

# Commercial opportunities and risks for CO<sub>2</sub> capture at biomethane plants

UK Green Gas Day 2025 AFRY Management Consulting

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### Agenda

- 1. Introduction
- 2. Development and opportunity in UK liquid CO<sub>2</sub> market
- 3. Biogenic CO<sub>2</sub> pricing
- 4. Carbon removals opportunity
- 5. Commercial risks for biomethane producers capturing CO<sub>2</sub>



#### ABOUT AFRY MANAGEMENT CONSULTING

# AFRY Management Consulting is a leading advisor of the transition of the energy and bioindustry sectors

Presence	Revenue	Projects	Staff	Backed by
5	~150 million	>100	800+	19,000
continents	€ in 2024	countries	management consultants	experts at AFRY



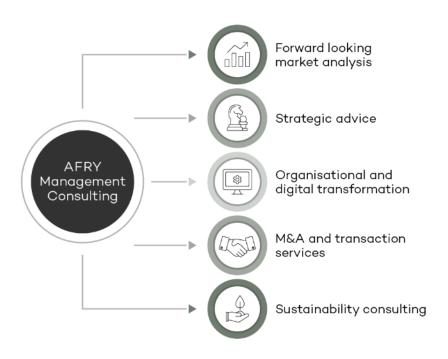
- Global transition towards decarbonised energy system
- Sector integration due to decarbonisation and electrification (e.g. mobility, industries, cities)
- Need for smart infrastructure to enable transition and new decentralised business models



Transition to

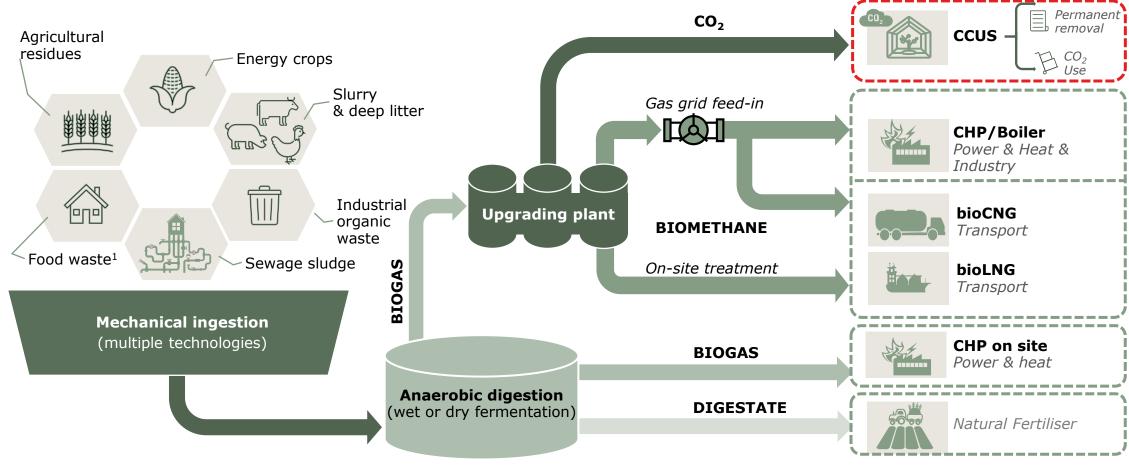
Bioeconomy

- Growing sustainability awareness and commitment
- Global shift in demand and products
- Need for green carbon to ensure full decarbonisation
- Resource scarcity





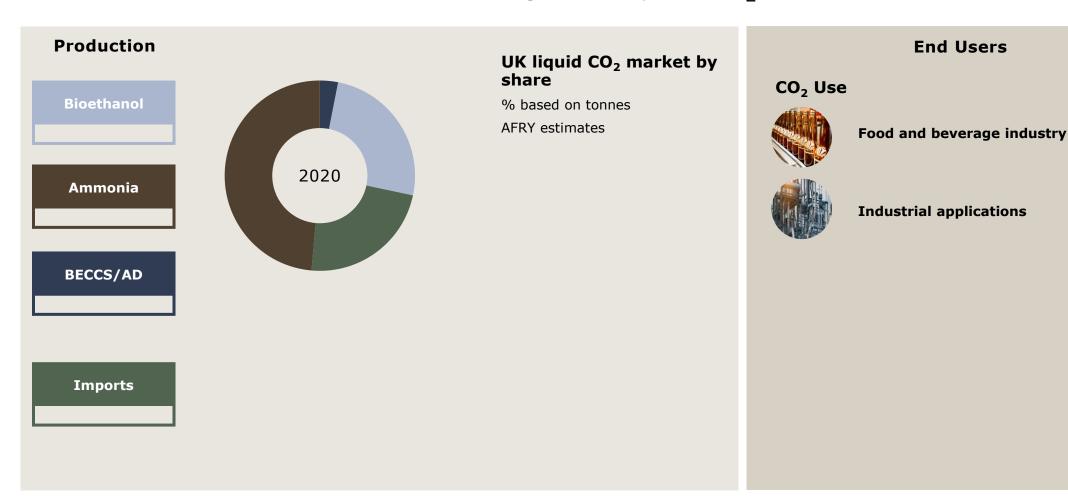
Historically,  $CO_2$  is not a revenue stream that developers and investors have paid huge attention, but that is changing



Notes: (1) County councils, restaurants, households

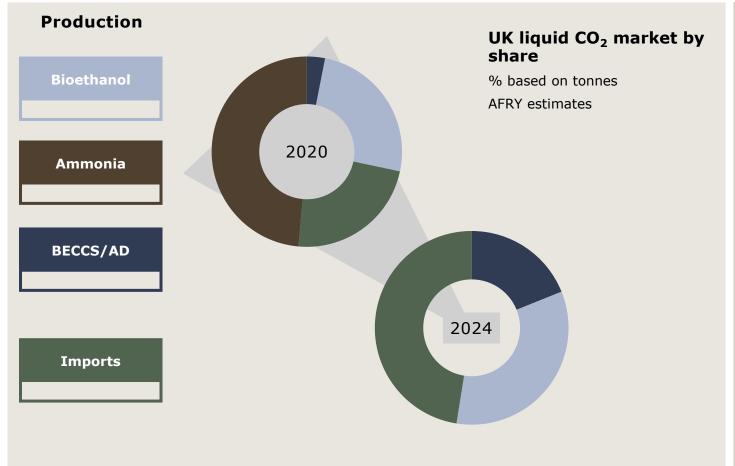


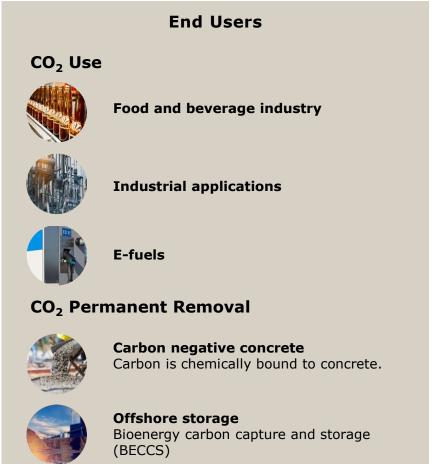
The UK carbon dioxide ( $CO_2$ ) market was until recently a concentrated one with sales of food- and industrial-grade liquid  $CO_2$ ...





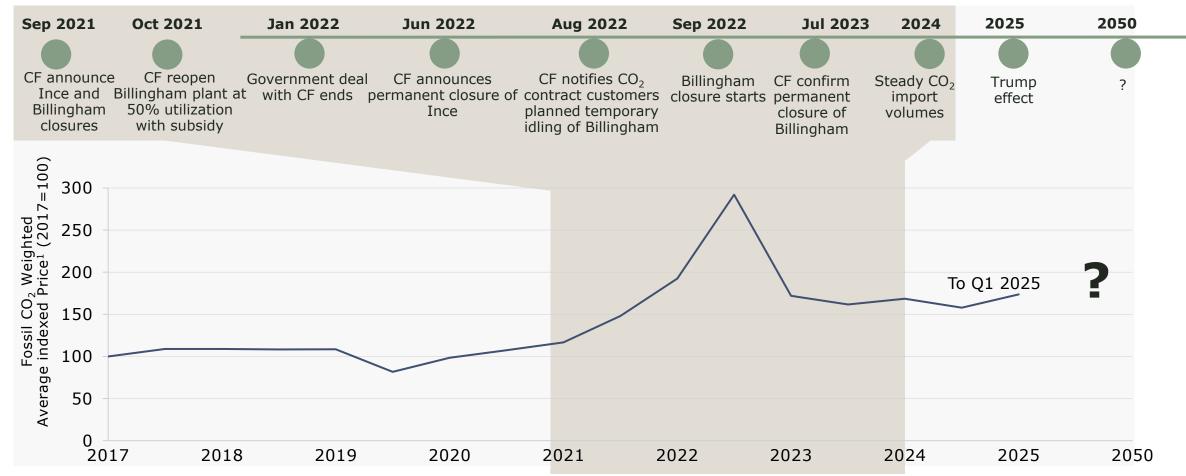
...but with traditional suppliers curtailed, new suppliers such as AD plants can fill the gap and meet demand from end-users that value biogenic  ${\rm CO_2}$ 







# Selling to the liquid CO<sub>2</sub> market has brought higher revenue in recent years due to domestic supply shortage, but future pricing is uncertain



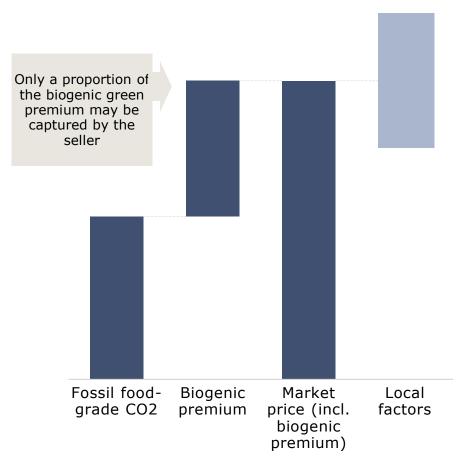
Notes: 1) Weighted average price on monthly imports over 100t



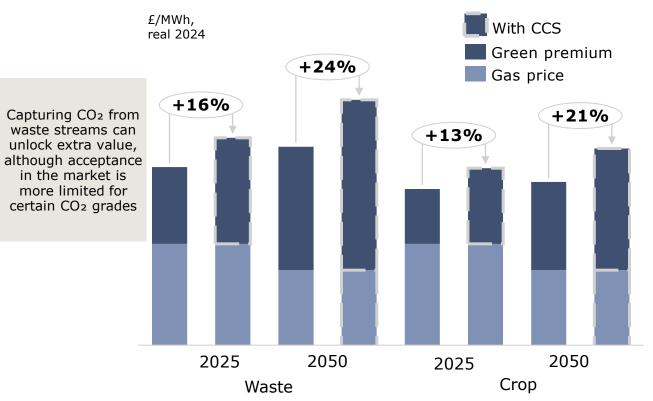
#### BIOGENIC CO2 PRICING

# Quantifying the biogenic premium can be tricky – it is a function of multiple stackable components, which will vary by location

#### Illustrative overview of LCO<sub>2</sub> pricing for UK AD plant



## Comparison of biomethane value with and without CO<sub>2</sub> capture



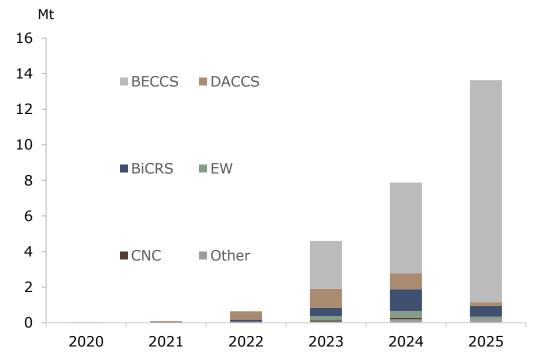
Note: Based on average of confidential AFRY projections for value of biomethane in selected EU markets where GHG reduction is recognised



#### CARBON REMOVALS OPPORTUNITY

# Early corporate adopters with aggressive net zero targets are driving the permanent removals market, with BECCs dominating supply

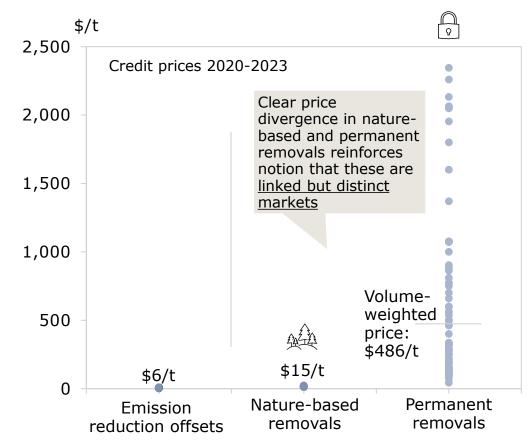
#### **CDR VOLUMES TRADED**



#### **Permanent Technological Removals:**

- BECCS Bioenergy with Carbon Capture and Storage
- DACCS = Direct Air Capture and Carbon Storage
- BiCRS = Biomass Carbon Removal & Storage
- EW = Enhanced Weathering
- CNC = Carbon Negative Concrete

#### **REMOVAL CREDITS ARE TRADING AT A PREMIUM**



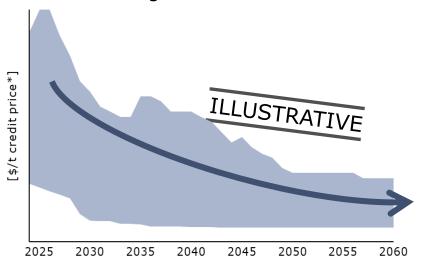


#### CARBON REMOVALS OPPORTUNITY

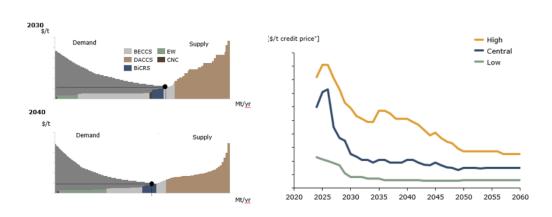
CDR credits will be of increasing importance to biomethane producers capturing CO2, especially those with lower cost access to CO<sub>2</sub> infrastructure



AFRY's ELPSIS model projects prices and volumes for permanent carbon removals, covering the full value chain of DACCS, BECCS, BiCRS, Enhanced Weathering, Carbon Negative Concrete.



#### **SAMPLE OUTPUTS**







COMMERCIAL RISKS FOR BIOMETHANE PRODUCERS CAPTURING CO.

### Whilst there is upside from CO<sub>2</sub> capture, there are also commercial risks which will vary by producer and end-use market

#### **Financial**

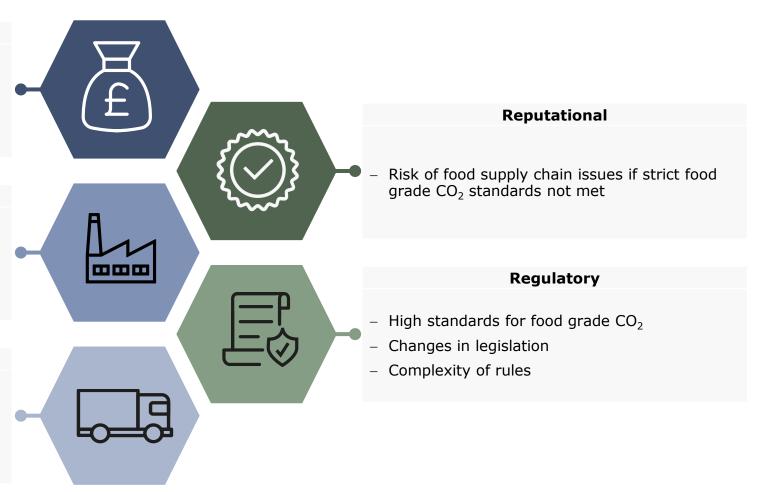
- Revenue volatility
- Limited risk management options
- Offtaker risk

#### **Operational**

- Insufficient policies and processes to meet CO<sub>2</sub> standards
- Lack of direct CO<sub>2</sub> sales experience or transport and logistics

#### Infrastructure

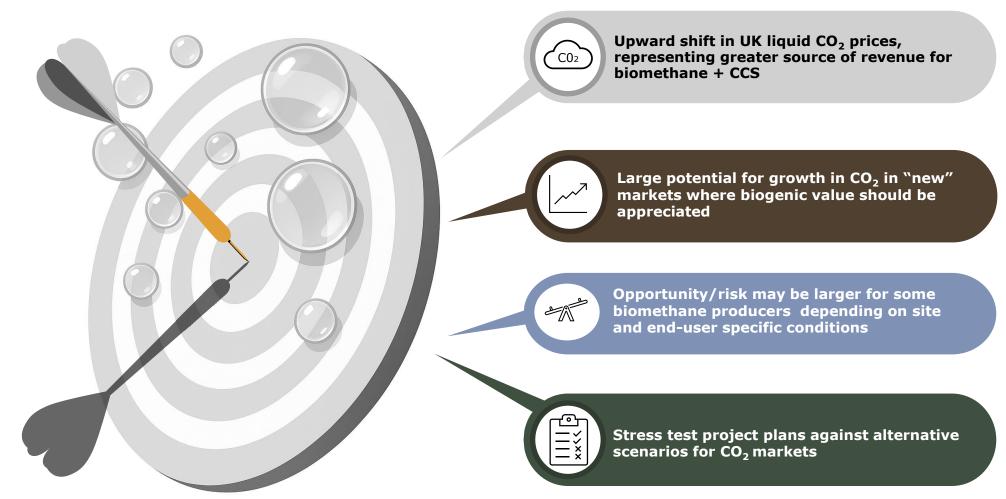
- Availability of transport and storage infrastructure for biomethane producer and end-user
- Long distance from end-user reducing carbon intensity benefits of biogenic CO<sub>2</sub>





#### CONCLUSIONS

### CO<sub>2</sub> putting the fizz into biomethane projects – but don't get carried away!





### Contact

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