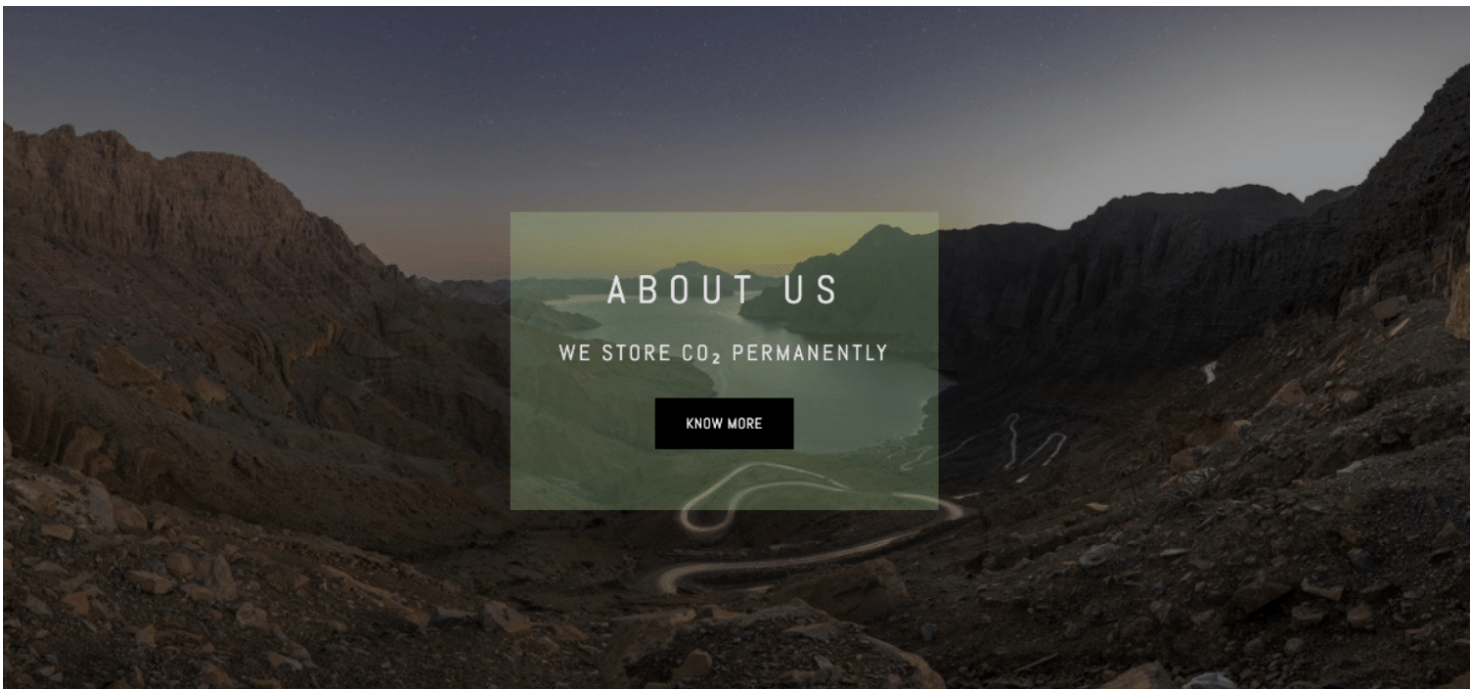

44.01 uses the mineral peridotite to convert carbon dioxide into harmless stone | Photo source 44.01

REMOVING CO2 FROM THE AIR AND TURNING IT INTO STONE

SCIENCE

Researchers have developed a way to use a naturally occurring mineral to remove CO2 from the air

Spotted: While world leaders focus on reducing future greenhouse gas emissions, former investment manager Talal Hasan and his company 44.01 (the molecular weight of carbon dioxide) are focusing on a different area: removing the CO2 already present in the air and water. 44.01 is doing this by using the mineral peridotite to convert carbon dioxide into harmless stone.

The peridotite reacts with carbon dioxide and water to produce calcite, another common and harmless mineral. This process happens naturally and can be seen in rock formations, as large streaks of calcite running through peridotite deposits. While peridotite is normally found miles below sea level, on the northern coast of Oman, tectonic action has brought large amounts of the mineral to the surface.

Hasan was working in Oman's sovereign investment fund when he learned that CO2 absorbed into the ocean along the coast had created the largest "dead zone" in the world. At the same time, the country's readily available supply of peridotite appeared to offer a unique solution. 44.01's goal is to harness the natural mineralisation process, speed it up and apply it on a large scale to remove CO2 from the atmosphere.

The startup's initial plan is to drill a borehole and pump in highly carbonated water until the peridotite is saturated. Initially, the CO2 is sourced from carbon capture companies like Climeworks. Hasan points out that this process is similar to that used by the oil industry, explaining that, "rather than pulling the hydrocarbon out, we're pumping it back in."

As attention turns increasingly to the fight against global warming, a number of innovations in carbon capture and sequestration are beginning to take shape. Some important recent developments include a system for making chemicals out of CO_2, and a tiny carbon capture device that can be used by individuals.

Written By: Lisa Magloff

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Website: 4401.earth
Contact: 4401.earth/contact

Takeaway:

A number of companies, like Climeworks, are working on direct carbon capture, but it is not clear what to do with all of the captured carbon. This could be one solution – turning it to stone. Not only does Oman have large resources of peridotite, but 44.01 also hopes to use the country's abundant sunlight as an alternative energy source to power the project – rather than creating even more carbon. There remains the issue of paying for the carbon sequestration, but Hasan thinks that this could be achieved with carbon offsetting. In the meantime, they have raised seed funding from investors, including Apollo Projects, Breakthrough Energy Ventures, and small investments from families in Oman and environmental organisations in Europe.