

Transition-opportunity sector profiles

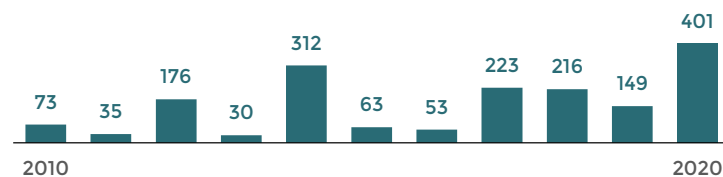
CARBON CAPTURE, UTILIZATION, AND STORAGE

Carbon capture, utilization, and storage (CCUS) refers to technologies that capture CO₂ emissions and use or store them, leading to permanent sequestration. Carbon removal technologies include direct air capture (DAC) or bioenergy with carbon capture and storage (BECCS).

Global market (78 companies)

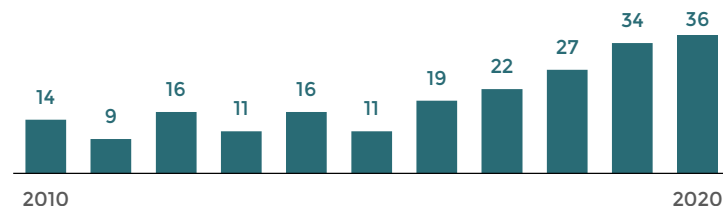
Capital invested (\$M)*

Total: \$1.7 billion



Deal count*

Three-fold increase from 2010 to 2020



Global low-carbon scenarios and trends

- In low-carbon scenarios, 3% to 11% of primary energy could use CCUS by 2050.¹
- CCUS could contribute 4% of global CO₂ reductions by 2030 and 12% by 2050.²
- CCUS market could reach \$4–\$10 billion by 2026-27 (with a CAGR of 5%–17%).³

Global market dynamics

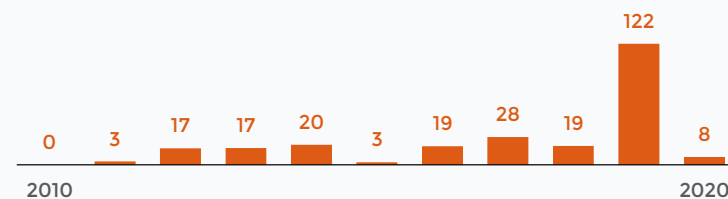
- CCUS has historically performed below expectations, but investment is growing and technology costs are falling.⁶
- 30+ new CCUS facilities announced since 2017 (most are in the US and Europe).
- \$685 million invested in the world's largest CCUS network in Norway in 2020.⁷
- Key market barriers: capital costs, network infrastructure, technical risks, financing.⁸
- Big investments in Direct Air Capture in 2020: US DoE (22 million); UK government (128 million); Climeworks (110 million).⁹
- 2025 Xprize of \$100 million for cost-effective and scalable CCUS technologies.¹⁰

*Source: PitchBook Data, Inc. (2021). Data is drawn from a custom search that has not been reviewed by PitchBook Analysts.

Canadian market (13 companies)

(\$M)

Total: \$257 million



Inconsistent but trending upward



Canadian net-zero scenarios and trends

- Significant potential to use CCUS for emissions-intensive sectors (e.g., fertilizers, cement, chemicals, blue hydrogen).
- Wide variability among net zero scenarios, ranging in 2050 from 10-644 Mt of capture.⁴
- Concentrated CO₂ streams considered “safe bet”, unconcentrated a “wild card”.⁵

Canadian competitiveness

Canada has early advantage in CCUS and DAC technology, and policy support.

➤ Advantages

- Early public investment; expertise in EOR; substantial geological storage (AB, SK); industrial hubs (e.g., AB Trunk Line).¹¹
- Early CCUS adoption for coal-fired electricity (Boundary Dam, SK) and oil sands upgrader (Shell Quest).¹²

✘ Disadvantages

- Not clear which technology sectors will use.

NOTABLE COMPANIES

Carbon Engineering: leading in direct air capture and raised \$90 million in 2019.¹³

Swante secured \$75 million as world's largest private investment in point source CCS.¹⁴

Disclaimer

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The information and data contained in this analysis has been obtained or prepared from publicly available documents and other sources prepared by third parties, some of which may be proprietary and used under license. In particular, the global and domestic investment trends included in the two figures are obtained from PitchBook Data, Inc., drawn from customized searches that have not been reviewed by PitchBook analysts. These data and trends also underestimate total market activity. The PitchBook database contains information on over 3 million companies globally but is not exhaustive. Within this database, not all deals are included and not all deals have a disclosed value. The sector also only includes companies whose primary line of business aligns with the sector description (e.g., it excludes large multinationals with multiple lines of goods/services and those with only indirect linkages to the sector). Total investment includes company-level data through December 31, 2020.

All dollar values included in this document are expressed in USD.

Endnotes

- 1 Network of Central Banks for Greening the Financial System. 2020. "NGFS Scenario Explorer (REMIND-MAGPIE Immediate 1.5 with CDR and Delayed 2 with limited CDR)." <https://data.ene.iiasa.ac.at/ngfs/>; IEA (International Energy Agency). 2021. Net Zero by 2050: A Roadmap for the Global Energy Sector. May.
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- 5 Canadian Institute for Climate Choices. 2021. Canada's Net Zero Future: Finding Our Way in the Global Transition. February. <https://climatechoices.ca/reports/canadas-net-zero-future/>
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- 11 International Energy Agency. 2020. "Report Extract: A New Era for CCS." In CCUS in Clean Energy Transitions; Natural Resources Canada. 2016. "Alberta Carbon Trunk Line." Government of Canada.
- 12 Canada Energy Regulator. 2019. "Market Snapshot: Carbon Capture, Utilization, and Storage Market Developments." Government of Canada. <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-carbon-capture-utilization-storage-market-developments.html>
- 13 PitchBook Data Inc. 2021. Custom search (data has not been reviewed by PitchBook analysts). Pitchbook.com; International Energy Agency. 2020. "Report Extract: A New Era for CCS." In CCUS in Clean Energy Transitions. <https://www.iea.org/reports/ccus-in-clean-energy-transitions/a-new-era-for-ccus#growing-ccus-momentum>
- 14 Svante. 2021. "Svante Raises \$75 Million to Decarbonize Cement and Hydrogen Production." Press release. February 2.