In 15 years

$1 tn

Source: BloombergNEF study, January 2023
Increasing share of carbon removals

Share of credits as removals 2015-2021

- <20% Share of credits as removals 2015-2021
- 52% of all portfolios will contain 60%+ of removals by 2030
- 7% of companies aiming for removal only portfolios

Source: Expert survey, BCG analysis, February 2023
Carbon portfolio breakdown to 2050

Indicative breakdown of carbon portfolio over time

1. Avoided emissions and emissions reduction with short lived storage
2. Carbon removal with short lived storage
3. Emissions reduction with long lived storage
4. Carbon removal with long lived storage

Adapted from The Voluntary Carbon Market: Climate Finance at an Inflection Point by World Economic Forum & Bain Company, based on The Oxford Principles for Net Zero Aligned Carbon Offsetting
Direct air capture has clear benefits

100%

Fully additional

 Fully measurable

No arable land
Large scale carbon removal is needed

Mitigation potential for selected CDR methods, in Gt CO$_2$e per year

- **Afforestation & Reforestation**: 0.5-10
- **Biochar**: 0.3-6.6
- **Enhanced weathering**: 2-4
- **BECCS**: 0.5-11
- **DAC**: 5-40

Source: IPCC – only selected CDR methods displayed
From capture to removal

Availability
- Planned and unplanned downtime: 10%

Performance
- Wind, weather, and sorbent degradation losses: 0% (average)

Recovery
- CO₂ extraction and purification losses: 5%

Grey emissions
- Accounting for grey emissions of full supply chain: 15%

Complete process is 3rd party verified

Nameplate CO₂ capture capacity
Available CO₂ capture capacity
CO₂ captured
CO₂ stored
CDR produced

CO₂ quantities
Corrections & losses
Net CDR
Cost per ton

Total cost

CAPEX

OPEX

Overhead

COGS

Tons of CDR produced

Net CO₂ stored, accounting for all losses and grey emissions
Technology scale-up has to overcome a cost mountain

Indicative cost evolution of photovoltaic electricity production

<table>
<thead>
<tr>
<th>R&amp;D</th>
<th>Demonstration</th>
<th>Deployment</th>
<th>Maturation</th>
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<tbody>
<tr>
<td>1950s</td>
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The Voluntary Carbon Market: Climate Finance at an Inflection Point, January 2023

Net-zero aligned portfolios suggest ~40% engineered CDR by 2030

Source: Based on World Economic Forum - The Voluntary Carbon Market: Climate Finance at an Inflection Point, January 2023