

# Biomethane for Transport Decarbonisation

## Opportunities for Local Authority Fleets

Chris Huhne - **Chairman, ADBA**

Wasundara Doradeniya - **Policy Analyst, ADBA**

Philip Fjeld - **Founder and CEO, CNG Fuels**

Mark Richmond - **Technical Director, WRM Ltd**

Deborah Delaney - **General Manager, Bio Capital**



# Biomethane for Decarbonising Transport Sector

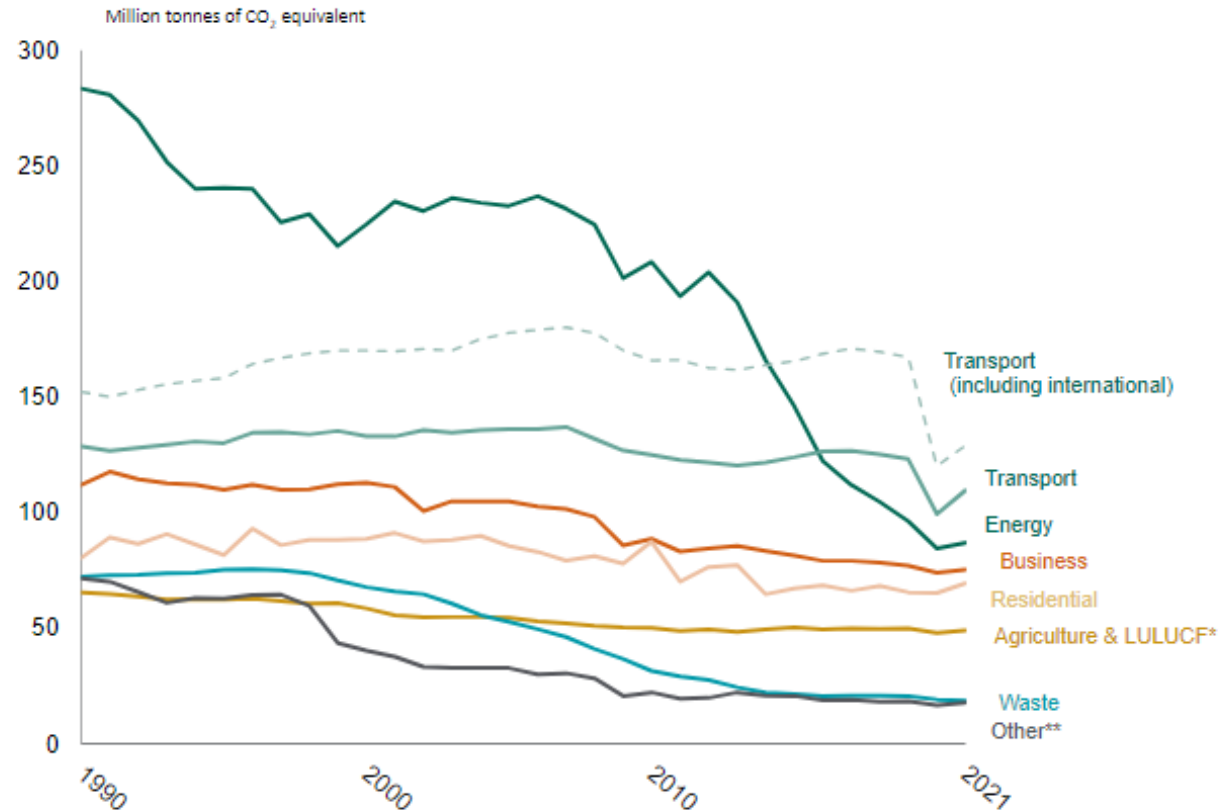


Wasundara Doradeniya  
Policy and Market Analyst | ADBA

 **ADBA** | Anaerobic Digestion and  
Bioresources Association

**Decarbonising  
Transport Week**  
4/8 March 2024

- Largest greenhouse gas emitter producing **26%** of the UK's total emissions in 2021 (437 MtCO<sub>2</sub>e)
- Slowest sector to reduce emissions since 1990
- Contribution to air pollution → **32%** of Nitrogen Oxides and **14%** of Particulate Matter (PM2.5) emissions
- **Heavy Goods Vehicles (HGVs)** caused **20%** of domestic transport emissions



Greenhouse gas emissions by sector, 2021 ([DESNZ, 2023](https://www.desn.gov.uk))

- The UK needs to decarbonize the transport sector immediately, but time is running out
- Biomethane is the best-available ready-to-use solution
- More HGV fleets are transitioning to biomethane fuels as the companies recognise the benefits
- Fuelling HGVs with biomethane can cut well-to-wheel emissions by **80%** per km driven, compared to diesel

If we deploy biomethane trucks rapidly

Reduce 38% HGV emissions by 2030

If we wait for electric/hydrogen trucks to be deployed

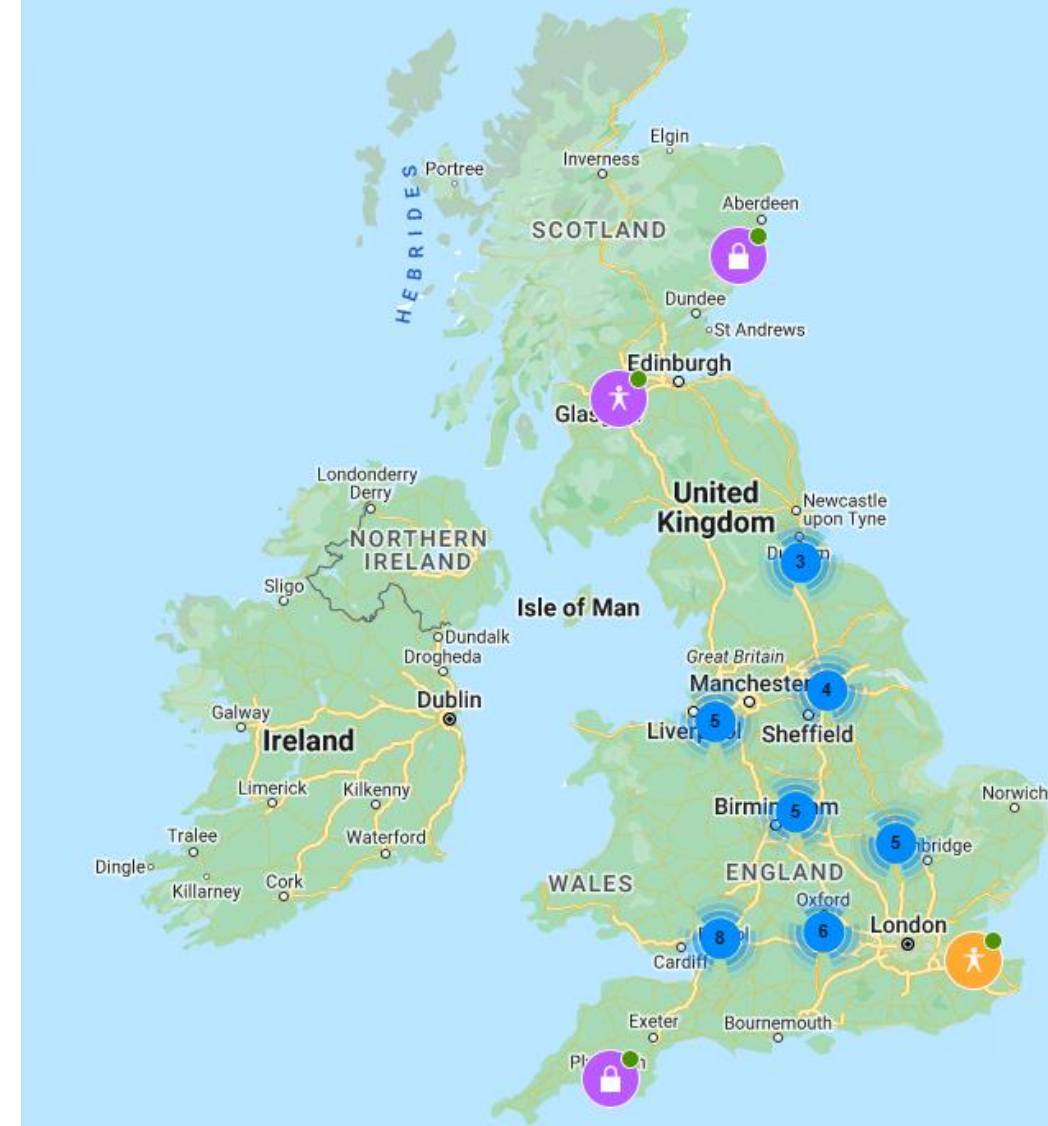
Only 6% reduction by 2030

## Continuously growing supply

- AD plants recycle organic wastes to generate biomethane and other bio-products
- 133 biomethane plants in the UK – 7 TWh of biomethane
- Continuously growing each year

## Utilisation

- Over 1700 gas-fueled HGVs operating in the UK – rapidly growing in number
- Major industry players have transitioned from diesel to gas-fueled trucks
- 40 CNG/LNG refuelling stations across the UK



## Biomethane production



Can fuel **8.5%** of all HGVs in the UK

Potential to fuel **40%** of all HGVs in the UK

## GHG emission savings



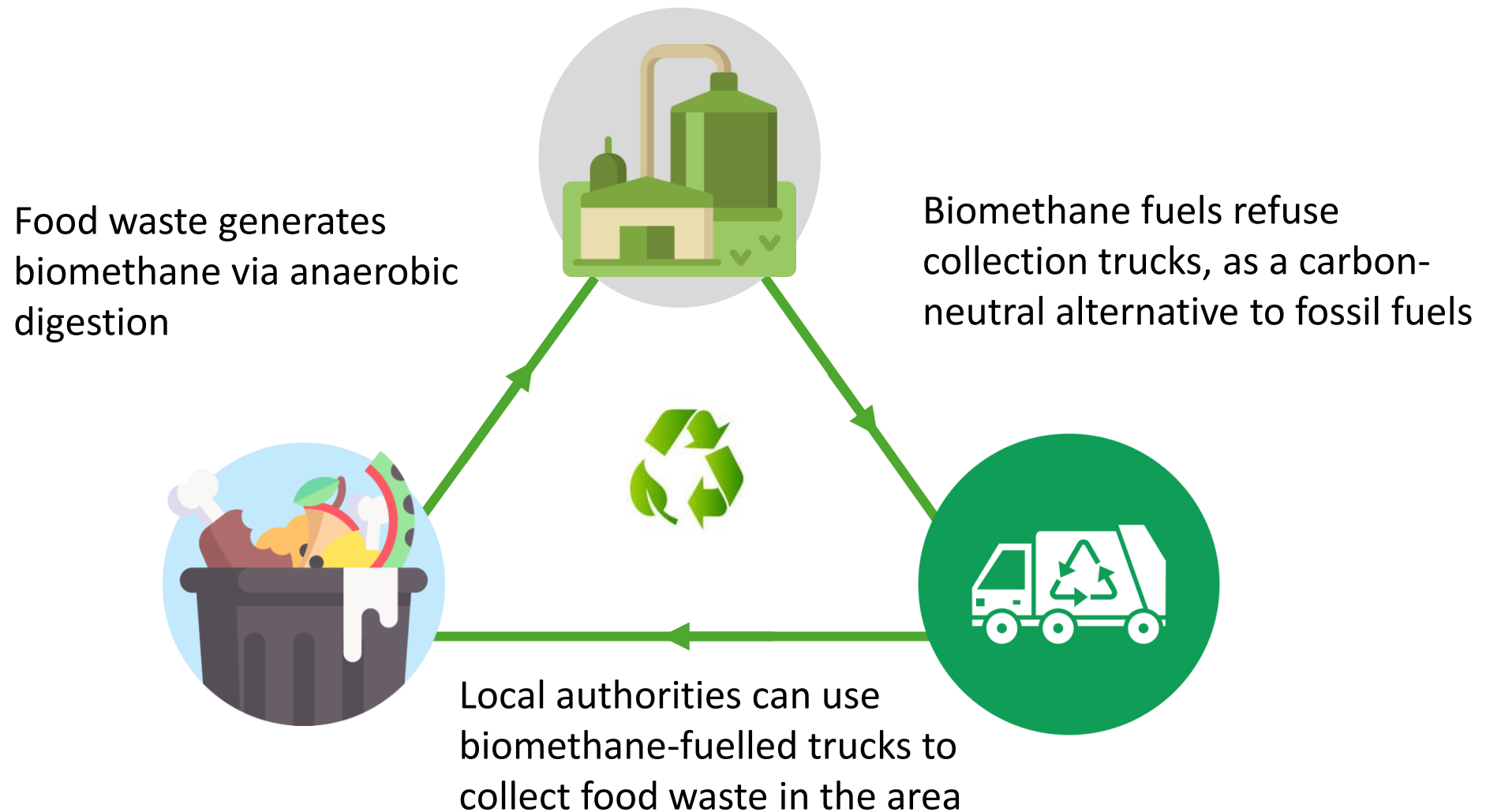
Saving **5.2%** transport emissions

Potential to save over **23%** of transport emissions

Current State

Full Potential

# Opportunities in Food Waste Collection



- Local authorities declare a climate emergency → targets to cut Scope 1 emissions and reach net zero in the next decade
- Waste collection fleets → A major contributor
- New mandate to collect weekly food waste collections from households

*Opportunity to use biomethane as an alternative fuel for refuse collection fleets*

## Benefits of AD for local authorities

- Lower emissions than diesel trucks
- Saves money due to the lower fuel duty of gas
- Better working conditions for the waste collectors
- High levels of reliability, requiring minimal downtime
- Clean Air Zone compliant





# THANK YOU!



Decarbonising<sup>TM</sup>  
Transport Week  
4/8 March 2024

Wasundara Doradeniya  
Policy and Market Analyst | ADBA  
[Wasundara.Doradeniya@adbioresources.org](mailto:Wasundara.Doradeniya@adbioresources.org)

 **ADBA** | Anaerobic Digestion and  
Bioresources Association



# Driving fleet emissions

*to zero*

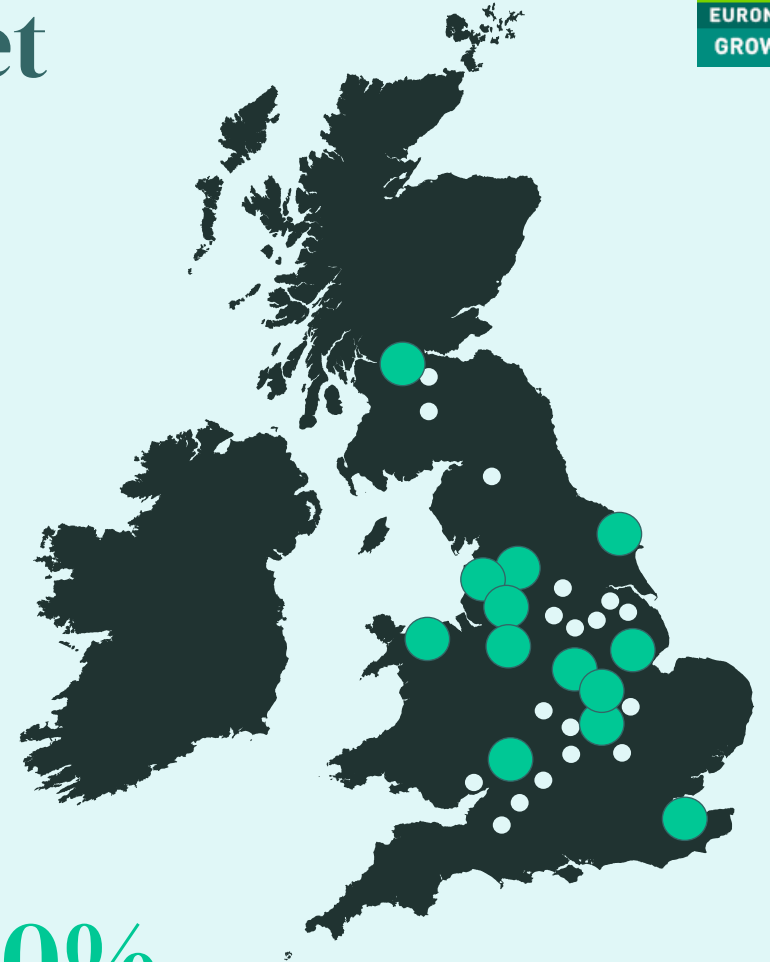
# Decarbonising Europe's truck fleet

An **integrated supplier of alternative fuels** with a growing network of refuelling stations, supported by a blue-chip customer base

Offering biomethane (Bio-CNG), the **fast-track option for net-zero trucks** with up to 90% lower emissions and reduced costs compared to diesel

Targeting **30-40 stations in the UK by end-2026**, under our CNG Fuels brand, with longer-term ambition to expand into other European markets

Stations can be adapted to a **low-carbon multi-fuel future** with hydrogen and electricity in addition to biomethane



13

refuelling stations  
 across the UK

>1700

vehicles using  
 CNG Fuels' infrastructure

>120k

GHG emissions  
 saved (tonnes)<sup>1</sup>

100%

Bio-CNG station  
 availability

# A typical Bio-CNG station



Gas inlet

Fuel dispensers

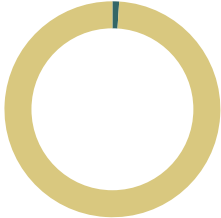
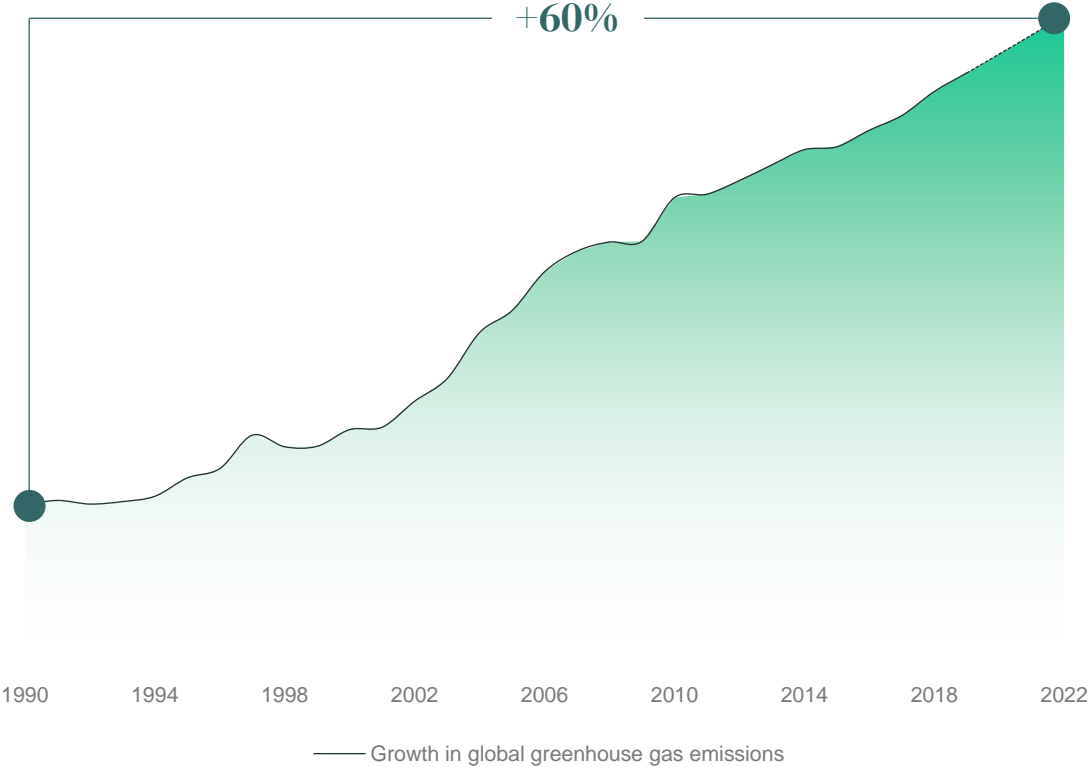
Bio-CNG compressor

High pressure storage

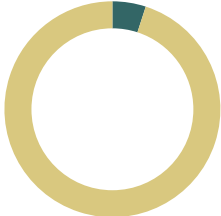
**8**  
minutes to fill a tank with 400+ miles (650 km) range

**80**  
trucks per hour in capacity

# Heavy goods vehicles are a large contributor to the growing global emissions problem



Heavy Goods Vehicles account for 1% of the UK road transport fleet...



... but intensive use means they make up 5% of UK traffic...



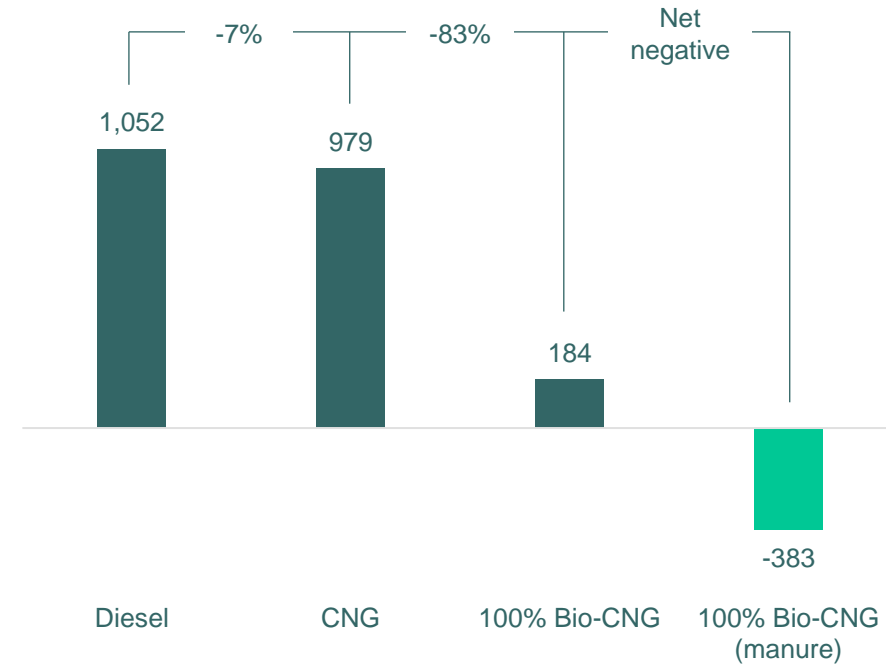
... and a massive **18%** of all transport greenhouse gas emissions in the UK.

# Renewable biomethane is a fast-track solution to decarbonise long haul trucking

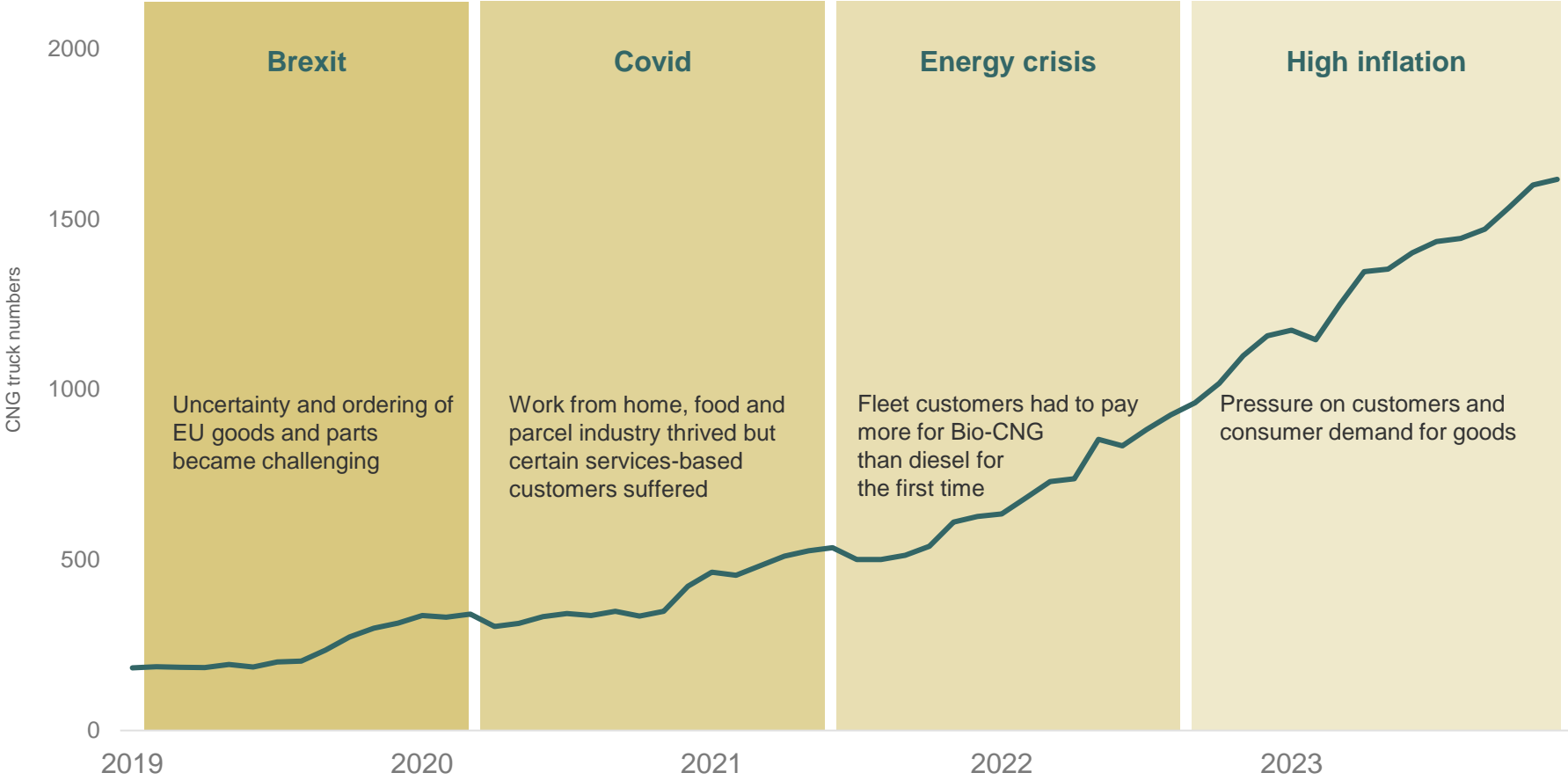
## Government decarbonization mandate

- The UK has committed to a legally binding target of net-zero emissions by 2050
- Transport was the largest greenhouse gas emitting sector in the UK in 2020, responsible for almost a quarter of emissions
- HGVs are the hardest road vehicles to decarbonise due to their long driving range, high payload and low production volume
- Using biomethane to decarbonise HGVs has strong policy support through the Renewable Transport Fuel Obligation (RTFO) policy and reduced fuel duty

## Bio-CNG emissions benefits (gCO<sub>2</sub> / km)



# Fuel cost savings of switching to Bio-CNG, but also resilient customer adaption during uncertainty



Current fuel cost savings<sup>1</sup> compared to diesel of

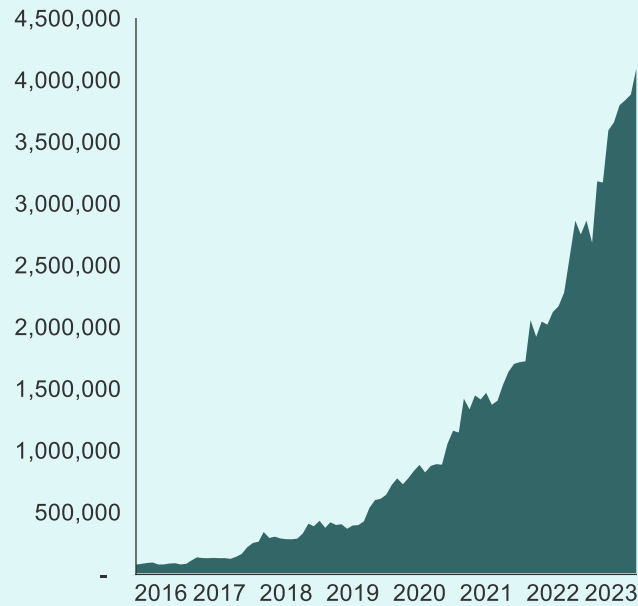
~40%



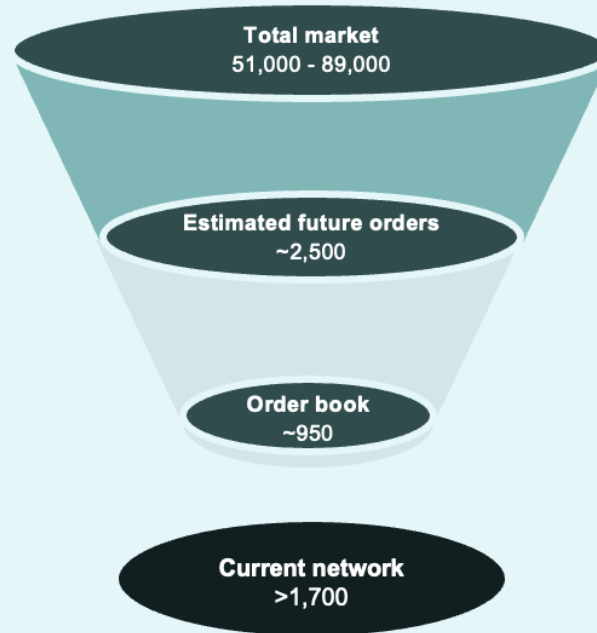
<sup>1</sup> CNG Fuels. Notes: Percentage average fuel cost saving of running a typical Bio-CNG vs diesel HGV

# Summary and Outlook

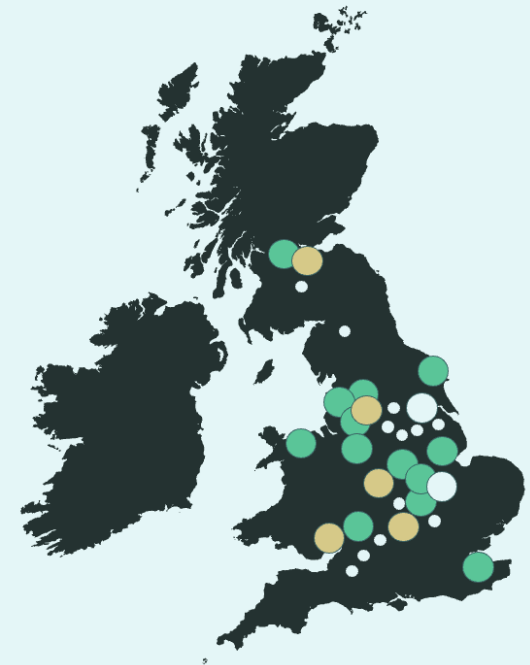
## Mass-adoption of Bio-CNG



## Strong CNG truck pipeline



## Station network growing rapidly





# Opportunities, challenges and barriers for biomethane local authority refuse collection fleets



# Opportunities for biomethane refuse collection vehicles

- ✓ Additional waste services introduced by March 2026
- ✓ Closed loop opportunity provides excellent communication opportunity
- ✓ Fleet replacement strategy provides opportunity for change
- ✓ Many RCV specifications are now comparable between gas and diesel
- ✓ Depot expansion or alteration requirement offer opportunity for development of fuelling infrastructure.
- ✓ Co-location with the AD plant is not essential.
- ✓ Grid gas provides a stepping stone to biomethane.



# Challenges for new food waste collections

- ? Local authority officers are under pressure to respond to core policy and may miss the opportunity
- ? Vehicle lead times, availability, and contingency
- ? Funding shortfall
- ? Section 114 notices
- ? Incentive stability vs value?
- ? Competition





**BIO  
CAPITAL**

# Anaerobic Digestion

## Closing the Loop

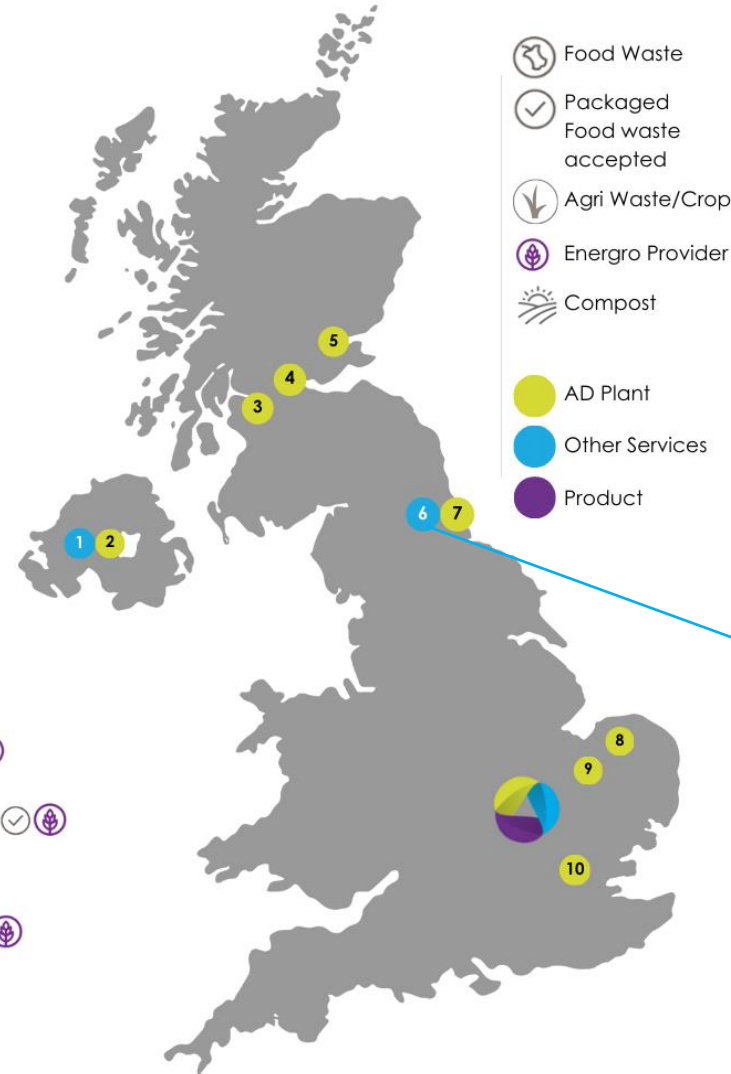
**By: Deborah Delaney**

4th March 2024

## OPERATING UK-WIDE:

### Our Locations

1. Granville Energy Supply
2. Granville Eco Park   
3. Barkip Biogas  
4. Energen Biogas   
5. Earnside Energy    
6. Warrens Group
7. Warrens Emerald Biogas   
8. Redstow Renewables 
9. Corbiere Renewables 
10. East London Biogas   



# Bio Capital - Warrens Group

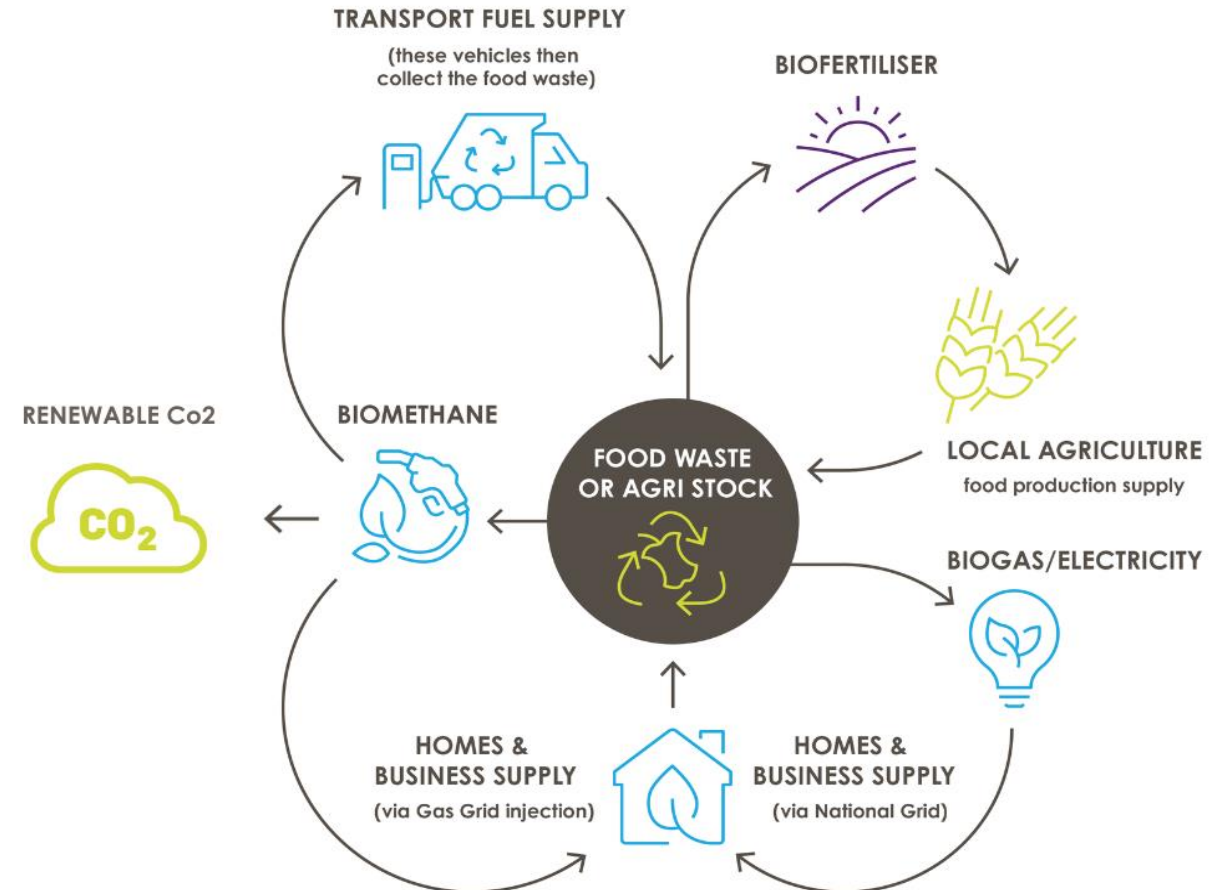
- Collect circa 120ktpa per annum
- 100ktpa per annum feedstock
- Fleet entirely CNG driven by start of 2025
- Looking to expand our business further this year



# Our 2024 Circular Economy

## We produce...

- **Renewable Electricity** – Generation from feedstock
- **Biomethane** – For transport fuel
- **Biofertiliser (Energro)** – Replacing chemical fertiliser
- **Gas to Grid**
- **Renewable Co2** - collection of the CO2 into new markets and sequestration possibilities



# Local Authorities and Net Zero

- Bin size/caddies and availability
- Potential tonnage available and participation
- Collection vehicles – in-house or third party
- Fleet management – CNG/Electric/diesel/source separated or split body RCV
- Fleet – long lead times
- Transfer station requirement
- Feedstock processors and distance
- Re-fuelling - CNG option
- Neutral carbon footprint
- Contingency plans
- Sustainability and data management/data provision





# Partnerships with Waste Management companies

- National or local brokers to our sites supported
- Ability to move the feedstock via our own transport facility to additional sites
- Strong customer service record
- Excellent customer portal allowing real time information on collections
- PurGo transport management system allowing tracking of vehicles, automatic emails to customers regarding issues prior to and following collections
- Photographic evidence where required immediately
- Regular contract management meetings through our extensive National commercial team
- ISCC accreditation – full supply chain visibility

# Manufacturing/Commercial Waste

- Artic trailers, Hook loader compactor
- Bin, Compactor and Skip provision/exchange
- By end of 2025 all artics CNG – closed loop
- Solid food, effluent. Sampling of feedstock and agreement to proceed via Supply Agreements or contract.
- Transport arm of the group currently being increased and roll-out to all sites.
- Budget-able and transparent.

# Proof Of Concept

Bio Capital has demonstrated that powering municipal waste trucks with biomethane from collected food waste is a viable, closed-loop model. The model closes the loop on feedstock streams, supports circularity, and prevents waste going to landfills.

- 4 x RCV's (Iveco)
- 2 x 6x2 artic for tipper/tanker work (Iveco conversion)
- 2 x artic to be delivered March/April.
- 1 x hookloader (Scania)
- 1 x hookloader (Scania) to be delivered in July.

Currently working on Local Authority pilot provision to enable collection of data and aid decision making with regards to CNG usage.

# Cost Savings

- After the initial investment, fuelling trucks with self-generated biomethane can provide long-term fuel cost savings compared to diesel.
- Currently 35% saving against diesel running costs.
- Manufacturers have come a long way in ensuring their product is maintained correctly and efficiently.

# Local Energy Security

- Anaerobic digestion and biomethane production creates a local sustainable fuel source, reducing reliance on imported diesel.
- Local CNG installations have improved the network allowing us to transport feedstock nationally should it be required.
- Filling pumps on site at AD facilities are easy and relatively inexpensive to install reducing reliance on diesel with fluctuation prices.
- Allows more accurate budgeting

# Challenges Encountered

- High upfront cost
- Lead times & parts availability
- Availability & efficiency
- Infrastructure
- Driver perception

The challenges thus far have been outweighed by the benefits and which can be recognised by our clients.



**BIO  
CAPITAL**

**Thank you**

**Deborah Delaney**

[Deborah.delaney@bio-capital.co.uk](mailto:Deborah.delaney@bio-capital.co.uk)