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The scope for accelerating emission reductions

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Motivation

- Current climate policies are not consistent with the 1.5°C limit
- Main problem: Current carbon pricing is not comprehensive and not sufficient. Comprehensive and sufficient carbon pricing is indispensable to stay well below 2°C.
- Consider complementary policies targeting technological improvements as well as behavioural changes to further accelerate action.
- Can additional policies complement carbon pricing and accelerate action and close the gap between well-below 2°C and 1.5°C?

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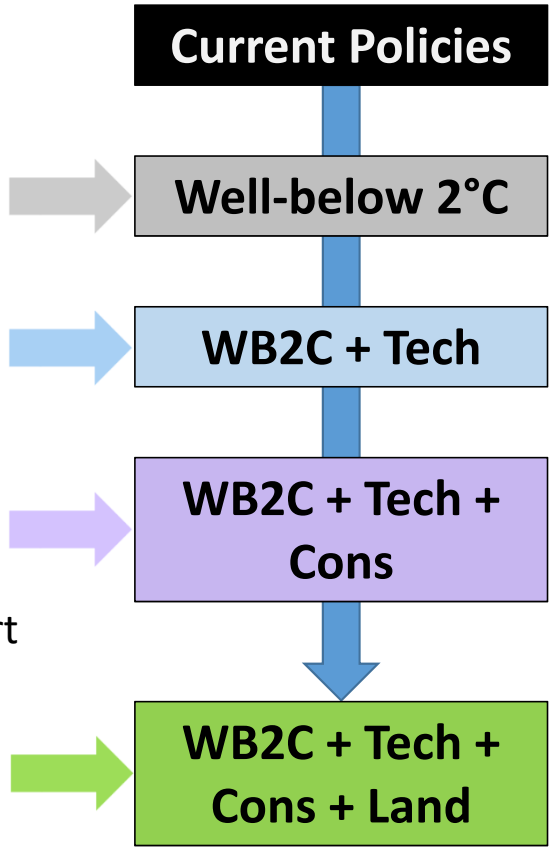
Measures can target all sectors

- Sufficient CO_2 price across all sectors
- **Technological transformation**: rapid decarbonisation of electricity generation; push for more direct and indirect electrification in all sectors; significant deployment of CCS
- **Energy consumption**:
  - **Efficiency** improvements incl. faster buildings renovation and better insulation for new constructions
  - **Sufficiency**: lower floorspace per capita; shift in setpoint temperatures; reduced passenger and freight transport; transport modal shifts
- **Land**: advanced measures in reducing non-CO_2 GHG emissions; peatland protection and restoration; additional land-sharing CDR methods; dietary changes; reduced food waste both at household levels and farms or processing retail



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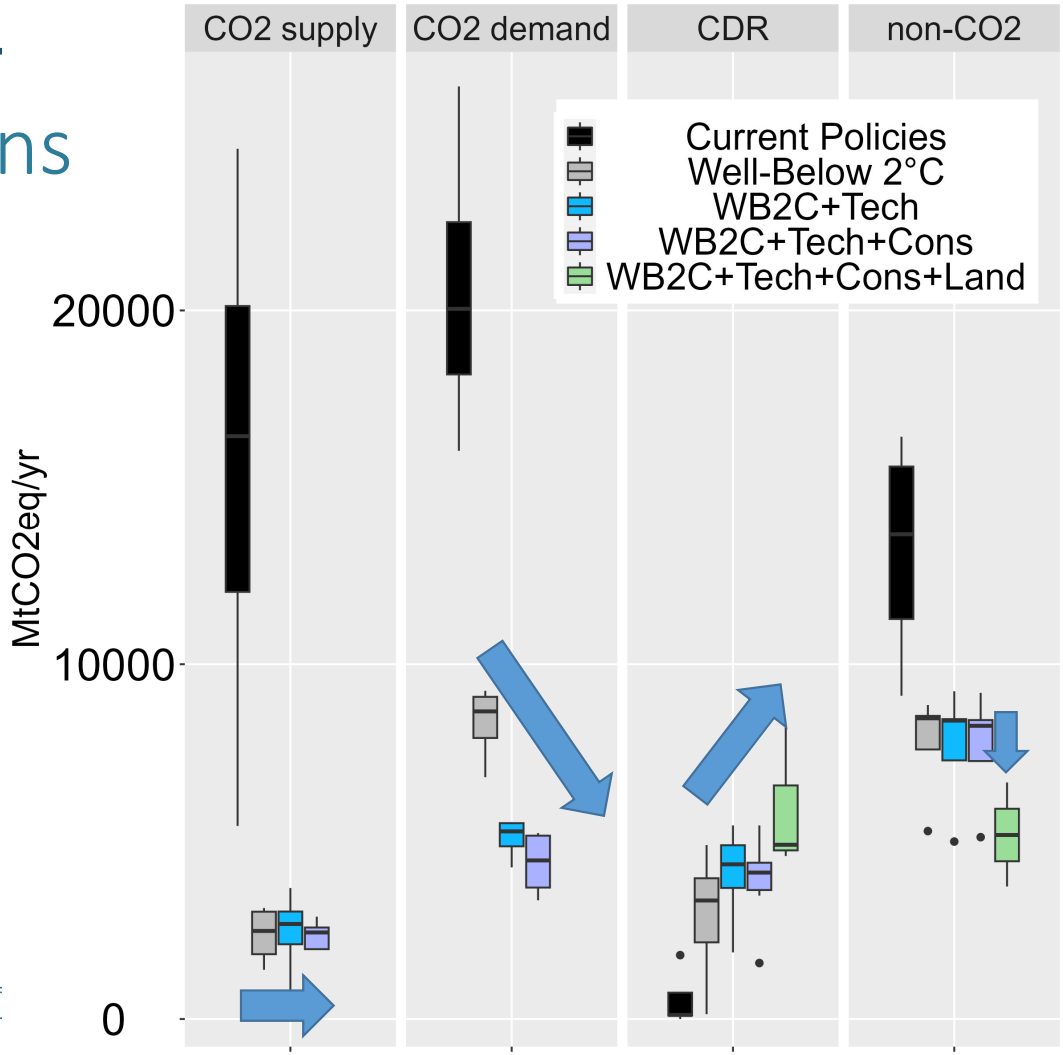
Global emission reductions in 2050

- High carbon price can fully leverage emission reduction potential on the **supply side** (*Well-Below 2°C* scenario).
- All policies contribute to further emission reductions on the **demand side.**
- Increasing CCS capacities and including additional land-based options enhance **CDR** potential.
- Land policies crucial to reduce **non-CO_2.**



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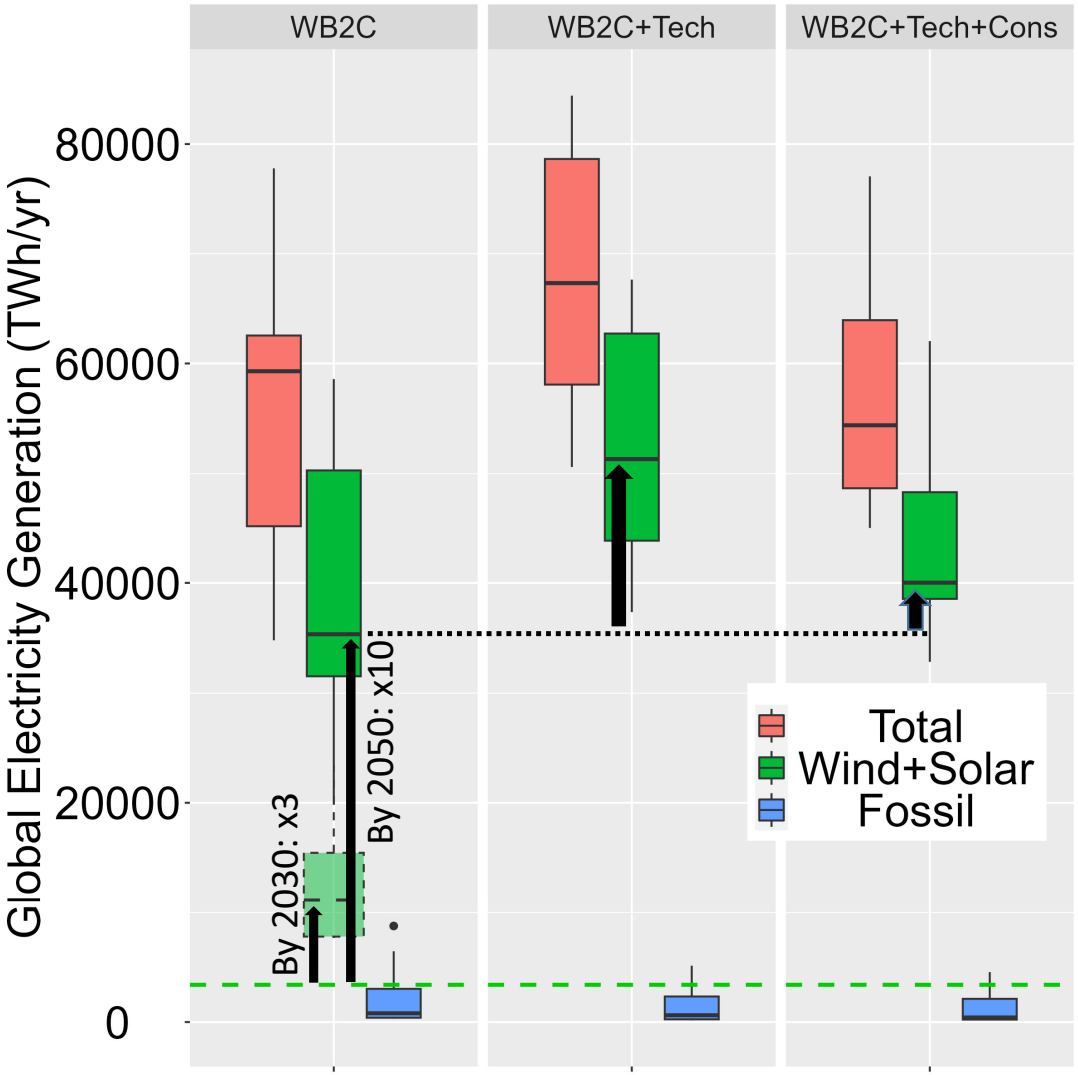
Complementary measures provide benefits also for the energy system

- Carbon price pushes fossil fuels out of electricity generation. Variable renewables increase by factor 3 by 2030, factor 10 by 2050.
- Policies focusing on a **technological transformation** lead to ~45% higher variable renewable electricity demand.
- The addition of policies focusing on **energy consumption** balances this additional electricity demand.



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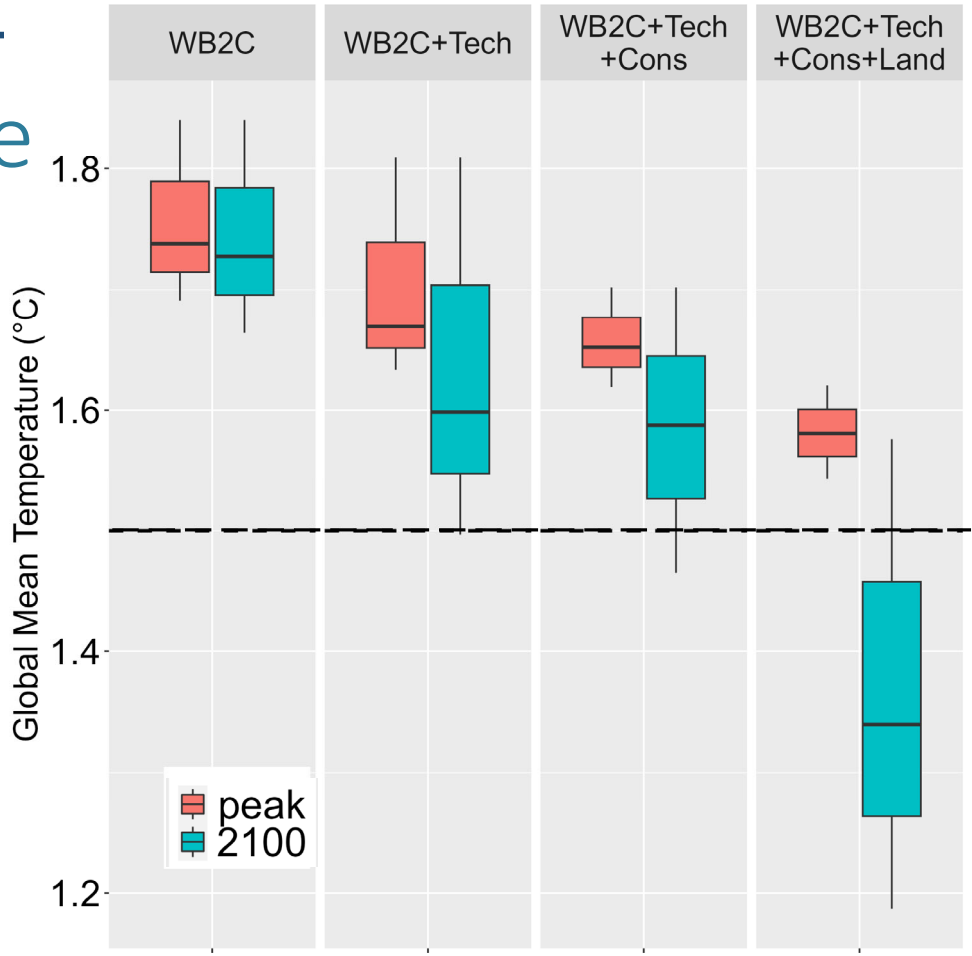
Global Mean Temperature

- Only the **combination of all measures** reduces global mean temperature to a level **compatible with 1.5°C with low overshoot.**
- **Land policies** can contribute to enhanced carbon storage on land, thereby **reducing cumulative net CO_2 emissions**. In addition, land policies are the most effective option for **reducing non-CO_2 GHG emissions**, leading to a further **reduction of peak warming and especially warming in 2100**.



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Summary

- Comprehensive and sufficient carbon price is needed to phase out fossil fuels and reduce emissions both on the supply and demand side.
- Policies focusing on a technological transformation are crucial for further decarbonization of all demand sectors by 2050 and to increase the carbon removal potential.
- Policies focusing on energy consumption are complementary as they reduce energy demand and therefore not only contribute to further demand side emission reductions, but also balance the higher electricity demand resulting from more direct electrification.
- Land policies can contribute to enhanced carbon storage on land, and are the most effective option for reducing non-CO_2 GHG emissions, leading to a further reduction of peak warming as well as end-of-century warming.

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Thanks for your attention!

NAVIGATE project website: https://www.navigate-h2020.eu/

Synthesis report: https://www.navigate-h2020.eu/wp-content/uploads/2023/11/NAVIGATE-synthesis-report-compressed.pdf

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