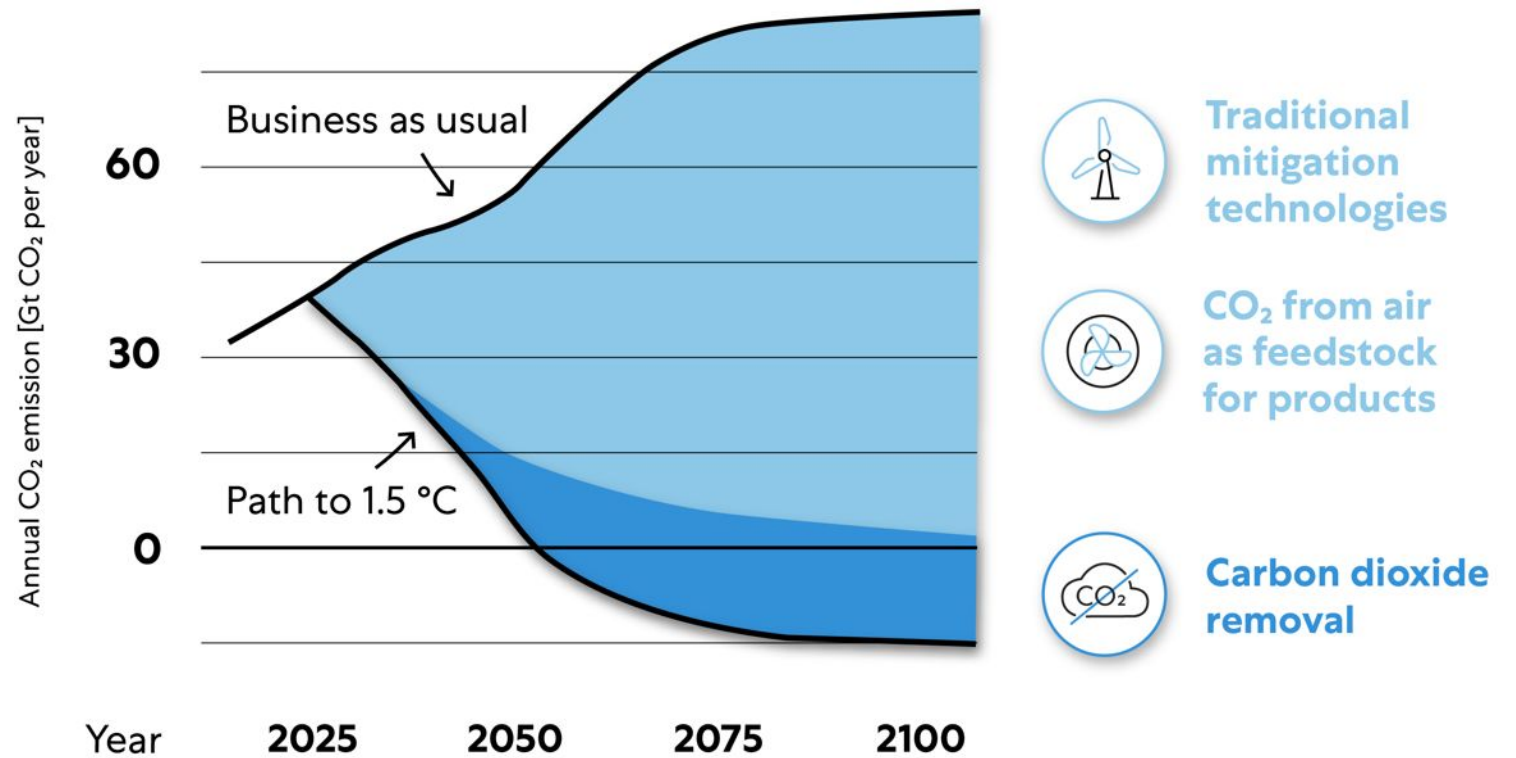


Why direct air capture?



How to keep global heating below 1.5°C

























- Replace fossil carbon for fuels and materials
- Neutralize **unavoidable emissions** to reach net-zero
- Realize **negative emissions** to achieve climate targets



Data source: (with permission from) Mercator Research Institute

Comparison CDR of approaches



	Area required to remove 8 Gt CO ₂ per year	Water required to remove 8 Gt CO ₂ per year	Expected cost at large scale	Impact on environment*
 <p>Afforestation Large-scale tree plantations to increase carbon storage in biomass and soil.</p>	 <p>6'400'000 km² Europe = 10'500'000 km²</p>	 <p>740 km³ Yearly global freshwater withdrawal 2010 = 4'000 km³</p>	 <p>5–50 USD/t CO₂</p>	 Biodiversity  Albedo  Food Security
 <p>BECCS Bioenergy in combination with Carbon Capture and Storage.</p>	 <p>2'500'000 km²</p>	 <p>480 km³</p>	 <p>100–200 USD/t CO₂</p>	 Biodiversity  Albedo  Food security
 <p>Enhanced weathering Distribution of crushed silicate rocks on soil surfaces to absorb and bind CO₂ chemically.</p>	 <p>220'000 km²</p>	 <p>3 km³</p>	 <p>50–200 USD/t CO₂</p>	 River/ocean chemistry
 <p>Direct air capture Direct capture of CO₂ from ambient air through engineered chemical reactions.</p>	 <p>15'800km^{2**}</p>	 <p>8 km³ Potentially zero</p>	 <p>< 200 USD/t CO₂</p>	 Minor

• BECCS and afforestation both put biodiversity and food security at risk when deployed on a large scale, because of significant land-use requirements. Albedo refers to the warming effect caused by the low reflectivity of forests and agricultural areas. Enhanced weathering affects water chemistry such as rising pH levels in rivers.

** Including energy provision via PV.

ORCA: Climeworks' latest plant in Iceland - the world's largest DAC facility

