

The challenge of capturing carbon

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In the race to combat climate change, capturing carbon dioxide (CO₂) emissions has been touted as a simple road to reach net-zero emissions by 2050. While the science behind carbon capture is sound, current technologies are expensive and not optimized for all settings. A cover story in *Chemical & Engineering News*, the weekly newsmagazine of the American Chemical Society, highlights the current state of carbon capture and work being done to improve the process.

Although efficiency improvements and renewable power sources can help, they are often expensive and will not be enough to counter the billions of tons of CO₂ sent into the atmosphere each year, writes Associate Editor Craig Bettenhausen. Carbon-capture technology, implemented at the source of CO₂ emissions such as [power plants](#), could largely negate those emissions. Despite its promise, only one commercial power plant is using this technology today. Interestingly, oil and [gas companies](#)—the main producers of CO₂ emissions—are now unlikely allies of those who are developing capture methods, spurred by competition from cheap renewable energy and consumer demand for low-carbon options.

At present, the most common form of carbon capture uses solvents to absorb CO₂ and let through other, less harmful gases. While this method is well understood, it requires up to 50% of a plant's energy output, making it not a particularly "green" solution. Scientists are working to develop the next generation of carbon-capture technology, with solid sorbents and membranes showing promise. These materials require less energy and are already in use at some sites with concentrated CO₂ emissions. The immediacy of the issue has prompted companies to begin developing other methods, including the use of cryogenics and metal-organic frameworks to absorb the gas. While the U.S. government is working with companies to subsidize [carbon capture](#), critics say that it distracts from investing in renewable energy and regulating polluters. Progress is being made, but experts warn that the next decade will be the deciding period in which to find a solution to CO₂ emissions.

More information: "The life-or-death race to improve carbon capture"

[cen.acs.org/environment/greenh ...
co2-emissions/99/i26](https://cen.acs.org/environment/greenh...co2-emissions/99/i26)

Provided by American Chemical Society

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