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Thoughts on NETs, BECCS, and modelling

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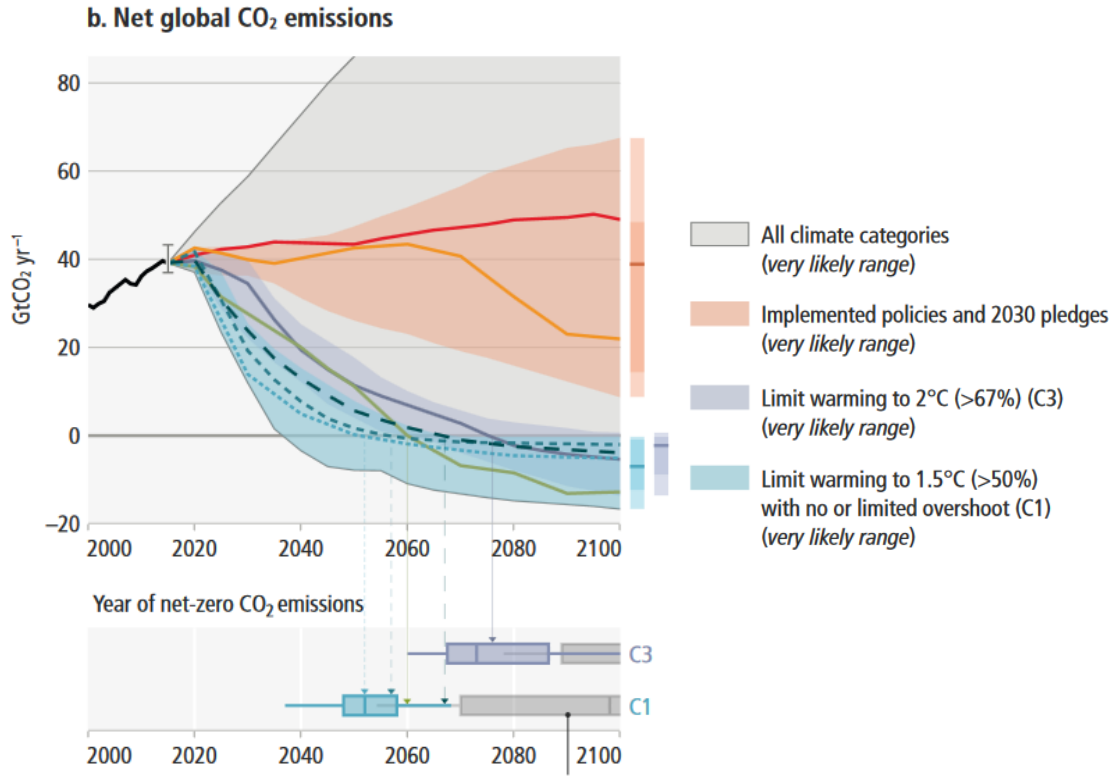
Today's narrative

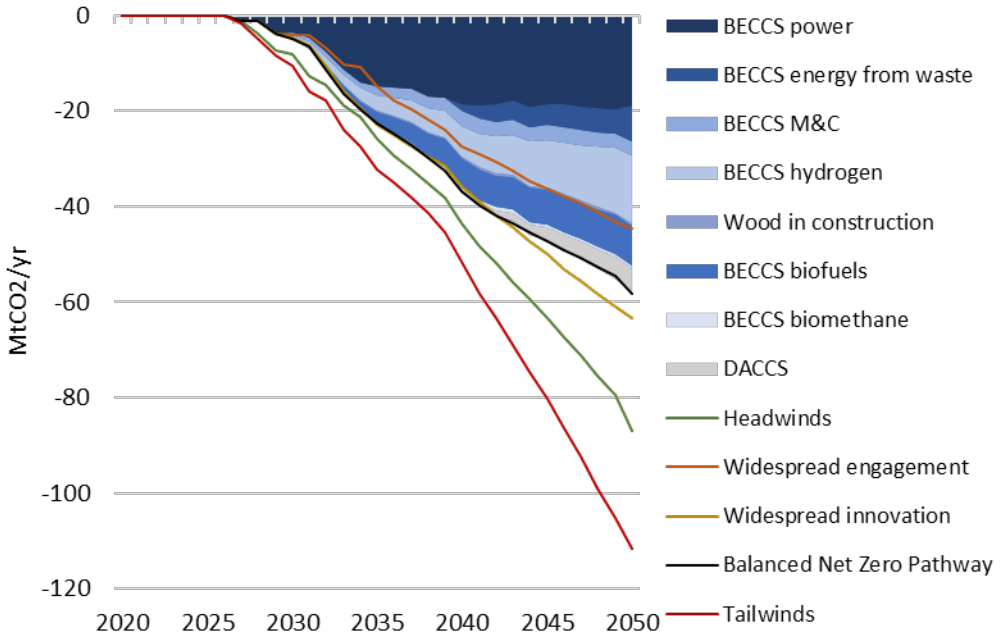
- Biomass and BECCS will likely play a role in reaching NZ,
- How much, and where it is used, remains uncertain,
- This picture changes as our understanding of alternatives evolves,
- And the need for NETs varies depending on overall strategy
- Particularly because there are other options to consider
- So while investing in NETs is essential, let's not get distracted – there are solutions that we can apply today.

UK & Global scenarios to 2050 require BECCS

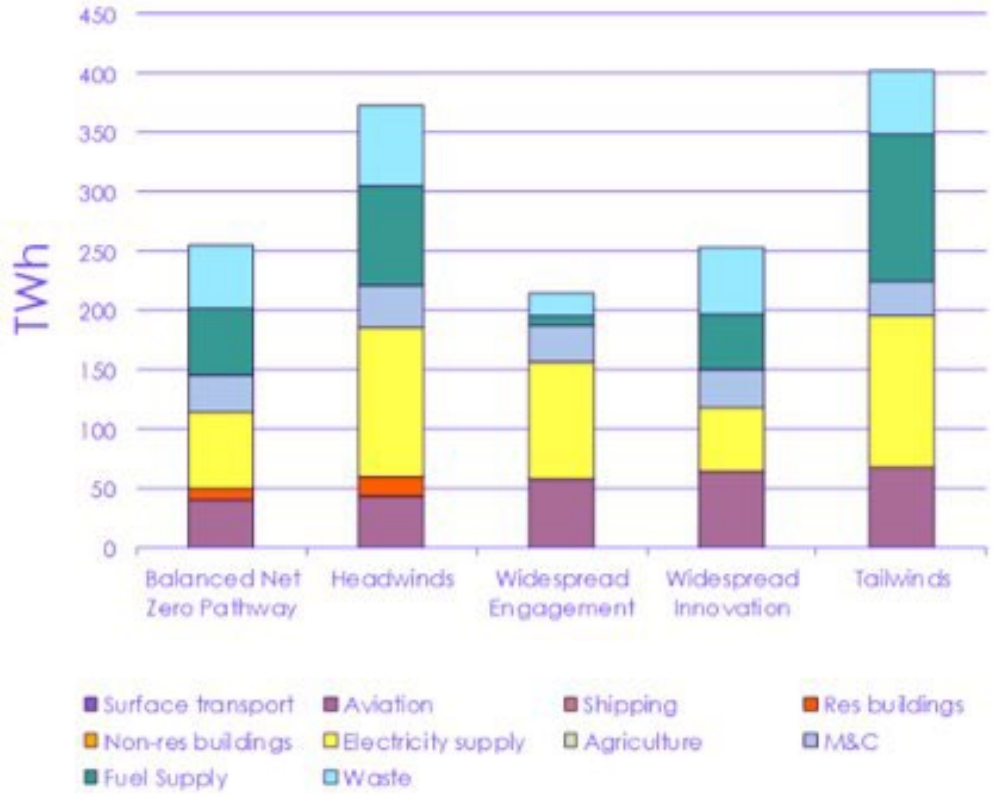
IPCC AR6 mitigation pathways



CCC CB6 scenarios use of NETs



How much, and where remains uncertain

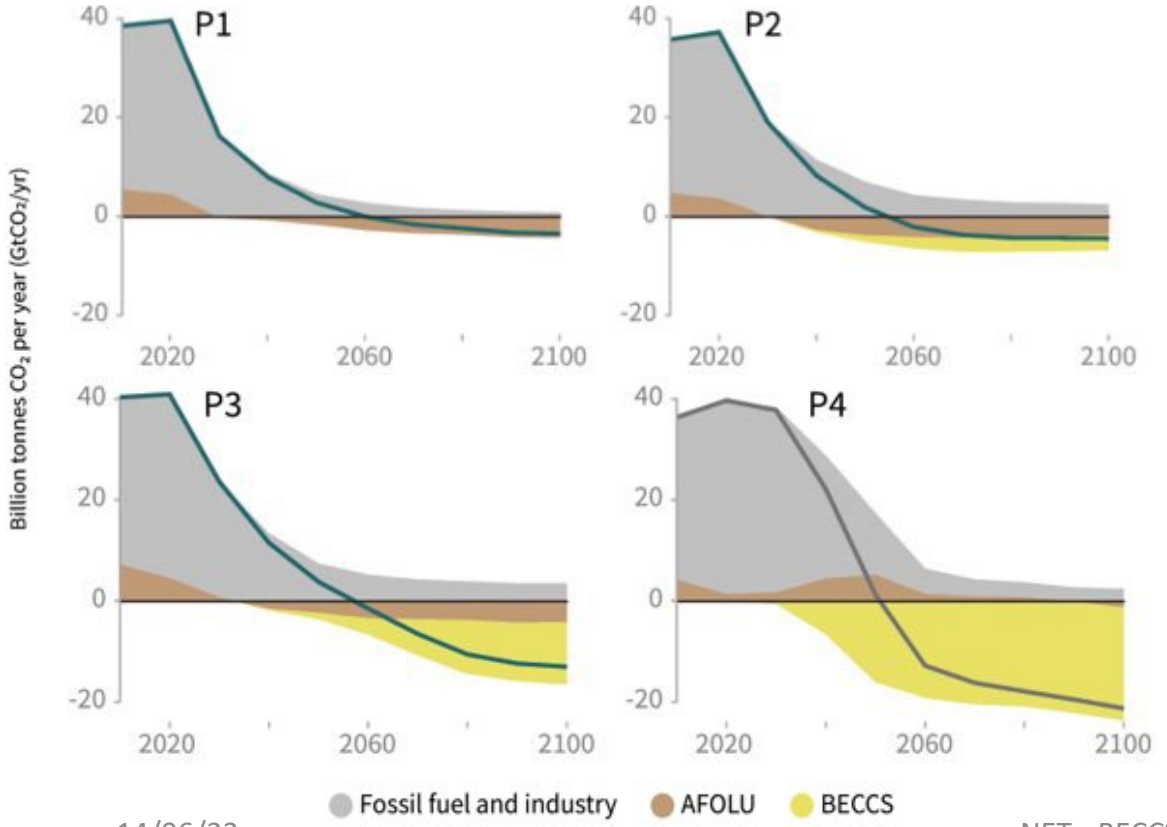


Different pathways show significant differences in biomass and waste consumption and end use (CCC, CB6)

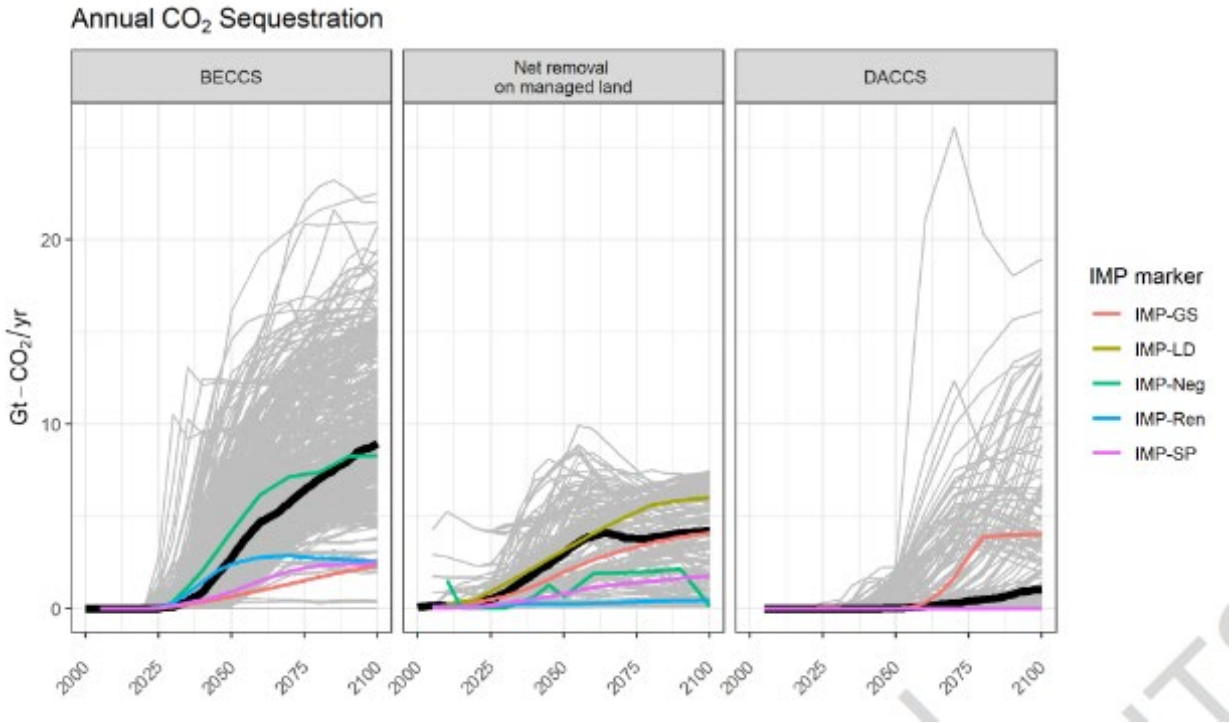
- Assumptions about biomass availability, quality & sustainability?
- Hydrogen & fuel supply vs. Electricity?
- Scale of consumption?

Our picture of NETs in models is changing

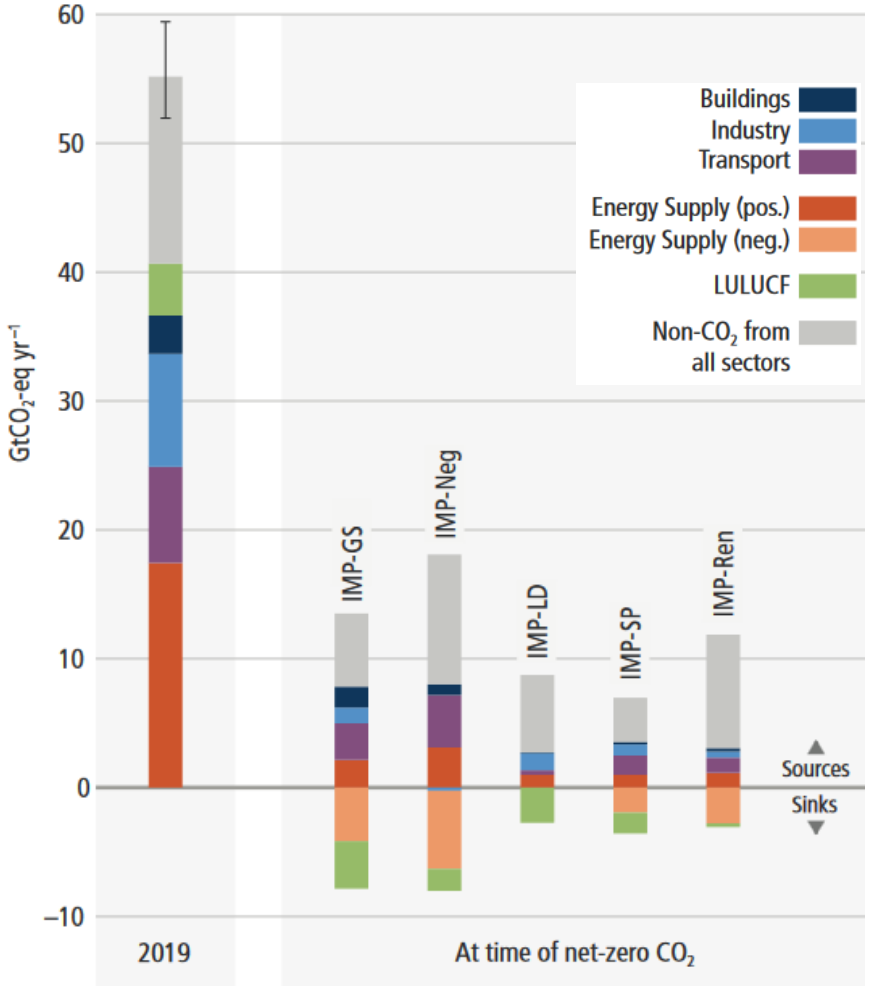
IPCC illustrative pathways to 1.5°C - BECCS key to delayed action (2018)



IPCC AR6 summary of pathways across predominant NETs (2022)



And it depends on our overall strategy, globally…

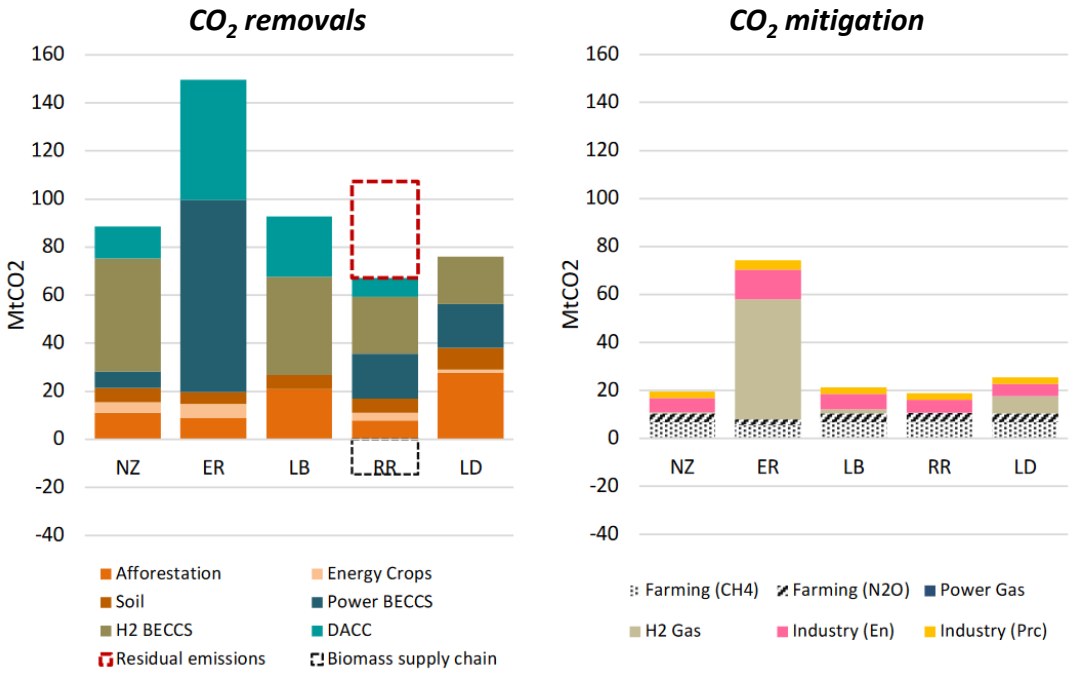


Net sectoral GHG emissions at the time of net-zero CO_2 emissions compared to 2019 emissions (IPCC, AR6, 2022)

- There are different ways of imagining the future.
- These different worlds picture different societies.
- Their needs are not equal and will shape how many NETs we need

(GS – gradual strengthening, Neg – focus on negative emissions, LD – low demand, SP – shifting focus, Ren – emphasis on renewables)

… but also locally

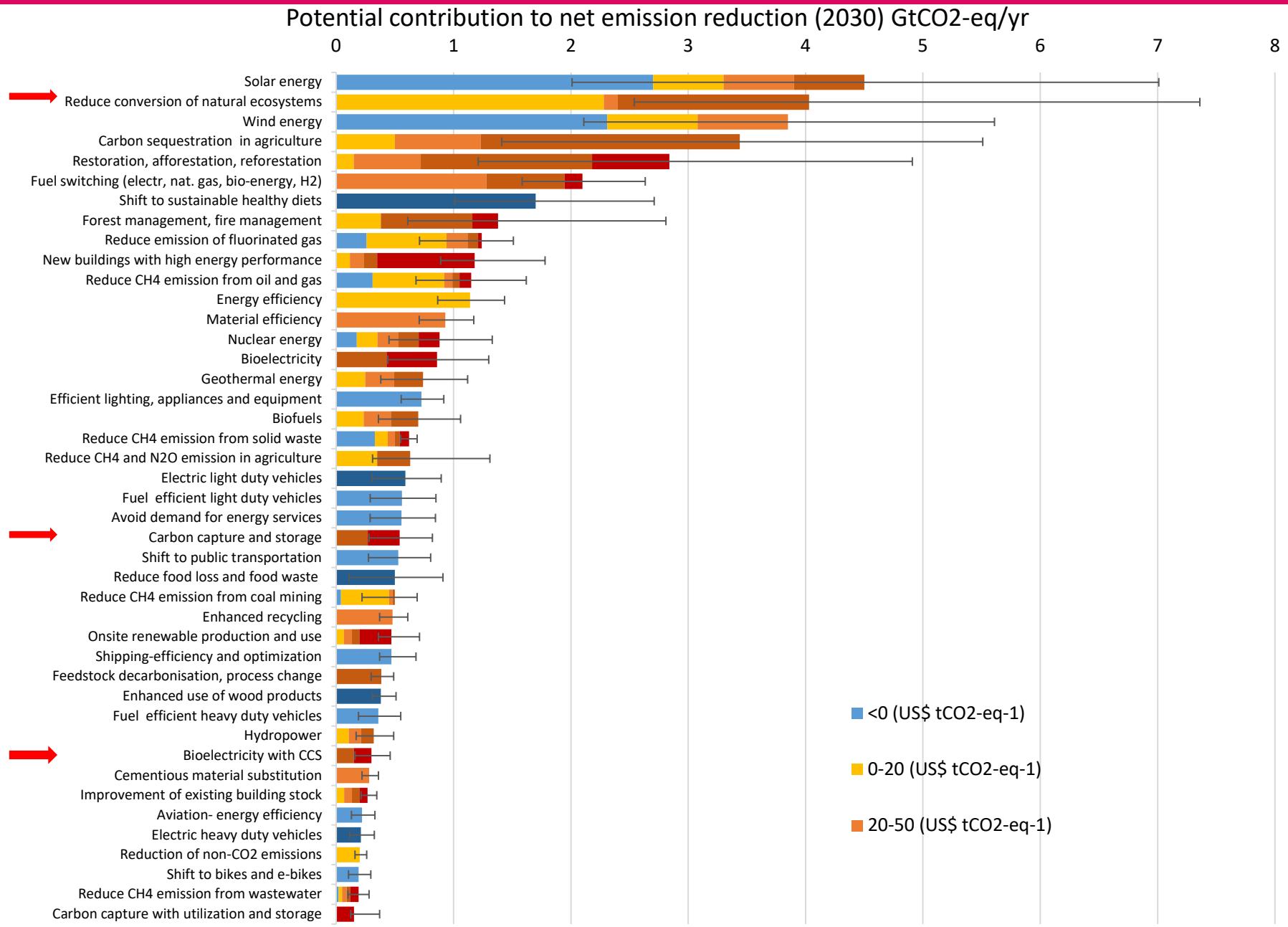


(Watson et al., 2021)

The role of BECCS in the UK's net-zero pathway – similarly – **depends on our future view of the world**

- High reliance on removals and capture?
- Reduced pressure and lower reliance on NETs?
- Failure to act and falling short of our targets?

(NZ – net zero reference, ER – Engineered Removals, LB – Low Biomass, RR – Reduced Removals, LD – Low Demand)



In addition, and importantly,

NETs are one options among many others

Summary of thoughts

1. It is increasingly likely that NETs will be critical for achieving our goals
2. But BECCS is only one technology from a basket of NET options, as we learn more, this picture will continue to change.
3. Irrespective though, betting too heavily on any NETs involves heavy risks for the energy system.
4. Also, a sustainable future is not only about carbon, we need to consider externalities, co-benefits, and links to SDGs.
5. Luckily, other solutions do exist.

Implications for policy?

- ❑ Prioritise actions to **reduce emissions now**, don't get distracted.
- ❑ **Have** the difficult **conversation** about **alternative solutions** – e.g lowering demand.
- ❑ Invest in NETs with the intention of **balancing remaining emissions** across the economy as a whole.