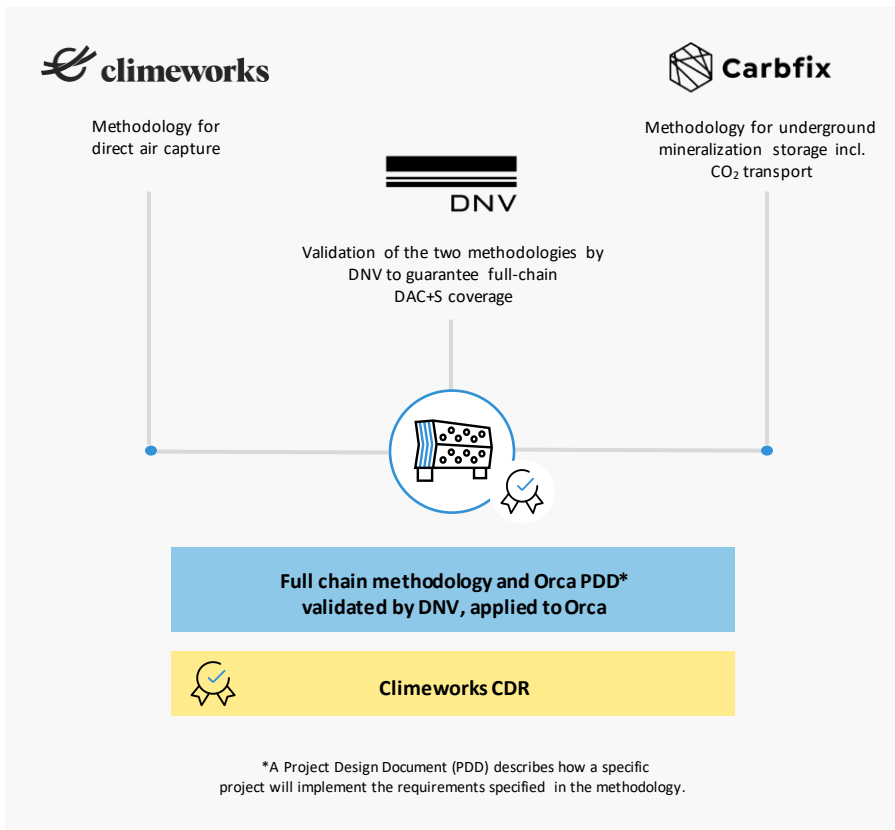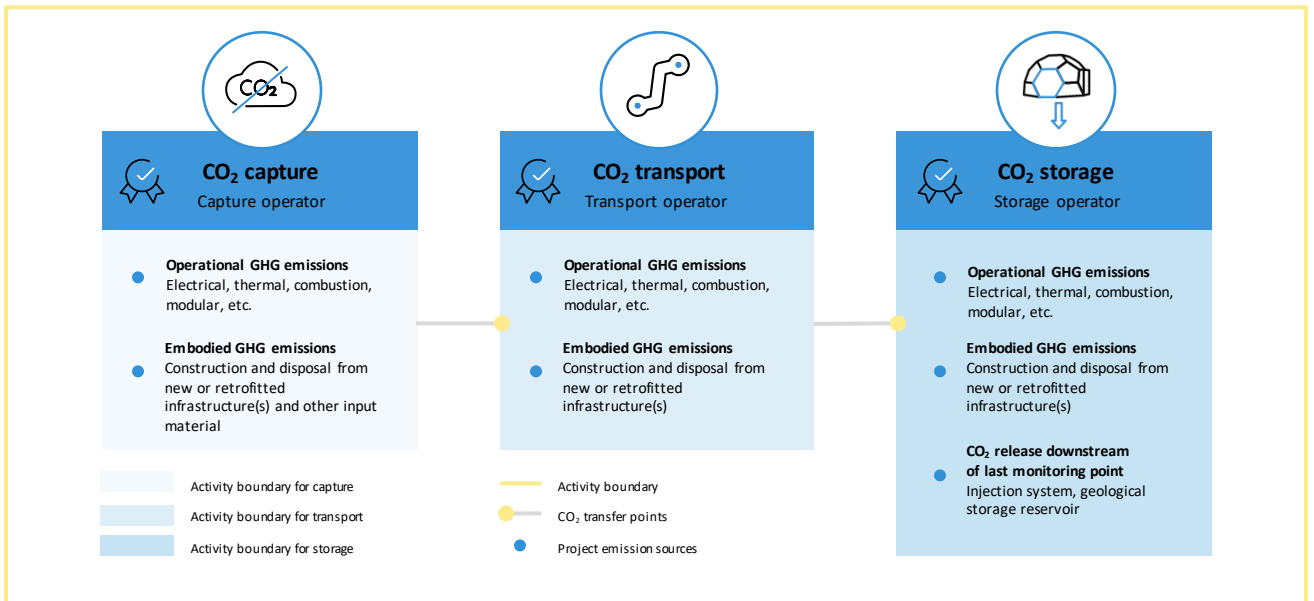## What is a methodology?

A methodology describes how different projects measure and report how they achieve specific standards. For example, while all carbon removal projects need to measure greenhouse gas emissions, the techniques to measure emissions from trees differ from those used for direct air capture (DAC), thus requiring different methodologies. Climeworks and Carbfix have partnered to develop a full-chain methodology dedicated to CDR via a direct air capture and storage (DAC+S) using underground mineralization, validated by DNV, a global leader in quality assurance.

CO₂ capture
Capture operator

- **Operational GHG emissions**
  Electrical, thermal, combustion, modular, etc.
- **Embodied GHG emissions**
  Construction and disposal from new or retrofitted infrastructure(s) and other input material

CO₂ transport
Transport operator

- **Operational GHG emissions**
  Electrical, thermal, combustion, modular, etc.
- **Embodied GHG emissions**
  Construction and disposal from new or retrofitted infrastructure(s)

CO₂ storage
Storage operator

- **Operational GHG emissions**
  Electrical, thermal, combustion, modular, etc.
- **Embodied GHG emissions**
  Construction and disposal from new or retrofitted infrastructure(s)
- **CO₂ release downstream of last monitoring point**
  Injection system, geological storage reservoir

- Activity boundary for capture
- Activity boundary for transport
- Activity boundary for storage
- Activity boundary
- CO₂ transfer points
- Project emission sources

---

climeworks

Methodology for direct air capture

Carbfix

Methodology for underground mineralization storage incl. CO₂ transport

DNV

Validation of the two methodologies by DNV to guarantee full-chain DAC+S coverage

Full chain methodology and Orca PDD*
validated by DNV, applied to Orca

Climeworks CDR

*A Project Design Document (PDD) describes how a specific project will implement the requirements specified in the methodology.

Why are methodologies key to produce CDR?

Methodologies enable the verification of carbon dioxide removal (CDR) as they ensure that CDR is produced in accordance to the standards defined and reported accurately, which is a prerequisite for certification. Climeworks' and Carbfix' full-chain DAC+S methodology has been validated by DNV who advised on the principles of methodology development, ensuring robustness and accuracy of the approach. DNV then conducted an onsite audit, where a review of documentation, interviews with staff, and site inspection verified that Climeworks is producing CDR and Carbfix is mineralizing CO₂ underground in accordance with those methodologies.

About Climeworks and DAC

Climeworks empowers people and companies to fight global warming by offering CDR as a service via DAC technology.
DAC is key to mitigating global warming. The Intergovernmental Panel on Climate Change estimates that DAC+S needs to remove up to 310 billion tons of CO₂ by 2100 in order to limit global warming to 1.5°C with no or limited overshoot.
At Orca, Climeworks' DAC facility in Iceland, the CO₂ is permanently removed from the air by capturing and geologically storing it for thousands of years with Climeworks' storage partner Carbfix.

Climeworks' & Carbfix' full-chain DAC+S methodology

Validated
by the independent quality and assurance leader DNV

Publicly available
The two modular methodologies are available from our website

Modular
To enable combination into full-chain and application to different DAC+S projects