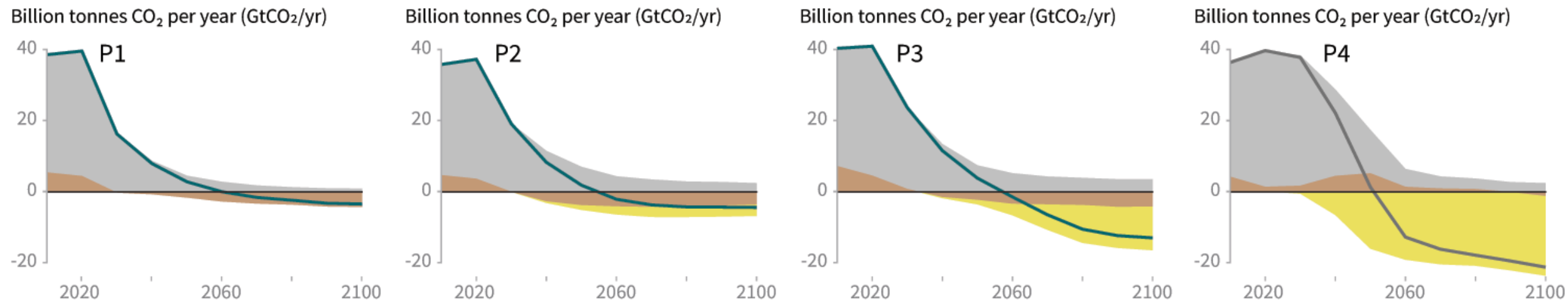


GGR development: a strategic policy view

Steve Smith, BEIS

Global policy context

● Fossil fuel and industry ● AFOLU ● BECCS



All pathways that limit global warming to 1.5°C with limited or no overshoot project the use of carbon dioxide removal (CDR) on the order of 100–1000 GtCO₂ over the 21st century.

Source: IPCC SR1.5

GGRs



Afforestation



Enhanced weathering



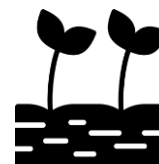
Habitat restoration



Direct air capture with carbon storage (DACCS)



Biochar



Soil carbon sequestration

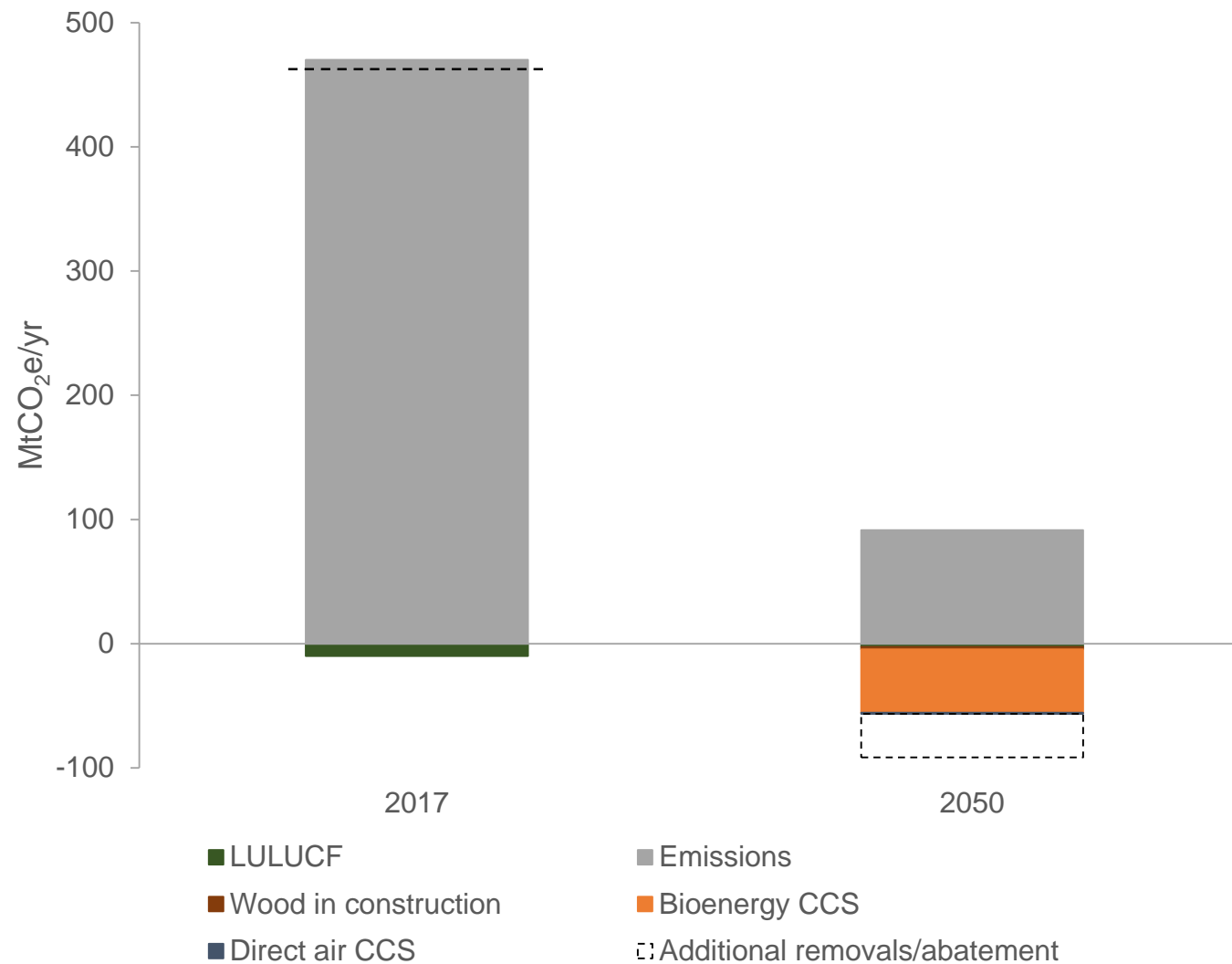


Building with biomass



Bioenergy with carbon capture and storage (BECCS)

UK policy context



Source: UK GHG emissions national statistics, CCC

Government aims

- Create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network
- Sustainably manage all England's soils by 2030, and develop soil metrics & management approaches
- Increase English woodland in line with aspiration of 12% cover by 2060: planting 180,000 hectares by end of 2042
- Increase timber supplies and use more wood in construction
- Strengthen mechanisms for businesses to offset emissions by tree planting, and explore extending to other land activities



A Green Future: Our 25 Year Plan to
Improve the Environment



Government aims

7. Develop our strategic approach to **greenhouse gas removal technologies**, building on the Government's programme of research and development and addressing the barriers to their long term deployment

“We want the UK’s entrepreneurs, universities and engineering industries to be well placed to exploit the advantages of global demand for these new technologies”

R&D

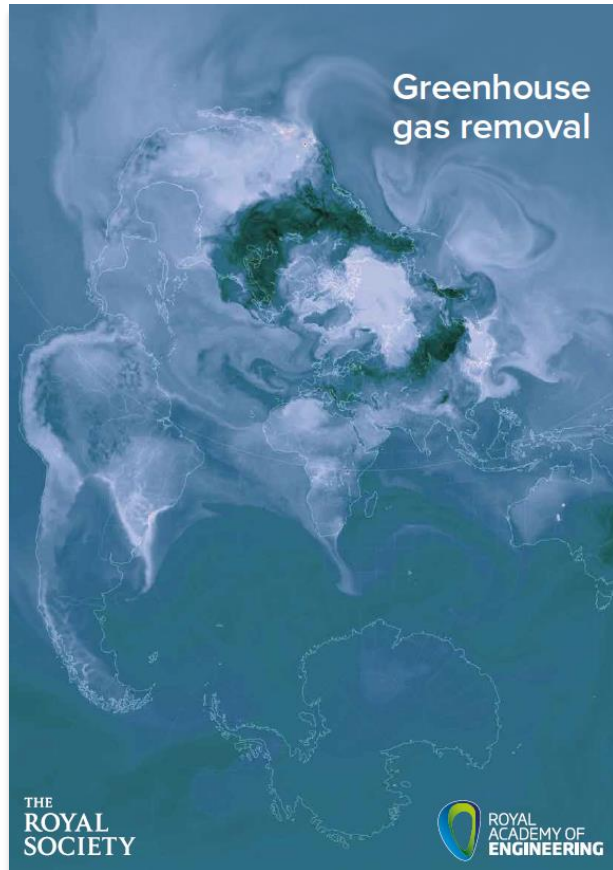
- co-funding £8.6m GGR programme
- inviting RS & RAEng joint report

Scope for policy incentives

- UK timber in construction
- CCUS action plan
- GGR policy options assessment



RS & RAEng GGR report



RECOMMENDATION 1

Continue and increase global efforts to reduce emissions of greenhouse gases. Large-scale GGR is challenging and expensive and not a replacement for reducing emissions.

RECOMMENDATION 2

Implement a global suite of GGR methods now to meet the goals of the Paris Agreement. This suite should include existing land-based approaches, but these are unlikely to provide sufficient GGR capacity so other technologies must be actively explored.

RECOMMENDATION 5

Incentivise removal of atmospheric greenhouse gases through carbon pricing or other mechanisms. GGR has financial cost at scale and so will require incentives to drive technological development and deployment of a suite of methods.

RECOMMENDATION 6

Establish a framework to govern sustainability of GGR deployment. Undertake rigorous life cycle assessments and environmental monitoring of individual methods and of their use together.

RECOMMENDATION 3

Build CCS infrastructure. Scenario building indicates that substantial permanent storage, presently only demonstrated in geological reservoirs, will be essential to meet the scale required for climate goals.

RECOMMENDATION 4

Incentivise demonstrators and early stage deployment to enable development of GGR methods. This allows the assessment of the real GGR potential and of the wider social and environmental impacts of each method. It would also enable the process of cost discovery and reduction.

RECOMMENDATION 7

Build GGR into regulatory frameworks and carbon trading systems. In the UK, as an example, active support for GGR implementation (soil carbon sequestration, forestation, habitat restoration) should be built into new UK agricultural or land management subsidies.

RECOMMENDATION 8

Establish international science-based standards for monitoring, reporting and verification for GGR approaches, both of carbon sequestration and of environmental impacts. Standards currently exist for biomass and CCS, but not for GGR methods at large.

GGR policy options assessment

Proposes:

- 4 possible long-term policy pathways
- Suite of supporting policies
- Near-term policy actions
 - including support for demonstration

- Greenhouse Gas Removal (GGR)
policy options – Final Report



Report prepared for BEIS

Final

June 2019

:vivid economics
putting economics to good use

SPF and the GGR landscape

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Strategic GGR RD&D: a government view

- Which methods actually work?
- How can we bring costs down?
- How can we increase potential and deployment?
- What are the strengths and opportunities for the UK (clean growth)?
- What are the environmental risks, trade-offs and co-benefits?
- How can we monitor and verify easily, especially for storage in soils?
- Pipeline to deployment:
 - What data can be gathered during demonstration that investors want to see?
 - What role for private sector collaboration?

