

The importance of Carbon Management for a climate-neutral Germany

*The pathway to net-zero in Germany by 2045 –
evidence from the leading German studies*

Summary

- According to [an analysis of the five leading scenarios to achieve climate-neutrality in Germany](#) Carbon Management technologies are urgently required to reduce emissions.
- A climate-neutral Germany in 2045 will require the capture and storage of **3-17 Mil. Tons CO₂** of unavoidable emissions annually.
- **17-47 Mil. Tons CO₂** per year must be removed and permanently stored through negative emissions technologies.
- Meaningful climate action requires sufficient preparation in this decade, which means **a clear political strategy**, a robust **legal framework**, suitable **transport and storage infrastructure** and **financial incentives** are essential.

In order to achieve Germany's climate targets, carbon management technologies are imperative. According to the five leading scenarios by [Ariadne](#), [Agora Energiewende](#), [Deutsche Energie-Agentur \(Dena\)](#) and the [Bundesverband der Deutschen Industrie e.V.\(BDI\)](#) without carbon management technologies, a climate-neutral Germany cannot be achieved by 2045.

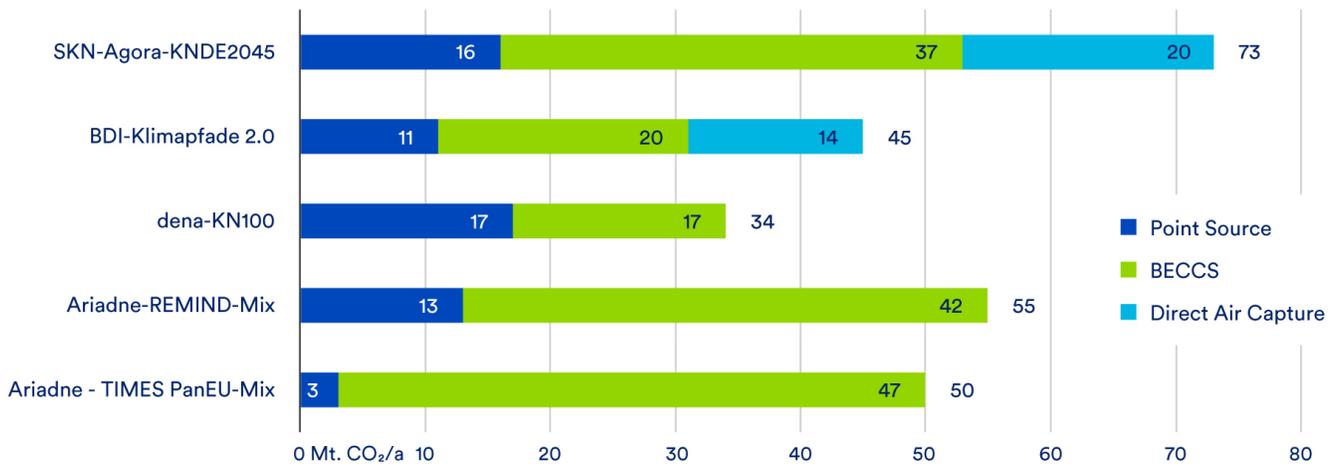


“In order to achieve the KSG targets of the industrial sector, the dena study indicates the need for carbon capture already in 2030.”

Dena

Despite all efforts, unavoidable emissions will remain in the industrial sector beyond 2045. These must be captured or offset by carbon management technologies. In all scenarios of the studies mentioned above, the use of carbon capture will be necessary to capture and store **3-17 million tonnes of CO₂** annually by 2045.

Quantities of geologically stored CO₂



Other carbon management technologies such as bioenergy with carbon capture and storage (BECCS) or direct air capture and storage (DAC) are also required in all scenarios for a climate-neutral Germany. According to the studies, by 2045, an average of **39 million tonnes of CO₂** from negative emissions will need to be stored annually.

As early as 2030, Germany must make use of carbon management technologies that are ready for series production. In 2030, **up to 4 million tonnes of CO₂** will have to be captured and stored annually. Due to this market ramp-up, rapid and continuous development of carbon management technologies will be the consequence. Negative emissions first requires the technical and commercial development of carbon capture and builds on this development.

To ensure the necessary development of carbon management technologies, Germany must create a consistent roadmap in the next legislative period. This requires:

- A clear political roadmap for CCS
- A clear and applicable legal framework
- Suitable transport and storage infrastructure
- Financial support schemes for CCS/U

“Preparations for possible CO₂ storage sites and coordinated infrastructure planning should therefore begin as early as this decade.”

BDI