Reversing two centuries of carbon emissions.

Carbon180

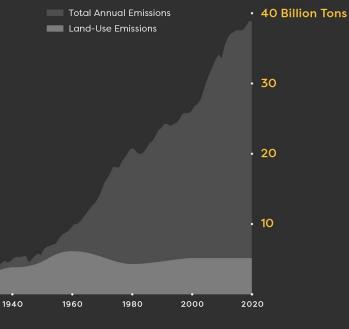# Global emissions are on the rise.

Since 1950, global CO_2 emissions have more than quintupled. According to the IPCC, catastrophic climate change will be unavoidable if we don't reach net zero by mid-century. **So far, serious efforts have relied mostly on reductions to bend the curve.**
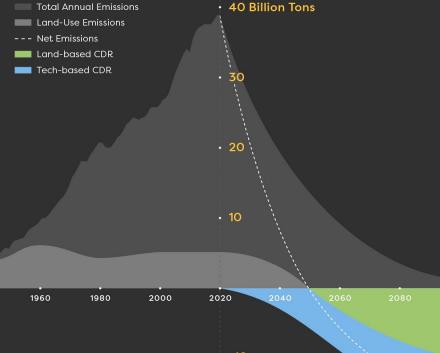

Total Annual Emissions
Land-Use Emissions

40 Billion Tons

30

20

10

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000 2020

The solution?
Rewind the clock.

Climate goals can only be met by removing the carbon that already exist in our atmosphere. This means absorbing as much CO_2 every year as we currently emit — effectively, running the fossil fuel industry in reverse. Anything less would place an impossible burden on reduction efforts.

Total Annual Emissions
Land-Use Emissions
Net Emissions
Land-based CDR
Tech-based CDR

40 Billion Tons

30

20

10

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000 2020 2040 2060 2080

-10

-20 Billion Tons

Source: Rockstrom et al. *A roadmap for rapid decarbonization*, 2017.
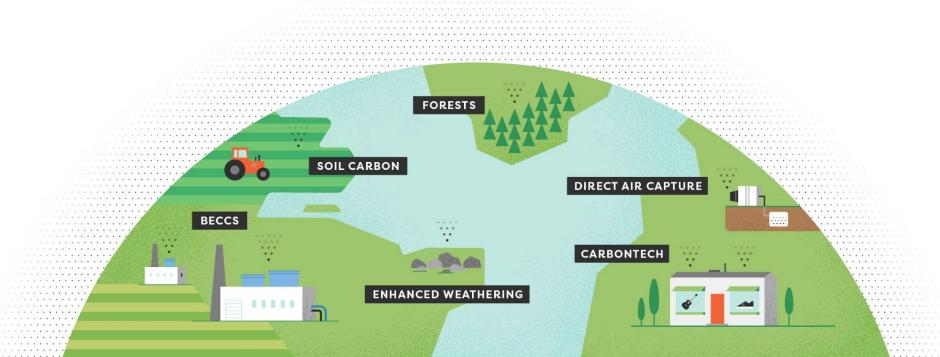
Solutions are within reach.

FORESTS

SOIL CARBON

DIRECT AIR CAPTURE

BECCS

CARBONTECH

ENHANCED WEATHERING

Carbon removal is not carbon capture

Though the confusion isn't farfetched. Both climate solutions clean up carbon pollution — but differ significantly in methods and impacts.

Carbon removal

Negative emissions

"Sucks" existing CO_2 from the air using land-, ocean-, and tech-based pathways, rather than preventing emissions at the source
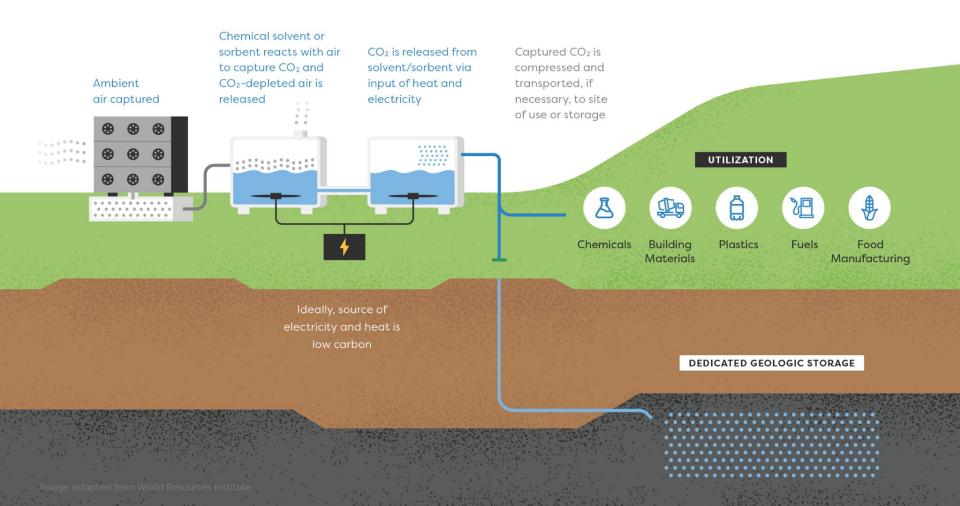
Can target *legacy emissions* and address climate impacts on frontline communities

Carbon capture

Net-zero emissions

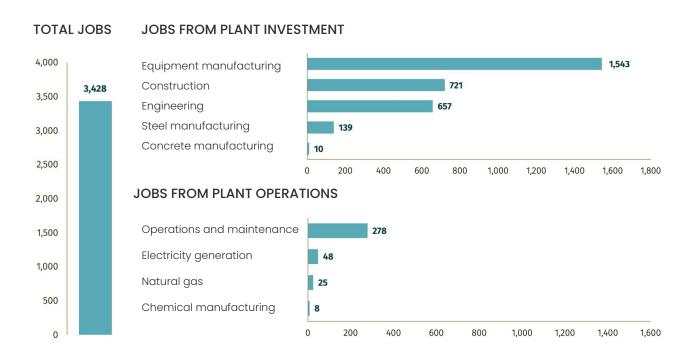"Scrubs" CO_2 from a *point source* — a localized source of emissions, such as a power plant or industrial facility

Lowers or zeroes out the footprints of traditional, carbon-intensive industries

Direct air capture

Ambient
air captured

Chemical solvent or
sorbent reacts with air
to capture CO₂ and
CO₂-depleted air is
released

CO₂ is released from
solvent/sorbent via
input of heat and
electricity

Captured CO₂ is
compressed and
transported, if
necessary, to site
of use or storage

UTILIZATION

Chemicals

Building
Materials

Plastics

Fuels

Food
Manufacturing

Ideally, source of
electricity and heat is
low carbon

DEDICATED GEOLOGIC STORAGE

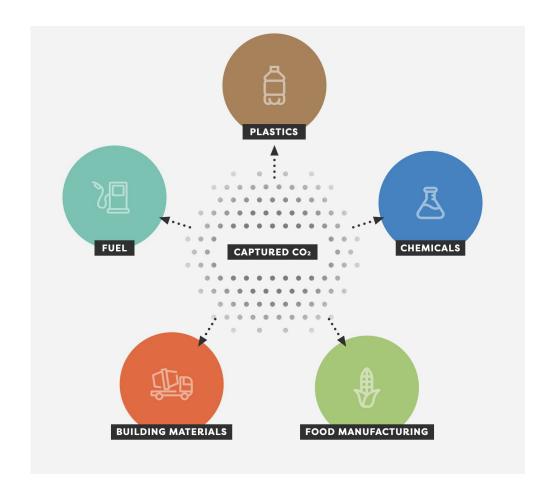Image adapted from World Resources Institute

Job Creation

The majority of jobs are associated with design, engineering and construction of the plant as well as the manufacturing of plant equipment. A typical DAC plant requires 278 workers to maintain and operate the facility once it's constructed.

TOTAL JOBS

3,428

JOBS FROM PLANT INVESTMENT

Category	Jobs
Equipment manufacturing	1,543
Construction	721
Engineering	657
Steel manufacturing	139
Concrete manufacturing	10

JOBS FROM PLANT OPERATIONS

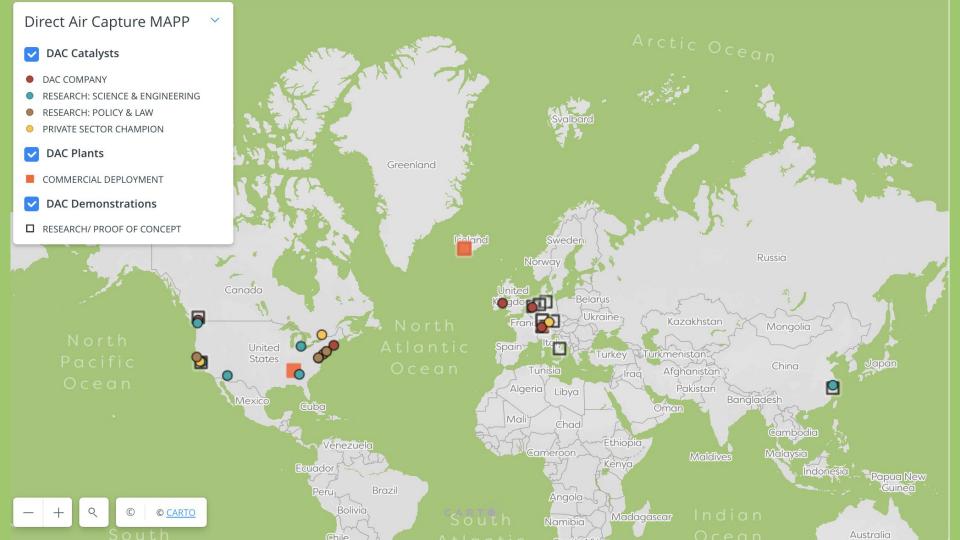| Category	Jobs
Operations and maintenance	278
Electricity generation	48
Natural gas	25
Chemical manufacturing	8

Source: IMPLAN Group, Keith et al. 2018. NAS, AISC, Rhodium Group analysis. Note: All values reflect DAC plant median cost and performance estimates. Values will vary depending on technology type and configuration.

A $1T Opportunity

Carbon180's market-sizing report estimates a $1T total available market in the US for product derived from CO_2 — and $6T globally.

Where we are today

Direct Air Capture MAPP

DAC Catalysts
- DAC COMPANY
- RESEARCH: SCIENCE & ENGINEERING
- RESEARCH: POLICY & LAW
- PRIVATE SECTOR CHAMPION

DAC Plants
- COMMERCIAL DEPLOYMENT

DAC Demonstrations
- RESEARCH/ PROOF OF CONCEPT

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Direct Air Capture MAPP ∨

- ☐ **DAC Catalysts**
- ☑ **DAC Plants**
  - 🟧 COMMERCIAL DEPLOYMENT
- ☑ **DAC Demonstrations**
  - ☐ RESEARCH/ PROOF OF CONCEPT

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Startup Progress

Heirloom
$53M Series A

climeworks
$650M Round

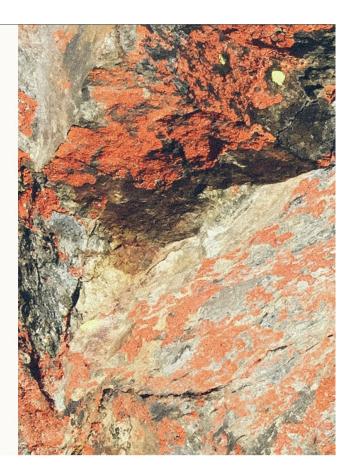**XPRIZE®**

287 Teams - 6 DAC
companies in shortlist

∴ **Frontier**

An advance market commitment to accelerate carbon removal

Frontier is an advance market commitment to buy an initial $925M of permanent carbon removal between 2022 and 2030. It's funded by Stripe, Alphabet, Shopify, Meta, McKinsey, and tens of thousands of businesses using Stripe Climate.

Buyers
Get in touch →

Suppliers
Get in touch →

stripe **Alphabet** **shopify** **Meta** McKinsey & Company

Barriers to Scale

💰

High Costs

Current capture costs are $200-$600/ton of CO_2, but need to be much lower to be deployed at scale.

📈

Durable Markets

Private sector companies are starting to purchase DAC tons, but long-term, high quality markets are necessary
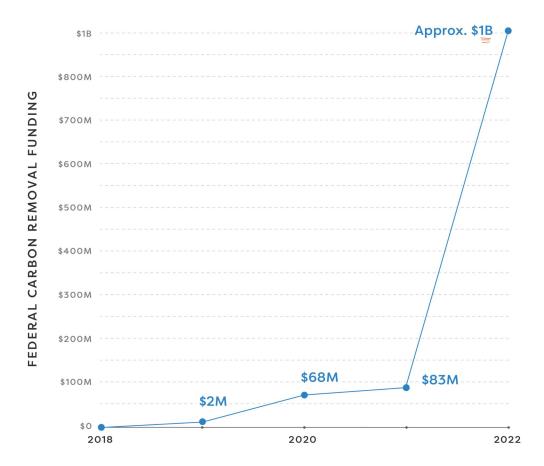
🔨

Shared Infrastructure

Many smaller DAC companies face barriers developing geologic and energy infrastructure

Policy Opportunities

$1 Billion in FY22

Funding for CDR has increased more than 1500% in just two years.

FEDERAL CARBON REMOVAL FUNDING

$1B
$800M
$700M
$600M
$500M
$400M
$300M
$200M
$100M
$0

Approx. $1B

$2M
$68M
$83M

2018   2020   2022

Carbon180

New Policy Action

$3.5B for DAC Hubs

Supports 4 regional, million-ton-scale direct air capture and storage hubs across the US

SCALE Act

Provides financing and implementation support for CO_2 transportation and storage networks

Funding for EPA Class VI

Expanding the agency's capacity to permit CO_2 storage

CDR RD&D Legislation

Engaging in efforts to secure next-level support for CDR RD&D + improve cross-agency coordination

ESIC Act

Investment tax credits supporting direct air capture alongside other clean energy technologies

Procurement

Leveraging state wins to scale federal purchasing of carbontech materials and new legislation on direct air capture procurement

Policy Opportunities

Updated 45Q

Increasing the DAC-to-storage 45Q tax credit, reducing the capture thresholds, and instituting direct pay

Federal Procurement

Creating a long-term, durable market for DAC to scale + setting standards

Modernize Regulation

Ensure we have the necessary regulations that both protect communities and work for startups