

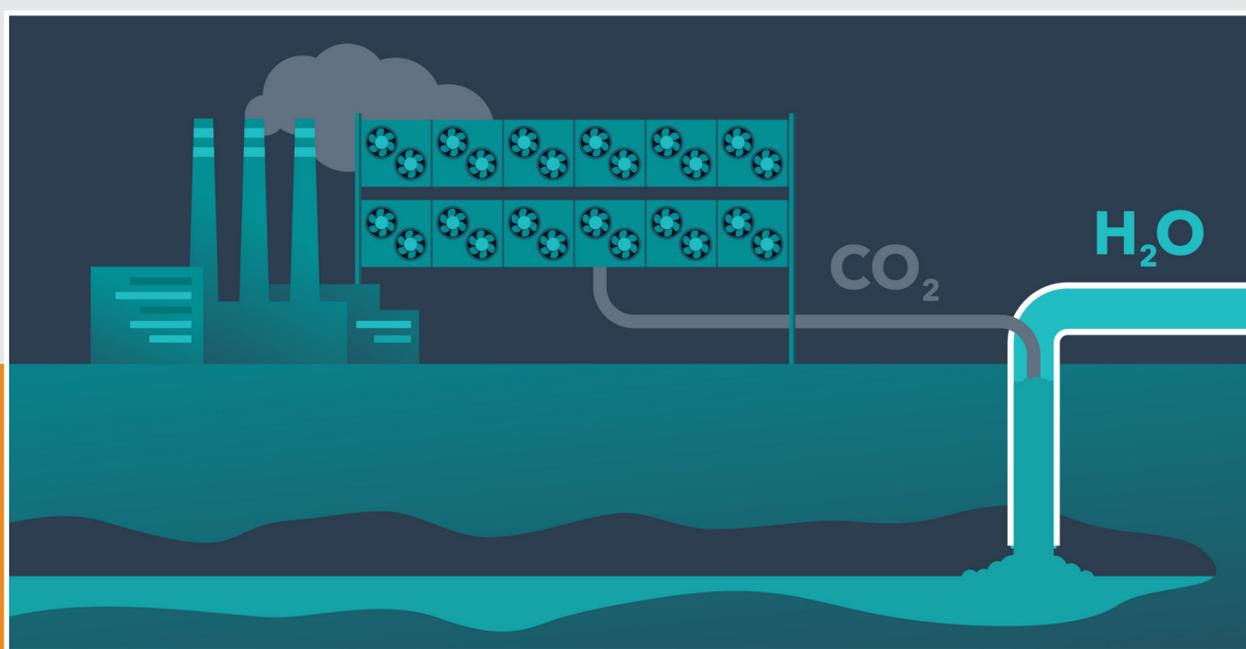
CAPTURING CARBON

FROM THE ATMOSPHERE



Combating climate change largely depends on reducing the volume of greenhouse gases in the atmosphere, and carbon dioxide by far is the most prevalent. The energy sector generates the most emissions, primarily from fossil-fueled electric generating stations. Most efforts to reduce emissions have attacked the problem at the source, either by eliminating fossil fuels altogether, or capturing carbon dioxide at the source, from flue gases.

THERE IS ANOTHER WAY. The Swiss firm **Climeworks AG** attacks the problem by directly capturing carbon dioxide through direct capture from the air. It began operations at its Orca plant in Iceland in September, and is expected to pull 4,000 metric tons of carbon dioxide from the air per year. Once the gas is collected, it is heated, mixed with water and pumped underground. There, natural rapid mineralization occurs as the gas reacts with basalt rock to turn to stone in a few years.



The power thirsty plant is fed from a nearby geothermal power plant, a renewable energy source. But critics point out that the plant is limited despite its size, being capable of removing less than one percent of the annual emissions of a single coal-fired power plant.

Still, direct air capture is a relatively new technology. According to the International Energy Agency, only 15 DAC facilities existed worldwide in 2020. The technology will have to step up quickly to remove 100 to 1,000 gigatons of carbon dioxide from the atmosphere that the Intergovernmental Panel of Climate Change says is necessary.

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HERE'S A LOOK AT THE ORCA PLANT

A geothermal power plant sends renewable energy to the plant for operation. The heart of the plant are eight modular collector units each holding several dozen cylindrical fans. The fans draw air into filters, that collect the carbon from the atmosphere. Once the filters are saturated, the collector closes and the filters are heated to 100 degrees Centigrade. Using proprietary technology, the carbon is mixed with water and pumped underground where it mineralizes.



Credit: climeworks.com/co2-removal