ROADS TO REMOVAL | OVERVIEW

OPTIONS FOR CARBON DIOXIDE REMOVAL IN THE UNITED STATES

The Roads to Removal Report

- Is a first-of-its-kind national-scale analysis, outlining pathways for carbon dioxide (CO_2) removal to help the United States reach its climate goals.

- Examines the potential capacity, costs, and impacts of diverse CO_2 removal approaches on a county-by-county level.

- Includes an assessment of four key CO_2 removal methods (listed below) as well as transport and geologic storage of captured CO_2.

- Includes an 'Energy, Equity, and Environmental Justice Index' that analyzes each CO_2 removal method based on the location's vulnerability to pollution, emergencies, and workforce fluctuations.
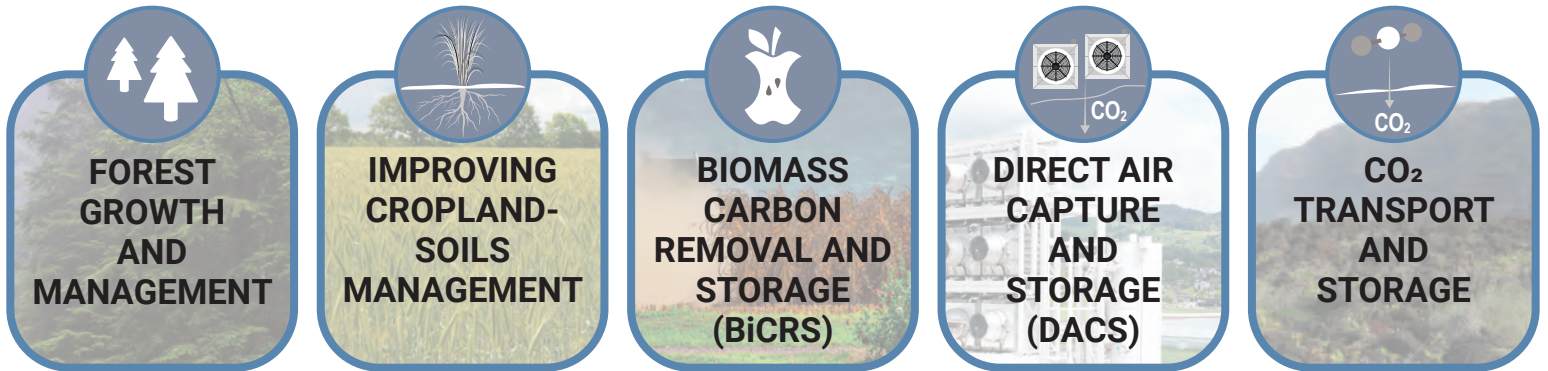
> "The USA can achieve upwards of a billion metric tonnes of CO_2 removal from the atmosphere per year, at a price we can afford…"
>
> Dr. Jennifer Pett-Ridge
> *Lead Author, Roads to Removal*
> *Lawrence Livermore National Laboratory*

FOREST GROWTH AND MANAGEMENT

IMPROVING CROPLAND-SOILS MANAGEMENT

BIOMASS CARBON REMOVAL AND STORAGE (BiCRS)

DIRECT AIR CAPTURE AND STORAGE (DACS)

CO_2 TRANSPORT AND STORAGE

Key Findings:

- CO_2 removal will be necessary to address remaining emissions after full grid decarbonization.
- Each method could provide large-scale CO_2 removal by 2050, but opportunities, costs and co-benefits differ by region.
- Cropland soil and forest based carbon storage approaches are ready to scale now.
- DACS and BiCRS can offer significant removal capacity by 2050, but need further development and scaling.
- In a cost-optimized scenario, 1 billion metric tonnes of CO_2 removal per year can create about 440,000 long-term jobs.
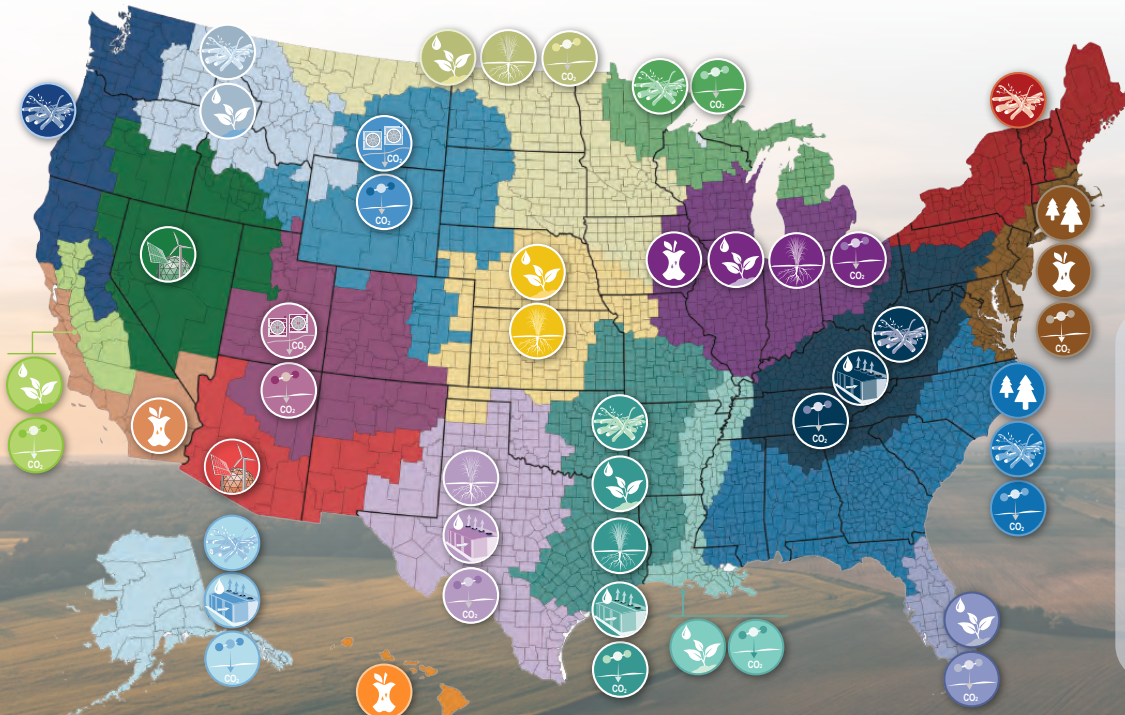
Every region has a story.

Every region has an opportunity.

R2R Partners: Lawrence Livermore National Laboratory, Oak Ridge National Laboratory, Lawrence Berkeley National Laboratory, University of Texas at Austin, North Carolina State University, University of California, Berkeley, Colorado State University, Indiana University Indianapolis, Yale University, University of New Hampshire, Iowa State University, Michigan State University, and University of Pennsylvania.

To learn more about each carbon dioxide removal pathway, go to **Roads2Removal.org**