

CDR stakeholder engagement & policy design: Summary for policymakers

Carbon Dioxide Removal (CDR) has taken center stage in the climate policy community. Forming an increasingly prominent role in many countries' net zero targets, many of these methods are, however, mired in controversy, especially Direct Air Carbon Capture and Storage (DACCS). Indeed, CDR generally and DACCS specifically are complex and uncertain topics, with an immense divergence of views and values on how to proceed (or not) with their implementation. Concerns about these technologies' mitigation potential and co-benefits, as well as fear they distract from emissions reduction priorities.

Critical to ameliorating these concerns and opening a path towards removals policymaking – one that is efficient, ethical and implementable – is stakeholder engagement. These processes have proven successful in gathering insightful information on general perceptions about CDR technologies; however, such deliberative policy learning for CDR policy design is still limited, particularly in Germany, which has had few engagements to date.

In this policy brief we share four recommendations for CDR and DACCS policy development derived from one of the few active stakeholder engagements in Germany on the topic. These recommendations provide policymakers with a clearer path forward towards implementing a highly polarizing technology in a way that minimizes polarization.

The recommendations presented in this policy brief were developed in a two-day stakeholder engagement workshop that took place in Berlin from April 18-19, 2023 and a subsequent online survey. Participants were experts mainly engaged in European and German climate policy. More details available in Apergi et al., 2024.

When embarking on CDR legislative processes and policy developments, countries should include stakeholder deliberations during each step of the policy process.

Stakeholder deliberation processes are critical to addressing “wicked problems” that bear a high value load without a clear consensus on a path forward, such as the implementation of CDR.

As the European Union and its member states embark on a process to design a legislative landscape for CDR, stakeholder deliberations must be included in each step of the policy process. **Approaching the 2050 net zero future means removals will play a bigger and bigger role in governments' overall climate policy mix.** Informing this role and the political debates that will accompany it with co-creative and deliberative stakeholder engagement will be critical for choosing policies for CDR methods that are effective and *implementable*.

Policymakers should engage stakeholders as early as possible and in each subsequent portion of the legislative process. These engagements should be collaborative and empower the stakeholders to deliberate the issues at hand through a variety of formats.

This engagement will play an important role in how quickly DACCS can be implemented – when needed and without objection.

We would like to thank the CDR-PoEt consortium partners for their inputs and support

2. DACCS deployment must not lead to mitigation deterrence. Governments must combine their support of DACCS deployment with ambitious emissions reductions targets and a fossil fuel phaseout.

These mitigation efforts should focus on fast and large emissions reductions, and carbon removals should be treated only as a tool to compensate residual emissions that are kept at a demonstrable minimum.

To address the risk of mitigation deterrence, policymakers need to maintain strict emissions reduction targets despite the pressure to weaken them. Importantly, **removals should not be treated as equivalent** to emission reductions when determining mitigation targets. The two should be treated as complements, not substitutes.

Including removals in the voluntary carbon markets can support the early deployment of DACCS technologies e.g. in the development of monitoring, reporting and verification (MRV) technologies and practices. However, the introduction of removals in the carbon markets should be done with care (e.g. with restricted or separate integration) as their unlimited use could lead to the offsetting of viable emissions reductions in addition to residual emissions. Separate policies incentivizing DACCS (e.g. government supported R&D, subsidies and tax incentives) are preferable. Such policies should also support the design of strict MRV and accounting of removals. Importantly, **any policy support should be combined with a fossil fuel phaseout, and efforts to replace fossil fuels with sustainable energy sources should continue undeterred.**

Definitions of residual emissions and what counts as carbon removal must be unambiguous, and internationally standardized and accepted, clarifying both what constitutes residual emissions and how these should be **calculated. Defining such criteria should involve stakeholder engagements**, as well as negotiations and agreements at the international level via dynamic processes with frequent revisions to reflect technological progress.

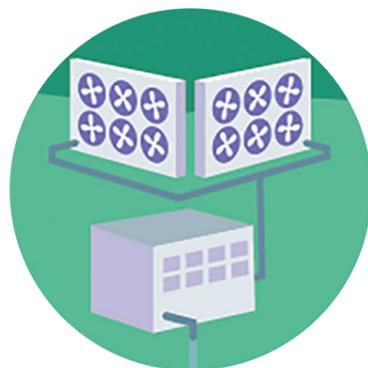
3. Timescale considerations should be reflected in DACCS policy design. Different policies that are adaptable over time are needed. These would account for changing requirements for DACCS scale-up in the near and long term.

At the moment DACCS deployment is low. There currently exist only very few small scale pilots that store the captured carbon permanently and do not use it for commercial reasons. The high cost and energy requirements are among the main barriers for large scale DACCS deployment.

Policymaking efforts today should include a strong focus on **support for applied research, pilot projects and demonstration plants for DACCS**. It is important to support the design of a large number of small scale pilot projects to allow for learning and positive spillover effects. In addition, competition between many small scale actors will also help reduce costs. Planning should ensure that DACCS pilot facilities are located in places with good storage capacity.

Policy incentives like subsidies, tax incentives and loans will be indispensable in the first phase to achieve DACCS innovation and to scale up. Public procurement of DACCS credits and reverse auctions are also suggested tools to fund DACCS programs in the near term. **Government support should also target the development of an enabling infrastructure**, including the development of transport and storage solutions along with the design of an MRV system.

As technologies become more viable in the long term, a number of additional private sector incentives could partially replace government support. These include carbon pricing and the integration of DACCS into the carbon markets. The latter, however, should be done with care to avoid mitigation deterrence as previously outlined.



Infographic depicting DACCS technology

4. CDR policy design should reflect considerations of tradeoffs. Governments should include detailed documentation of key tradeoffs that come along with different deployment pathways of CDR.

Tradeoffs between climate mitigation efficiency and other targets should be tackled proactively in CDR policymaking, and their documentation should be transparent and made available to access.

No singular policy measure exists to deal with the challenges deriving from the complexity of DACCS and other CDR methods, and each deployment pathway poses a range of tradeoffs. Potential tradeoffs exist, among others, between fair processes and climate effectiveness, between economic performance ecological effectiveness and social justice, etc.

Deliberating with stakeholders on tradeoffs is a very important aspect of DACCS stakeholder engagement. **Policymakers should ensure these tradeoffs are considered by a variety of experts across a range of fields and sectors, including civil society representatives**, during their engagement efforts. This should be done in the early stages of such engagement.

These tradeoff deliberations should be documented in a transparent and accessible way and made accessible publicly once a policy pathway with DACCS has been chosen. **Public trust in the legislative process would increase with knowledge that different tradeoffs were considered** and a clear justification for the legislative choices made and the tradeoffs they pose is provided.

CONCLUSION

Stakeholder engagement will play a critical role in the EU, providing countries like Germany with tools to incorporate CDR and DACCS into their climate policy strategies in a way that is effective, ethical and – above all – implementable. This engagement should start early and accompany each step of the legislative process, as this will lead policymakers to gain a greater and more nuanced understanding of how and under what circumstances these technologies can and should play a role in their policy mix. Moving towards implementation, governments should ensure DACCS deployment will not deter mitigation efforts and, as such, is accompanied by measures such as a fossil fuel phaseout. With DACCS' highly controversial and potentially polarizing nature, trust in the policymaking process will be crucial to its acceptance, and as such it should transparently convey considerations of issues such as timescale and tradeoffs.

About CDR-PoEt (2021 - 2025)

Carbon Dioxide Removals – Policies and Ethics (CDR-PoEt) examines the ethical and equity implications of policy instruments for CDR, based on interdisciplinary research and stakeholder deliberations. The project specifically evaluates the feasibility ('what can we do from an economic, socio-cultural, and institutional perspective?') and the desirability ('what do we want to do?') of CDR policies and methods in their specific contexts, providing a foundation for developing policy recommendations at local, national and international levels.

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 <https://cdrterra.de/en/consortia/cdr-poet>
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REFERENCES

- Apergi, M; Hellmich, M; Eberenz, E; Honegger, M; Reinecke, S; Tänzler, D. (2024). **Productive in disagreement: stakeholder deliberation insights on carbon dioxide removal in Germany.** Berlin: Frontiers in Climate, 6, <https://doi.org/10.3389/fclim.2024.1465613>
- Boettcher, M., Schenuit, F., & Geden, O. (2023). **The formative phase of German carbon dioxide removal policy: Positioning between precaution, pragmatism and innovation.** Energy Research & Social Science, 98, 103018
- Breitschopf, B., Dütschke, E., Duscha, V., Haendel, M., Hirzel, S., Kantel, A., Lehmann, S., Marscheider-Weidemann, F., Riemer, M., Tröger, J., Wietschel, M. (2023). **Direct Air Carbon Capture and Storage A game changer in climate policy?.** Fraunhofer ISI.
- Boyd, J., Joiner, E., Krupnick, A., Toman, M. (2024). **Policy Incentives to Scale Carbon Dioxide Removal: Analysis and Recommendations.** Resources for the Future.
- Brad, A., & Schneider, E. (2023). **Carbon dioxide removal and mitigation deterrence in EU climate policy: towards a research approach.** Environmental Science & Policy, 150, 103591.
- Buck, H.J., Carton, W., Lund, J.F. et al. **Why residual emissions matter right now.** Nat. Clim. Chang. 13, 351–358 (2023). <https://doi.org/10.1038/s41558-022-01592-2>
- Deprez, A. (2023). **Carbon dioxide removal: Five principles for a science-based, sustainable, and feasible approach.** IDDRI.
- Failing, L, Gregory, R. Harstone, M. (2007). **Integrating science and local knowledge in environmental risk management: A decision focused approach.** Ecol.Econ. 64(1), 47-60
- Fulton, M. (2023). **Direct Air Capture – Policy Support is Essential.** Inevitable Policy Response.
- Görg, C, Neßhöver, C., Paulsch, A. (2010). **A new link between biodiversity science and policy.** GAIA 19 (3),183-186
- Lebling, K., Leslie-Bole, H., Byrum, Z., Bridgewater, L. (2022). **6 Things to Know About Direct Air Capture.** World Resources Institute.
- McLaren, D. (2020). **Carbon Removal: The dangers of mitigation deterrence.** Carnegie Climate Governance Initiative.
- Meckling, J., & Biber, E. (2021). **A policy roadmap for negative emissions using direct air capture.** Nature communications, 12(1), 2051.
- Sekera, J., & Lichtenberger, A. (2020). **Assessing Carbon Capture: Public Policy, Science, and Societal Need: A Review of the Literature on Industrial Carbon Removal.** Biophysical Economics and Sustainability, 5 (14).
- Stoefs, W. (2021). **Penetrating the carbon removal smokescreen.** Carbon Market Watch.

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Design and graphic: Gernot Kropf / December 2024