1] <https://www.epa.govt.nz/industry-areas/emissions-trading-scheme/participating-in-the-ets/removal-activities>

[2] <https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/carbon-removals-strategy/> and https://environment.govt.nz/assets/OIA/Files/2023_06_15_draft-CAB-274_Developing_a_Carbon_Removals_Strategy-Redacted.pdf ;

[3] <https://www.mbie.govt.nz/dmsdocument/30548-enabling-carbon-capture-utilisation-and-storage-proactive-release-pdf>

5. Barriers for CDR deployment in Carbon Markets

• Costs

CDR technologies, especially permanent ones, remain expensive compared to conventional mitigation, limiting market demand: there is a substantial gap between the current and forecast carbon prices, and the costs of CDR technologies.

- EU ETS Carbon Price: As of early 2025, the price of European Union Allowances (EUAs) has fluctuated between approximately €61 and €84 per metric ton.
 - The EU ETS price is forecasted to almost double at a range of €120-€200. Although there is variation between forecasts, all of them reach at least €120 per ton before 2030 [1].
- Cost of CDR Technologies: DACCS costs range from 125 to 335 \$/tCO₂ [2]; BECCS costs range from 30 to 400 \$/tCO₂ [3]; Biochar costs range from 80 to 200 \$/tCO₂ [4].
- The funding gap is the main practical barrier to deploying industrial-scale CDR: without viable financing pathways, CDR infrastructure will not scale in time.

• MRV

The methodology for measuring, reporting, and verifying carbon removals have not been developed yet– this may consequently affect trust in markets – and thus there is a need for robust MRV systems.

• Mitigation deterrence

Mitigation deterrence is often cited as a barrier to integrating CDR into carbon markets, based on the concern that removals might displace more immediate emission reductions. However, under a technology-neutral approach, CDR should be treated as a legitimate climate tool alongside others abatement options. In a market economy, the tool of choice should be up to the market actors, not the regulator.

Sources:

[1] See 2025 State of the EU ETS Report, Figure 6.9. EUA price forecasts, pg. 34.

[2] International Energy Agency. (2022). *Direct air capture 2022: A key technology for net zero*. Retrieved from <https://www.iea.org/reports/direct-air-capture-2022>

[3] See, for example, Hayat et al. (2024). Which bioenergy with carbon capture and storage (BECCS) pathways can provide net-negative emissions? *International Journal of Greenhouse Gas Control*, 135, 104164.

<https://www.sciencedirect.com/science/article/pii/S1750583624001075>

[4] World Economic Forum. (2025, January 21). *The path to net zero requires carbon removal. Here are the trade offs for scaling different technologies*. Retrieved from <https://www.weforum.org/stories/2025/01/cost-of-different-carbon-removal-technologies/>

5. Barriers for CDR deployment in Carbon Markets

- **Public acceptance**

CDR methods face significant public scepticism and resistance. This opposition stems from concerns related to issues such as seismic risks, carbon leakage, and biomass sourcing, raising questions about safety, environmental integrity, and sustainability of these technologies. In addition, the issue of deterring mitigation has become an argument that resonates well with some stakeholders, especially when the debate is superficial.

- **Regulatory barriers**

Regulatory barriers are a central challenge for integrating CDR into the EU's climate policy architecture. At present, only removals under the LULUCF Regulation and the CRCF Regulation are officially regulated, though this is not sufficient. Indeed, the CRCF Regulation framework does not automatically translate into compliance use within the EU ETS, which remains the EU's flagship carbon market.

The EU ETS Directive currently defines regulated activities strictly in terms of emission reductions from installations covered by the system, without recognizing negative emissions or providing a legal mechanism for issuing allowances for verified removals. There are no explicit provisions detailing how CDR could be accounted for in the EU ETS. The Directive's language focuses on emission allowances, with one allowance permitting the emission of one tonne of CO₂ equivalent but has no provisions for the issuance of credits for removing CO₂ from the atmosphere and creating additional emissions space.

While the revised ETS Directive includes a commitment for the European Commission to report by July 2026 on how negative emissions could be integrated, there is currently no operational framework or clear timeline for such integration.

6. Integrating CDRs into Carbon Markets

6.1. Which emissions trading systems?

- There are different options that can be envisaged when it comes to integrating CDRs into carbon markets:
 - CDRs integration into ETS1: ETS1 is the original EU Emissions Trading System, which currently covers power generation and energy-intensive industries. Integrating CDRs into ETS1 would mean that permanent removals could be a compliance instrument in the EU ETS.
 - CDRs integration into ETS2: ETS2 is the emissions trading system that will cover buildings and road transport from 2027.
 - Integrating CDRs into both ETS1 and ETS2 would create a broader, more unified carbon market.

- The choice between integrating CDR into ETS1 or also including it in ETS2 has distinct implications in terms of market design, summarized below:

Aspect	ETS1 only	ETS1 + ETS2
Sectors covered	Power, industry	Power, industry, buildings, transport
Market liquidity	Improved, but limited to ETS1 sectors	Maximized, larger pool of participants
Investment certainty	High for ETS1-linked CDRs	Higher, as all major sectors participate
Policy coherence	Moderate, sectoral fragmentation remains	High, single carbon price and incentives
Administrative burden	Lower, simpler integration	Higher, more complex governance

- The third option could be the creation of a separate trading system for CDRs operate alongside the existing ETS, with its own rules, obligations, etc [1].
- An example of is a system based on Carbon Storage Obligations (CSOs), that is, the obligation to sequester a percentage of carbon embedded in a product or emitted [2]. A separate trading system could create carbon storage obligations that can only be met with CDRs, and introduce such obligation gradually, setting dedicated removal targets/obligations for specific sectors or entities. However, the creation of a new trading scheme would add complexity to the EU's climate policy landscape and would create very expensive obligations for the covered entities, at a time when competitiveness has become an important consideration for the EU economy. The political appetite for such a step remains uncertain, and the design details would require substantial debate and negotiation.

Sources:

[1] See, for example, European Scientific Advisory Board on Climate Change. (2025). *Scaling up carbon dioxide removals: Recommendations for navigating opportunities and risks in the EU*. Retrieved from: <https://climate-advisory-board.europa.eu/reports-and-publications/scaling-up-carbon-dioxide-removals-recommendations-for-navigating-opportunities-and-risks-in-the-eu>.

[2] See, for example, Zakkour, P.D. and Heidug, W., 2019. *A Mechanism for CCS in the Post-Paris Era: Piloting Results-Based Finance and Supply Side Policy Under Article 6*. King Abdullah Petroleum Studies and Research Center discussion paper. April 2019. <https://doi.org/10.30573/KS--2019-DP52>; Zakkour, P.D., Heidug, W., Howard, A., Haszeldine, R.S., Allen, M.R., and Hone, D., 2021. Progressive Supply Side Policy under the Paris Agreement to Enhance Geological Carbon Storage. *Climate Policy* 21 (1), p. 63-77. <https://doi.org/10.1080/14693062.2020.1803039>; Marcu, A., Zaman, P., & Zakkour, P. (2022, March 17). *Scaling up and trading CO2 storage units (CSUs) under Article 6 of the Paris Agreement – Potential challenges, enablers, governance and mechanisms*. ERCST. Retrieved from <https://ercst.org/scaling-up-and-trading-co2-storage-units-csus-under-article-6-of-the-paris-agreement-potential-challenges-enablers-governance-and-mechanisms/>

6. Integrating CDRs into Carbon Markets

6.2. Credit Issuance

- **Ex-ante**

In the ex-ante model, credits are awarded before the actual carbon removal has taken place, based on the expectation of future delivery. This approach can accelerate project financing by providing an upfront revenue stream, which is particularly valuable for capital-intensive or innovative removal projects that require significant investment before any carbon is sequestered. To manage the risk that the promised removals may not materialize, a (public) institution with regulatory authority typically backs the guarantee, ensuring that credits are honoured even if the project underdelivers. Alternatively, dedicated financial instruments can be developed to underwrite this risk.

- **Ex-post**

In the ex-post model issues credits only after the removal has been completed and independently verified. This approach ensures that each credit corresponds to an actual removal of one ton of carbon dioxide, minimizing the risk to environmental integrity and non-delivery. However, because credits are only issued after successful verification, project developers must wait to receive revenue, which can make it harder to secure upfront financing and may slow the deployment of new CDR projects. The ex-post model is generally favoured for its robustness and transparency, but it may be less attractive to investors or developers who need early cash flow to launch or scale their operations – and will slow response to climate change.

6. Integrating CDRs into Carbon Markets

6.3. Limits

The use of CDR credits could face varying limitations within emissions trading systems. These constraints generally fall into three categories:

- **Unlimited / unconstrained:** no volume or type restrictions. This approach assumes market forces will essentially rely on the economics of the different options.
- **Constrained:**
 - **Qualitative:** limits based on specific permanence requirements, MRV standards, geographical location and sustainability safeguards – e.g. the EU ETS excludes afforestation credits due to reversal risks and land-use conflicts.
 - **Quantitative:** volume-based limits: total share of CDRs that can be used in the ETS s
 - **Qualitative + Quantitative:** a mix of quality-based and volume-based restrictions.

6. Integrating CDRs into Carbon Markets

6.3. Limits

6.3.1. Qualitative limits

When considering how to integrate CDR credits into the EU ETS, policymakers face the following options regarding qualitative limits

- **No Qualitative Limitations on CDR Credits**

- **Description:** All types of CDR credits—regardless of their permanence, technology, or MRV standards—are accepted for compliance. This includes both permanent technology-based removals (like DACCS and BECCS) and nature-based solutions (e.g., afforestation, soil carbon)
- **Rationale:** This approach maximizes flexibility and market size, potentially accelerating deployment of a wide array of CDR approaches. It avoids prematurely excluding options that could improve in quality over time and may reduce compliance costs. However, it risks undermining environmental integrity due to variability in permanence, measurability, and reversibility.

- **Limiting the Quality of CDR Credits Allowed**

- **Description:** Only removals that meet specific quality thresholds are eligible—typically focusing on permanence, technological maturity, robust MRV, and additionality. This often limits eligibility to technology-based and durable methods.
- **Rationale:** This ensures that credited removals deliver real, measurable, and lasting climate benefits. It addresses the risk of reversal (e.g., tree loss) and helps maintain the credibility of the EU ETS.

Phased Eligibility for CDR integration

- **Description:** Phased eligibility involves limiting the types of CDR methods allowed in the EU ETS at the outset, with a clear plan for expanding eligibility over time. For example: initially, only technologically mature, permanent, and high-integrity removal methods—such as Direct Air Carbon Capture and Storage (DACCS) and Bioenergy with Carbon Capture and Storage (BECCS)—would be eligible. Other methods, such as biochar, enhanced weathering, or some nature-based solutions, would be considered in future phases, once robust MRV frameworks and permanence standards are established.
- **Rationale:** This approach maintains the environmental credibility of the EU ETS by ensuring only verifiable, durable removals are used in the early stages. It provides a predictable, science-based pathway for expanding the scope of eligible CDRs as standards and technologies mature. This accommodates innovation while safeguarding decarbonisation.

6. Integrating CDRs into Carbon Markets

6.3. Limits

6.3.2. Quantitative limits

- When considering how to integrate CDR credits into the EU ETS, policymakers face two broad options regarding quantitative limits:
 - **Limiting the Quantity of CDR Credits Allowed**
 - **Description:** Under this approach, the number of CDR credits that can be used for compliance is capped. The cap could be expressed as an absolute number (e.g., 10 million CDR credits per year) or as a percentage of the total EUAs in circulation (e.g., up to 5% of total annual EUAs).
 - **Rationale:** This method provides predictability and control over the influence of CDR credits on the overall carbon market. It helps manage the pace at which removals are integrated and allows for gradual scaling as the market and MRV systems mature.
 - **No Quantitative Limitations on CDR Credits**
 - **Description:** In this scenario, there are no explicit restrictions on the number of CDR credits that can be surrendered for compliance. Entities could, in theory, use unlimited CDR credits to meet their obligations under the cap.
 - **Rationale:** This approach could accelerate investment in CDR technologies by providing a vast potential demand and a strong price signal. It could also allow the market to determine the optimal mix of abatement and removals based on relative costs.

6. Integrating CDRs into Carbon Markets

6.4. Relationship between CDR and EU ETS Cap

Option 1: Increase the total EU ETS compliance instruments (Adding CDRs on top of the EU ETS cap)

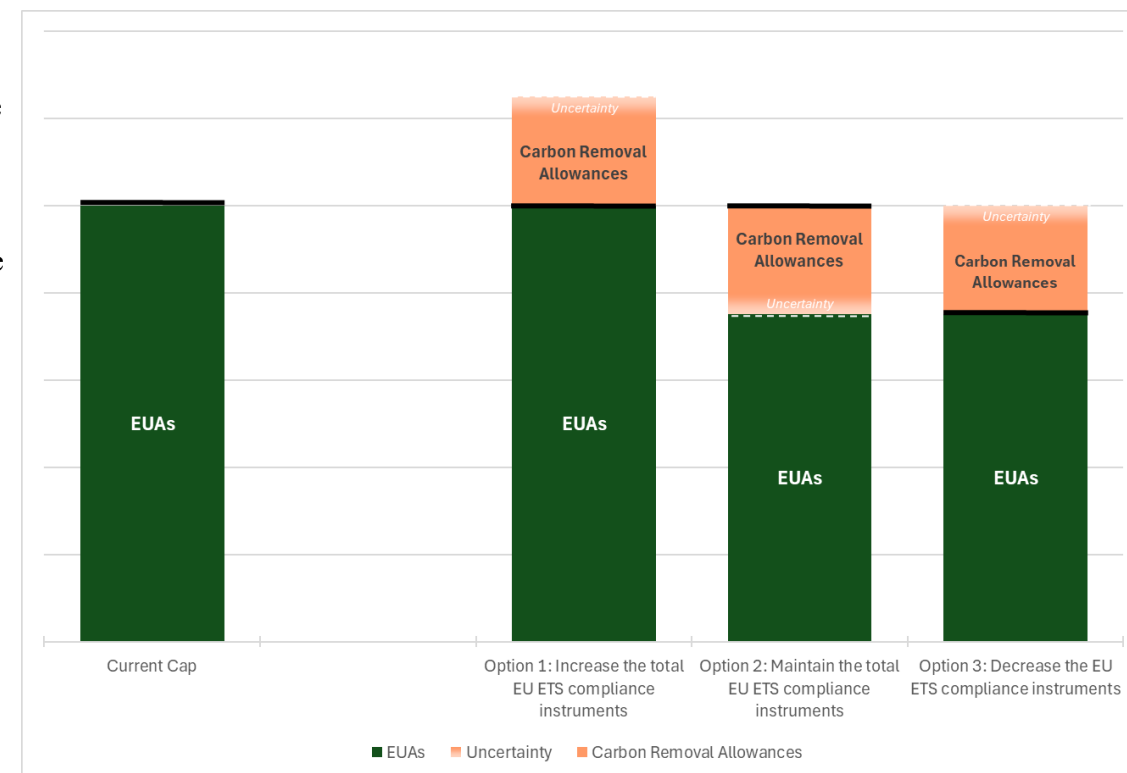
- CDR operators would be issued allowances, and they would constitute an increase in the number of compliance instruments to meet EU ETS obligations. The logic would be that a removal decreases the CO₂ concentration in the atmosphere and therefore create an additional emissions space. This implies that the total allowances are increased by the amount of CDR supply entering the market, with no upper limit on carbon removal allowance allowed for compliance, or with a limitation, that needs to be justified. Usage of CDRs or EUAs will be based on economic considerations.

Option 2: Maintain the total EU ETS compliance instruments (Decrease the number of EUAs based on the CDRs approved to enter the EU ETS)

- EUAs would be withdrawn whenever a carbon removal allowance is allowed in the EU ETS. This swap ensures that the same overall supply of compliance instruments, and therefore the cap, remains unchanged. This would only make sense if prices of CDRs would be in the same range as EUAs and the decision would be based in economics.

Option 3: Decrease the EU ETS compliance instruments (Decrease the number of EUAs based on the expected supply of CDRs entering the EU ETS)

- The relationship between the EUA cap and CDR is the same as in Option 1, but in this scenario the authority pre-emptively reduces the number of EUAs in the market. This option is not driven by economic considerations as the regulatory authority is setting the supply, without any consideration of the demand.



6. Integrating CDRs into Carbon Markets

6.4. Relationship between CDR and EU ETS Cap

Implication on atmospheric concentration CO₂

- ***Option 1: Increase the total EU ETS compliance instruments (Adding CDRs on top of the EU ETS cap)***

This option maintains the same atmospheric concentration of CO₂, where the resulting CO₂ emissions will be equal to an EU ETS market that does not allow CDRs. For every additional carbon removal credit added, no EUA will be removed.

- ***Option 2: Maintain the total EU ETS compliance instruments (Decrease the number of EUAs based on the CDRs approved to enter the EU ETS)***

The option 2 operates on a different principle, as carbon removal allowances are included within the same cap. This results in lower atmospheric concentration of CO₂ depending on eventual supply of carbon removal credits introduced in the market.

- ***Option 3: Decrease the EU ETS compliance instruments (Decrease the number of EUAs based on the expected supply of CDRs entering the EU ETS)***

This option operates on the same principle as option 1, the difference being that the atmospheric concentration of CO₂ will be lower, due to the reduced cap.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

- The integration of CDRs in the EU ETS requires a carefully designed governance framework to ensure good market functioning, and alignment with EU climate goals. Several governance structures are possible, each with distinct advantages and challenges.
- The governance has to address the following issues:
 - A) How to verify, accept, and use carbon removal credits
 - B) How removal credits are acquired from the market
 - C) How removal credits reach the EU ETS covered installations that have obligations

A) Verification, Acceptance, Conversion

Role of the Regulator

- The regulator will have to frame the MRV, permanence conditions, LCA, etc. This is currently being done under CRCF, including various methodologies being prepared as delegated acts.
- The regulator that manages the EU ETS, the EC, will also have to make decisions on the quality and quantity of CDRs that will be allowed in the EU ETS.
- The regulator sets the practical steps and rules for how CDR credits are recognized, transferred, and ultimately used for compliance within the ETS.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

Verification

Before any CDR credit can be used in the EU ETS, it must undergo a rigorous, standardized validation and verification process.

- Permanence: the removals must be durable, with mechanisms in place to address potential reversals (e.g., buffer pools, insurance, liability arrangements).
- No Double Counting: each tonne of CO₂ removed is only counted once and not claimed by multiple actors or in multiple jurisdictions, in line with the CRCF and Paris Agreement Article 6.
- Robust MRV: MRV should be consistent with EU standards—these are expected to be further refined in the upcoming 2026 EU ETS review.
- Genuine LCA to ensure that all emissions are being considered to properly quantify the net removal.

Regulatory Acceptance

- CDR Registry: Verified credits are recorded in a central CDR registry, ensuring traceability and transparency.
- Eligibility for EU ETS: Only credits that meet all regulatory requirements are eligible for use in the EU ETS, either as compliance units or for conversion into EUAs.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

Convert CDRs into EUAs

Once accepted, there are two main pathways for integrating CDR credits into the EU ETS as compliance instrument:

- **Use the CDR as a compliance instrument**
 - Differentiation: CDR credits are surrendered as a separate category of compliance unit, distinct from EUAs. This approach maintains a clear differentiation between emission reductions (EUAs) and removals (CDR allowances).
- **Conversion to EUA**
 - Exchange Rate: CDR credits can be converted into EUAs, either at a 1:1 ratio or using a conversion factor (e.g., to account for permanence risk or quality).
 - Identical Functionality: once converted, these EUAs are indistinguishable from standard allowances and can be traded or surrendered for compliance like any other EUA.
 - Irreversible Conversion: the exchange is a one-way process—once a CDR credit is converted to an EUA, it cannot be reversed.
 - Transparency: all conversions are logged in the registry, ensuring full transparency and traceability for regulators and market participants.
- However, the regulator does not acquire CDR credits, and does not manage the market, including market liquidity.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

B) Acquiring CDRs from the market

For this, there are two options:

- They are **acquired directly by EU ETS covered installations** from project developers
- They are **acquired by a centralized body** from project developers after being certified by the regulator who then brings them to the market under various conditions

A first condition is that a regulator needs to establish the rules for certification of CDRs once produced. In this case one issue that needs to be determined will be who gets that credit in the value chain: the installation that captures from the air, or the storage installation. We would lean more towards the storage installation, as this is where the liability and scarcity lie in our view.

Role of Central Body

- If the model follows the approach of a central body, whereby it acquires the credits from the market and then make them available to EU ETS covered entities, then the central body can have the functions outlined below and use different approaches:
- While the regulator defines quality and quantity of CDRs in EU ETS, the centralized body may introduce additional functions that will deeply impact the functioning of the EU ETS.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

Role of Central Body

- A centralized body could
 - a) Acquire CDRs from the market from producers, which could impact prices for CDRs
 - b) Manage the supply and price of centrally acquired CDRs in the market.
 - c) Provide financial back stop for ex-ante
- It must be noted that it is possible that some of the functions of a centralized body may vary over time, as CDRs and technology matures, and markets learn how to better manage negative emissions markets.
 - a) A centralized body could hold a reverse auction to acquire CDRs from the market and store them before releasing to EU ETS covered installations.
 - b) It could then make them available through an auction to EU ETS covered installations, in a manner, and at a rate, that would ensure good market functioning, market liquidity and avoid unnecessary price volatility.
 - c) It could also have the regulatory ability to issue CDRs in the market ex-ante, backstopping any potential non delivery of CDRs by CDR suppliers.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

The Centralized Body could be in different forms

- The **MSR** can be revisited and be given additional functions
- A **Carbon Central Bank** could be created to provide the necessary functions that may go well beyond the role that it may play

MSR

- Similarly to how the MSR is currently allowed to release allowances into the EU ETS market as per Art. 29a of the EU ETS Regulation, in the event of excessive price fluctuations, additional functions can be added to this mechanism to manage a reserve of CDR credits.
- *Advantages:*
 - The mechanism is already established and operational within the EU ETS policy framework
 - Builds on the MSR's aim of releasing additional allowances into the carbon market without undermining market stability.
 - May cost less than establishing a new separate entity and more political feasible.
- *Challenges:*
 - The current mandate of the MSR is limited and expanding to the functions outlined above will still require amendments to the current regulation.
 - Current personnel expertise and available resources may be lacking in order to handle the added work and complexity of CDR integration.

6. Integrating CDRs into Carbon Markets

6.5. Governance Structure

Carbon Central Bank

- A carbon central bank could manage the supply, demand, and risk associated with CDRs delivery. This institution could procure CDRs buffer supply, manage price and delivery risk, and auction credits into the ETS, acting analogously to a monetary authority.
- *Advantages:*
 - Enhances market confidence and shields the system from excessive volatility, especially during the early deployment of CDRs.
 - Allows for strong public oversight, at least at the early stages.
 - Manages the deployment of removals.
 - Supports early-stage technologies and manages the risk of non-delivery and associated fiscal exposure.
- *Challenges:*
 - The effectiveness of a central intermediary depends on a clear mandate and governance where rule-based mandates are replaced by guidelines and human intervention, which is better for the upcoming conditions in the EU ETS and EU climate change policy in general.

Sequencing and Evolution of Governance

- *Description:* The governance model can evolve in time and another possibility could involve starting with a centralized model to manage the complexities and risks of early-stage CDR deployment, then transitioning to more decentralized or hybrid models as the market matures and regulatory capacity grows.
- *Rationale:* early centralization allows for careful oversight, learning, and risk management, while later decentralization can foster competition, innovation, and broader market participation as standards and technologies stabilize.

6. Integrating CDRs into Carbon Markets

6.6. Use for Residual vs. All Emissions

Residual emissions only

- This approach limits the use of CDR credits to sectors where emissions are considered technically or economically unavoidable—such as industrial process emissions (e.g., cement, steel) or agricultural methane.
- The rationale is to prioritize direct mitigation where feasible, and reserve CDR for areas where emissions cannot be eliminated.

All Emissions

- Allowing CDRs to offset any emissions—regardless of source—would offer maximum flexibility within carbon markets.
- This supports technology neutrality and cost-effectiveness, enabling market forces to identify the most efficient mitigation pathways.

6. Integrating CDRs into Carbon Markets

6.7. Use of domestic vs. international CDRs

- CDRs can be produced domestically in the EU, or in a third party, i.e. outside EU Member States.
- Defining what is domestic and what is international may also require some additional thinking. For illustration purposes, if the capture is in the EU, but the storage facility is outside the EU, a solution not at all improbable, how is such a situation to be classified?

6.7.1. Domestic CDR Deployments

Benefits of Domestic CDR deployment

- **Accountability and transparency**

Domestic CDR projects allow for what may be perceived, incorrectly, as stricter oversight, especially with regard to MRV, sustainability and associated credibility. The CRCF regulation aims to standardize monitoring and reporting, reducing risks of greenwashing and ensuring permanence in carbon storage. By keeping CDR within the EU, policymakers can, in principle, directly enforce environmental safeguards.

- **Public Acceptance and Political Feasibility**

Studies indicate that European citizens prefer domestic CDR solutions over international offsets, particularly when they involve afforestation or renewable-powered DACCS rather than industrial-scale interventions abroad[1]. Public trust in governance structures is higher within Europe, reducing opposition and legal hurdles compared to projects in politically unstable or less regulated regions.

Sources:

6. Integrating CDRs into Carbon Markets

6.7. Use of domestic vs. international CDRs

6.7.1. Domestic CDR Deployments

Challenges of Domestic CDR deployment

- **High Costs & Infrastructure Gaps**

Technology-based removals remain prohibitively expensive without substantial support measures. Costs in the EU, the availability of affordable renewable energy (RE), and the complexity of putting in place a transportation network are not small challenges.

- **Storage capacity**

The EU lacks sufficient operational geological storage capacity for CO₂, necessitating substantial cross-border transport and storage agreements. Most storage is available in the North Sea which requires ramified and substantial transportation infrastructure development and amelioration.

- **Public acceptance**

Many CDR methods, such as DACCS or BECCS, are not well known to the public. This knowledge gap can lead to scepticism or resistance, especially when technologies are perceived as unnatural or risky. Public support often depends on how "natural" a CDR method is perceived to be. For example, afforestation and reforestation are generally more accepted than technological solutions like DAC or BECCS because they are seen as less intrusive to nature[1].

- **Slow Policy Development Integration and Market Incentives**

CDR policies remain fragmented, with unclear incentives for private investment. There are few comprehensive targets or frameworks specifically designed for CDR. Most existing policies are piecemeal, focusing on isolated projects or voluntary initiatives rather than coordinated national strategies. Many countries, including major emitters, have yet to set explicit removal goals or integrate CDR meaningfully into their broader climate policy frameworks. The absence of a robust carbon pricing mechanism that will give value to removals discourages innovation. Current subsidies and incentives, where they exist, are often limited to early-stage demonstration projects and are not sufficient to drive the large-scale deployment needed to meet mid-century targets.

Sources:

6. Integrating CDRs into Carbon Markets

6.7. Use of domestic vs. international CDRs

6.7.2. International CDR Deployments

Benefits of International CDR Deployment

- **Cost-Effectiveness**

International deployment of CDR can significantly enhance cost-effectiveness by leveraging regional differences in resources, land availability, and technology suitability. For instance, some CDR methods like BECCS and biochar are more cost-competitive in certain regions due to favourable local conditions, such as lower land costs or greater biomass availability. In short, international cooperation enables countries to deploy CDR where it is most economically efficient, minimizing the global cost of achieving net-zero targets.

- **Greater Removal Potential**

Countries outside the EU, especially developing countries in the South, such as Brazil, offer vast land areas for afforestation and BECCS at lower costs. Estimates suggest that Brazil could theoretically supply up to 152.5 million hectares for EU CDR needs [1]. Similarly, regions with abundant renewable energy (e.g., Iceland leveraging geothermal energy for DACCS [2]) or favourable geological storage (e.g., Norway) can achieve removals more efficiently than densely populated EU states.

- **Available renewable energy at reasonable prices**

Many CDR technologies, especially engineered solutions like DACCS, require substantial energy inputs. Deploying these technologies in countries or regions with abundant, low-cost renewable energy (such as solar or wind) can significantly reduce operational costs and carbon footprints. International CDR deployment allows for siting energy-intensive removal projects in areas where renewable energy is both plentiful and affordable, ensuring that the carbon removal process itself remains economically viable.

Sources:

6. Integrating CDRs into Carbon Markets

6.7. Use of domestic vs. international CDRs

6.7.2. International CDR Deployments

Challenges of International CDR Deployment

- **Political and Regulatory Uncertainty**

There is a perception among stakeholders that CDR projects in third countries may face governance gaps, corruption risks, and weak enforcement of environmental standards. The lack of harmonized certification schemes increases the risk of double-counting or non-permanent removals, undermining climate benefits. The work that is being done, but incomplete, under Art 6.4 of the Paris Agreement will alleviate these concerns.

- **Public Acceptance**

European stakeholders may resist outsourcing CDR in general, and outsourcing to third countries adds another level of opposition, perceiving it as a way to delay mitigation measures domestically. Surveys show strong preferences for local solutions.

6. Integrating CDRs into Carbon Markets

6.8. Bridging the Financial Gap

As of today, the significant gap between current EUA prices—typically ranging from €61 to €84 per tonne—and the much higher costs of most high-durability CDR technologies, which often exceed €200 per tonne, limits the ability of CDRs to be financially viable compliance instruments in the EU ETS if this financial gap is not bridged.

- **Price Management**

One approach, hands-off, is to allow for time and EUA prices to increase while CDR costs decrease until a time in the future when then two curves intersect.

- **CCfDs**

CCfDs can play a role to close the funding gap. These contracts can help overcome the cost barrier by guaranteeing CDR project developers a fixed price for removals. This mechanism effectively fills the gap between the EUA market price and the actual cost of removal, de-risking investment and accelerating deployment.

- **Permanence-Based Exchange Rates**

Having “exchange rates” for different types of removals based on durability and MRV strength. This would create differentiated values without fragmenting the market into multiple asset classes.

- Allows the issuance of fewer EUAs per tonne of removal for less durable methods.
- Encourages investment in long-term storage technologies like DACCS and BECCS.
- Avoids over crediting from uncertain or medium-durability removals.

6. Integrating CDRs into Carbon Markets

6.8. Bridging the Financial Gap

- **Public Purchasing Programmes**

The development of public purchasing programs for certified carbon removals could also play a role in stimulating early-stage project development. The European Commission's DG CLIMA is exploring options for an EU purchasing program for permanent CDR to address a critical gap in climate change mitigation, as part of the initiative titled "Strategy for the Financing of Permanent Carbon Removals" which runs from September 2024 to August 2025. Design aspects of such program - e.g. mandate, portfolio, purchasing methods, additional services, and funding - are still under discussion

- **Voluntary + Compliance Market Synergy**

- Encourages coexistence and complementarity of VCM and EU ETS
- ETS participation could validate or “upgrade” voluntary credits - early-stage projects may begin in the voluntary space and, over time, graduate to compliance-grade recognition.
- Risks include double counting and credit leakage, which require registry safeguards.

7. Recommendations (1/3)

The recommendations below are meant to create a straw man on the use of CDRs in the EU ETS.

1. CDRs should be introduced in both the ETS 1 and 2. A phased approach is recommended, with the initial integration in the ETS1 only, as it is a well-tested and better understood system.

- The integration of CDR in both ETS1 and ETS2 is the recommended approach – integration will be initially in ETS1 only. Having such a unified integration of carbon removal allowances maximizes liquidity by expanding the market participant pool and creates more robust price discovery. Furthermore, administrative efficiency gains emerge from standardized MRV protocols, reducing regulatory complexity and compliance costs. Different or separate CDR treatment across ETS1, ETS2 or a separate removal system would not only not reap the same benefits but might also create perverse incentives for regulatory arbitrage, potentially undermining the integrity of the overall system. A unified framework ensures that CDR deployment follows economic rationale rather than regulatory segmentation, directing resources toward the most cost-effective removal technologies.

2. The method of accounting used should allow for CDRs to be used in addition to the EUAs issued.

- This option allows the use of CDRs to be based on atmospheric concentration of CO₂ rationale and market efficiency. Having the same EUA cap maintained throughout also provides certainty on future availability of EUAs without being based on the feasibility of CDRs. In short, based on the logic of market efficiency in reducing the atmospheric concentration of CO₂ and allowing the cap to drive decarbonization we recommend this option.

3. Only permanent CDRs should be integrated, until the system is well tested.

- Only the methods qualifying as permanent by IPCC and CRCF standards, with advanced MRV and a fully developed methodology with LCA integration are considered. It seems that currently only DACCS, BECCS, and Biochar satisfy these requirements. The establishment of qualitative criteria serves multiple functions: reducing the risks of a reversal event, preventing low-quality credits from undermining market confidence, and ensuring compatibility with international climate commitments.

7. Recommendations (2/3)

4. A centralized system for acquiring and introducing CDRs in the EU ETS should be used initially to ensure high public oversight and ensure that all CDRs are of the highest quality. A modified MSR with new functions should be first tested as an option.

- The establishment of a single, EU-level authority or mechanism responsible for the integration of certified CDR units into the EU ETS. A single, transparent regulatory body allows for clearer accountability, standardized reporting, and easier monitoring by regulators, stakeholders, and the public, reducing risks of fraud or inconsistent practices across member states. Also, centralized procurement enables the implementation of rigorous, uniform standards and verification protocols for all CDRs entering the system. This minimizes the risk of substandard or non-permanent removals undermining the ETS's environmental integrity and market credibility.

5. There should be quantitative and qualitative limitations until it is well understood how the system works and its impact on EU ETS functioning and price formation.

- A strictly limited scope for CDR integration into the EU ETS must be maintained during the initial operational period. This entails establishing explicit quantitative caps on the total volume of CDRs permitted into the system annually and enforcing qualitative thresholds governing the types of removal technologies eligible for inclusion. These constraints serve as safeguards while critical operational knowledge is being developed.

6. The ex-ante issuance and use of CDRs should be permitted.

- Credits should be issued ex ante, at least in an initial phase to stimulate early investing and accelerate the funding flow. Ex ante credit issuance addresses in our view, a fundamental market failure in early-stage CDR deployment: the gap between technological feasibility and commercial viability. Traditional ex post systems create a temporal mismatch between capex and revenue generation, particularly problematic for capital-intensive CDR technologies requiring upfront investments to reach scalability. The ex-ante issuance approach does bring with it some under-delivery risk concerns, however we believe that an institution with regulatory authority would address this by backing the guarantee, ensuring that credits are honored even if the project underdelivers.

7. Recommendations (3/3)

7. There is no reason why the use of CDRs should be limited to specific economic sectors.

- Allowing CDR credits to offset any emissions source enables market forces to identify the lowest-cost compliance pathways across the entire covered economy. This approach embodies the fundamental principle of technology neutrality, avoiding the government picking winners and losers in the technology development process. The approach also maintains compatibility with international carbon markets and Art 6 mechanisms under the Paris Agreement, preserving options for future linking and recognition of international credits. Technology neutrality supports innovation by creating market demand for CDR generally rather than specific technologies, allowing superior approaches to emerge through competitive processes.

8. While the use of international credits may be limited in quantity, they should be allowed in as soon as Art 6.4 is ready to produce CDRs.

- Permitting international CDR within the EU ETS recognizes the global nature of atmospheric carbon dioxide and the economic benefits of least-cost compliance across geographic boundaries. This approach leverages comparative advantages in CDR deployment, potentially reducing overall system costs while accelerating global removal capacity development. International integration requires robust governance frameworks to ensure environmental integrity across jurisdictions with varying regulatory capabilities.

9. CDRs allowed in the EU ETS should be exchanged for EUAs to ensure that there is no unnecessary market segmentation.

- This approach broadens the market, prevents fragmentations, increases participation, and improves liquidity, as both emission reductions and removals are traded within a single, unified system. A unified market for EUAs—whether generated by emission reductions or by CDR—enables emitters to make cost-effective choices between reducing emissions and investing in carbon removals. The market will naturally find the most economically efficient balance, as companies will pursue the least costly options to meet their obligations. This dynamic ensures that the pathway to net-zero emissions is achieved at the lowest possible overall cost, as industries can substitute high-cost abatement measures with more affordable removal options when available.

Supporters of the initiative

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Disclaimer

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