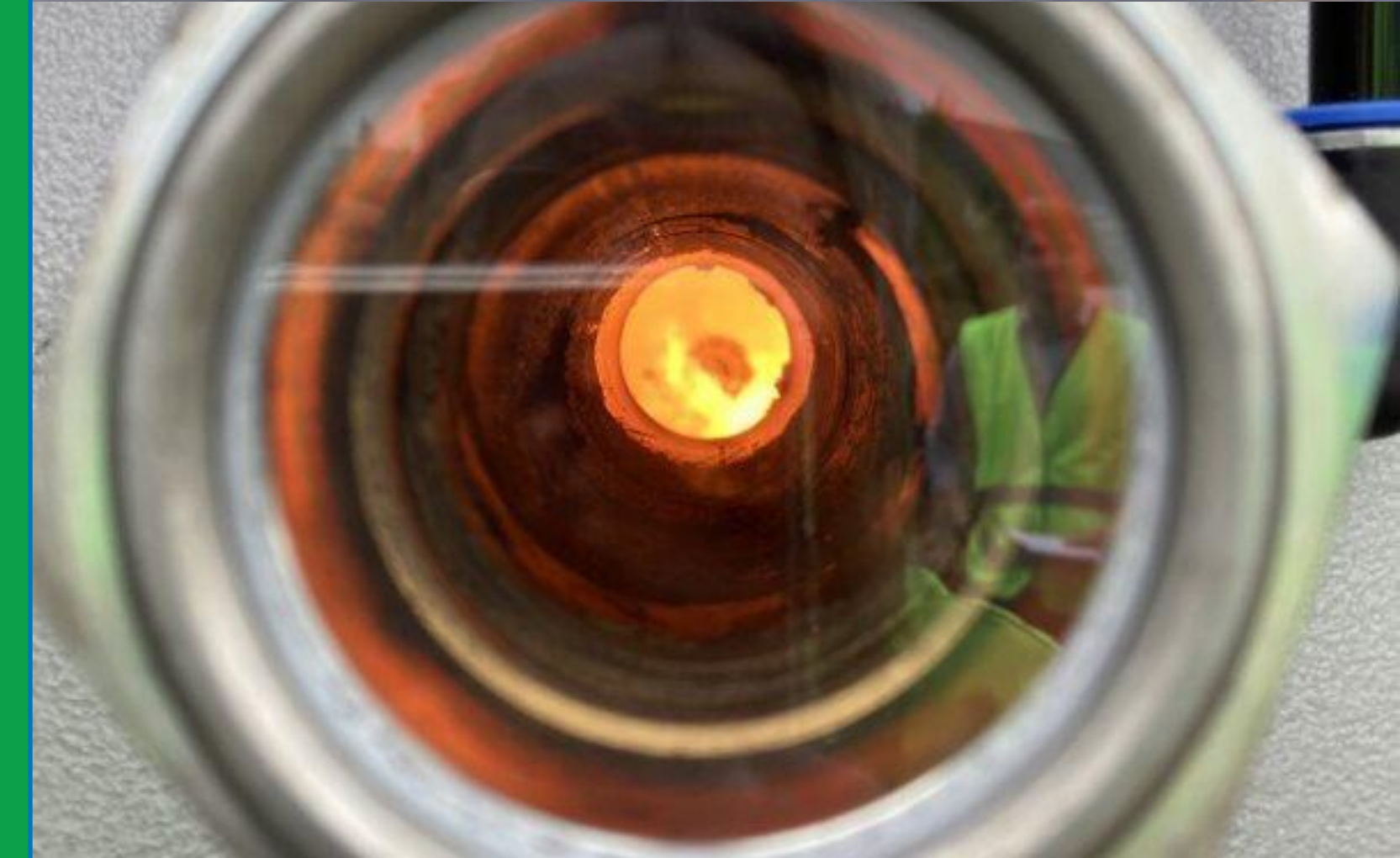




Department for  
Energy Security  
& Net Zero

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Head of Bioenergy and Carbon Removals  
7th November 2024



Department for  
Energy Security  
& Net Zero

# Reflecting on the NZIP Biomass Feedstocks Innovation Programme



## £26m biomass project to boost renewable energy drive

21 December 2021 by Grace Coleman



The use of grasses, hemp and seaweed are to be promoted via a new £26million government project to help the UK reach net zero.

- £26 million government funding to increase UK production of sustainable biomass that can be used to power homes and businesses
- new funding will support the development of innovative new biomass production solutions
- biomass can be used for low carbon energy and is a key component in UK's commitment to tackle climate change

## Objectives:

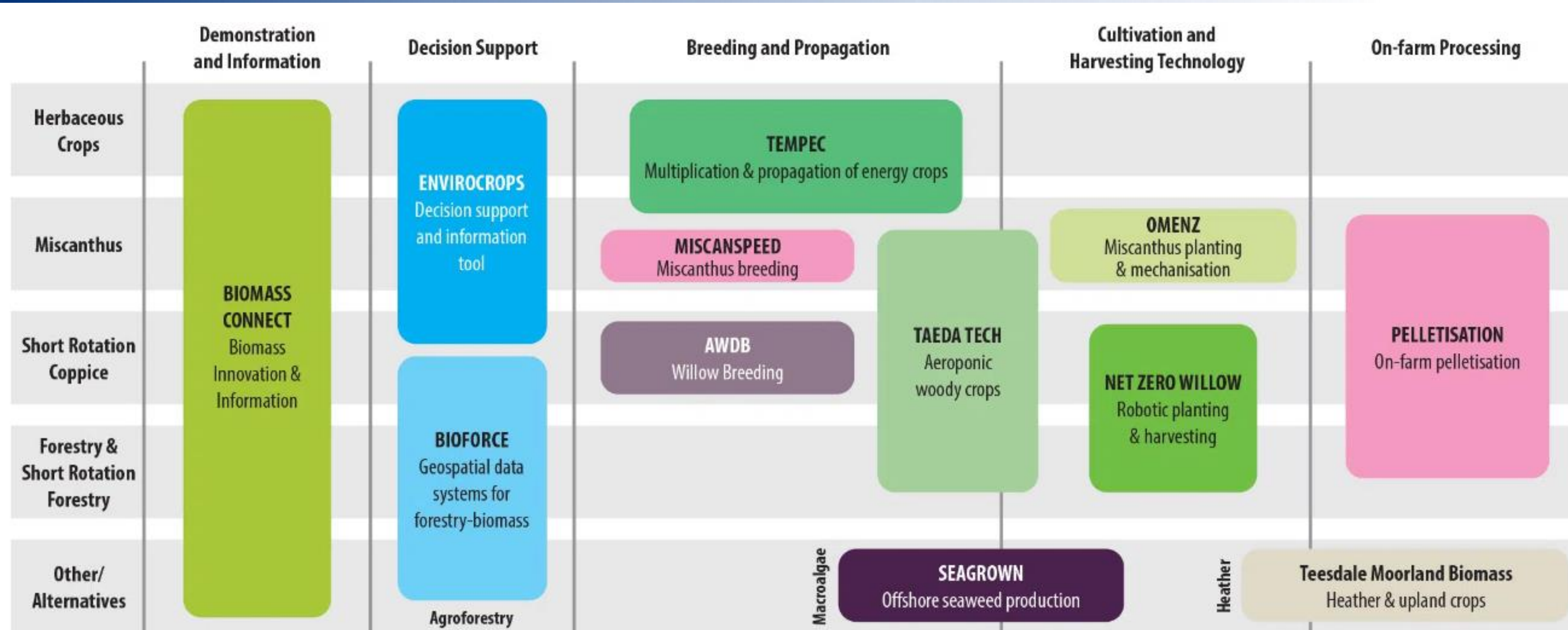
- 1) Increase the **supply of sustainable** UK biomass
- 2) **Demonstrate technical feasibility** of biomass feedstock innovations in a real-world, or suitably robust environment. Improvements assessed using metrics such as yield, efficiency and cost reductions.
- 3) **Demonstrate commercial feasibility** of biomass feedstock innovations, through ensuring technologies reach TRL 8, ready for commercialisation
- 4) Demonstrate that innovations can **technically work** together, **across UK geographies**, through the multi-site demonstrator platform.

## Delivered in 2 phases:

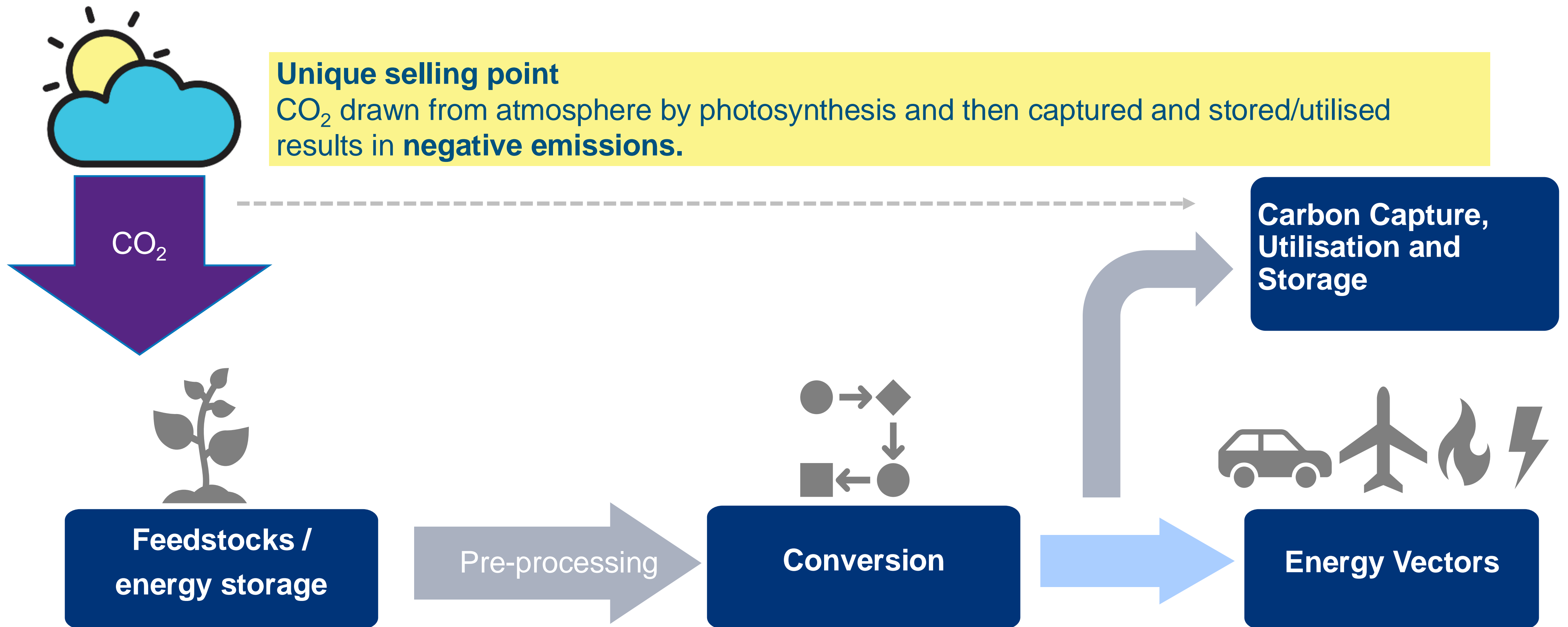
Phase 1: Feasibility and Design: **£4m** committed to develop 22 innovations and 3 nationwide demonstrators

Phase 2: Demonstration: **£32m** committed to develop 11 innovation, and 1 nationwide demonstrator

# There is a wide variety of projects on the Biomass Feedstocks programme, all selected for the significant potential impact they can have on UK's biomass supply



# Biomass with Carbon Removals value chain



## The Government's 5 missions:

### Kickstart economic growth

 Make Britain a clean energy superpower

 Take back our streets

 Break down barriers to opportunity

 Build an NHS fit for the future

# New Government, new missions

## 1) Kickstart economic growth

to secure the highest sustained growth in the G7 – with good jobs and productivity growth in every part of the country making everyone, not just a few, better off.

## 2) Make Britain a clean energy superpower

to create jobs and deliver security with cheaper, zero-carbon electricity by 2030, **accelerating to net zero.**

### Labour to commit almost £22bn to fund carbon capture and storage projects

Investment will fund two CCS clusters - but environmental campaigners have criticised plans

● [What is carbon capture, usage and storage?](#)



Ed Miliband, Rachel Reeves and Keir Starmer visit Teesside, the location for one of the CCS clusters. Photograph: Ian Forsyth/Getty Photograph: Ian Forsyth/Getty

**Rachel Reeves** is paving the way for a multibillion-pound increase in public-sector investment at the budget after the government announced plans to commit almost £22bn over 25 years to fund carbon capture and storage projects.

# What do carbon removal commitments mean for biomass producers?

In the Net Zero Strategy, the last government committed to developing and deploying GGR technologies at scale. This included an ambition to deploy at least **5MtCO<sub>2</sub>e pa** of engineered removals by 2030, potentially rising to **23 MtCO<sub>2</sub>e pa by 2035**.

We are taking a portfolio approach to GGR deployment and expect a **mix of technologies** will be required to meet Carbon Budgets and Net Zero.

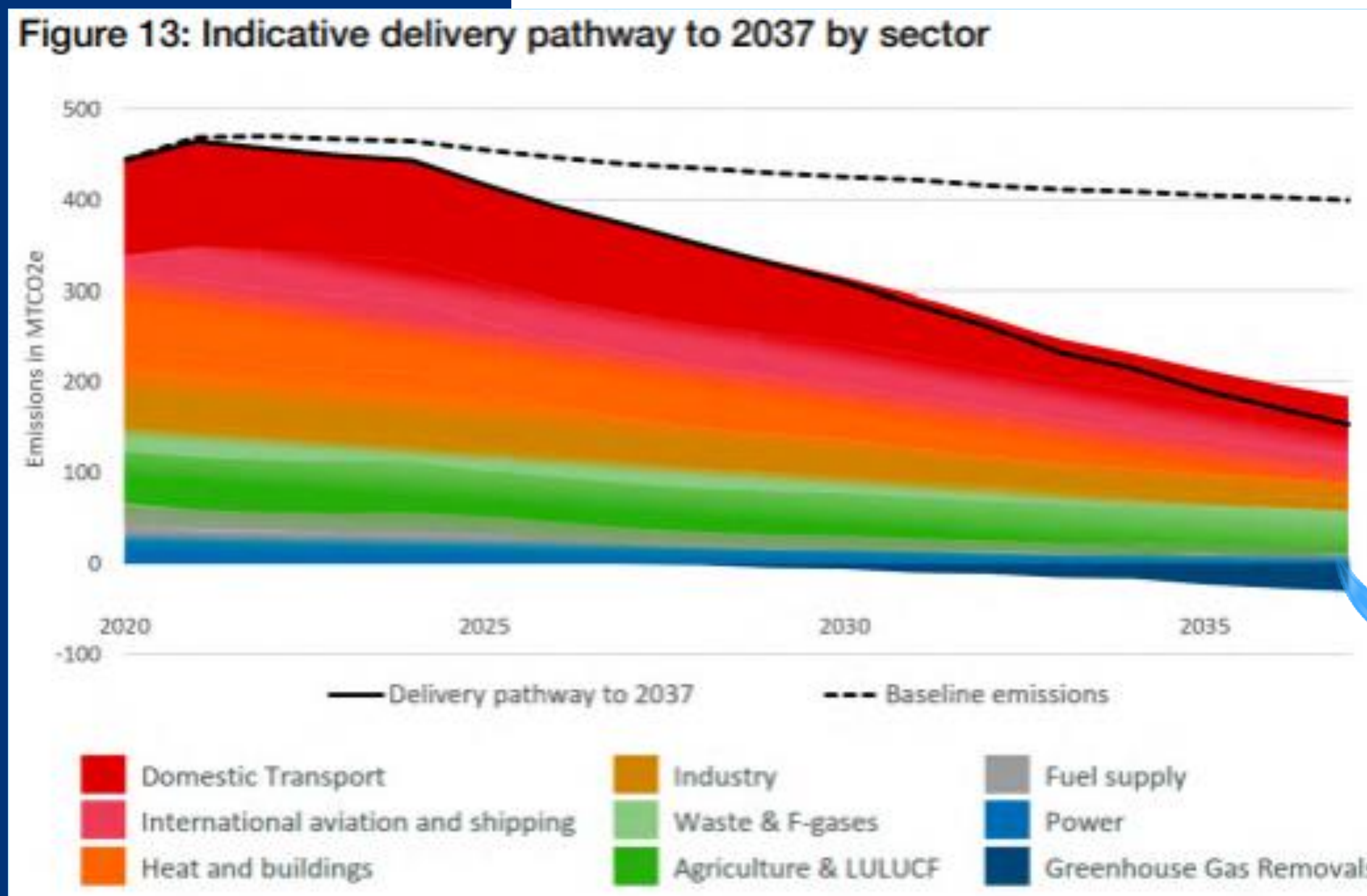
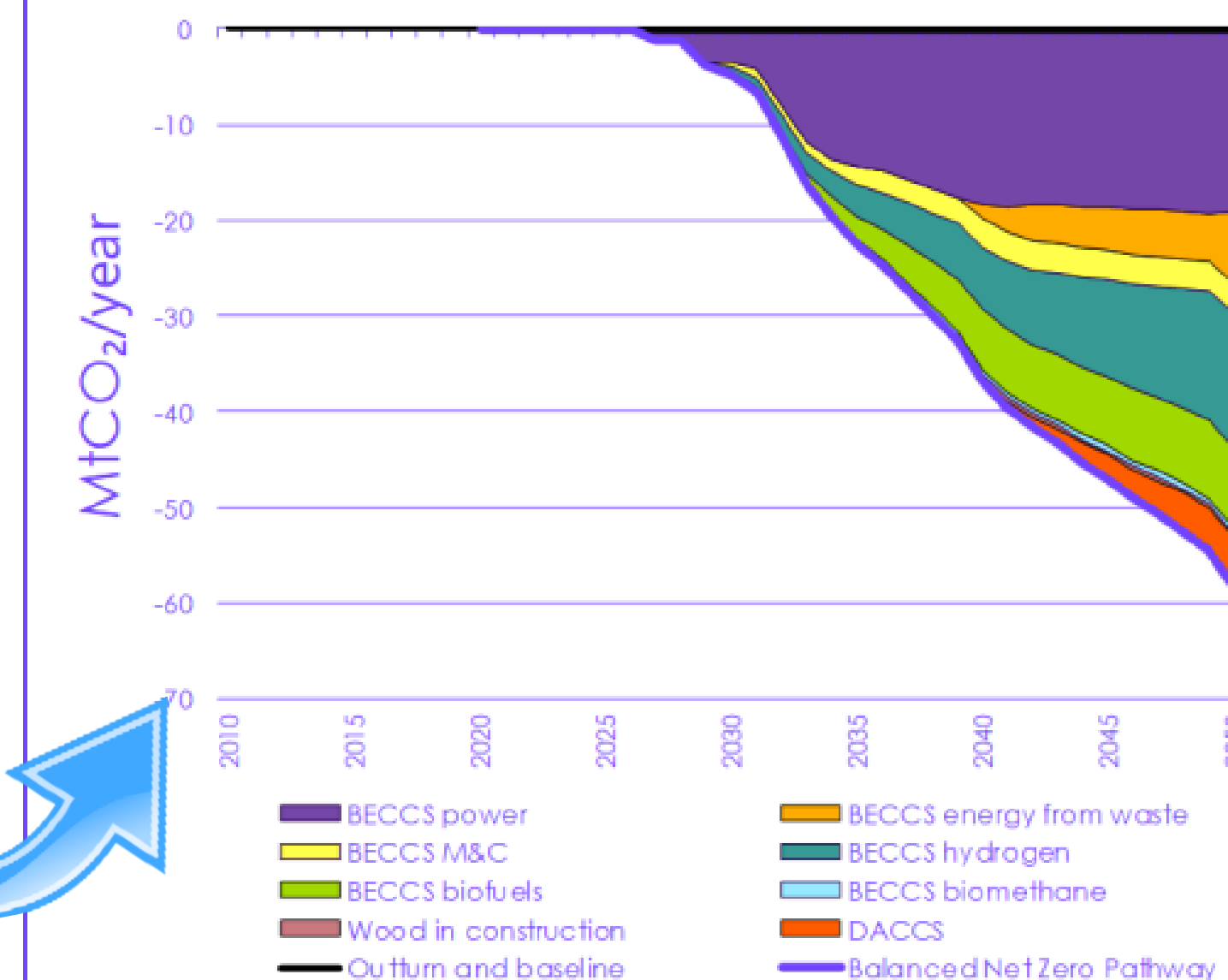


Figure A3.11.a Sources of abatement in the Balanced Net Zero Pathway for the GHG removals sector



Source: BEIS (2020) Provisional UK greenhouse gas emissions national statistics 2019; CCC analysis. M&C = Manufacturing and Construction.

Net Zero Strategy: Build Back Greener  
 October 2021

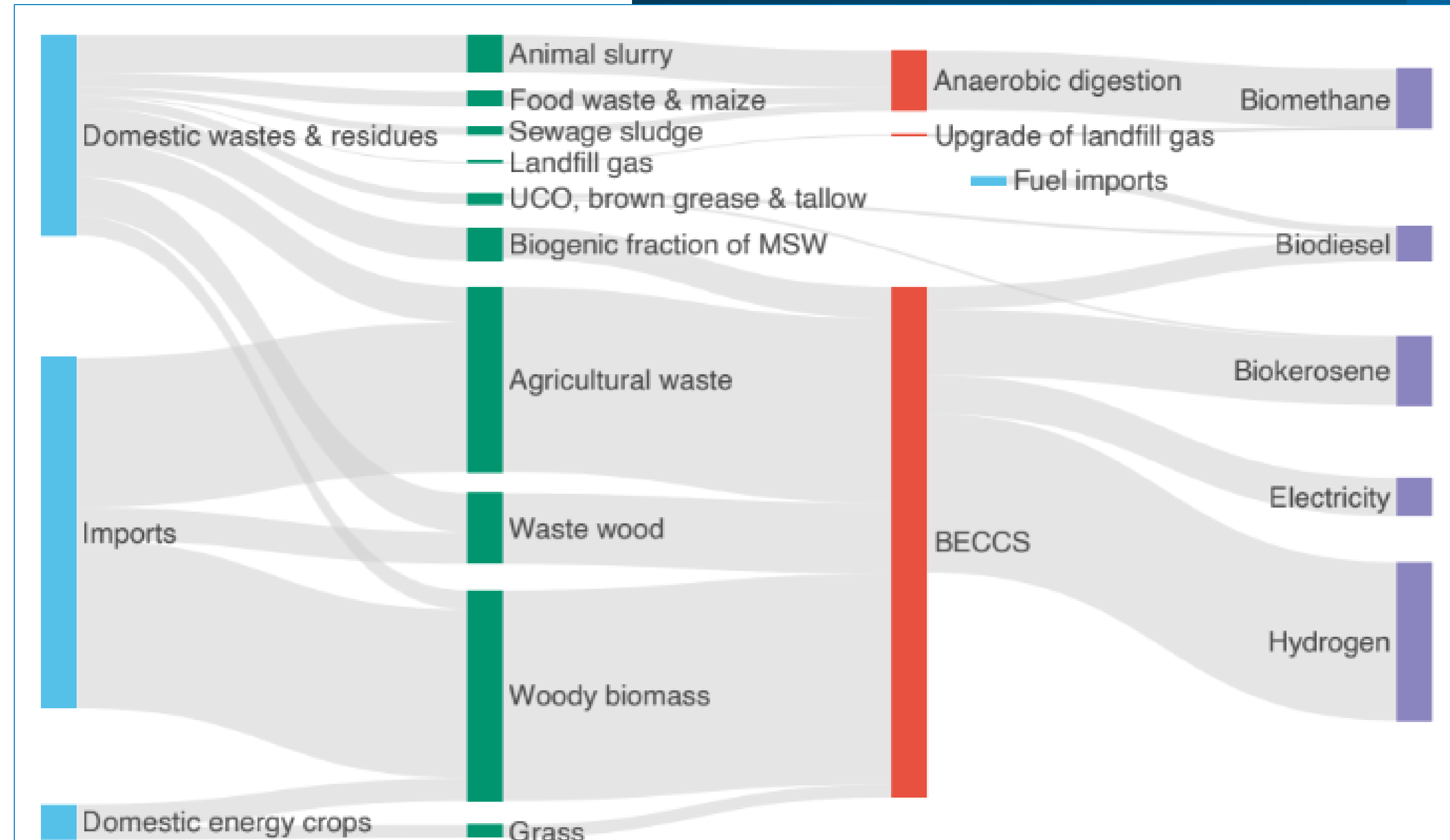
UNITED NATIONS  
 PARIS CLIMATE AGREEMENT  
 SIGNING CEREMONY  
 22 APRIL 2016

POWERING UP BRITAIN  
 THE NET ZERO GROWTH PLAN  
 March 2022

# Priority Use of Biomass

There are several scenarios modelled in the Biomass Strategy including

- **High Electrification**
- An ambitious biomass supply
- High Resource



**Figure 5.4:** Sankey diagram representing the allocation of biomass to the different processing technologies and end uses in illustrative Scenario 1, High Electrification.



# Hydrogen BECCS

Generating hydrogen from Biomass, and capturing CO<sub>2</sub>, Hydrogen BECCS is a negative emission technology.

Syngas generated from gasifiers can also be used for electricity generation, particularly at an industrial scale.

Feedstocks include waste wood and virgin biomass.

Gasifiers entering the sustainable aviation fuel industry are targeting municipal waste but exploring use of biomass







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# Lapwing Energy recently held an Open Day which demonstrated their holistic carbon removals lifecycle

Willow absorbs CO<sub>2</sub>

Pyrolysing for energy generation and biochar

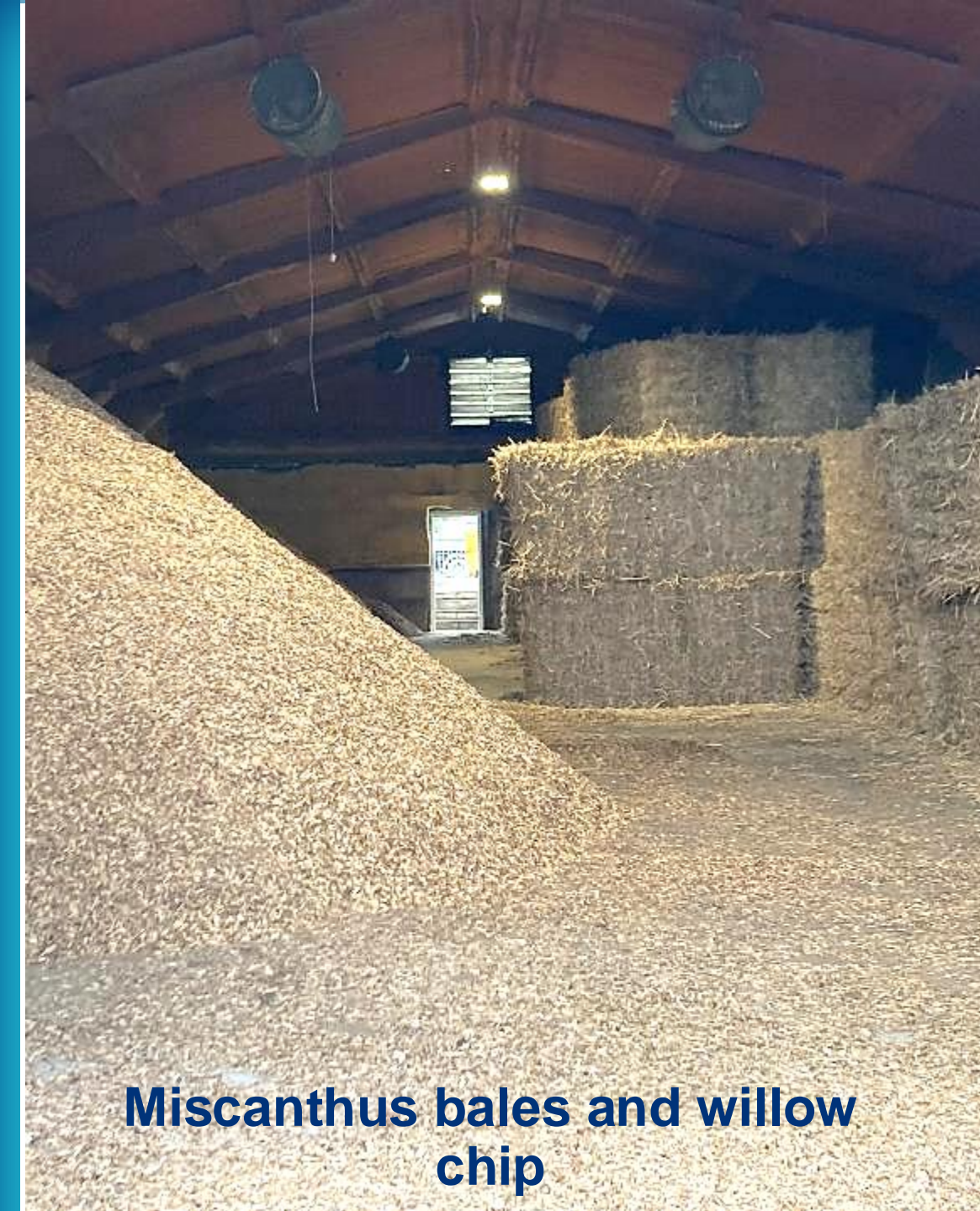
Char produced is buried for carbon capture

Heat used for vertical farming

Electricity used on site with excess exported

Peatland rehabilitated, land raised and re-wet,

Willow cultivated on the peatlands



Miscanthus bales and willow chip



Ceremonial burying of biochar





# To conclude

- There are exciting opportunities for changes in our ways of working, our technologies and our approaches to biomass, to facilitate the great change needed for our climate
- Biomass has an important part to play in the bio-based solutions, fuels, chemicals, hydrogen production and engineered carbon removals

