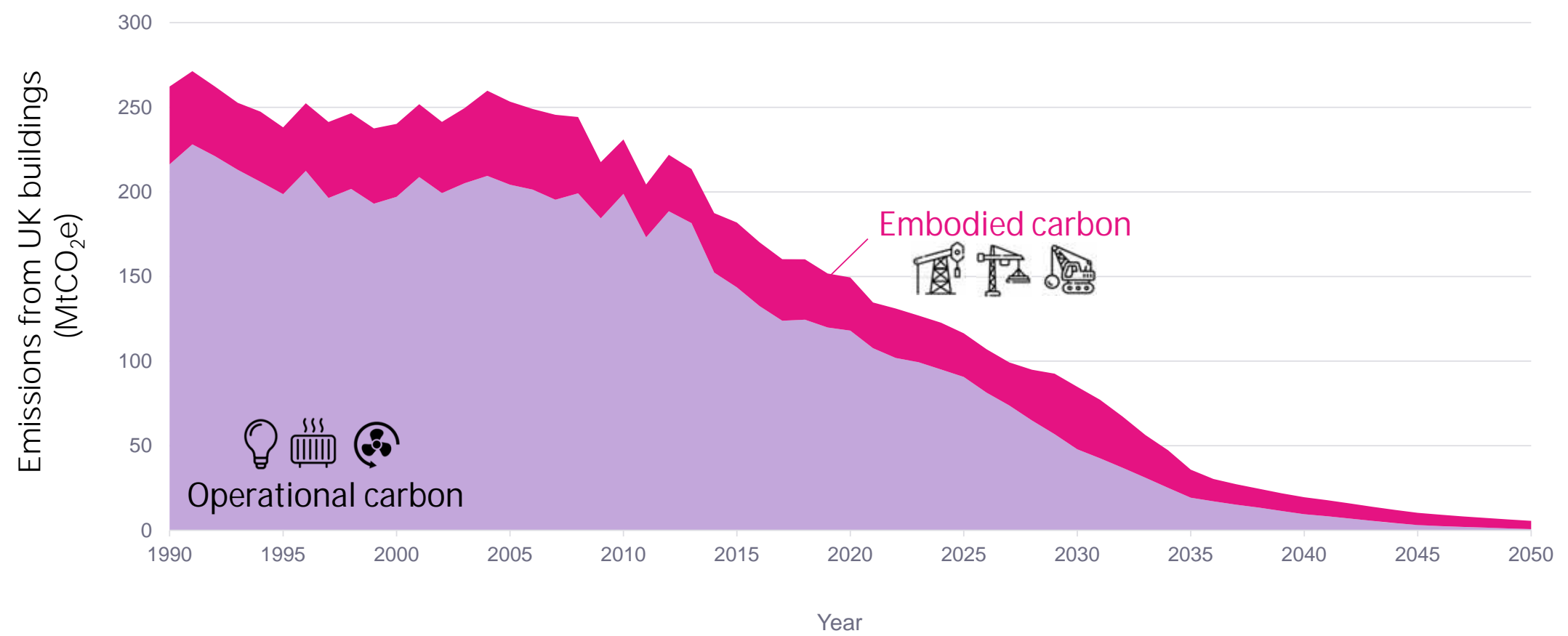




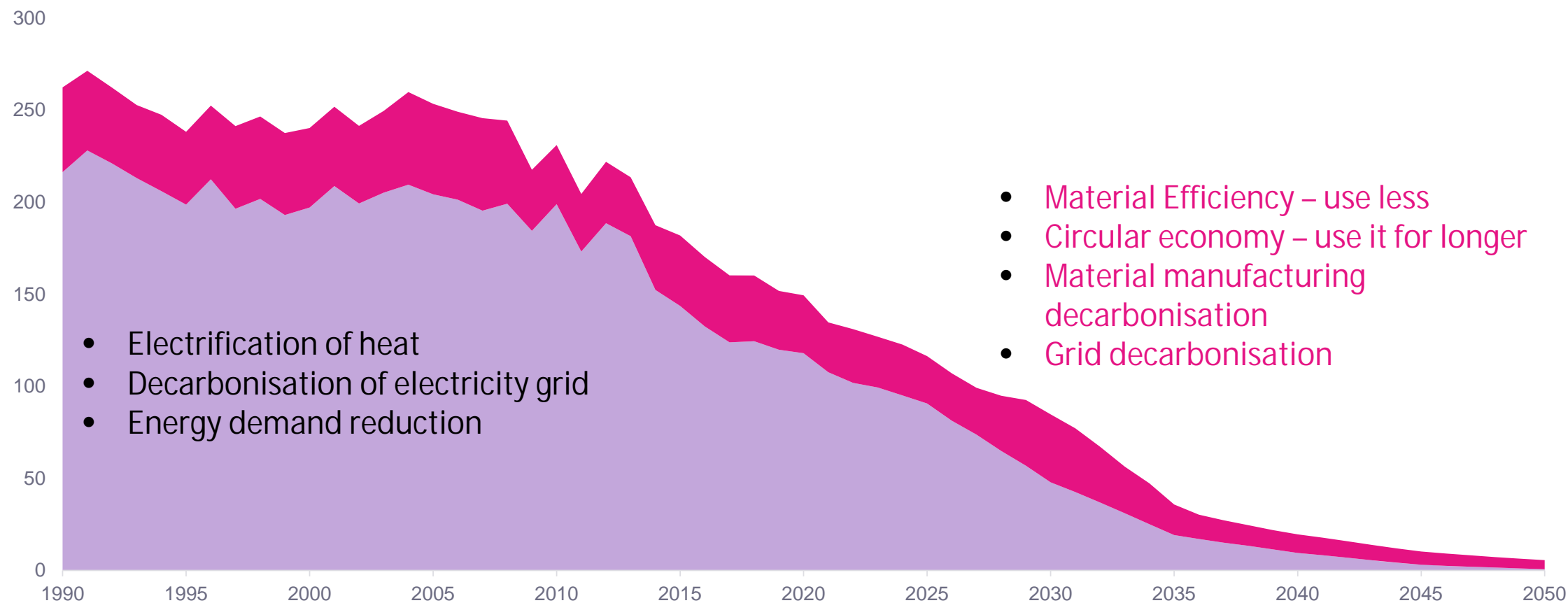
Decarbonising construction: The challenges & opportunities

Prof Danielle Densley Tingley

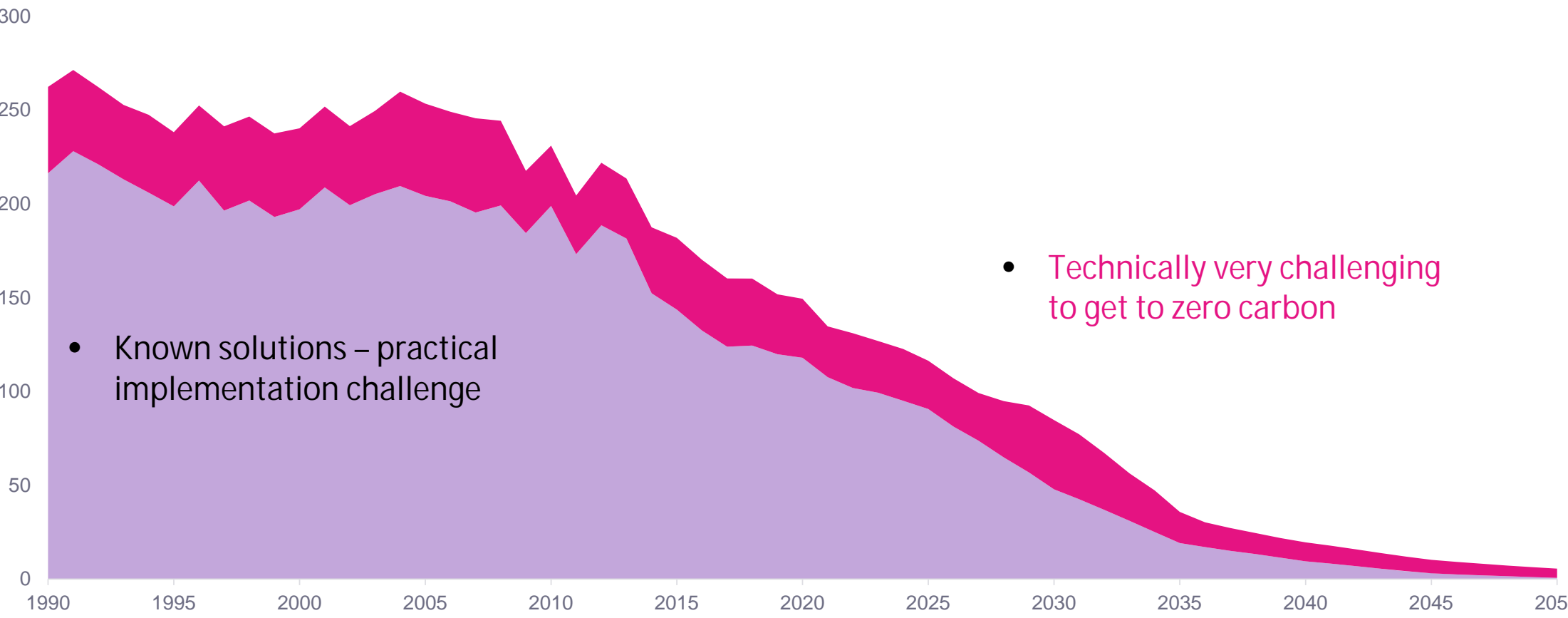
UKGBC construction decarbonisation pathway



Likely reduction pathways



Challenges...



Retrofitting England's Housing Stock

- ~25 million homes in England
- Old & largely inefficient stock
- Estimated 53% have wall insulation ¹
- 1% of homes have a heat pump as primary space heating system¹
- Stock not currently compatible with net zero
- Decarbonising heating is a key challenge for decarbonisation

¹English housing survey, 2023

What does a net zero compatible housing stock look like?

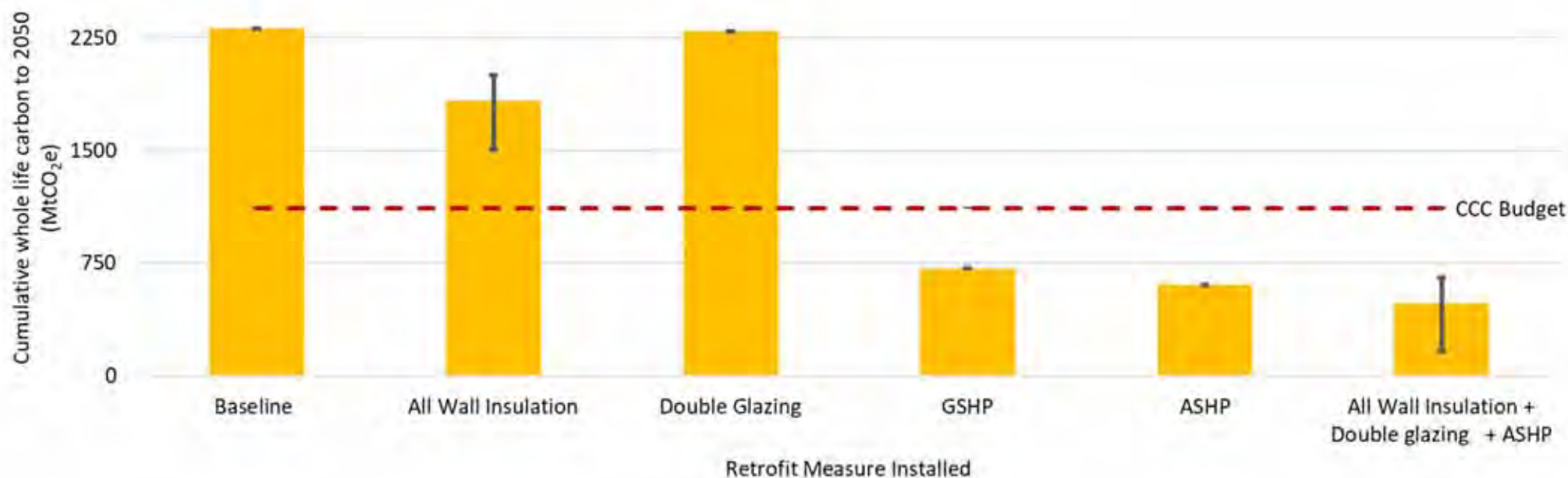
Setting a residential carbon budget to 2050



CCC	1119
Budget	MtCO ₂ e

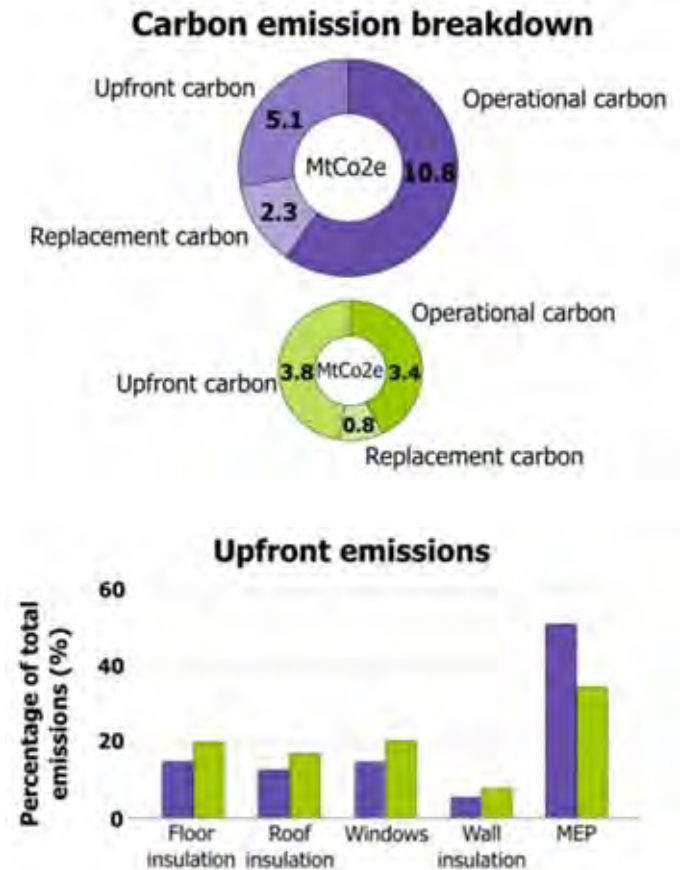
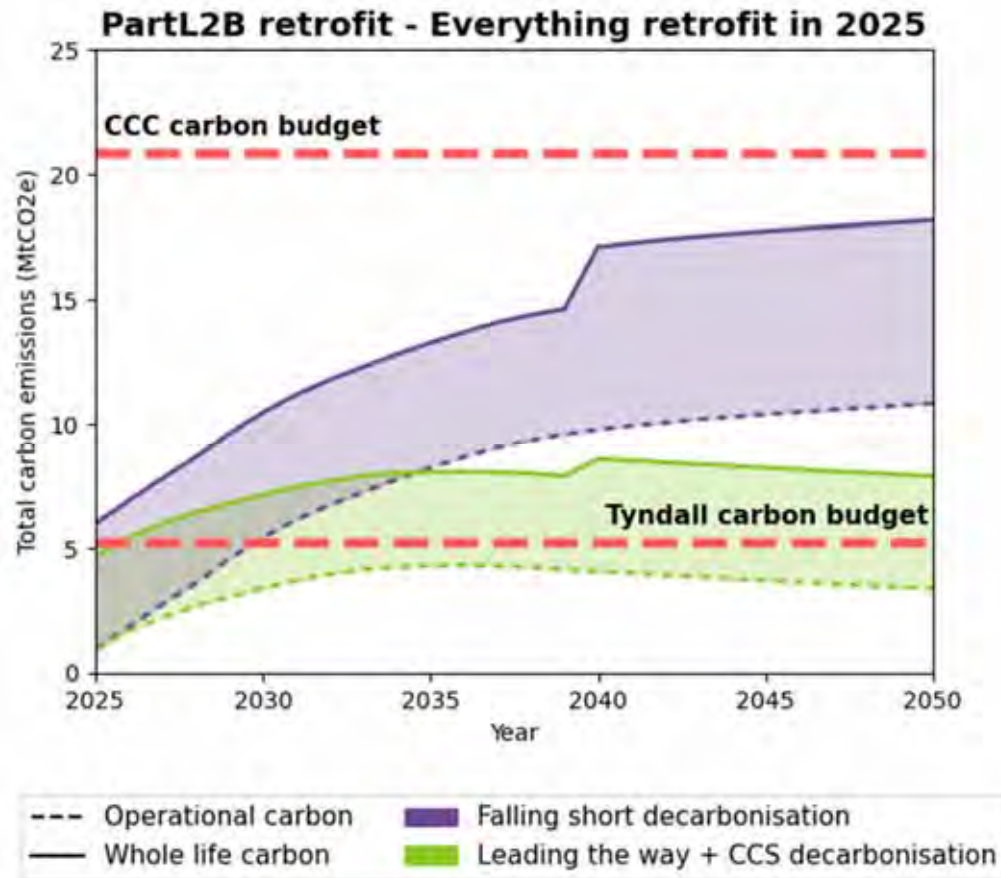
*From 2021 – 2050, Based on the current
share of domestic emissions

Cumulative whole life carbon to 2050



This assumes every house was retrofit in 2021!

Retrofitting England's School Stock

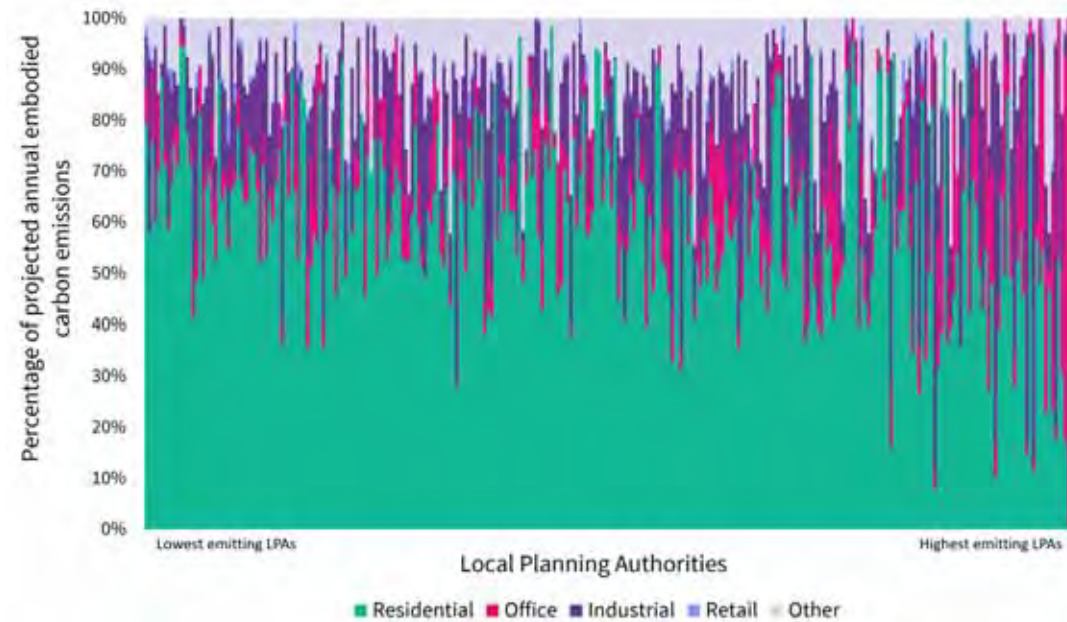
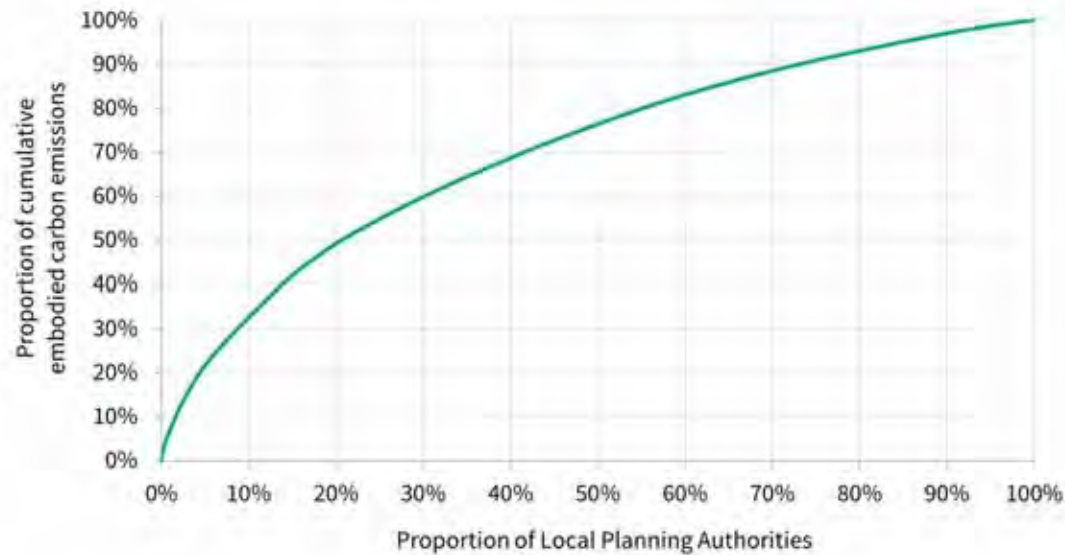


What about the 1.5 million new homes we need to build?

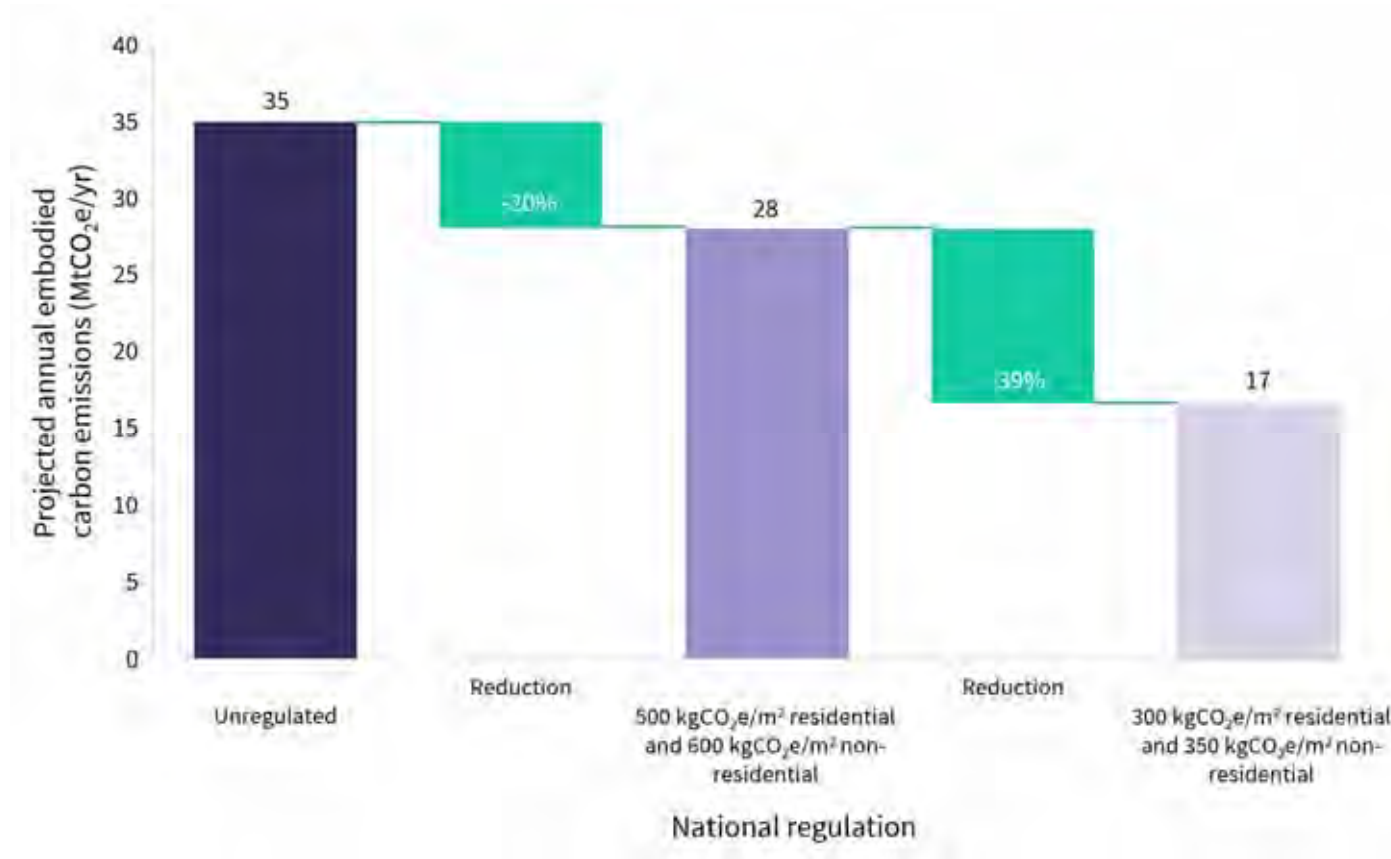
Projected embodied carbon from new construction



Diffuse distribution of emissions



What could national regulation achieve?



How can this be delivered at scale?

BuildZero Vision



A future where the material needs of the UK's building stock can be met with zero raw material extraction, zero carbon & zero waste





Questions?

Stay in touch:

 BuildZero Research Programme

 BuildZero@Sheffield.ac.uk

