DIRECT AIR CAPTURE

WHAT IS IT AND HOW DOES IT WORK?

WHAT IS IT?

Direct air capture (DAC) technologies are engineered solutions for removing carbon dioxide (CO_2) directly from the atmosphere.

ENERGY & RESOURCE NEEDS

DAC facilities require land for construction, water, access to underground geologic storage, and low-carbon or renewable energy for heat and electricity.

Overall, DAC systems need to achieve net-negative emissions. Achieving net-negative emissions means that a DAC system removes and stores more CO_2 than emitted during its construction and operation, effectively reducing overall CO_2 levels worldwide.

According to the DAC Coalition, over 40 DAC pilot and commercial facilities exist or are under construction around the globe, collectively removing thousands of tons of CO_2 every year. The largest facility, the ORCA near Reykjavik, Iceland, removes roughly 4,000 metric tons of CO_2 from the air annually.

THE PROCESS

Removal
Fans draw the surrounding air, containing CO_2, into the DAC system, where liquid or solid materials absorb or filter it from the air. Heat is then applied to release CO_2 from these materials for transport and storage or reuse.

Transport
The captured CO_2 is then compressed and transported, if necessary, through pipelines or other methods to a storage or reuse site.

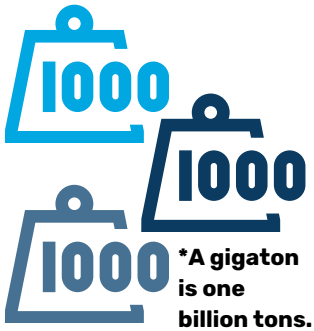
Injection
Once at the storage site, the compressed CO_2 is injected into porous rock formations deep underground.

Storage
After injection, CO_2 is safely and permanently stored underground.

WHY DO WE NEED DIRECT AIR CAPTURE?

The United Nations Intergovernmental Panel on Climate Change (IPCC) says, in addition to reducing emissions and capturing CO_2 from emission sources, we need to remove CO_2 from the atmosphere directly if we want to limit global temperature rises and slow climate change. DAC can help by removing CO_2 emitted over the past few hundred years and CO_2 currently being emitted from crucial-to-decarbonize sectors like cement and steel.

3,000 GIGATONS



*A gigaton is one billion tons.

of CO_2 can be safely and securely stored underground in the United States, according to the US Geologic Survey (USGS). For perspective, that is enough space to store more than 500 years of total US CO_2 emissions underground.

LEARN MORE AT CARBONACTIONALLIANCE.ORG

Carbon Action Alliance