

CDRterra statement to the climate target for 2040 of the EU

CDRterra acknowledges and supports the European Union's commitment to achieve climate neutrality by 2050. We appreciate the EU's focus on the level of ambition for 2040 and the examination of the evolution and role of climate policy instruments. This public process is part of laying the foundation for the analysis of future policies that the EU needs to implement beyond 2030. CDRterra is dedicated to contributing to this process by providing insights and expertise on carbon dioxide removal methods and their potential role in achieving the EU's climate objectives.

CDRterra is a research program focused on carbon dioxide removal (CDR) methods to enhance knowledge for research and policy decisions funded by the Federal Ministry of Education and Research of Germany. CDRterra is dedicated to a comprehensive assessment of various terrestrial, geological and material-based CDR methods and portfolios. It also acts as a counterpart to the research mission "CDRmare: Marine carbon sinks in decarbonization pathways" of the German Marine Research Alliance. CDRterra assesses CO₂ removal potentials in terms of their ecological, sustainable, economic, political, and legal feasibility, taking into account conflicts over resources such as water or land as well as societal processes. We seek to strengthen understanding on how the different CDR measures may be evaluated across all these dimensions and compared against each other and also how they interact with each other in order to define their role in climate change mitigation pathways.

Implementing an ambitious climate target by 2040 brings multiple opportunities, including mitigating climate change impacts, driving clean energy transition and innovation, improving public health, enhancing economic resilience, conserving the environment, and promoting social justice. These benefits and opportunities collectively contribute to a sustainable and resilient future. We acknowledge the need to use carbon removals as a complementary measure to emissions reductions, as CDR is necessary to compensate residual emissions as required for a net-zero target, and to create net-negative emissions. We emphasize the need for a well-defined policy landscape that incorporates the role of carbon removal in the European climate strategy.

Strengthening Emission Reduction Targets

To effectively address the urgency of the climate crisis, it is crucial to consider ambitious emission reduction targets for 2040. Striving for deeper reductions compared to 1990 levels will help accelerate the transition towards a climate-neutral economy. If the EU aims for a net emission reduction target of 80% to 90% by 2040, following an average trajectory between the 2030 target (55% reduction) and the climate neutrality goal in 2050 (-100% or carbon neutrality), it would demonstrate ambition and commitment to addressing the climate crisis in line with the pace chosen for the 2050 target.

Higher ambitions should be considered to open the opportunity for an earlier target of climate neutrality, as followed by some of its member states, and as is preferable to reduce climate impacts.

This level of ambition would require more rapid and extensive deployment of renewable energy, energy efficiency measures, electrification, and other low-carbon technologies across various sectors. It would also necessitate substantial efforts in decarbonizing sectors with more complex challenges, such as heavy industry, agriculture, and aviation. A 80% to 90% reduction target by 2040 could send a strong signal to other nations, encouraging them to raise their own climate ambitions. Moreover, this level of ambition would contribute significantly to limiting global warming to well below 2 degrees Celsius, as envisioned by the Paris Agreement. In order to achieve such a high reduction target by 2040 robust policy frameworks, substantial investments, and widespread societal engagement is needed. The EU would need to implement measures that support innovation, research and development, and the adoption of sustainable practices in both the public and private sectors. Additionally, the EU should ensure a just transition, providing support for affected industries and regions, as well as considering social and economic impacts.

Integration of Carbon Dioxide Removal

To ensure that the EU achieves its 2040 climate target, carbon removals should be considered as a crucial component of the overall strategy. Carbon removals play a vital role in compensating for emissions that are challenging to mitigate or cannot be fully eliminated. As the EU aims to reach climate neutrality by 2050, carbon removals become even more essential. To achieve the 2040 climate target, the EU should prioritize and scale up carbon removal solutions in conjunction with emission reduction efforts. Since technological development and scaling-up of CDR, e.g. in terms of infrastructure and governance considerations, requires substantial lead times, a 2040 target including CDR requires action on CDR today.

It is important to assess different CDR options, including all currently available solutions and avoid either-or decisions, in order to account for the fact that all CDR options, individually and as part of mitigation portfolios, have various advantages and disadvantages, and that their feasible potential and risks will change over time in response to changes in regulations, societal acceptance, and continuing climate change. Investing in research, development, and deployment will contribute to advancing the understanding and effectiveness of carbon removal methods.

It is further important to highlight that the GHG-neutrality target will have very different impacts on ecosystems and society depending on whether net-zero emissions are achieved as the balance of two large or two small gross emissions vs removal fluxes (the "important role" selected in the questionnaire refers to the unavoidability of CDR for net-zero targets, while the required amount of CDR should be as limited as possible). This again emphasizes the need to strive for as low residual gross emissions as possible. This in turn requires a transparent and thorough societal and political discussion about how to define residual emissions.

Given that many CDR options are a combination of natural and technological pathways, as highlighted by the IPCC's Sixth Assessment Report (WG3), and given that potentials and risks of each method depend on their role in a larger CDR and overall mitigation portfolio, separate targets for "nature-based" and "technological" removals do not seem practical or advantageous. It is clear, however, that the different CDR options pose different challenges, which need to be adequately accounted for, such as various scales of permanence. Risks and potentials of CDR methods need to be continuously assessed for short-, medium- and long-term scales, based on the best available research and in a comprehensive manner covering environmental, societal and ethical, economic and political considerations, in order to minimize trade-offs and create co-benefits with other sustainable development goals. In that context liability for carbon removals play a crucial role in safeguarding environmental integrity, addressing potential risks, and ensuring accountability in the deployment of these technologies.

It is crucial to establish a robust framework for certifying carbon removals, as proposed by the Commission, to ensure transparency, reliability, and environmental integrity. The certification process should include rigorous standards and monitoring mechanisms to verify the carbon removals' permanence, additionality, and avoidance of potential negative side effects. Here, important aspects are mentioned both by the Commission's certification framework and the call for evidence for the 2040 targets that highlight that not only emissions and removals need to be assessed, but that the do-not-harm principle should prevail. However, how to actually evaluate this needs to be clearly defined, since, e.g., biodiversity trade-offs are very specific to the ecosystem and management type, and it needs to be ensured that all relevant trade-offs (and potential co-benefits) are assessed (beyond the quoted air pollution, water supply, waste management, resource efficiency, circular economy and biodiversity exist, for example, considerations of local climate impacts).

Considering carbon removals as an integral part of the EU's climate strategy will enable the EU to achieve its 2040 climate target more effectively. By simultaneously reducing emissions and enhancing carbon removal efforts, the EU can make significant progress toward climate neutrality by 2050.

EU ambitions and international collaboration

The EU should continue to foster stronger collaboration and international action, aligned with the objectives of the Paris Agreement. The impact assessment should explore opportunities to enhance global climate ambition and engage with other Parties of the UNFCCC, contributing to the updating of nationally determined contributions (NDCs). While net-zero targets need to be implemented territorially, capacity building internationally, especially in the Global South, is also needed. A strengthening of international collaboration is also needed to ensure consistent and transparent standards for monitoring, reporting and verification as well as certification of CO₂ removal methods and to resolve international legal issues of cross-border CDR measures.

In order to have a robust impact assessment of the EU 2040 targets it is important to accompany the development and implementation of the targets by further research efforts. It is key to obtain more expertise to assess the feasibility and effectiveness of carbon removal technologies and approaches. A holistic assessment of potential impacts and trade-offs of different carbon removal options, considering their scalability, costs, co-benefits, and potential risks helps to develop methodologies for quantifying and verifying carbon removals, ensuring transparency and environmental integrity.

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