

# COOL DOWN

Co-creating a common EU  
vision of carbon removals

**CO-CREATED**

**POLICY  
RECOMMENDATIONS  
FOR EU  
INSTRUMENTS ON  
PERMANENT  
REMOVALS**

December 2024



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# INTRODUCTION

To achieve climate neutrality, humanity needs to eliminate almost all anthropogenic emissions. Towards that end, permanent carbon dioxide removals (CDR) will be needed to compensate for the unavoidable emissions from sectors society deems vital and to lower atmospheric concentrations of greenhouse gases caused by historical emissions.

Ranging from industrial to nature-based processes, carbon removal techniques are not created equal. One major factor to distinguish them is their duration of carbon dioxide storage.

Biogenic sequestration by natural ecosystems that sequester carbon from the atmosphere and store it in biomass or soils are vulnerable to human and natural disturbances. Due to the risk that the carbon ecosystems store will be rereleased into the atmosphere, biogenic sequestration should be considered temporary. Natural ecosystems should be protected and their carbon uptake enhanced, but they should not be used to compensate residual anthropogenic emissions. Carbon removal methods that can store carbon for at least several centuries should be considered permanent and can therefore be used to compensate for residual emissions.

Support for carbon removals must not undermine efforts to slash emissions. To avoid this and to recognise the distinction between biogenic sequestration and permanent CDR, different targets and policies are necessary for emissions reduction, biogenic sequestration and permanent removals.

The EU needs a clear and comprehensive strategy that is mindful of the risks, challenges and opportunities of supporting the development and scale-up of a sufficient supply of permanent removals.

[In the CO2ol Down project](#), representatives from academia, industry, and civil society, collaborated during three full-day co-creation workshops to come up with the building blocks for a good strategy for permanent removals.

## Quality and legitimacy through co-creation

Positions in the field of CDR range from overconfidence in the future availability of removals to tackle climate change, to excessive caution regarding their usefulness and impacts. This polarisation risks either stalling proper regulation and investments. The co-creation process worked with this polarity and drew out proposals which illustrate the greater purpose of both sides. The results are a resource for the policymakers who will tackle the challenge of establishing an effective governance framework to regulate removals.

CDR remains a critical topic to ensure humanity deals effectively with climate change. As we are dealing with a new rather than established policy field, the quality of inputs from stakeholders to policymakers is crucial. To enhance the latter and reduce the discrepancies between different actors' perceptions of removals, CO2ol Down focused on an inclusive and participatory process that improved relationships between stakeholders and created a safe space to brainstorm and discuss concrete policy proposals.

In this document, we present the results of our collective efforts to shape the future of the EU's post-2030 climate architecture in a way that supports real climate action, social well-being and environmental preservation.



# TARGET SETTING

- Legally binding targets for permanent removals should be set in addition to gross emissions reduction targets. A path towards net-negative GHG emissions by 2055 should be set with intermediate targets, starting in 2030 for every 5 year period, and integrated in the EU's nationally determined contributions.
- Following the same standard legislative process for the setting of emissions reduction targets, regularly reviewed and transparent targets for permanent removals should be set. The targets should reflect best scientific and technological removal methods knowledge and be updated in response to decreasing residual emissions and current social and technological considerations.
- Targets for permanent removals should be based on the European Scientific Advisory Board on Climate Change advice, incorporating justice, sustainability, and planetary boundary considerations. They should be expressed in volume and as a percentage of 1990 emissions.
- Targets should be set at the EU level and fairly allocated among member states, taking into account the differing socio-economic conditions of each country. Member states should be obliged to set out how their climate targets can be reached through their National Energy and Climate Plans.
- Sanctions and/or penalties should be imposed on member states if targets are not met. Revenues generated should be channelled back into the Innovation Fund to procure permanent CDR at the EU level.

# GOVERNANCE

- The interaction between EU member states in achieving the Union-wide permanent removal target has to be regulated in a similar way to the approach taken in the Effort Sharing Regulation. The interconnection between the EU and global removal targets should also be taken into account.
- Implementing the targets, including by the procurement of removals, should be overseen at the member state level, using tools such as reverse auctions or contracts for difference.
- Robust monitoring, reporting, and verification methodologies should be put in place to certify appropriate permanent removals that can be used towards the set targets.
- Access to transport and storage of CO<sub>2</sub> needs EU-level regulatory oversight.

# FINANCE

- Delivering permanent carbon removals in a fair manner will require urgent public funding in the initial stages of technology development and deployment, as well as larger quantities of private funding to ensure sufficient and long-term scaling of permanent CDR.
- Instruments that regulate the financing of permanent CDR should be based on the overarching 'Polluter Pays' principle while considering the 'Ability to Pay' principle and responsibility for addressing historical emissions. Public funds will be required to address emissions overshoot that has been caused in part by historical emissions that proved impractical to attribute (it is difficult to clarify who is responsible for historical emissions. For example, a company may no longer exist).
- Any instruments dedicated to leverage finance for permanent removals should be based on a compliance approach. We suggest the establishment of a public 'CDR development fund' for early-stage CDR initiatives and, separately, a blended 'CDR delivery fund' based on public and private funding for both procuring and generating demand for removals.

# PORTFOLIO APPROACH

- A wide range of permanent removal methods, including methods that do not yet exist, is desirable to attain climate goals. Not one single method will be able to achieve the scale needed. Moreover, a portfolio approach will be essential in mitigating any risks associated with each specific method. Therefore, it is necessary to favour the development and scaling of a variety of removal methods.
- There is an urgent need to prove or disprove appropriate methods according to a comprehensive set of criteria that includes sustainability, resource use and biodiversity impacts, permanence, additionality (if relevant), leakage, trade-offs, co-benefits, community consent, labour rights and worker ownership, the burden for future generations, justice considerations, and monitoring, reporting and verification.
- Most biomass-based permanent removals require access to land. Competition from other sectors/processes needs to be taken into account and long-term allocation planning between sectors using biomass might be needed before finalising targets for these types of removals.
- The EU should explore a range of appropriate use cases for permanent removal methods and identify tailored policy instruments for each use case.
- Member states should coordinate with the European Commission to ascertain the feasibility of their CDR portfolio based on their geographical and socio-economic conditions and carbon removal targets.

- Liability is required in the event that the climate benefit alters, such as in the event of reversal. Criteria should be assigned to govern the transfer of liability for each specific carbon removal method. The liable party must be identifiable at all times (operator/project developer, government). Liability will differ depending on the method, and the Commission should explore different liability procedures. The penalty should be high enough so that it is a deterrence. The aim of liability is to restore the atmosphere to its desired state and any other unforeseen impacts.

## SUSTAINABILITY CRITERIA

- The climate benefits of CDR delivery should be complemented by EU policies that promote sustainability, justice and ethical criteria. Social inequalities must be reduced rather than further exacerbated.
- Policy instruments should be based on the 'do no harm' and 'precautionary' principles, and planetary boundaries should be respected.
- The incommensurable value of nature and biodiversity should be acknowledged and protected from negative impacts of CDR projects.
- Permanent removals must support resilience in local communities and be implemented in a manner that is respectful of their rights. Projects should provide community benefits and be initiated through community engagement and consent.
- CDR activities should be exclusively powered by renewable energy sources (RES). The RES used for CDR methods should be additional.

**In the context of the 2040 target-setting process, we call on EU policymakers to adopt a dedicated permanent removals implementation strategy in the twelve months following the entry into force of the European Climate Law revision.**



# ABOUT THE PROJECT

CO2ol Down is a project that brings together representatives from civil society, academia and business that share a vision of the need to drastically cut emissions while maximising the potential and minimising the risks of biogenic sequestration and permanent removals in the EU.

Around fifty interested parties met at three workshops (one online and two in Brussels) to co-create proposals for amendments of the EU Climate Law and to devise policy recommendations for EU instruments on carbon removals.



This collaborative effort was inspired by improving the governance of carbon removals in the EU and ensuring action on all fronts: drastically reducing emissions, while protecting and restoring ecosystems and sustainably deploying permanent removals.

This document is therefore rooted in collective progress and mutual benefit, rather than the advancement of individual agendas. The final proposal was assembled by Carbon Market Watch under the guidance of the CO2ol Down editorial group (p.8). The editorial group consisted of a selection of CO2ol Down workshop participants who helped streamline the results of the workshops' discussion and resolve disputes. The group held three virtual meetings to discuss the documents. At the end of this process, the proposal was sent to the full group for comments and final signature.

Individuals or entities listed as co-creators are those who want to be acknowledged as having actively contributed to the development and writing of the document. Their input, ideas, and efforts were integral to shaping the content, structure, and overall direction of the document.

Those listed as supporters endorse and back the principles and recommendations presented in the document.

For more information about the history and achievements of the Cool Down project, visit our website: <https://carbonmarketwatch.org/campaigns/co2ol-down/>



# ENDORISING CO-CREATORS AND ENDORSING SUPPORTERS

| Organisation  | Type                          | Workshop 1           | Workshop 2                    | Workshop 3                                | Co-creator             | Supporter              |
|---|-------------------------------|----------------------|-------------------------------|---|------------------------|------------------------|
| <b>Bellona Europa *</b>   | Non-profit                    | Mark Preston         | Mark Preston,<br>Allanah Paul | Mark Preston                              | For their organisation |                        |
| <b>Carbon Balance Initiative</b>                                | Academic                      |                      | Ingrid Sundvor                | Ingrid Sundvor                            | For their organisation |                        |
| <b>Carbon Gap *</b>   | Not-for-profit                | Francesca Battersby  | Rodica Avornic                | Rodica Avornic,<br>Eli Mitchell<br>Larson | For their organisation |                        |
| <b>Carbon Market Watch</b>                                      | Not-for-profit                | Wijnand Stoefs       | Wijnand Stoefs                | Wijnand Stoefs                            | For their organisation |                        |
| <b>Climate Action Network Europe *</b>                          | Not-for-profit                | Ulriikka Aarnio      | Ulriikka Aarnio               | Ulriikka Aarnio                           | For their organisation |                        |
| <b>Direct Air Capture Coalition</b>                             | Industry (association)        | Aaron Benjamin       | Aaron Benjamin                |   | As individual          |                        |
| <b>Grantham Research Institute (London School of Economics)</b> | Academic                      | Joshua Burke         | Joshua Burke                  | Leo Mercer                                |                        | For their organisation |
| <b>Lund University</b>  | Academic                      | Wim Carton           | Wim Carton                    |   | As individual          |                        |
| <b>NewClimate Institute</b>                                     | Think-tank/research institute | Juliette de Grandpre |                               | Juliette de Grandpre                      | For their organisation |                        |
| <b>Oeko-Institut</b>  | Think-tank/research institute | Martin Cames         | Martin Cames                  | Martin Cames                              | As individual          |                        |
| <b>Saint Mary's University</b>                                  | Academic                      | Kate Ervine          |                               |   | As individual          |                        |
| <b>Sandbag</b>  | Think-tank/research institute | Aymeric Amand        | Aymeric Amand                 |   |                        | For their organisation |
| <b>UCLA</b>   | Academic                      | Duncan McLaren       | Duncan McLaren                | Duncan McLaren                            | As individual          |                        |
| <b>University of Edinburgh</b>                                  | Academic                      | Navraj S Ghaleigh    | Navraj S Ghaleigh             | Navraj S Ghaleigh                         |                        | As individual          |

\*The organisation does not necessarily align with all the elements included in the documents.

\*\*While the organisation supports most of the principles and recommendations included in the documents, it notes the final findings of the report should suggest an earlier date for reaching climate neutrality and net negativity in the EU, and they diverge from the organisation's positions on role of LULUCF removals towards the climate neutrality target.

| Organisation           | Type           | Workshop 1                | Workshop 2                | Workshop 3                | Co-creator             | Supporter              |
|------------------------|----------------|---------------------------|---------------------------|---------------------------|------------------------|------------------------|
| University of Oxford   | Academic       | Alice Evatt               | Alice Evatt               | Alice Evatt               | As individual          |                        |
| WWF European Office ** | Not-for-profit | Sofia Ghezzi, Alex Mason  |                           | Sofia Ghezzi, Alex Mason  | For their organisation |                        |
| WWF Germany **         | Not-for-profit | Julia Teppe               | Julia Teppe               | Julia Teppe               | For their organisation |                        |
| ZERO asts              | Not-for-profit | Mafalda Salgueiro Antunes | Mafalda Salgueiro Antunes | Mafalda Salgueiro Antunes |                        | For their organisation |

## OTHER PARTICIPANTS

| Organisation   | Type                             | Workshop 1                           | Workshop 2                           | Workshop 3                                 |
|--|----------------------------------|--------------------------------------|--------------------------------------|--|
| ApexBrasil   | Public agency (export promotion) | Bruno Capuzzi                        |                                      |  |
| Bakz4ever, India   | Industry (company)               | Parth Verma                          |                                      |  |
| Bioenergy Europe   | Industry (association)           | Ennio Prizzi                         | Daniel Reinemann                     | Ennio Prizzi                               |
| Carbo Culture  | Industry (company)               |                                      | Hanna Ojanen                         |  |
| Carbon Business Council                                  | Industry (association)           | Isabella Corpora                     | Isabella Corpora                     |  |
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| Carbonfuture / Deutscher Verband für Negative Emissionen | Industry (company)               | Sebastian Manhart                    |                                      |  |
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| Climateworks   | Industry (company)               | Anna Stratton                        |                                      |  |
| Drax Group   | Industry (company)               | Kasia Wilk                           | Kasia Wilk                           |  |

| Organisation  | Type                          | Workshop 1                       | Workshop 2                 | Workshop 3                |
|---|-------------------------------|----------------------------------|----------------------------|---------------------------|
| European Environmental Bureau                           | Not-for-profit                | Riccardo Nigro                   | Riccardo Nigro             |                           |
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| OXO Earth, Germany                                      | Industry (company)            | Farid Kreh                       |                            |                           |
| Patch. Rebalancing the planet                           | Industry (company)            | Georgia Berry                    |                            |                           |
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| SustainablePublicAffairs                                | Industry (consultancy)        |                                  | Nicolas Remilien           |                           |
| Transport & Environment                                 | Not-for-profit                | Bernardo Galantini, Sofie Defour | Bernardo Galantini         | Bernardo Galantini        |
| University of Cambridge                                 | Academic                      | David Reiner                     |                            |                           |
| University of East Anglia                               | Academic                      | Harry Smith                      |                            |                           |
| Vrije Universiteit Amsterdam                            | Academic                      | Clemens Kaupa                    |                            |                           |
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| Zero Waste Europe                                       | Not-for-profit                | Janek VahK                       |                            |                           |

# EDITORIAL GROUP

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| Julia Teppe       | WWF Germany   |
| William Druet     | CCSA (Carbon Capture & Storage Association)             |
| Mark Preston      | Bellona Europa  |
| Elisabeth Harding | Negative Emissions Platform                             |
| Ulriikka Aarnio   | Climate Action Network Europe                           |
| Martin Cames      | Oeko-Institut   |
| Duncan McLaren    | UCLA  |
| Fabiola De Simone | Carbon Market Watch                                     |

# FACILITATORS

The workshops were facilitated by Fabiola De Simone, Sabine Frank, Marlène Ramon Hernandez and Sam Van den plas from Carbon Market Watch, as well as from co-creation experts Kilian Flade and Jascha Rohr from Institute for Participatory Design. The three co-creation workshops held with stakeholders were prepared in eight internal workshops of the CMW facilitation team during which they also received training from Institute for Participatory Design.



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