



Green Gas & Carbon Capture

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Policy Lead

FUTURE BIOGAS

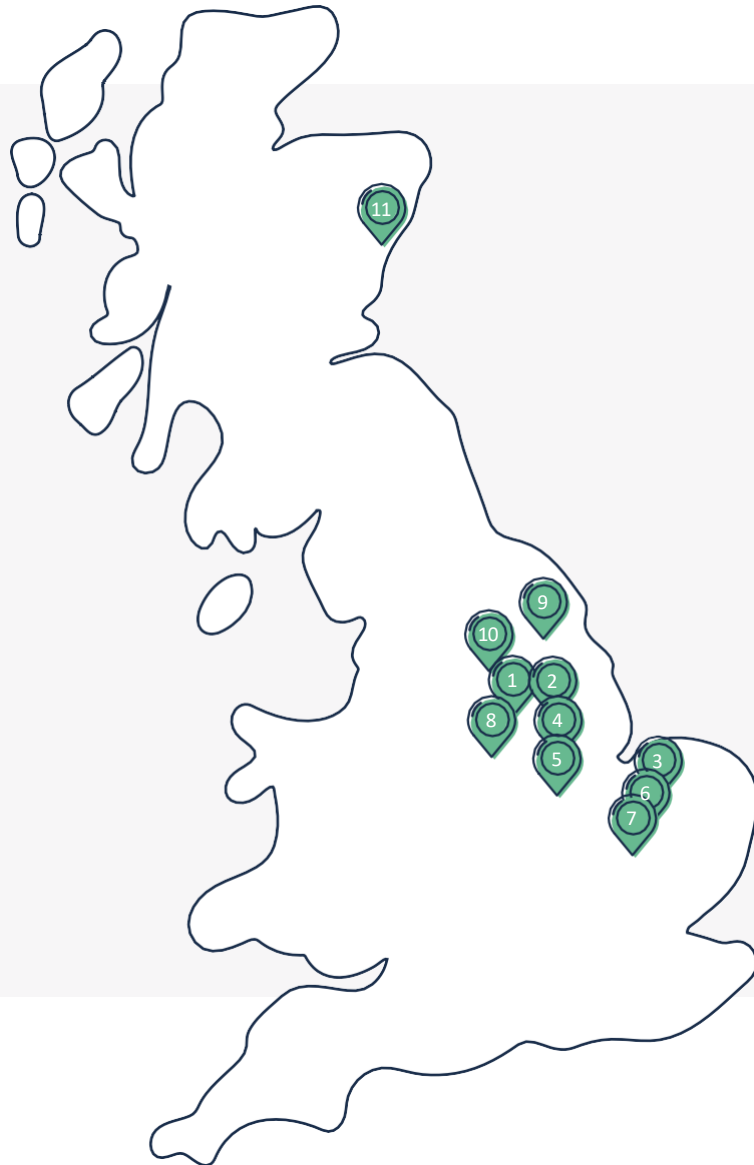
July 2023

One of the largest biomethane producers in the UK



12

AD Plants



Green Gas

489 GWh/per year capacity



Clean Electricity

73 GWh/per year capacity



Working with over

400 farmers

The Future Of Biogas



New Opportunity

to combine **anaerobic digestion** & **carbon sequestration**

Green Gas

Decarbonise gas networks

- IEA forecasts 30x increase to 2050
- Produced without subsidy

Carbon Sequestration

Deliver high value offsets

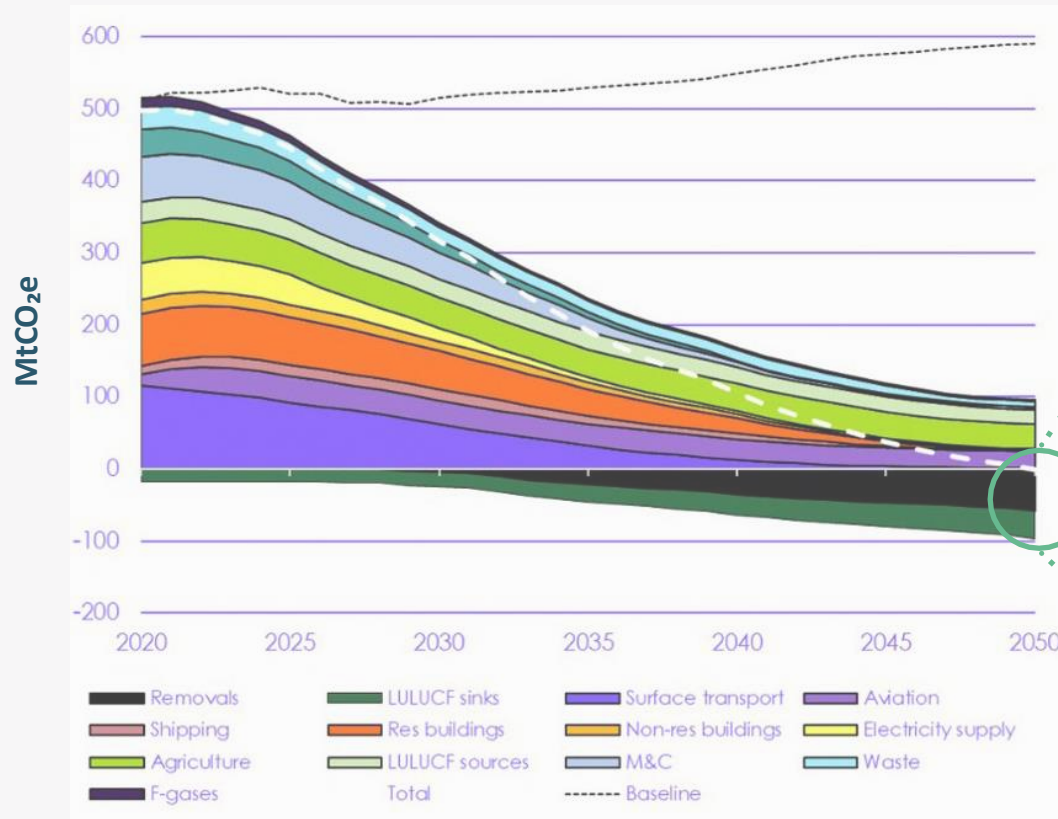
- Voluntary carbon growing 100% yoy
- \$50bn market by 2030

**Green Gas has moved to the
forefront of the energy transition**

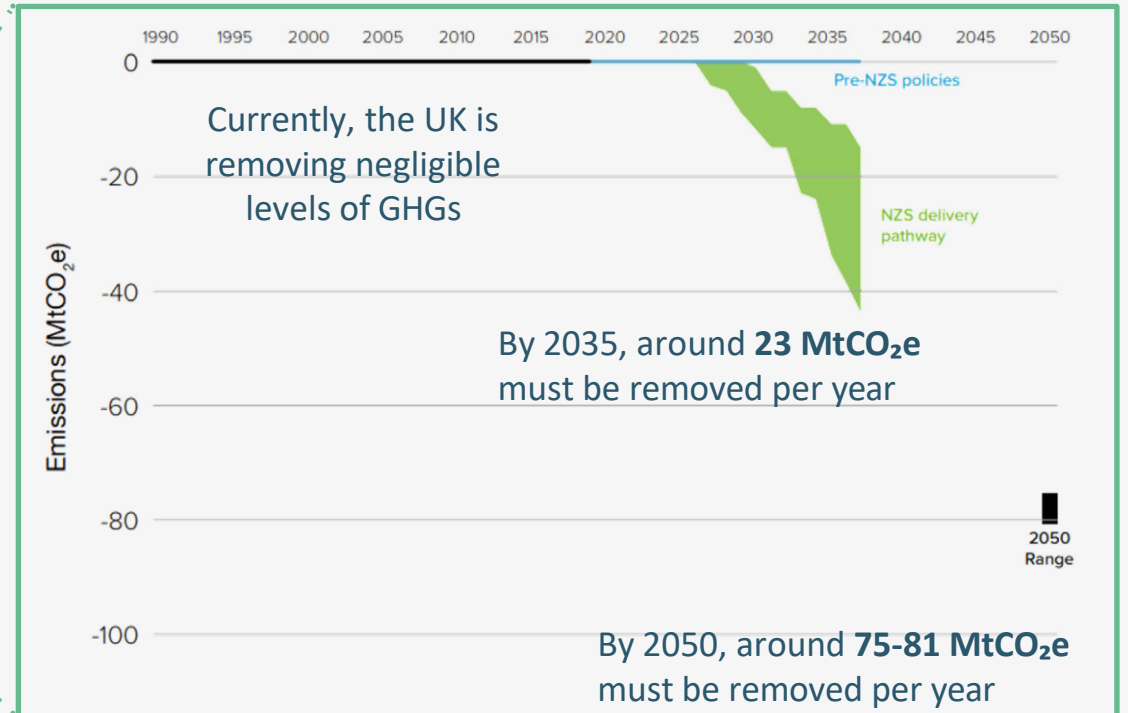


GHG removal and Net Zero

UK Balanced Pathway GHG Emissions

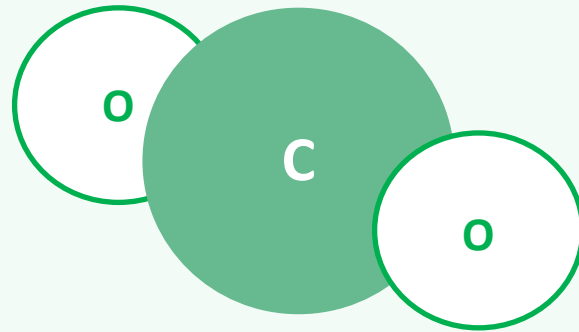


Source: CCC's Sixth Carbon Budget

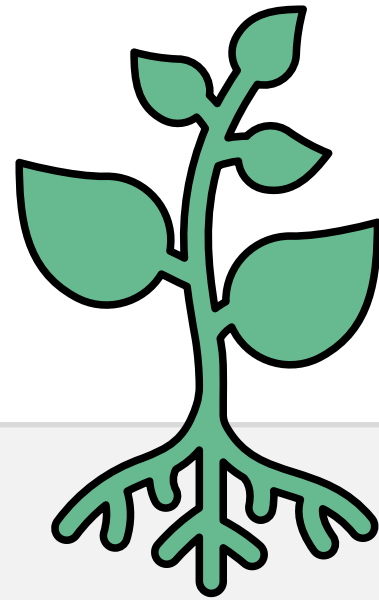
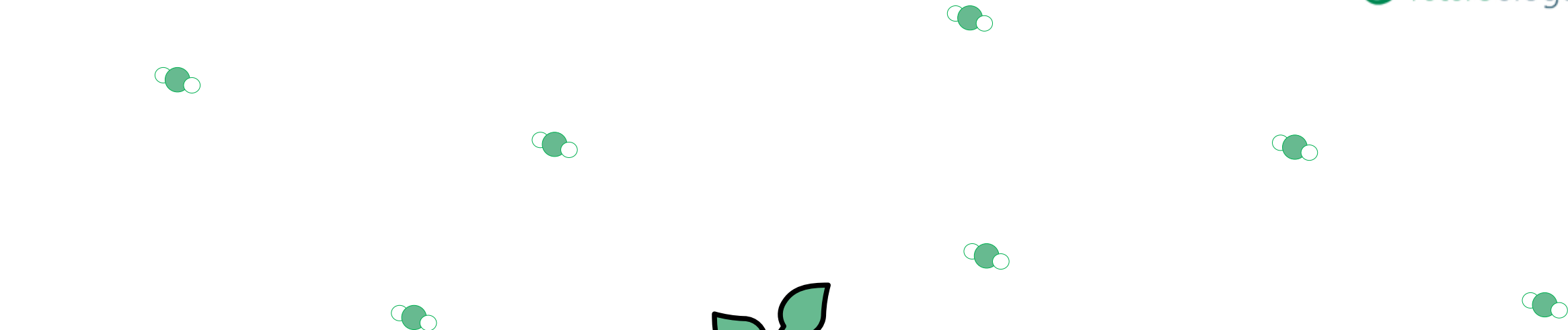


Source: Net Zero Strategy: Build Back Greener (2021)

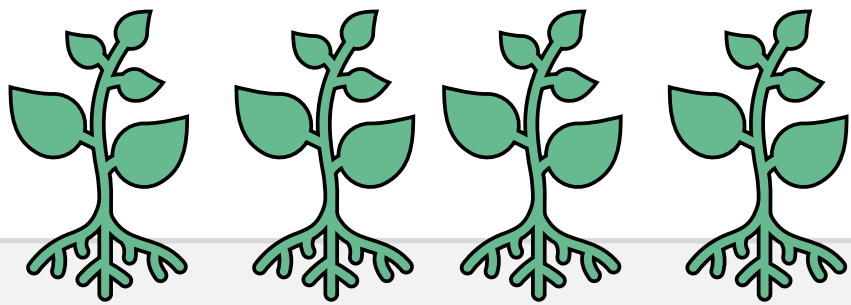
Follow the CARBON...



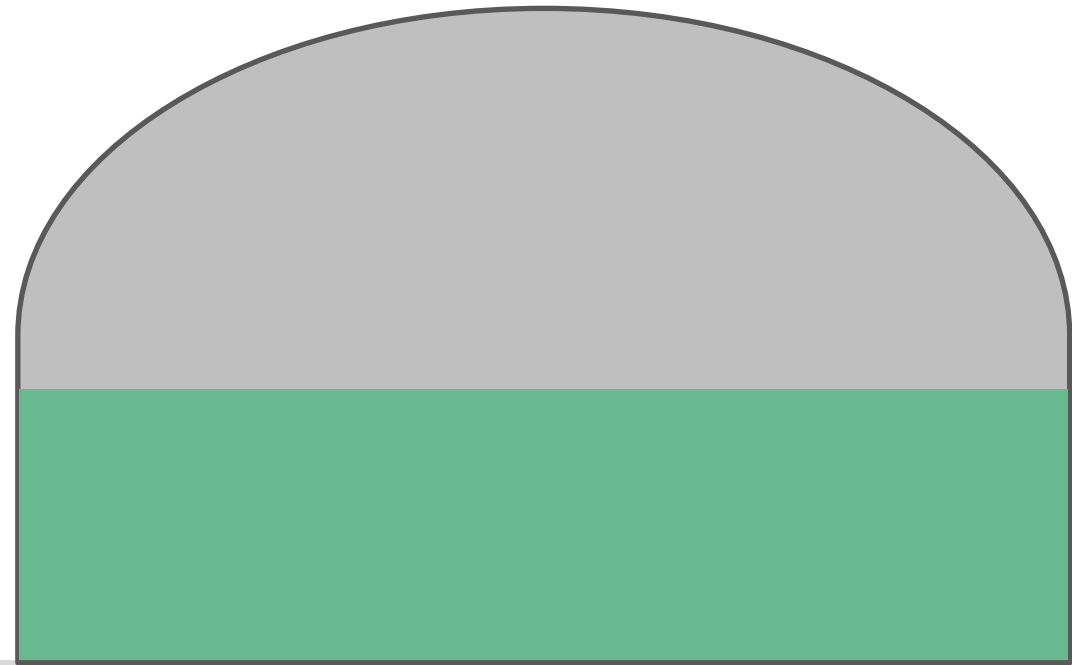
CARBON DIOXIDE



BIOENERGY CROP

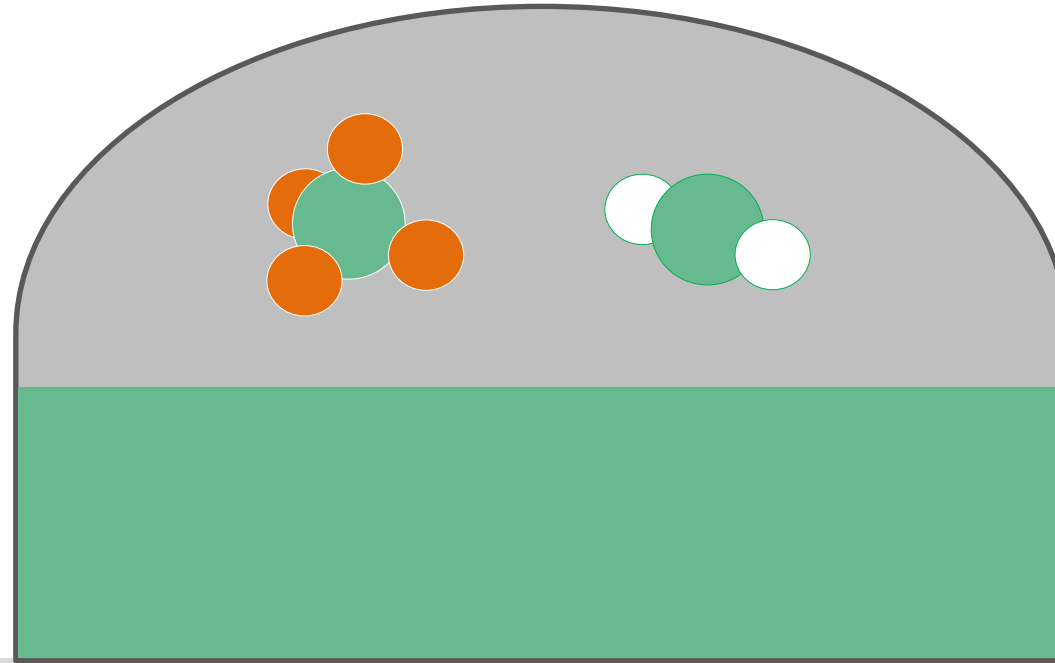


BIOENERGY CROP



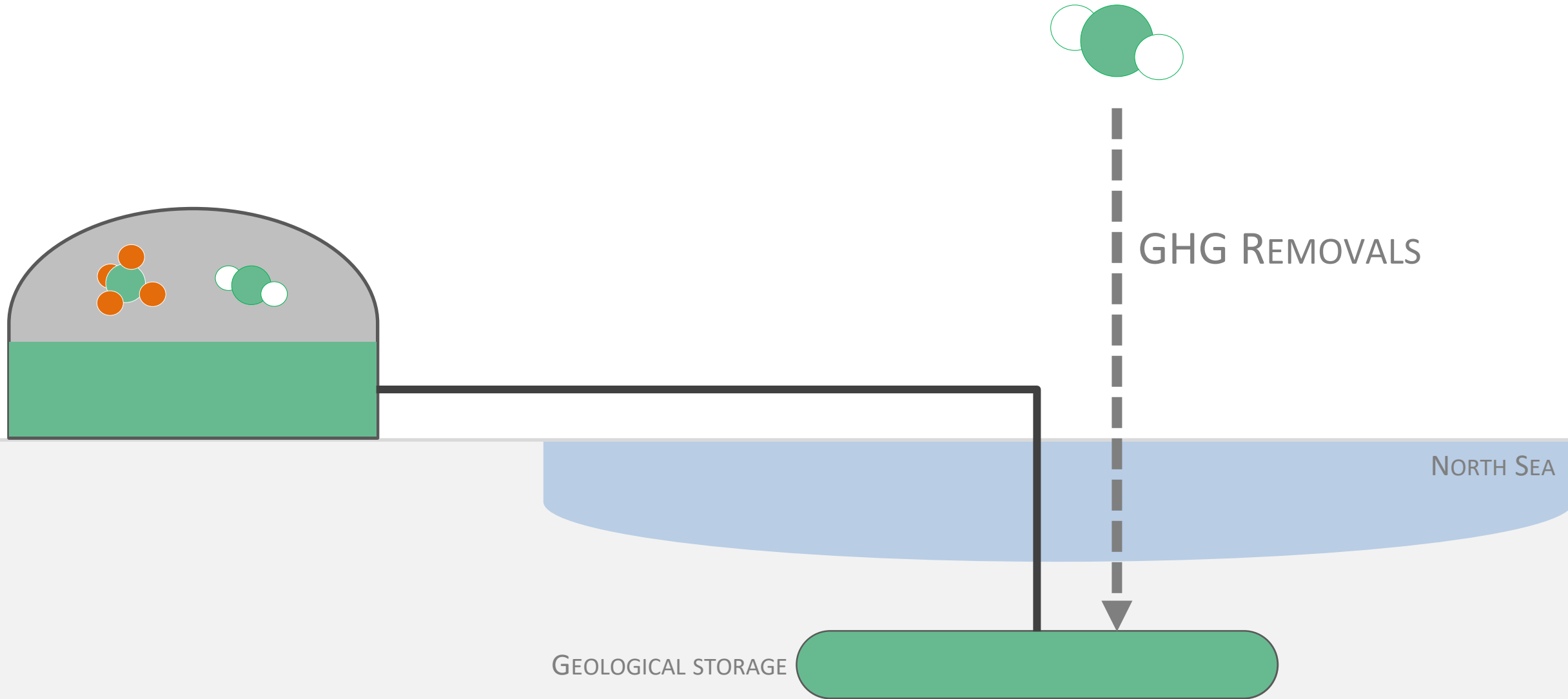
AD PLANT

55%
BIOMETHANE

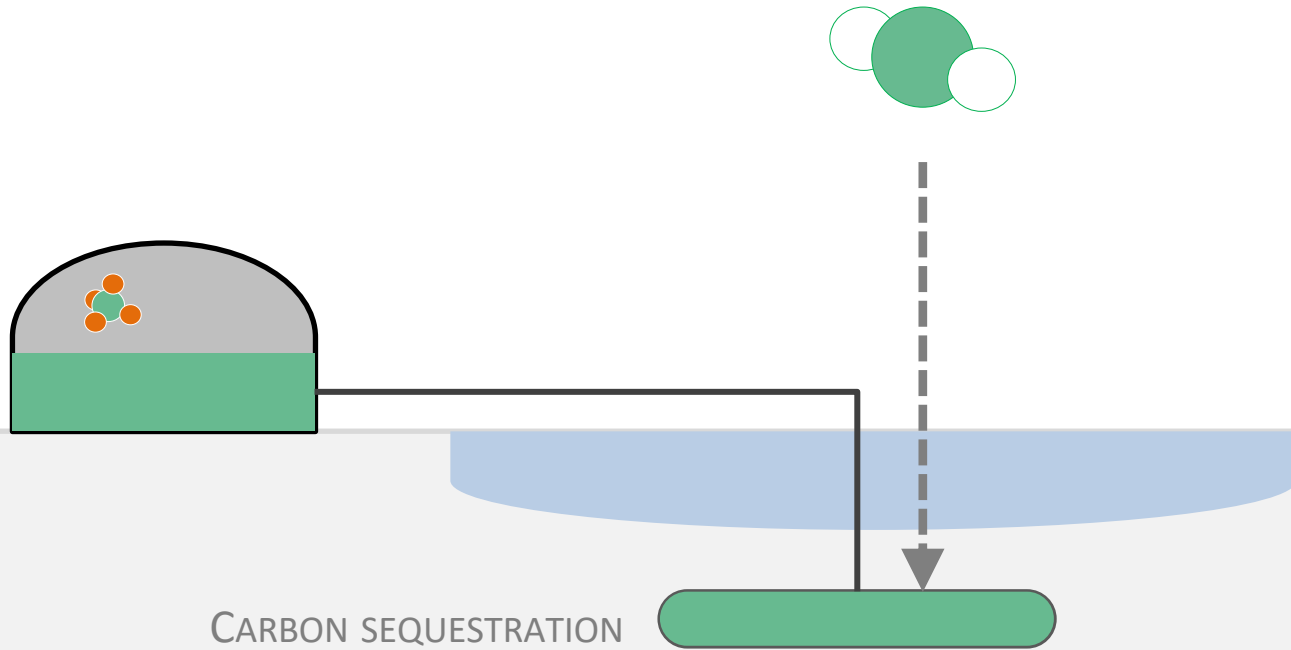


45%
CARBON DIOXIDE

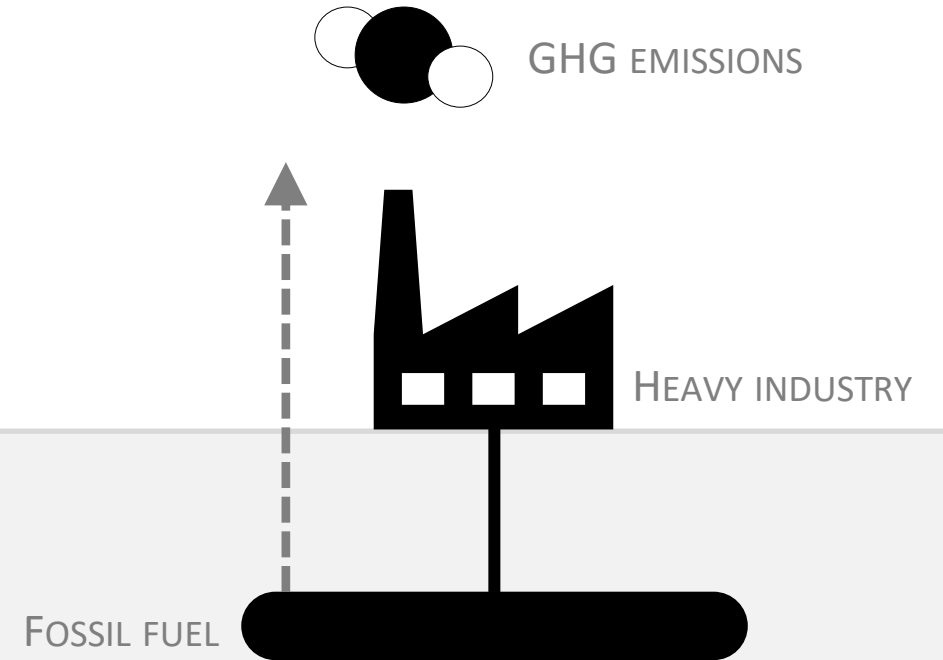




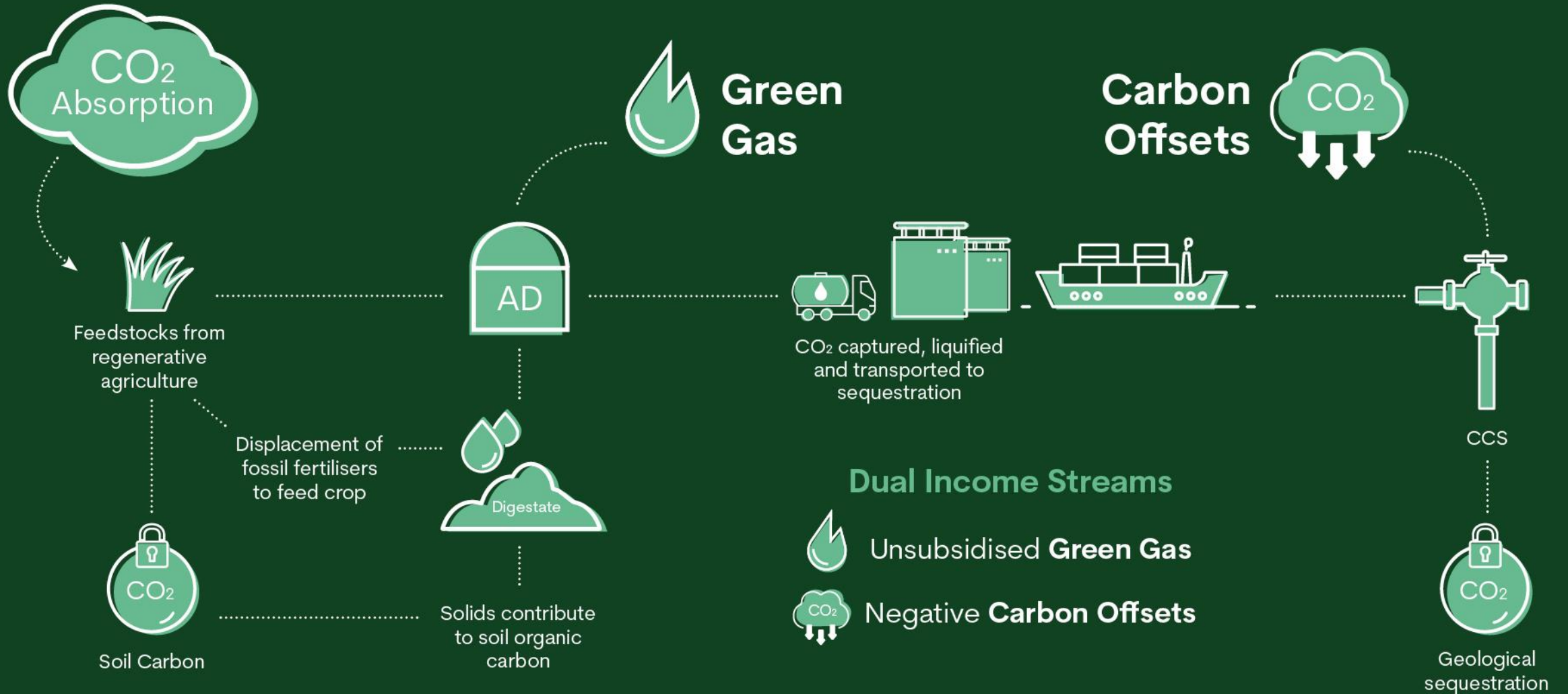
**FROM ATMOSPHERE
TO GEOLOGICAL STORAGE**

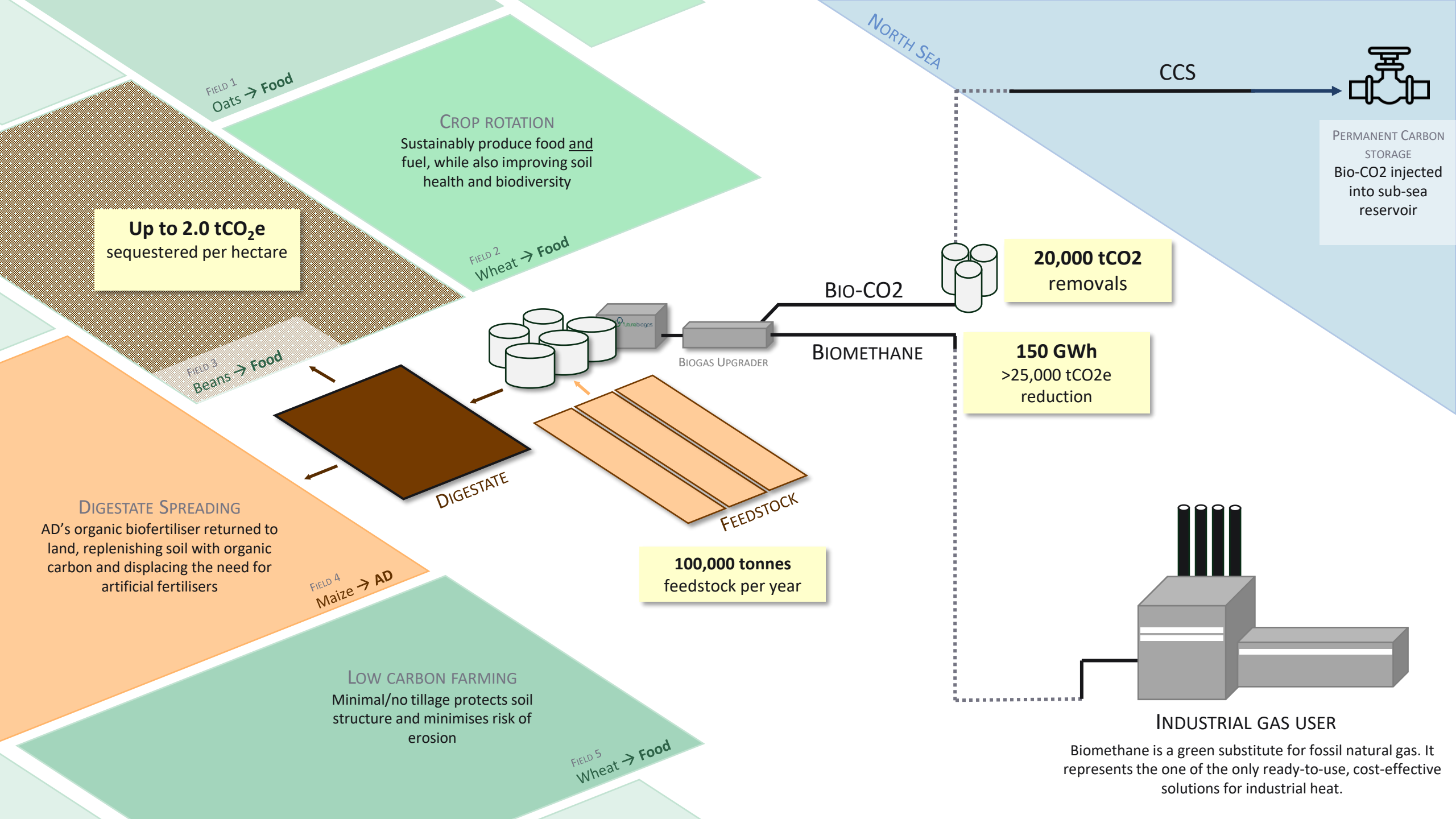


**FROM GEOLOGICAL STORAGE
TO ATMOSPHERE**



Carbon-focused Approach





FIELD 1
Oats → Food

CROP ROTATION
Sustainably produce food and fuel, while also improving soil health and biodiversity

Up to 2.0 tCO₂e
sequestered per hectare

FIELD 2
Wheat → Food

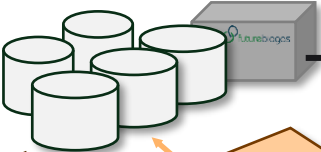
FIELD 3
Beans → Food

DIGESTATE SPREADING
AD's organic biofertiliser returned to land, replenishing soil with organic carbon and displacing the need for artificial fertilisers

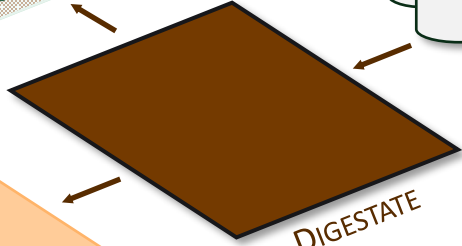
FIELD 4
Maize → AD

LOW CARBON FARMING
Minimal/no tillage protects soil structure and minimises risk of erosion

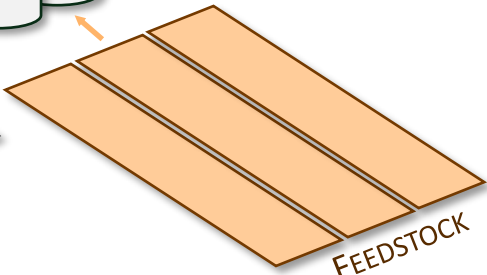
FIELD 5
Wheat → Food



BIOGAS UPGRADER



DIGESTATE



FEEDSTOCK

100,000 tonnes
feedstock per year

Bio-CO₂



20,000 tCO₂
removals

BIOMETHANE

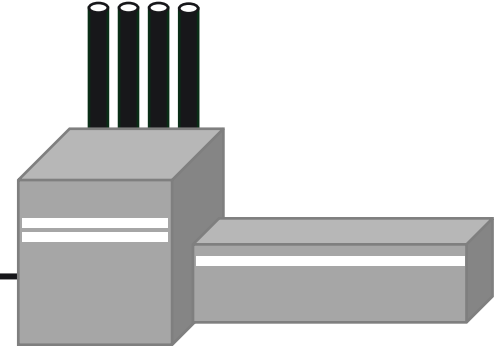
150 GWh
>25,000 tCO₂e
reduction

NORTH SEA

CCS



PERMANENT CARBON STORAGE
Bio-CO₂ injected into sub-sea reservoir



INDUSTRIAL GAS USER

Biomethane is a green substitute for fossil natural gas. It represents the one of the only ready-to-use, cost-effective solutions for industrial heat.

Accreditation

1

NATURE-BASED CARBON REMOVALS
Up to 2.0 tonnes CO ₂ sequestered per hectare

2

GEOLOGICAL CARBON REMOVALS
20,000 tCO ₂ pa

3

GREEN GAS UTILISATION
150 GWh pa

Potential scheme

TBC



Potential value

£1 - £15 per tCO₂

£350 - £900 per tCO₂

£20 - £30 per MWh

+ wholesale gas price

Potential customers*

Multiple buyers both corporate and consumer



AIRBUS

AstraZeneca

Industrial gas users, including AstraZeneca

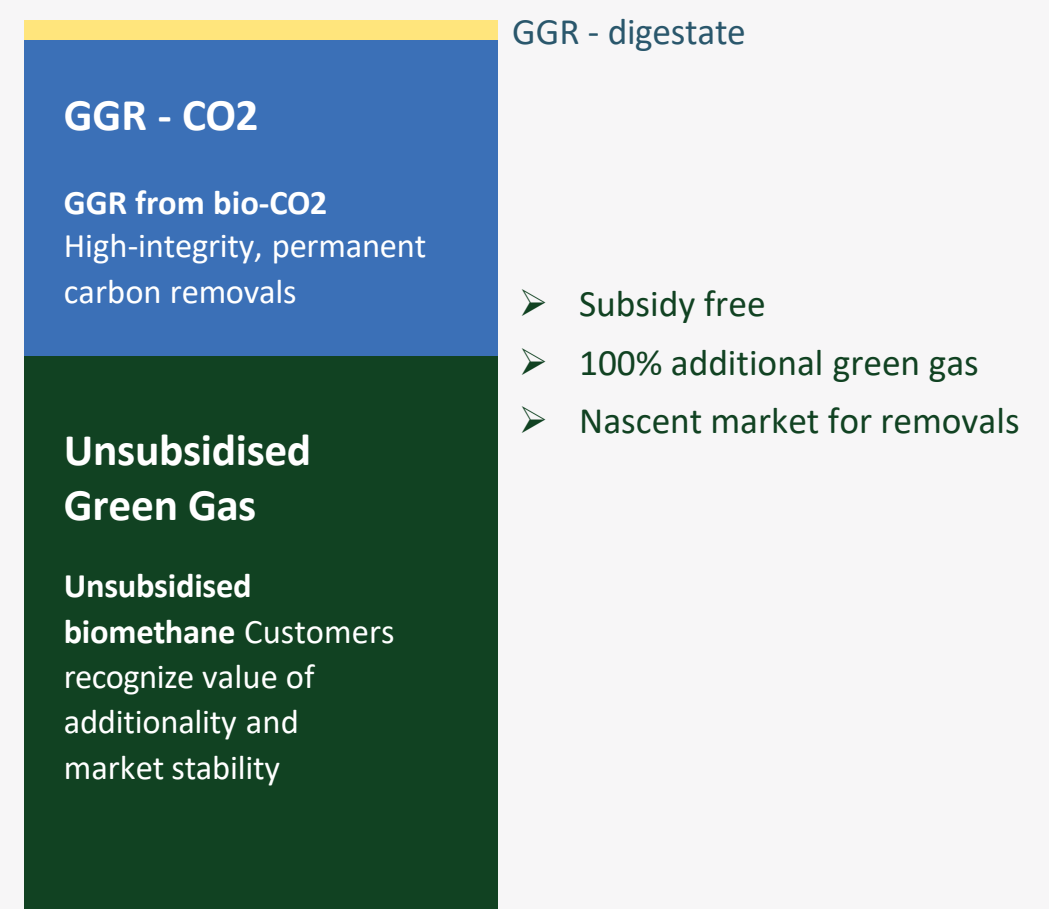
*expressed interested within general market

Breaking AD's Dependence on Subsidies

Conventional AD income revenue streams



Project Carbon Harvest



Removal markets



Voluntary carbon market

- Currently leading the development of standards and methodologies
- Growing interest from corporates as they recognise need for removals
- 82% of FTSE 100 companies now aim for 'Net Zero' emissions by 2050
- Lacks government-backed standards and oversight
- Market uncertainty derived from different approaches to carbon accounting



Compliance carbon market

- UK and EU ETS expressed desire to incorporate removals into Scheme rules
- Potential to strength market for removals
- Will provide much-needed clarity on the quality and standards of removals

EC has began developing its Carbon Removals Certification Framework (CRCF) – bridging the gap between markets.

CO₂: Removals vs Utilisation

REMOVALS

	Short term (0-3 years)
FOSSIL	Cannot deliver GHG removals
BIOGENIC	Lack of infrastructure

UTILISATION

	Short term (0-3 years)
FOSSIL	Short-cycle
BIOGENIC	



Thank you



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