

Carbon dioxide removal in Integrated Assessment Models

Scott Doney

University of Virginia

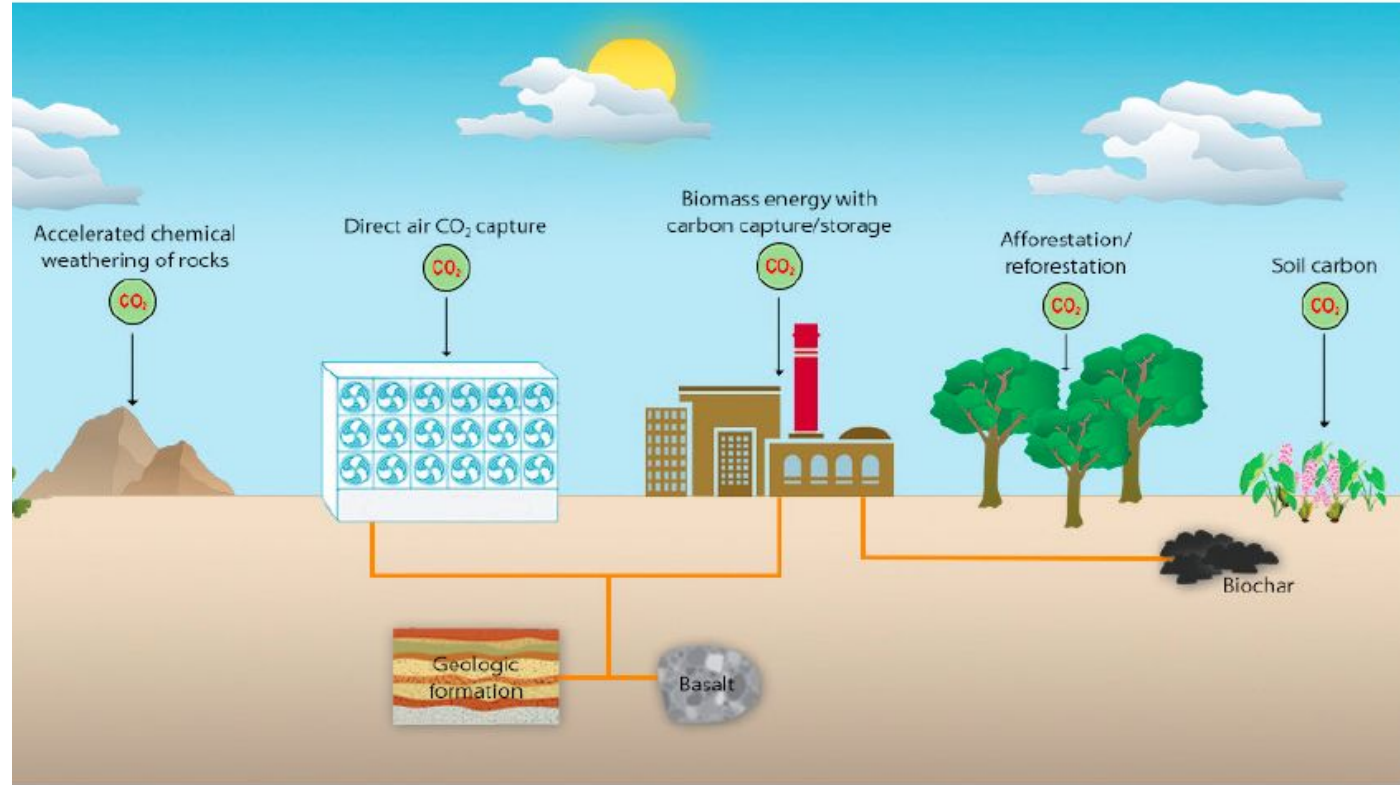
UVA: A. Clarens, W.

Shobe & P. Javadi

PNNL: J. Fuhrman

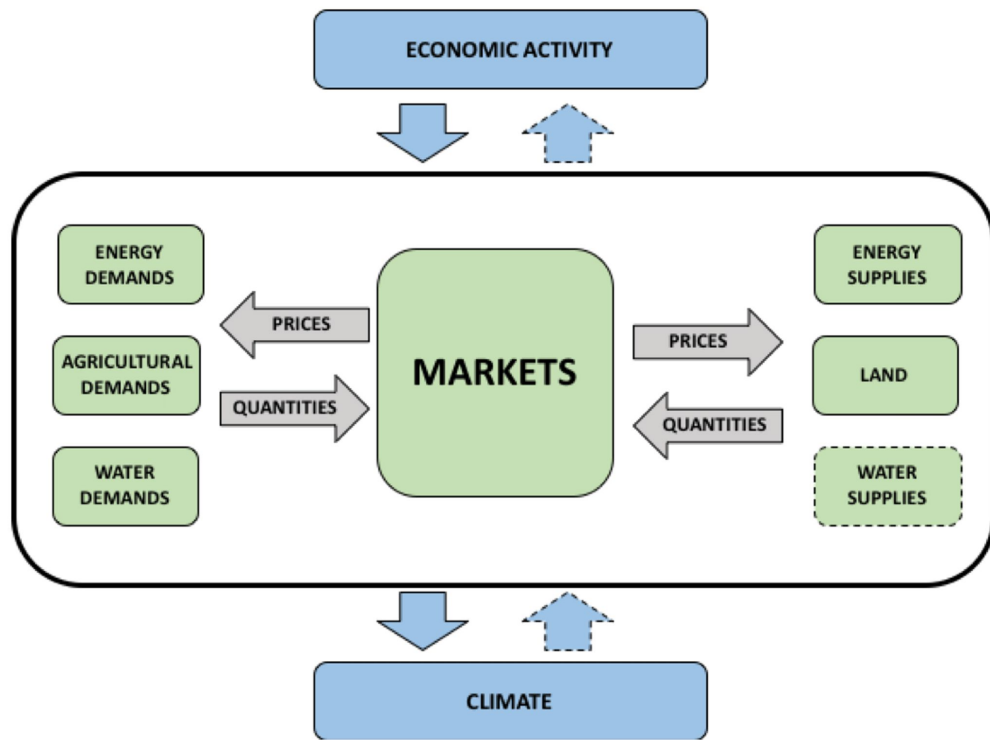
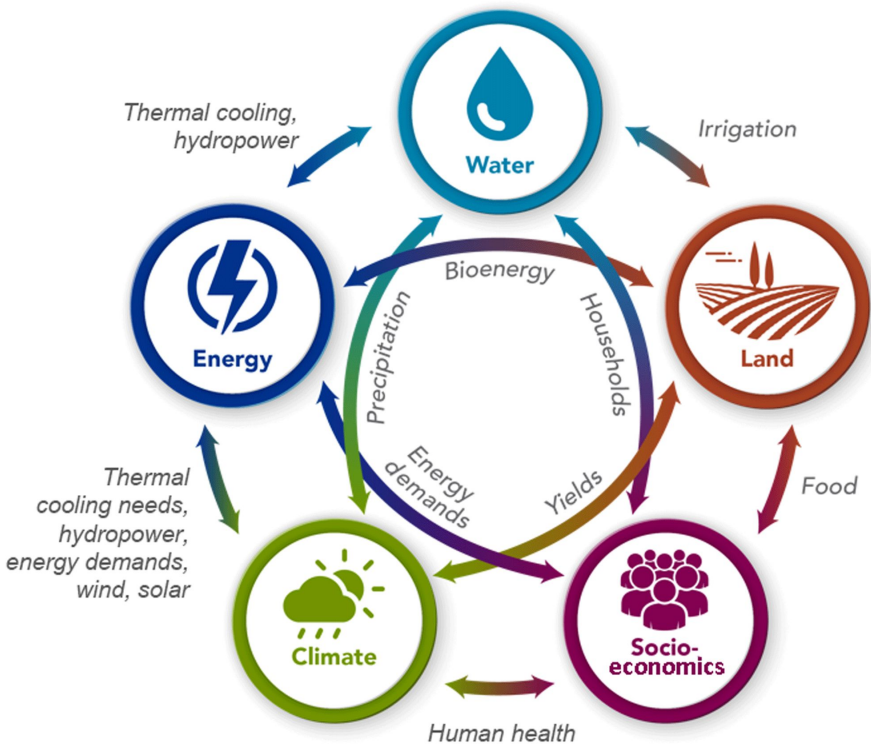
& P. O'Rourke

KAIST: H. McJeon



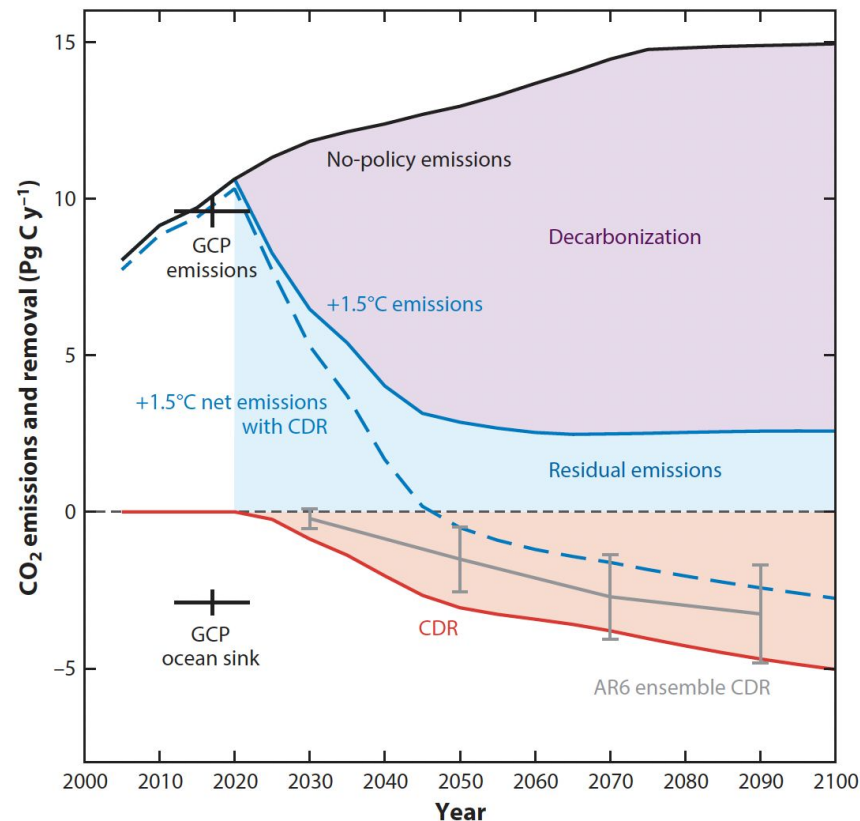
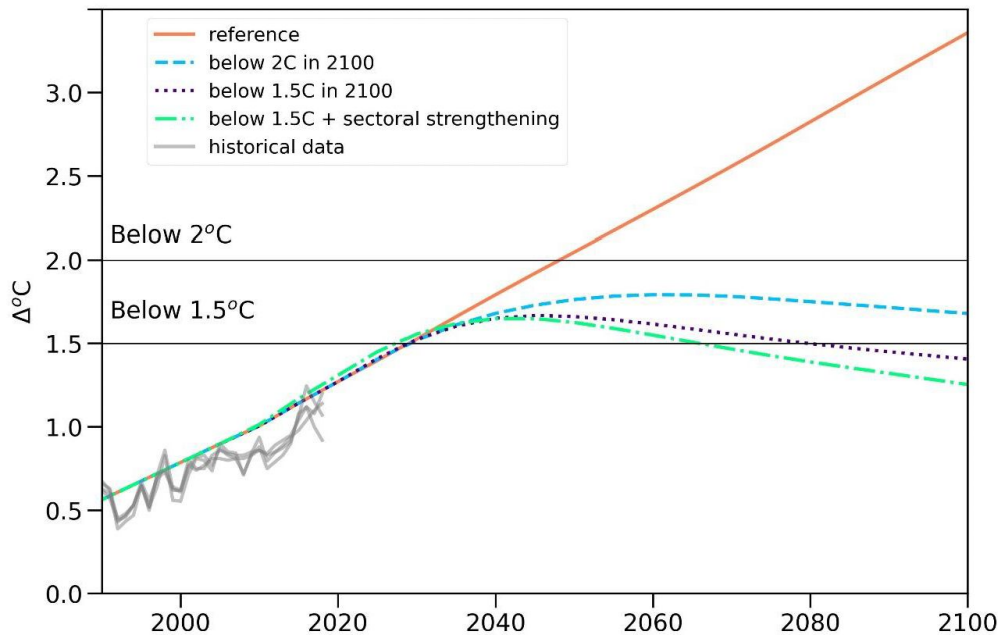
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Global Change Analysis Model – GCAM

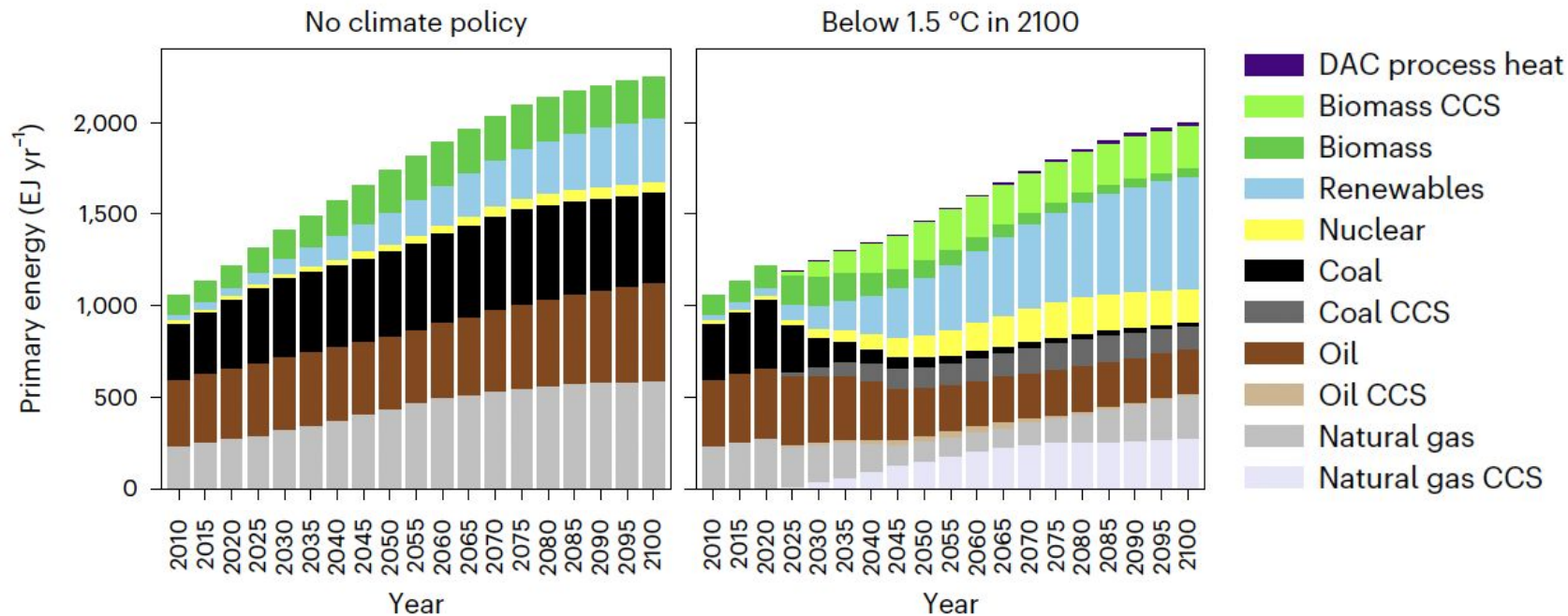


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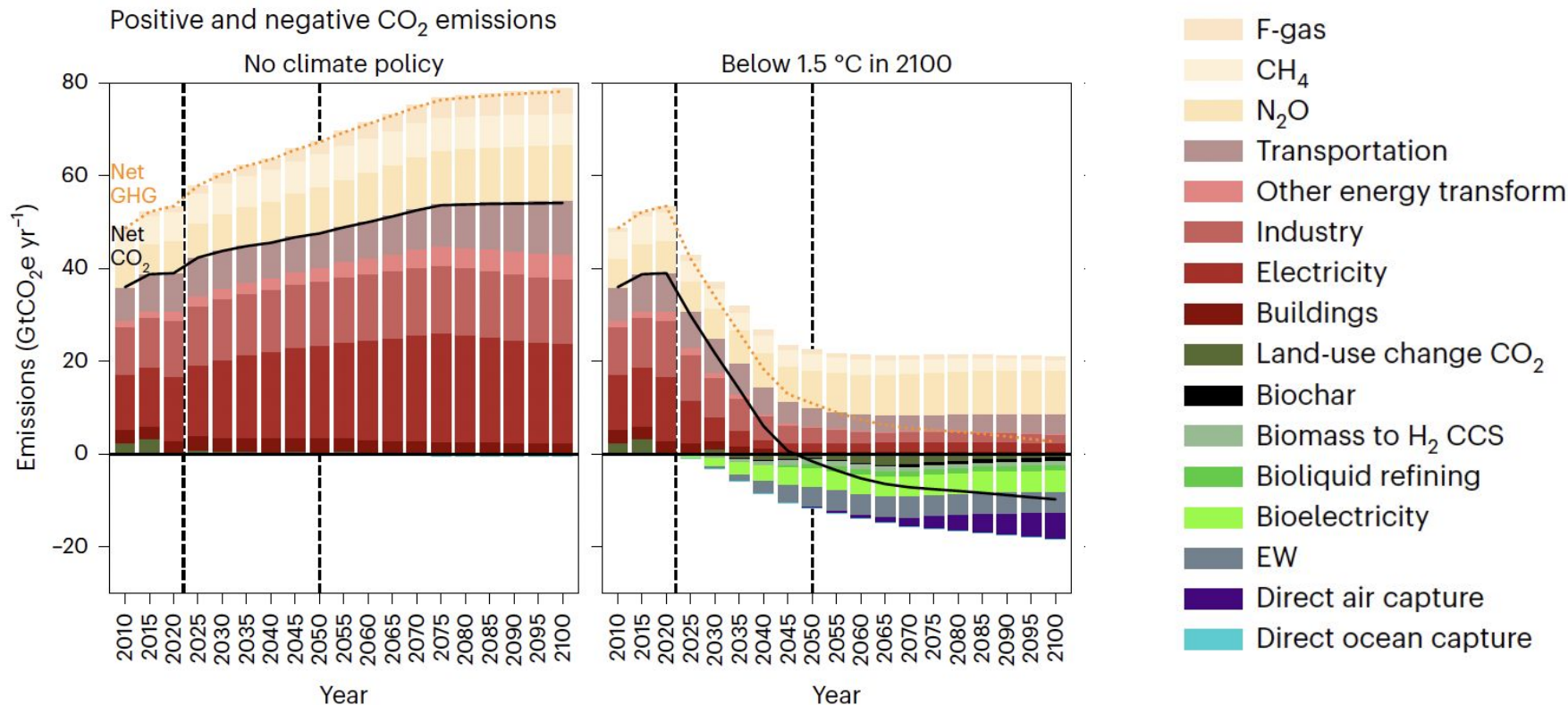
Climate policy targets & CDR



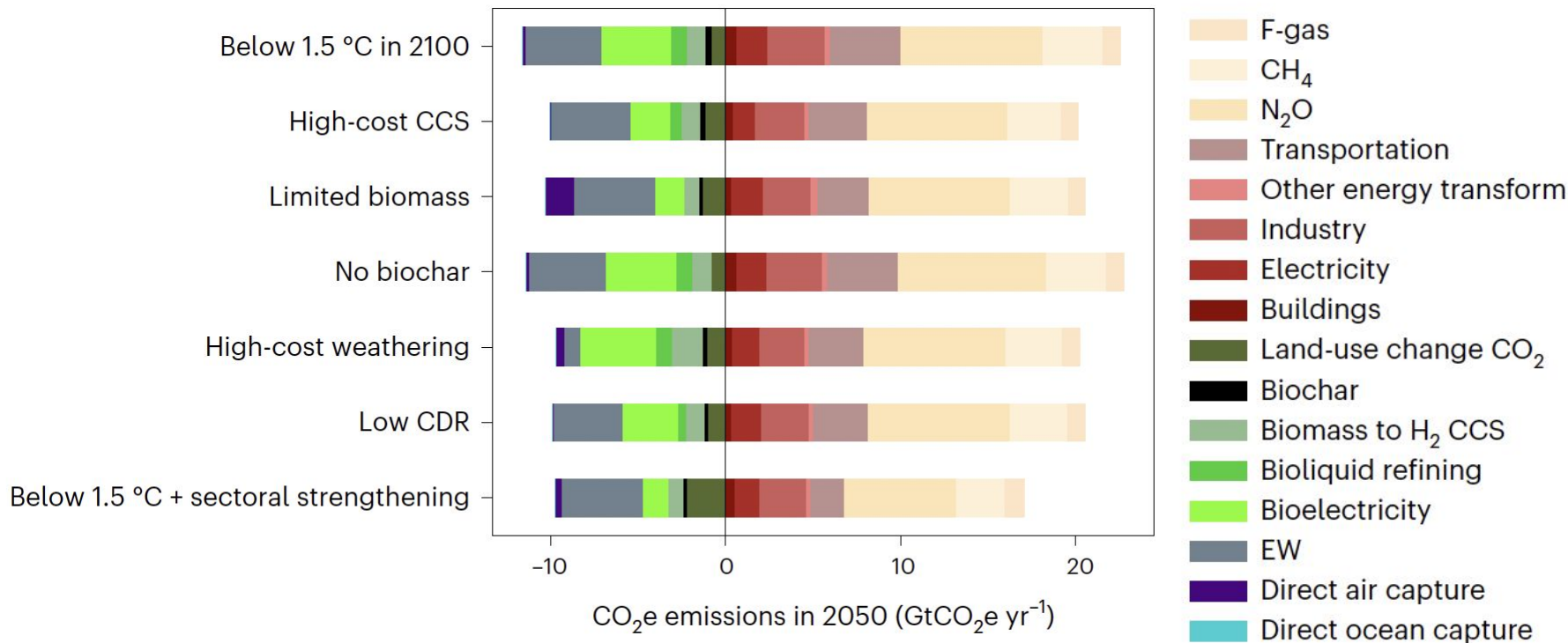
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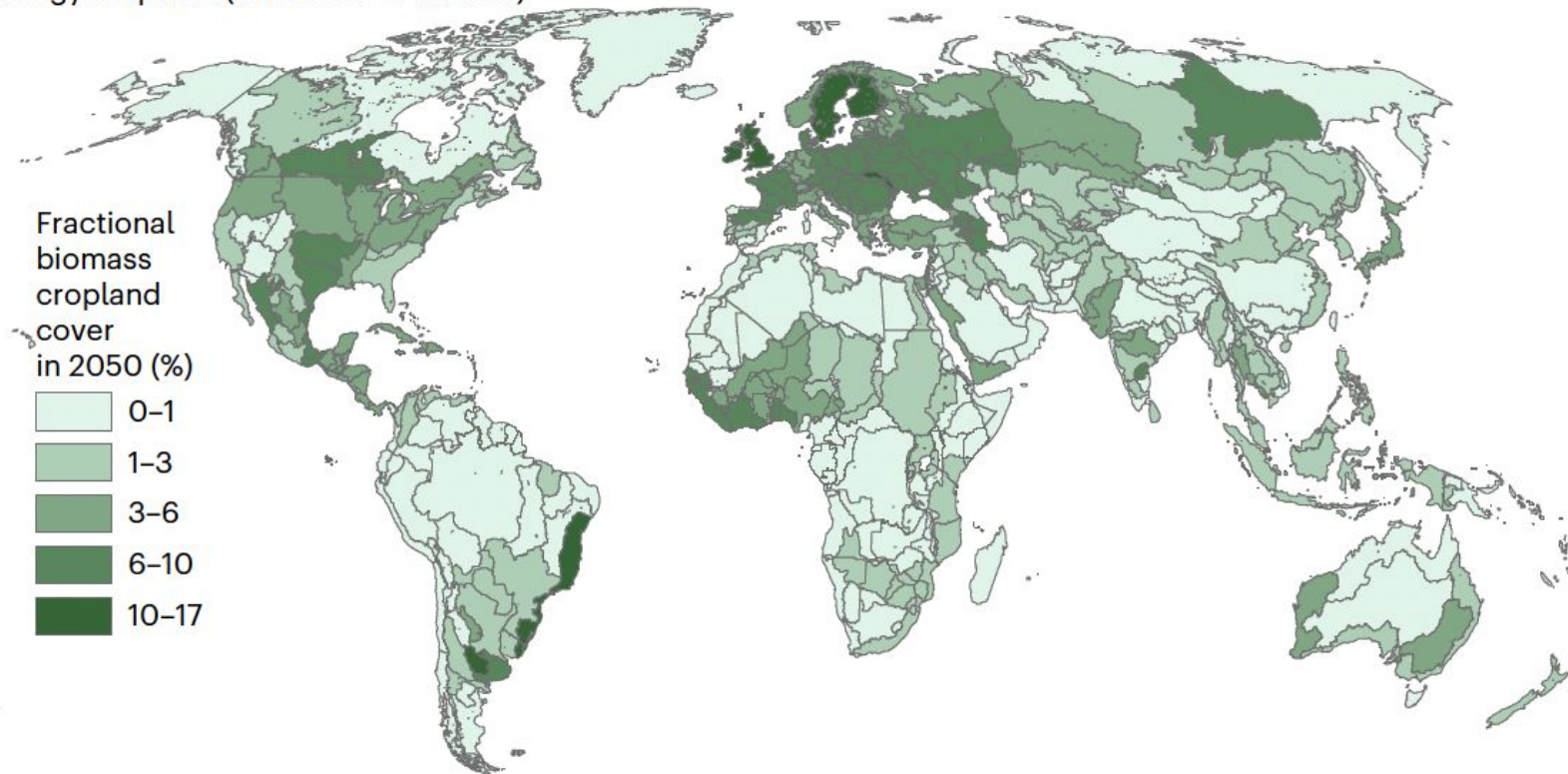


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Bioenergy cropland (below 1.5 °C in 2100)



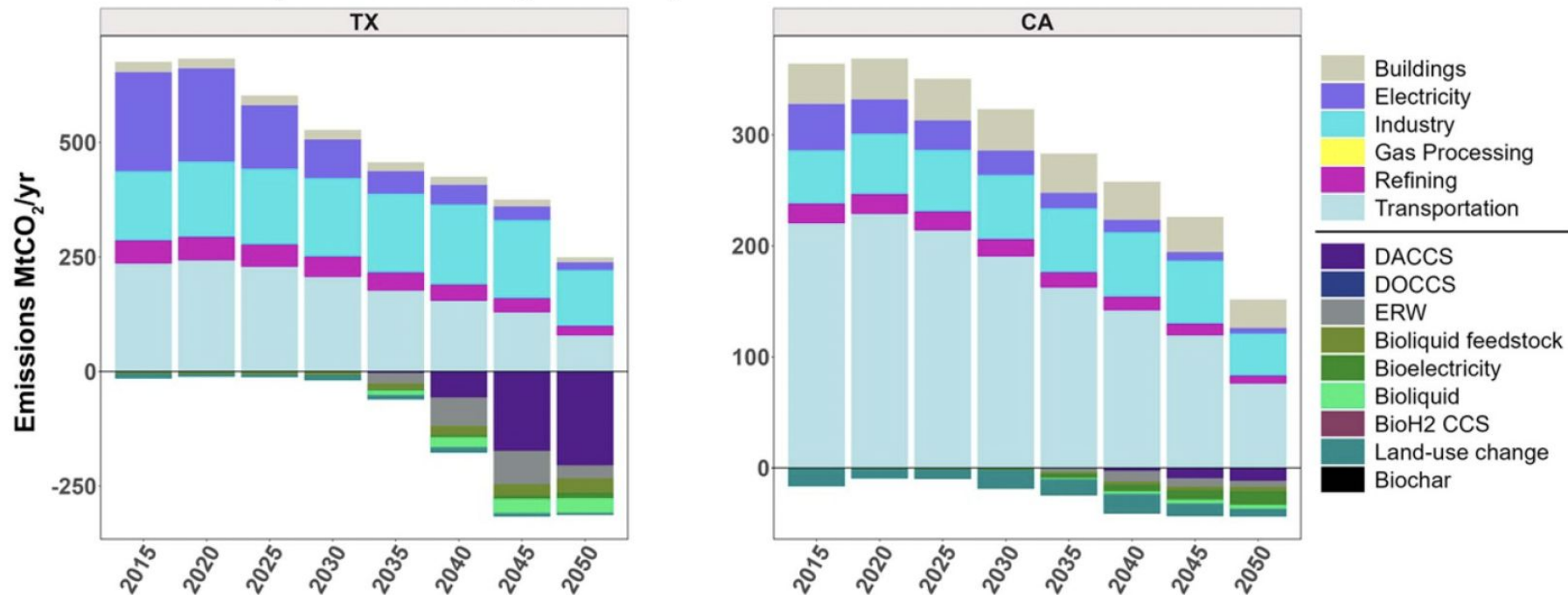
Fuhrman et al. Nature Climate Change 2023

<https://doi.org/10.1038/s41558-023-01604-9>

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GCAM USA

State-level positive and negative CO₂ emissions



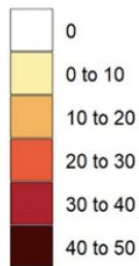
Javadi et al. Environmental Research Energy 2024

<https://doi.org/10.1088/2753-3751/ad81fb>

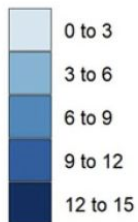
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GCAM USA

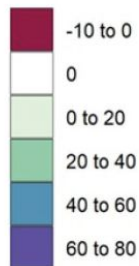
Fraction of final energy consumed by CDR (%)



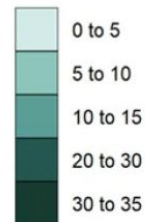
Fraction of water consumed by BECCS (%)



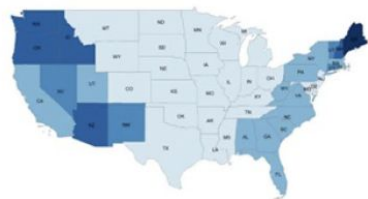
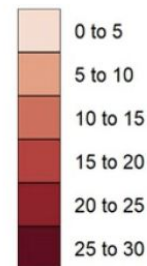
Forestland growth, 2015 to 2050 (%)



Fraction of biomass croplands for CDR in 2050 (%)



Fraction of biochar croplands in 2050 (%)



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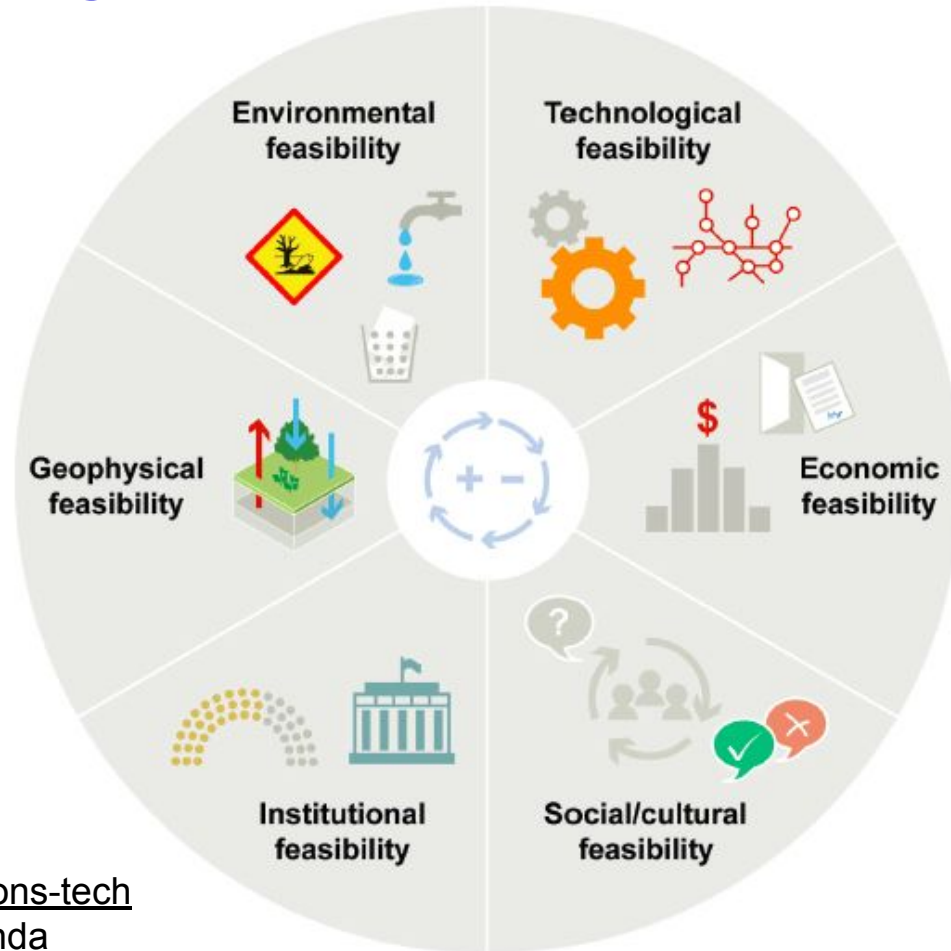
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<https://www.nap.edu/catalog/25259/negative-emissions-technologies-and-reliable-sequestration-a-research-agenda>