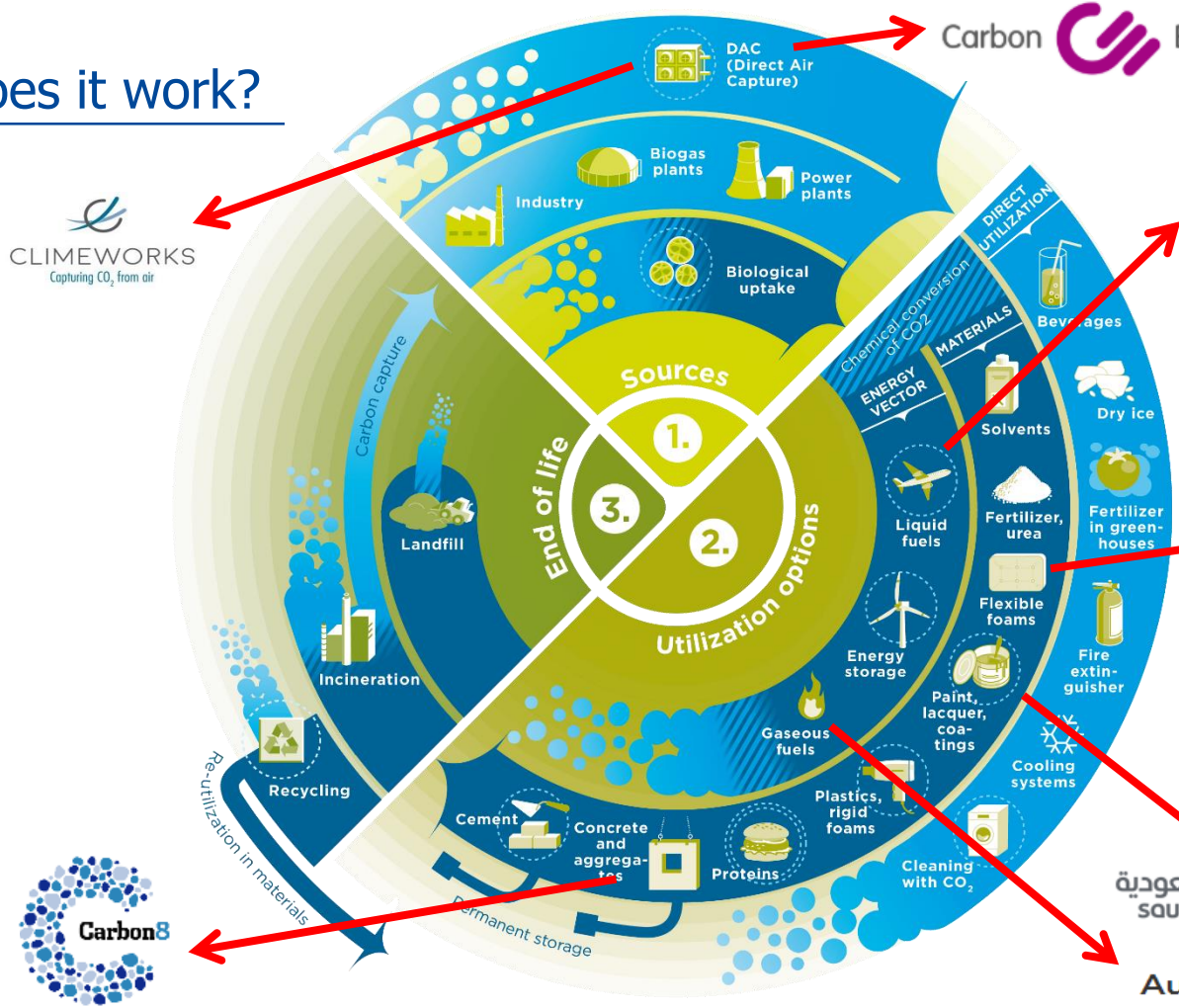
Reducing industrial CO_2 emissions and fostering a circular economy through CO_2 utilisation

Dr. Barbara Olfe-Kräutlein

Till Strunge

How does it work?



Carbon Engineering

IASS POTSDAM

CLIMEWORKS
Capturing CO_2 from air

sunfire

covestro

Carbon8

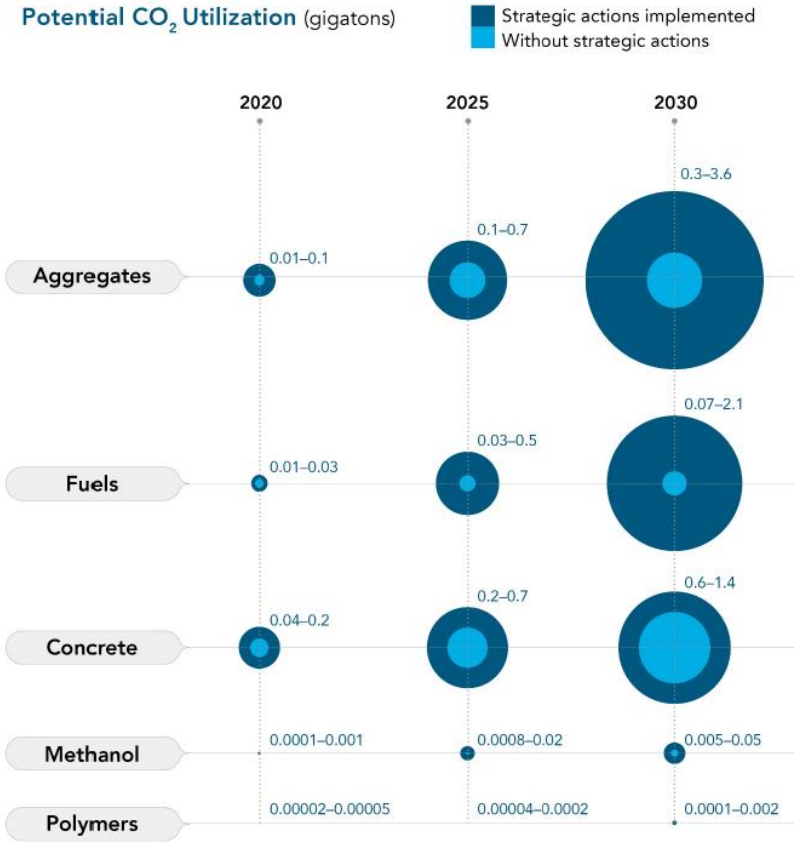
أرامكو السعودية
saudi aramco

Audi e-gas

What is the potential of CCU?

Estimations on the **potential** of how much CO_2 can be used annually in 2030 range from **5 to 7 gigatons**.

Biggest potential lies in the **building industry** (aggregates and concrete), where CO_2 can additionally be **stored long-term.**



Ref.: Hepburn, C., Adlen, E., Beddington, J., Carter, E. A., Fuss, S., Mac Dowell, N., . . . Williams, C. K. (2019). The technological and economic prospects for CO 2 utilization and removal. Nature, 575(7781), 87-97. & Global CO2 Initiative. (2016). Global Roadmap for Implementing CO2 Utilization.

How does this effect Sustainable Development?

Ref.: United Nations - Department of Economic and Social Affairs. (n.d.). THE 17 GOALS | Sustainable Development. UN.Org. Retrieved October 21, 2021, from https://sdgs.un.org/goals

How does this effect Sustainable Development?

- **Energy storage**
- New decentralized energy solutions, possibly with direct air capture

- Promoting **sustainable growth** through the conservation of fossil resources (substitution)

- Driver of **sustainable innovation**
- "Retrofit": retrofitting of industrial plants (point source capture)

- Potential pathway for more **sustainable production processes**
- **More efficient use** of natural resources (less need for fossil carbon sources) and promoting of (industrial) **carbon cycle**

- Contribution to **emission reduction**
- Promotes **sustainable use of resources**

CCU can have a direct effect on more than 5 of 17 SDGs.

Ref.: Olfe-Kräutlein, B. (2020). Advancing CCU Technologies Pursuant to the SDGs. A Challenge for Policy Making. Frontiers in Energy Research, 8: 198. doi:10.3389/fenrg.2020.00198.

Contact

Dr. Barbara Olfe-Kräutlein
Research Group Lead
CO_2 Utilisation Strategies and Society
Institute for Advanced Sustainability Studies e.V. (IASS)

barbara.olfe-kraeutlein@iass-potsdam.de