

Mercator Research Institute on
Global Commons and Climate Change gGmbH

Costs and Potentials of Carbon Dioxide Removal Technologies and Hydrogen

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7. November 2019, Berlin

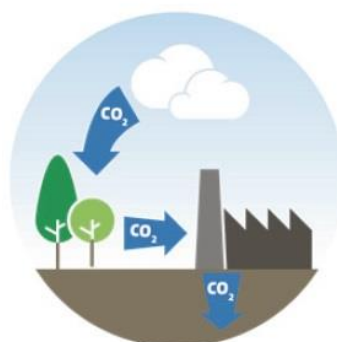
Weltenergierat, Energy Day 2019

 @BrigitteKnopf

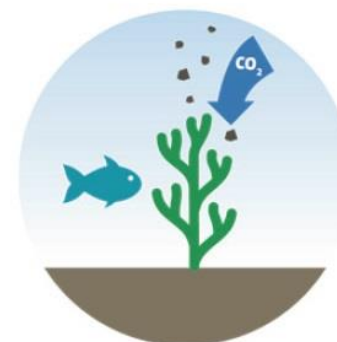
Overview of carbon dioxide removal (CDR) technologies



Afforestation and Reforestation
Tree growth takes up CO₂ from the atmosphere.



Bioenergy with carbon capture and storage
Plants turn CO₂ into biomass that fuel power plants. CO₂ captured and stored underground.



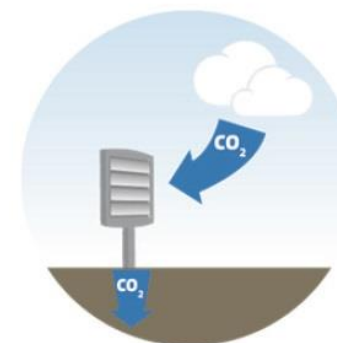
Ocean fertilization
Iron or other nutrients are applied to the ocean increasing CO₂ absorption.



Biochar
Partly burnt biomass is added to soils absorbing additional CO₂.



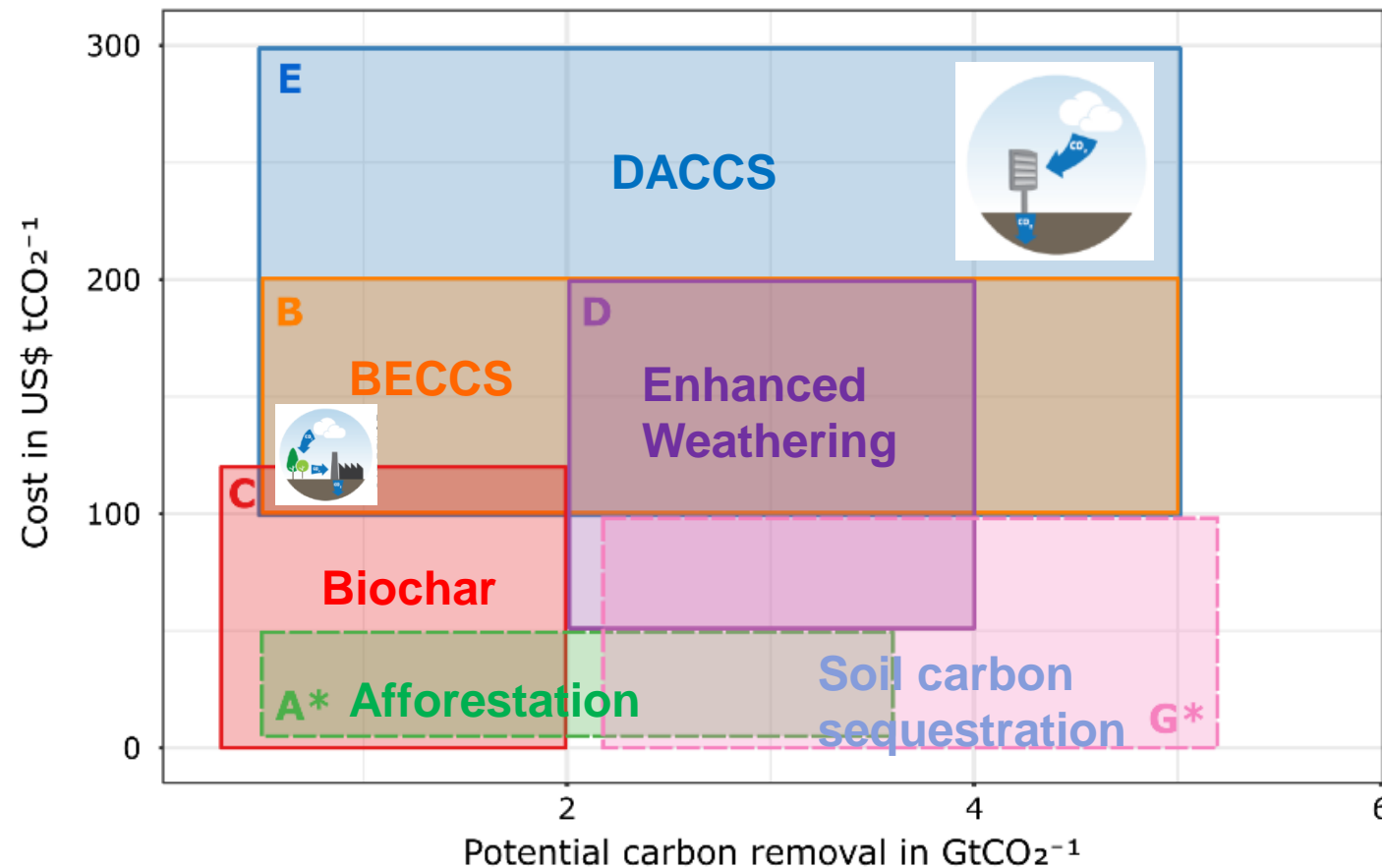
Enhanced weathering
Crushed minerals are applied to soil for chemical CO₂ absorption.



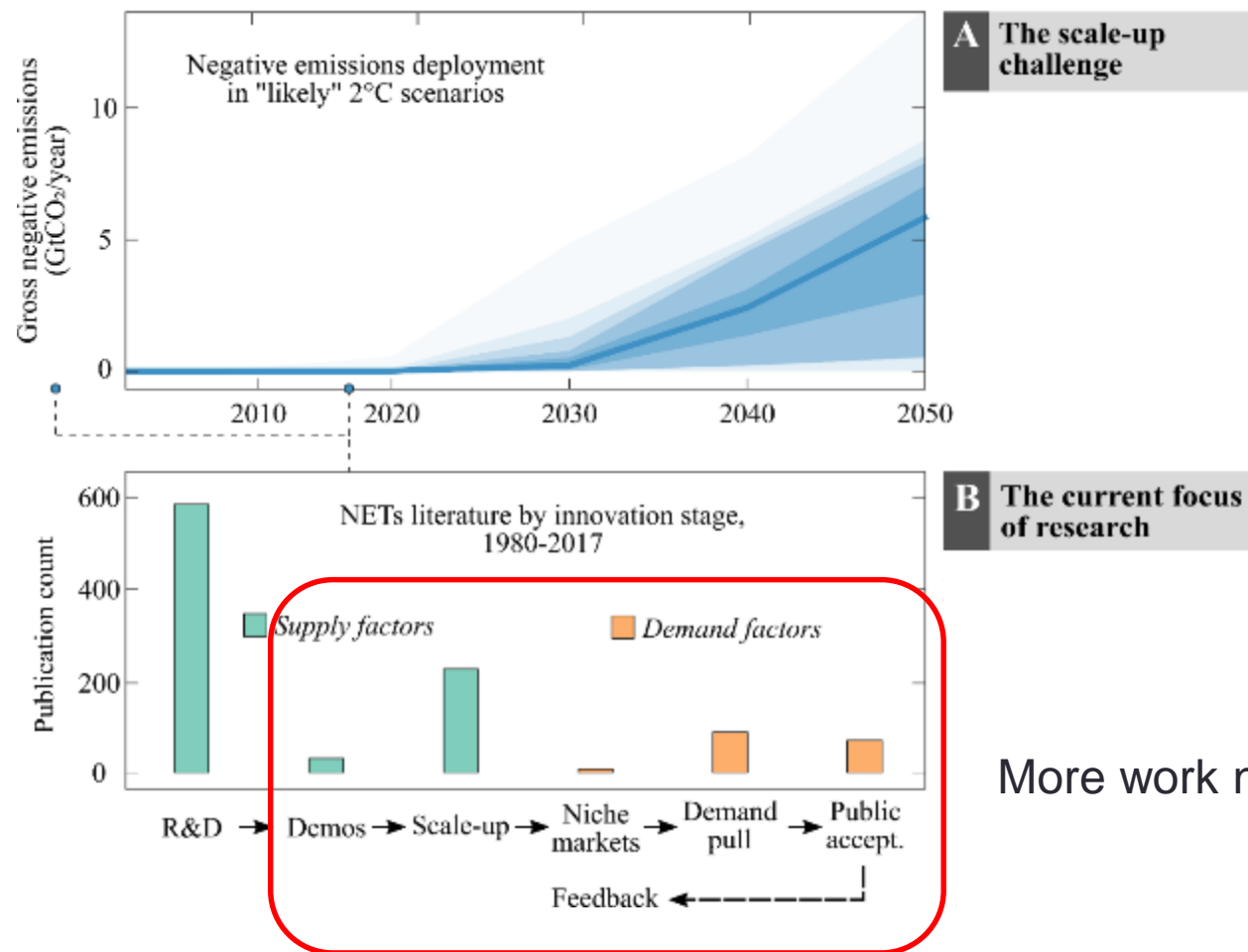
Direct Air Capture
CO₂ is removed from ambient air through chemical processes and stored underground.

Costs and potentials of removal options (2050) – Portfolio approach is required

- Assessment based on 3000 studies

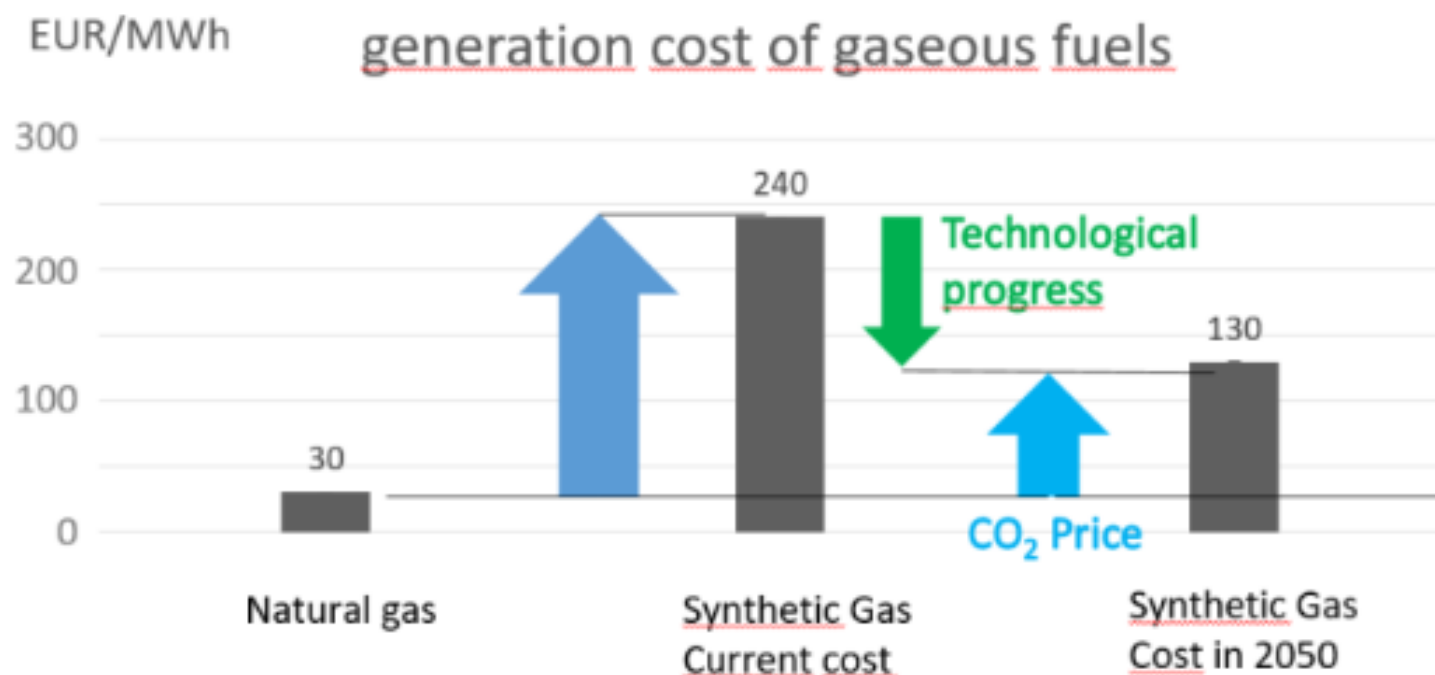


The scale-up challenge for CDR technologies



A hydrogen and power-to-X strategy...

- ...needs to go hand in hand with a strategy for renewable deployment
- ...should be limited to those areas where there are no alternatives
- ...needs high carbon prices (200-400 €/tCO₂)



Contact

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MCC was founded jointly by Stiftung Mercator and
the Potsdam Institute for Climate Impact Research