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Emissions scenarios consistent with 1.5°C

with a focus on Carbon Dioxide Removal

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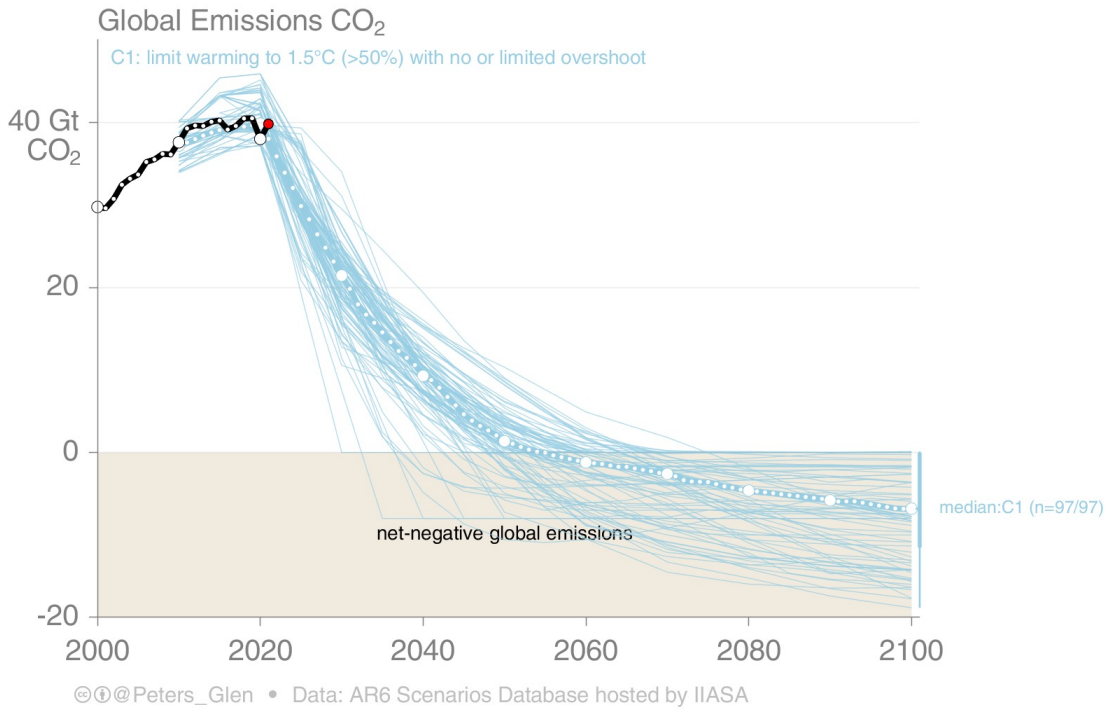
How does the Working Group-III Report of the IPCC Sixth Assessment Address Carbon Dioxide Removal and Solar Radiation Modification?

C2G Learn Webinar, 3 May 2022

A typical 1.5°C scenario

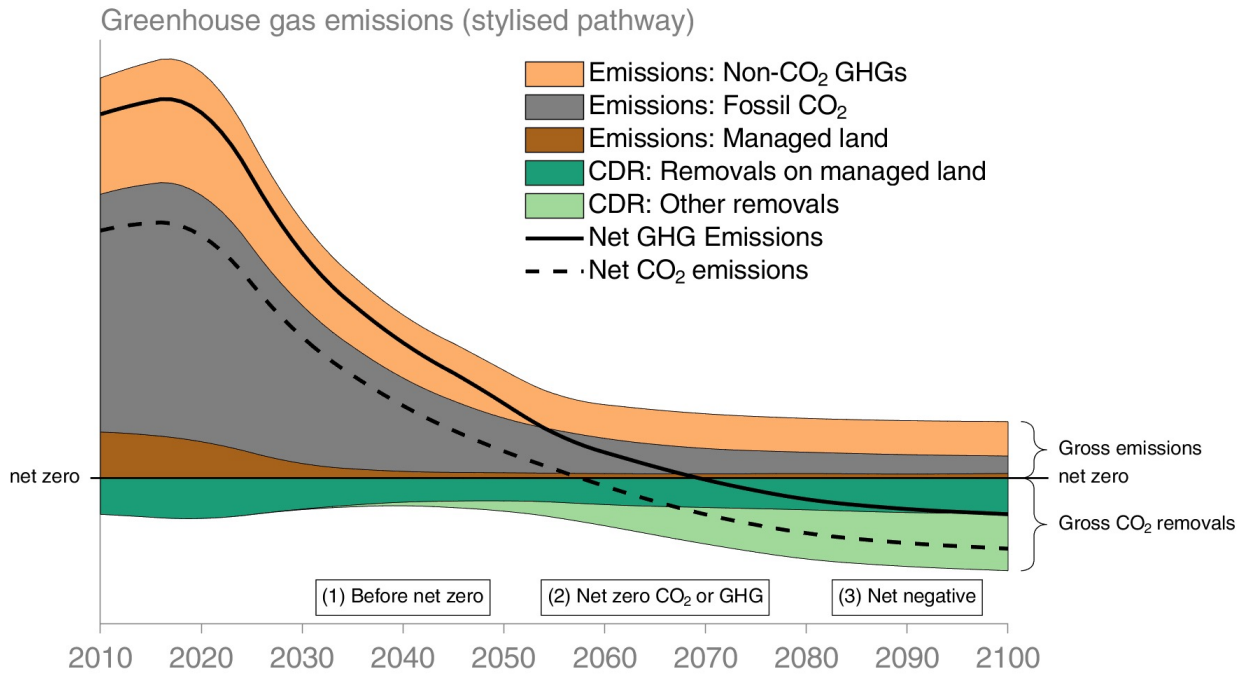
A peak in emissions ‘as soon as possible’, rapid decline thereafter, net zero CO_2 emissions around 2050, then negative
A 2.0°C scenario looks much the same, just reaching net zero CO_2 emissions around 2070



Source: Glen Peters (based on IPCC AR6 WG3 Scenario Database)

The anatomy of a scenario

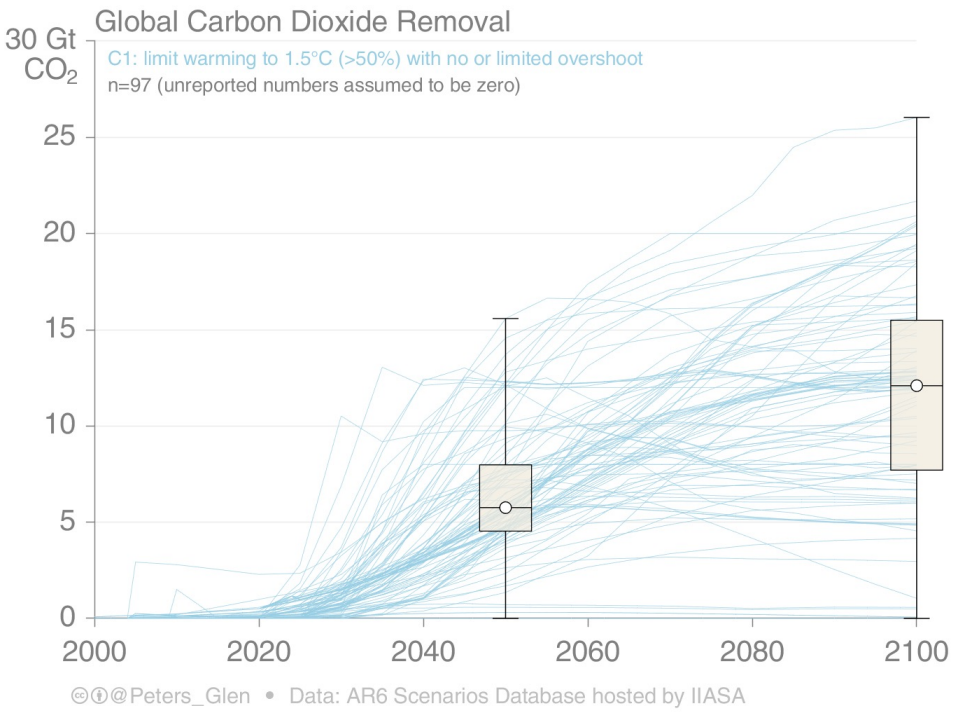
It is probably hard to avoid some level of Carbon Dioxide Removal (CDR) to offset 'residual' (or costly) emissions
In addition, CDR might help to reduce the temperature after a peak.



Source: Glen Peters (based on IPCC AR6 WG3 Scenario Database)

Carbon Dioxide Removal in scenarios

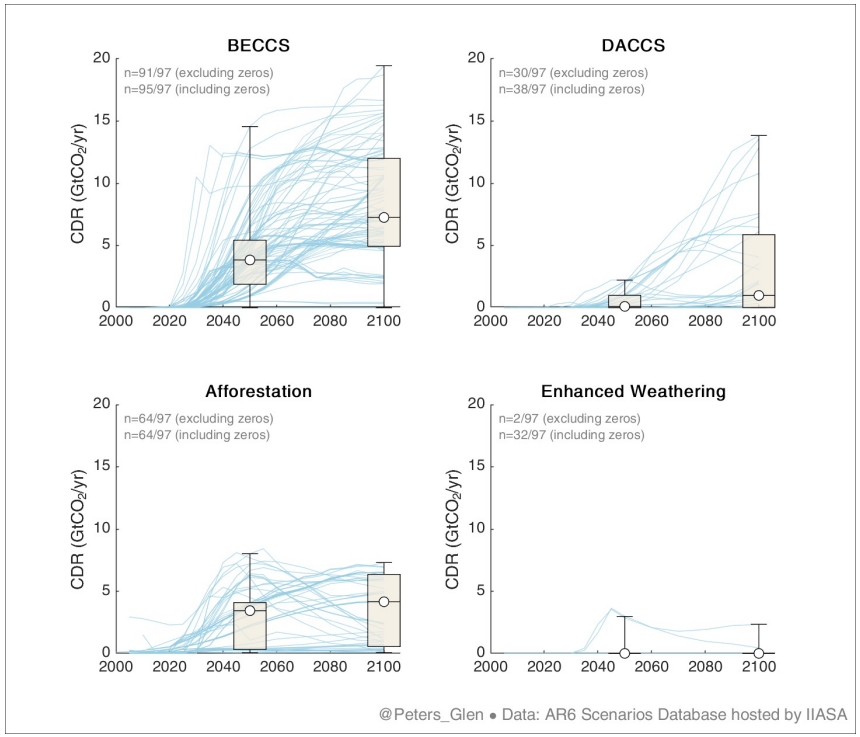
Scenarios use *a lot* of carbon dioxide removal. It is also hard to estimate the total amount of CDR. Why?
Scenario databases are also not statistical samples, we see the scenarios submitted, not other potential combinations



Source: Glen Peters (based on IPCC AR6 WG3 Scenario Database)

Carbon Dioxide Removal in scenarios

Scenarios dominated by Bioenergy with Carbon Capture and Storage (BECCS), some with Direct Air Capture (DACCS)
All scenarios report net land use change, but 2/3 report afforestation (also with uncertain definitions).



Source: Glen Peters (based on IPCC AR6 WG3 Scenario Database)

Conclusions

- Scenarios continue to use *large-scale* carbon dioxide removal
  - The scales often seem implausible given real-world developments
- Some level of Carbon Dioxide Removal likely to be beneficial
  - CDR may be cheapest option for hard-to-mitigate sectors
- Carbon Dioxide Removal only really has a function if emissions are simultaneously being mitigated rapidly

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Thank you

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