

Scaling Technology-based CDR: A US Federal Policy Roadmap

What is Technological Carbon Removal?

Technological carbon dioxide removal (CDR) refers to engineered approaches that remove carbon dioxide (CO₂) from the atmosphere and store it permanently. This includes direct air capture with storage, biomass carbon removal and storage, enhanced mineralization, and certain marine CDR pathways. These nascent technologies have advanced quickly, but federal policy support, physical infrastructure, and market systems are insufficient for the industry to scale.

About the Roadmap

Scaling Technology-based Carbon Dioxide Removal: A US Federal Policy Roadmap provides federal policymakers with policy solutions to put the U.S. on track to remove 30 megatons of CO₂ per year by 2030 — an interim milestone towards 5-10 gigatons annually by 2050 — and create economic opportunities for developers and workers across the U.S. The roadmap is organized around four enabling conditions that must advance in parallel for tech CDR to scale responsibly.



The Four Enabling Conditions

1. Boosting CDR Research, Development, Demonstration, and Deployment (RDD&D)

Federal RDD&D funding is the most powerful lever in reducing costs and building the evidence base needed for responsible CDR scale-up. Now the challenge is to remove bottlenecks slowing commercial scale-up and to make investments that improve removal capacity and lower costs.

Priority Recommendation: Amend the Infrastructure Investment and Jobs Act to ensure the Regional Direct Air Capture Hubs Program achieves maximum impact by 1) reducing the annual capture requirement from 1 million tons CO₂/year to 100,000 tons CO₂/year; 2) expanding eligibility to include other durable CDR technologies; and 3) allowing alternative funding mechanisms.



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2. Building out Infrastructure

The US has the subsurface capacity, geologic expertise, and existing infrastructure to lead in CO₂ transport and storage. Yet key elements remain underdeveloped or stalled, requiring increased federal investments, coordination, and capacity.

Priority Recommendation: Increase funding and staffing at the Environmental Protection Agency (EPA) to improve the efficiency of issuing Class VI well permits — the infrastructure that enables durable CO₂ storage and is regulated by the EPA to protect sources of drinking water.

3. Creating New Markets

The voluntary market has driven early demand but won't be enough to sustain the CDR sector on its own. Public policy can support the development of markets that drive broader demand and help developers secure financing.

Priority Recommendation: Codify a federal purchasing program with specific evaluation guidelines that set high standards for quality carbon removal and attract additional buyers from the private sector.

4. Strengthening Standards and Measurement, Monitoring, Reporting, and Verification (MMRV)

Standards ensure that a ton of carbon removal is actually a ton removed. However, there are more than 100 protocols for verifying carbon removal, fragmenting the system and putting credibility at risk. The federal government is well-positioned to bolster universal, robust standards for the CDR field.

Priority Recommendation: Invest in MMRV R&D to improve the science of underlying protocols, enable inter-pathway comparison, and unlock growth across CDR pathways.

Carbon180's **Road to 2030** roadmaps are actionable frameworks for policymakers to bring the benefits of carbon dioxide removal (CDR) to American's doorsteps. Scientists agree that we need to get CDR to gigaton scale by mid-century to avoid the worst impacts of climate change. We cannot bring solutions to scale without a federal policy foundation that supports this growth.

Reach out to us at tech@carbon180.org for questions or follow up discussions.



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