Monitoring, Reporting, and Verification

Issue Brief

Introduction

The Carbon Business Council joins the sector-wide call for clear, high-quality, and independent monitoring, reporting, and verification (MRV) standards for carbon dioxide removal (CDR). MRV is the process of accounting for, communicating, and certifying a CDR project's net carbon removal over time, including complete measurement of the project's total greenhouse gas (GHG) emissions. The full scope of MRV is a work in progress and is evolving to include a project's non-GHG impacts on ecological and Earth systems. It has been said that MRV is the "product" delivered by CDR companies, and we agree. Without high-quality MRV, buyers of CDR credits cannot be confident that their purchase truly counterbalances corresponding hard-to-abate residual emissions in a net-zero target, and the CDR sector will not be able to build the trust necessary to scale deployment.

Currently, widely accepted and independent MRV standards for CDR are limited outside of carbon dioxide storage in underground Class VI wells in the United States. Actors across the CDR ecosystem can join forces and work together to develop coherent and internationally applicable criteria for high-quality MRV standards across the diverse range of CDR pathways. This will take time and require sustained investment from both the private and public sectors. MRV will be strongest when based on the best available science and when independently administered and updated—whether by governments, existing standards bodies, or a newly created, independent non-governmental organization. Critically, criteria for high-quality MRV standards must acknowledge and account for the varying levels of uncertainty inherent to the range of potential CDR pathways. MRV should foster innovation and continue to scale and advance the sector while building trust and affirming effectiveness.

Challenges

- MRV is a complex and multi-faceted set of processes. The core of MRV is the measurement and verification of net CDR for a project that also considers how delivery for certain CDR approaches may occur over varying time intervals. This requires clear baselines, system performance verification, monitoring of durability and reversal risk, and cradle-to-grave measurement of a CDR project's GHG emissions using established life cycle assessment (LCA) methodology. There is growing consensus that MRV should also include the measurement and monitoring of a CDR project's potential environmental, ecological, and Earth system impacts.
- Criteria for high-quality MRV cannot be "one-size-fits-all," given the diversity of CDR pathways. Additionally, reducing uncertainty in MRV will be important for most CDR approaches, particularly those that involve open systems such as soils, forests, blue carbon (mangroves, seagrasses, and marshlands), rivers, and oceans. For biomass-based CDR approaches, important

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questions remain regarding sustainable sourcing of feedstocks, establishing clear baselines, and LCA methodology. Substantial research is necessary on multiple fronts to advance the science needed to develop and align on criteria for high-quality MRV for some CDR pathways, and this will require funding and time. For CDR approaches where standards already exist, additional research on topics like additionality can help to ensure that CDR is delivering maximum efficacy and trust.

- Not all incumbent carbon markets have yet to meaningfully incorporate CDR and more novel CDR approaches do not have any published standards for MRV. We are also starting to see a proliferation of MRV standards and protocols for other approaches at the company level and from new and established carbon market registries and standards bodies. While these offerings can provide a near-term solution, there is a risk that inconsistent standards are developed. There is a clear imperative for the sector to align on criteria for high-quality MRV that offer coherence across CDR pathways while accommodating each pathway's distinct characteristics. This will help avoid market confusion, fragmentation, and a race to the bottom in terms of cost or quality.
- There have been recent promising signs of governmental engagement on MRV for CDR, including public funding announcements in the U.S and the EU's nascent Carbon Removal Certification Framework. However, the public sector has not yet fully articulated what role it will play with respect to MRV, other than the U.S. Environmental Protection Agency's permitting for carbon dioxide storage in Class VI wells. MRV standards will be costly to develop for certain pathways, and public-sector engagement and support will be key.

Opportunity

There is a clear opportunity for the CDR sector—including public, private, and non-governmental actors—to engage in an inclusive and purposefully directed conversation on MRV. This engagement should focus on developing and advancing practically applicable and scientifically sound criteria for high-quality MRV standards for CDR approaches as well as aligning on how standards will be administered. On the latter point of who will administer standards for MRV, the Carbon Business Council is open to a range of options: the public sector; existing standards bodies (whether ISO, ICROA, SBTi, GHG Protocol, Verra, etc.); a new, independent non-governmental actor; or other ideas yet to be proposed. Developing and aligning on criteria for high-quality MRV will take time and require sustained investment, and the CDR sector must in parallel continue to innovate, advance, and scale as we learn and reduce uncertainty. The Carbon Business Council looks forward to engaging in the important work to address this opportunity with our members, affiliates, and the rest of the CDR sector.

Recommendations

- The Carbon Business Council agrees with Carbon180's "Framework for High-Accountability MRV" that high-quality MRV should incorporate not only measurement of net delivery of CDR, including a project's full cradle-to-grave LCA, but also the project's potential co-benefits and harms to ecological and Earth systems. High-quality MRV must also include monitoring of a CDR project's durability and reversal risk for a reasonable, human-scale period of time.
- The public sector should increase and accelerate funding support for the research, sampling, and modeling work necessary to establish criteria for high-quality MRV, particularly for open-system CDR pathways such as forest and soil carbon, marine CDR, and ex situ mineralization as well

as for in situ mineralization, a promising carbon dioxide storage approach that is currently not accommodated by U.S. policy or regulation including within 45Q. The U.S. government has already taken initial steps in this direction through the National Laboratory Call for Proposals for "Carbon Dioxide Removal Measurement, Reporting, and Verification Best Practices and Capabilities" and several other opportunities, but continued investment will be required. Research on and development of criteria for high-quality MRV should prioritize scalability, and, where possible, international applicability.

- High-quality MRV is an essential and non-negotiable requirement for the sector to build trust and develop the market necessary to achieve gigatonne-scale CDR by mid-century. However, to begin to answer the scientific and operational questions necessary to align on criteria for high-quality MRV, the sector must continue to innovate and scale deployment today. Tools like Frontier and Carbonplan's CDR Verification Framework can potentially help stakeholders in the sector scale and advance CDR as we simultaneously gain knowledge, build trust, and reduce uncertainty over time.

Credits

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About the Carbon Business Council

The Carbon Business Council (CO2BC), a member-driven and tech-neutral trade association of companies unified to restore the climate, is the preeminent industry voice for carbon management innovators. Together, the nonprofit coalition represents more than 80 companies across six continents with more than $1.5 billion dollars in combined assets.

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