Land use and Climate

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Achieving net Zero: The Role of Land, Tuesday 28 February 2020

BAU, Pledges and Climate target

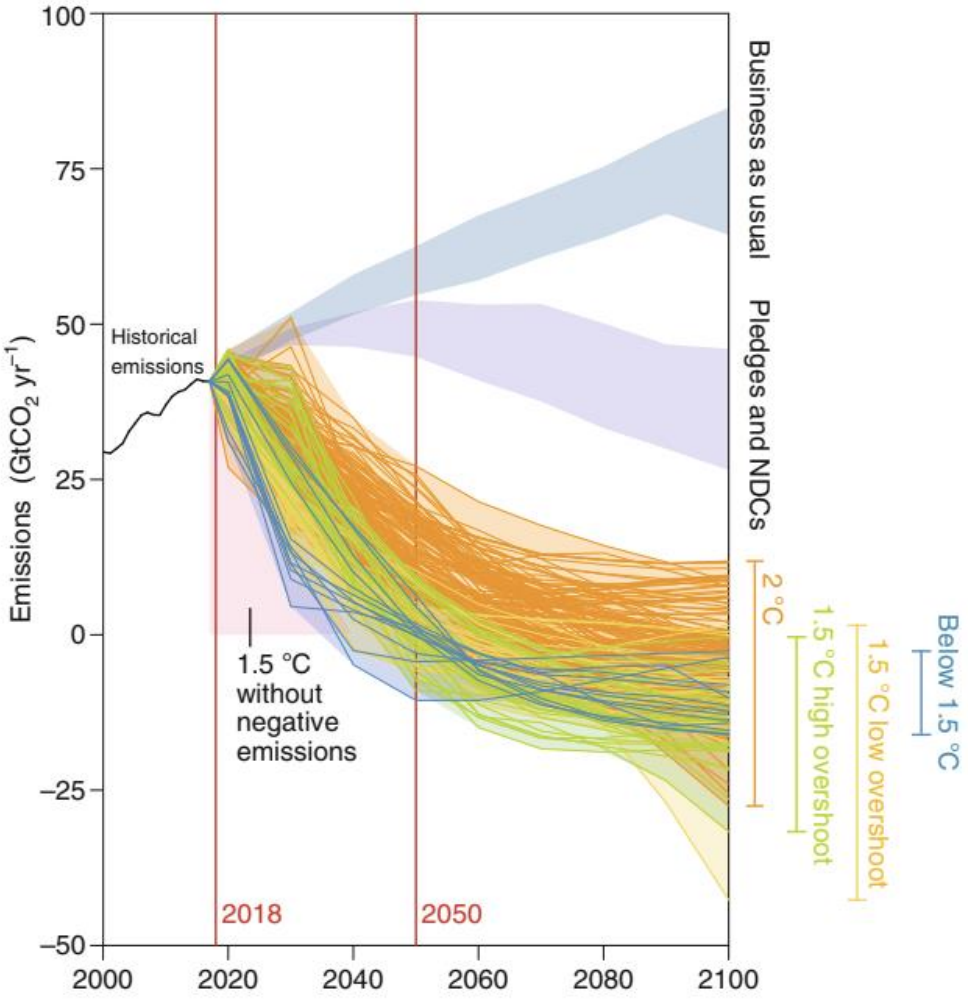
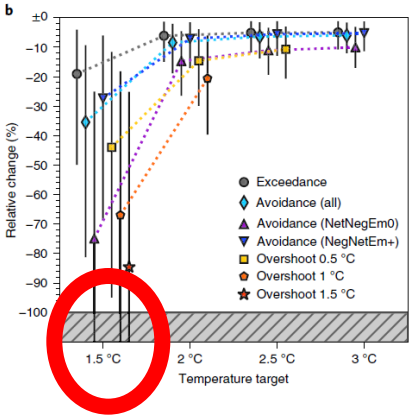


Fig. 1 | Global net anthropogenic CO_2 emission pathways in BAU, 2 °C and 1.5 °C model scenarios. The 2 °C (132 model runs, orange lines), 1.5

- Countries are not ambitous enough
- Timing of Zero Net depends on
  - Climate target
  - Degree of Over-/Undershooting emissions
  - Earth system

Source: Roe et al. NCC 2019

Emissions from thawing permafrost

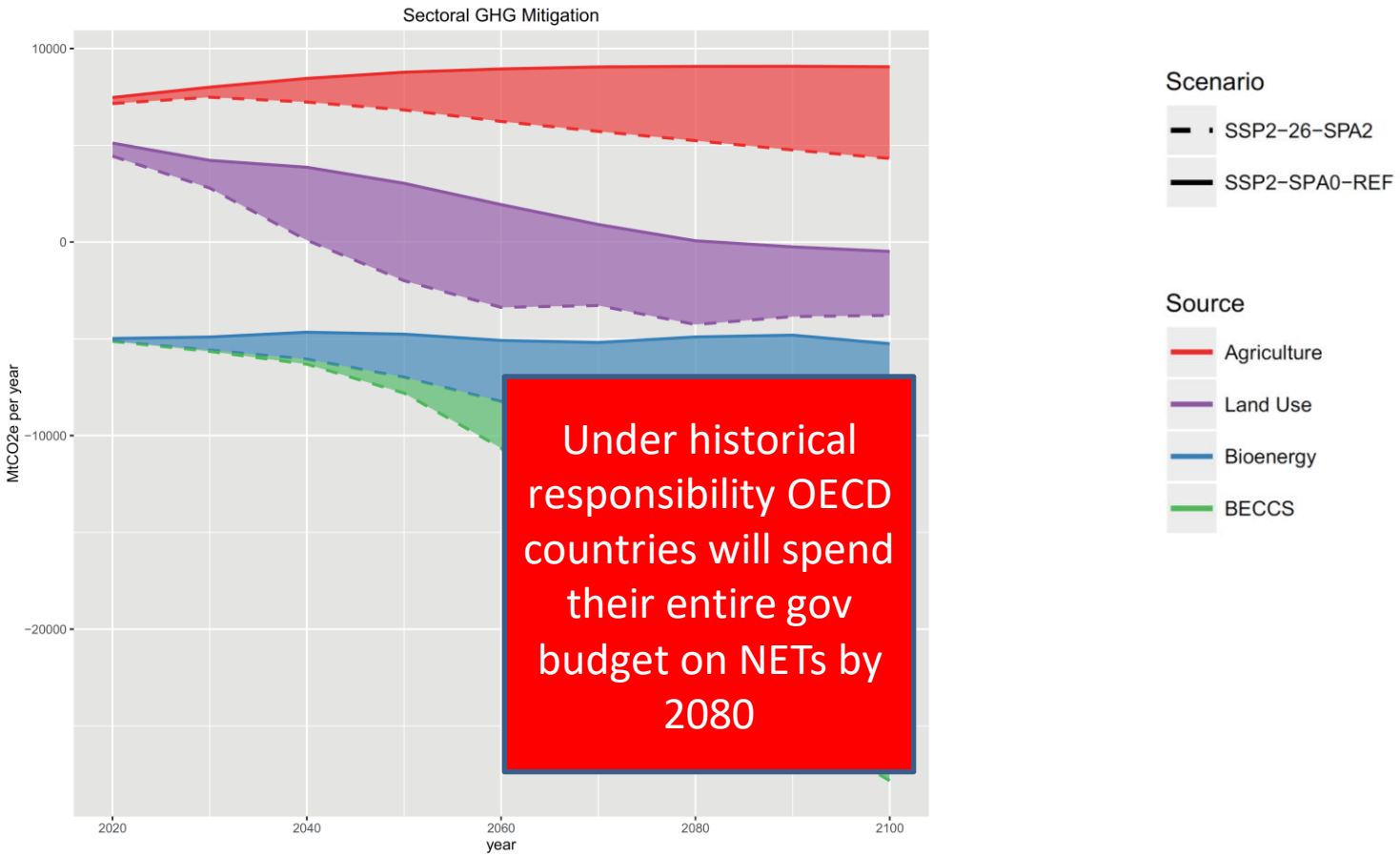


Accounting for additional emissions from permafrost there is a 5% chance that the remaining carbon budget for 1.5C is zero – today!

Gasser et al., NGS 2018

Land use sectors contribution to mitigate for 2ºC

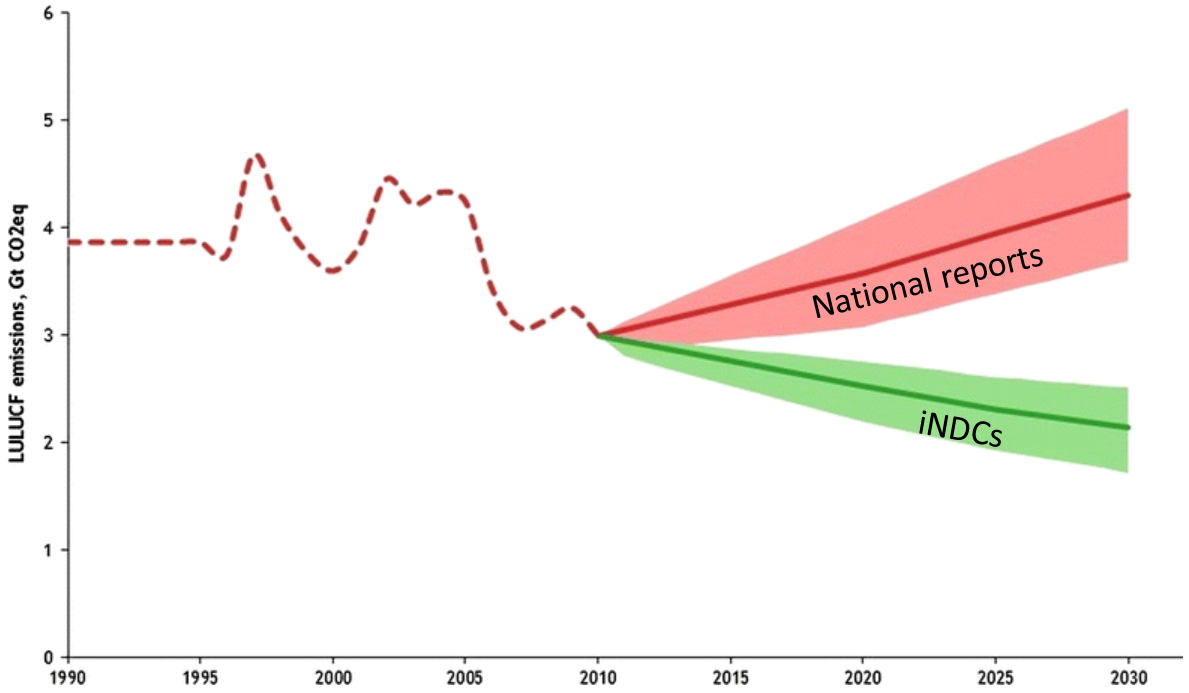
The Great Carbon Undershoot



Source: Based on Fricko et al. 2016, GEC; Obersteiner et al., NCC 2019

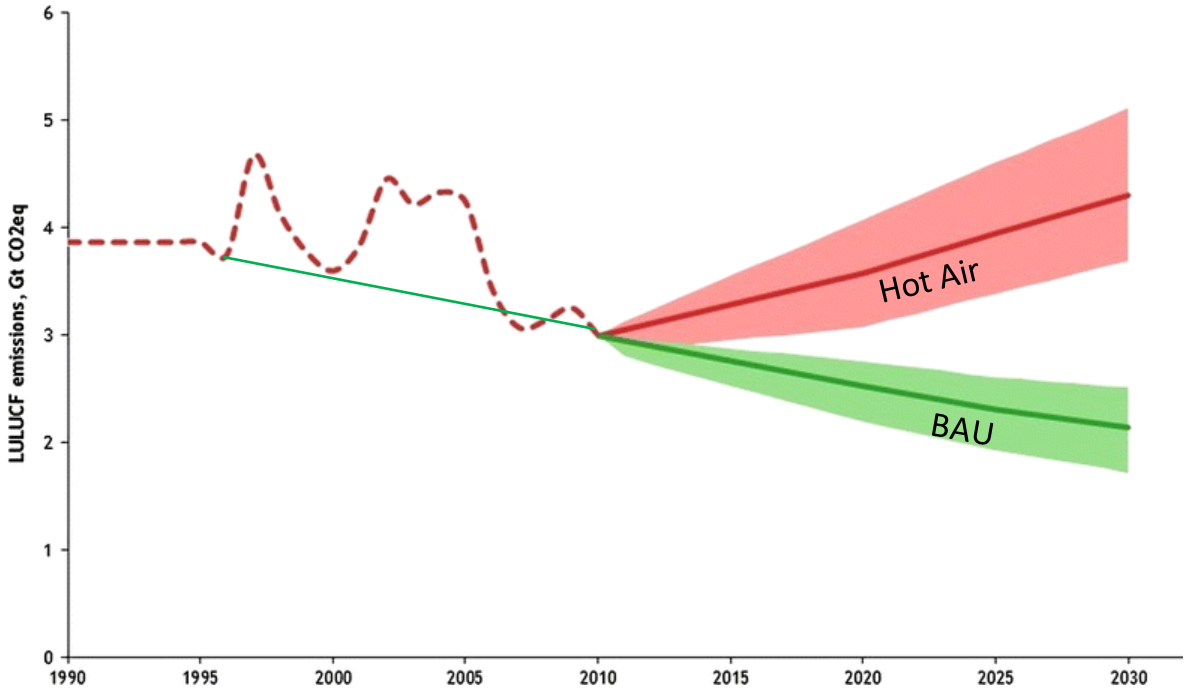
Are countries doing their homework in the land use sector?

Emissions from land



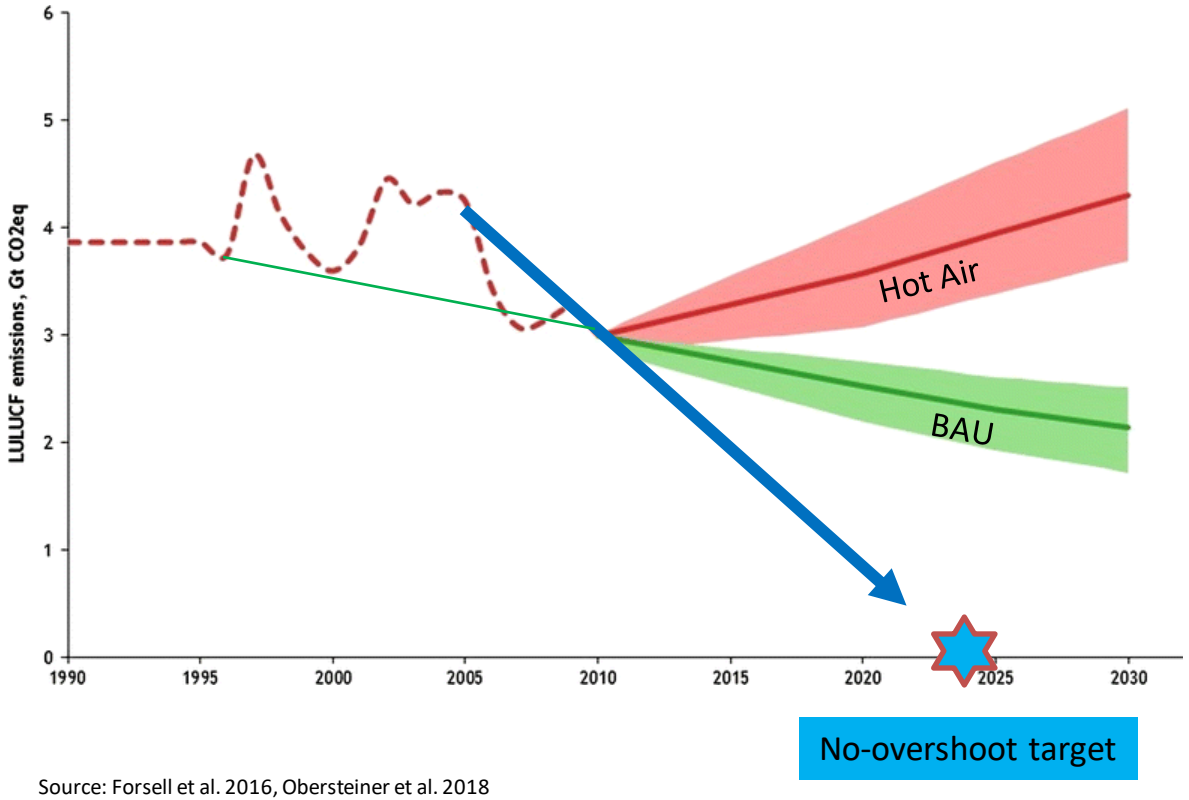
Source: Forsell et al. 2016

Emissions from land



Source: Forsell et al. 2016

Emissions from land

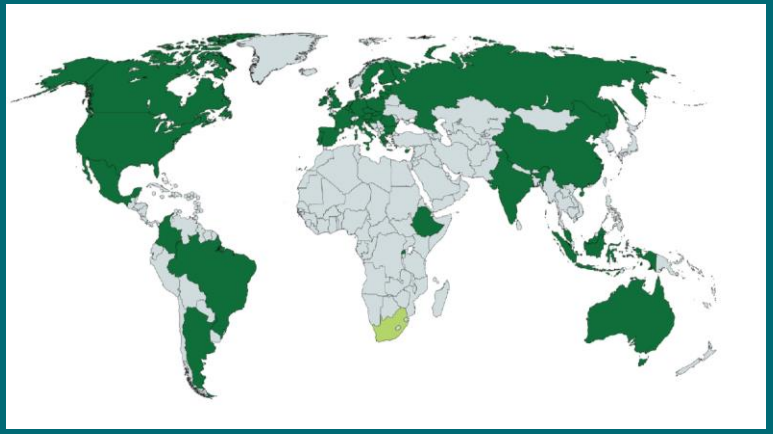


Source: Forsell et al. 2016, Obersteiner et al. 2018

The Food and Land Use Coalition

The Food, Agriculture, Biodiversity, Land Use and Energy Pathways (FABLE) Consortium

Pathways to Sustainable Land-Use and Food Systems



The Food, Agriculture, Biodiversity, Land Use and Energy Pathways (FABLE) Consortium

FABLE in the UK







Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environmental *Change* Institute
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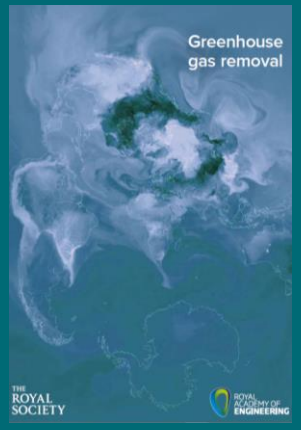
SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

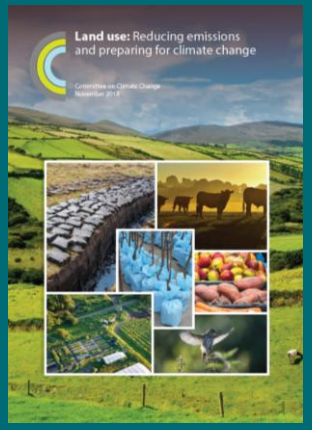
The Food and Land Use Coalition

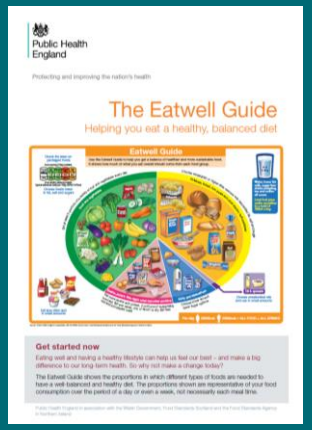
UK climate pathways

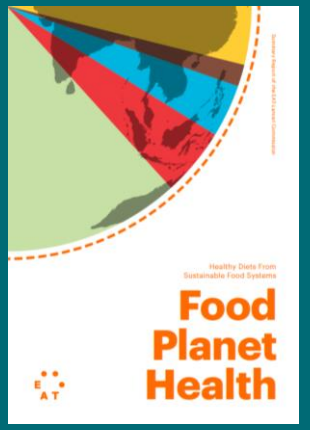
UK pathways based on:

- 5th carbon budget set by the UK Committee on Climate Change (CCC)
- Royal Society's report on "Greenhouse gas removal"
- CCC report on "Land use: Reducing emissions and preparing for climate change"
- Healthly diets based on governmental guidelines (the Eatwell Guide) and the EAT-Lancet Commission Report

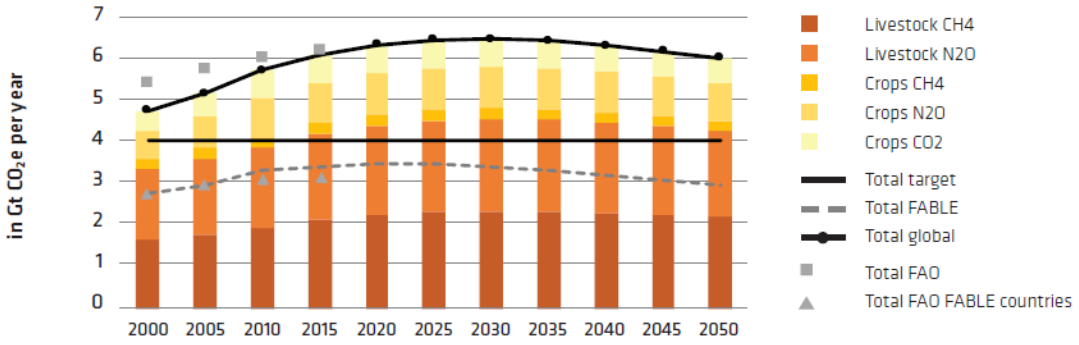


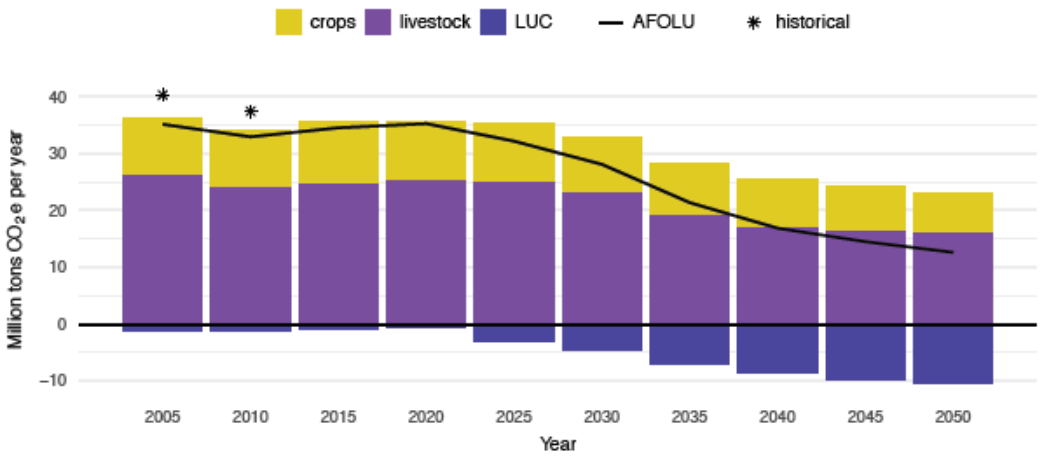






Target: GHG emissions reduction from agriculture





- ✓ **Global target** of GHG emissions from agriculture < 4 $GtCO_2e\ yr^{-1}$ by 2050 is not met

- ✓ **UK target** of net zero GHG emissions by 2050 is not met

Conclusion

- A global Zero Net target by 2050 sounds ambitious, but appears key to hedge Earth system risks

- Nature based solutions require systemic transformation of the food and land use system

- Countries are not up to the challenge
  - Glasgow should not become a lost opportunity