Leading the UK Zero Emission Bus Market

Gloria Esposito, Director of Sustainable Business

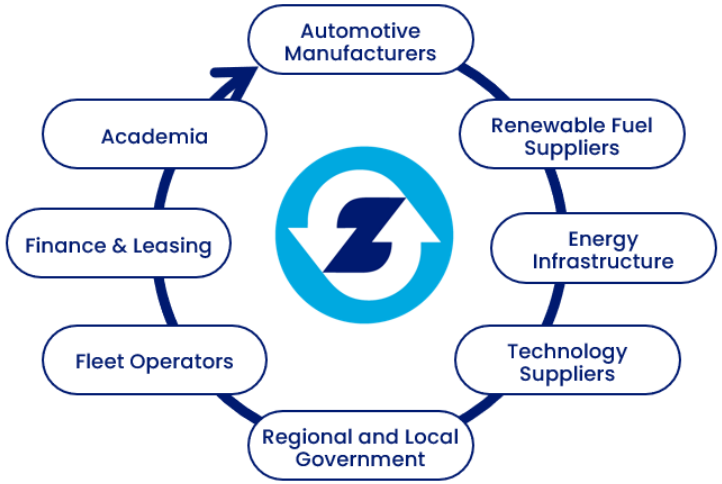
Zemo Partnership
Accelerating Transport to Zero Emissions

7th May – Climate and Clean Air: Where Are We and Where Are We Going in Urban Transport and Machinery in Latin America?

About Zemo Partnership

Accelerating Transport to Net Zemo Emissions

- Public-private partnership comprising of 150 organisations.
- Established in 2003 to accelerate the adoption of low and zero emission technologies, and renewable fuels, in the transport sector.
- Our work covers urban mobility, freight, non-road mobile machinery, motorsports.



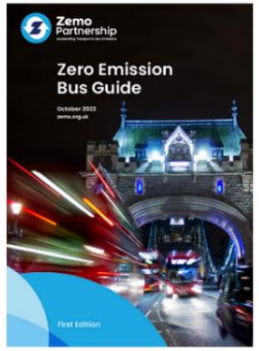
Areas of Expertise

- **Policy Development & Implementation**
- **Supporting Fleet Transition**
- **Knowledge Transfer**
- **Stakeholder Engagement**
- **Managing Certification Schemes**

Leading the UK Zero Emission Bus market


Guidance
Apply for zero emission bus funding (ZEBRA 2)
Introduction


Zero Emission Bus Certificate



Fostering collaboration - Zemo 'bus working group'

- 50+ organizations across the battery electric and hydrogen fuel cell bus value chain
- Identifying and addressing market challenges

Influenced Government fiscal incentives

- Supported UK Government introduce over £1 billion in capital funding for ZEB over the last decade
- Eight grant programs targeting Local Transport Authorities – vehicles and infrastructure
- Policy advisor - designing and monitoring funding streams

Designed the Zero Emission Vehicle Repowering Accreditation Scheme (ZEVRAS)

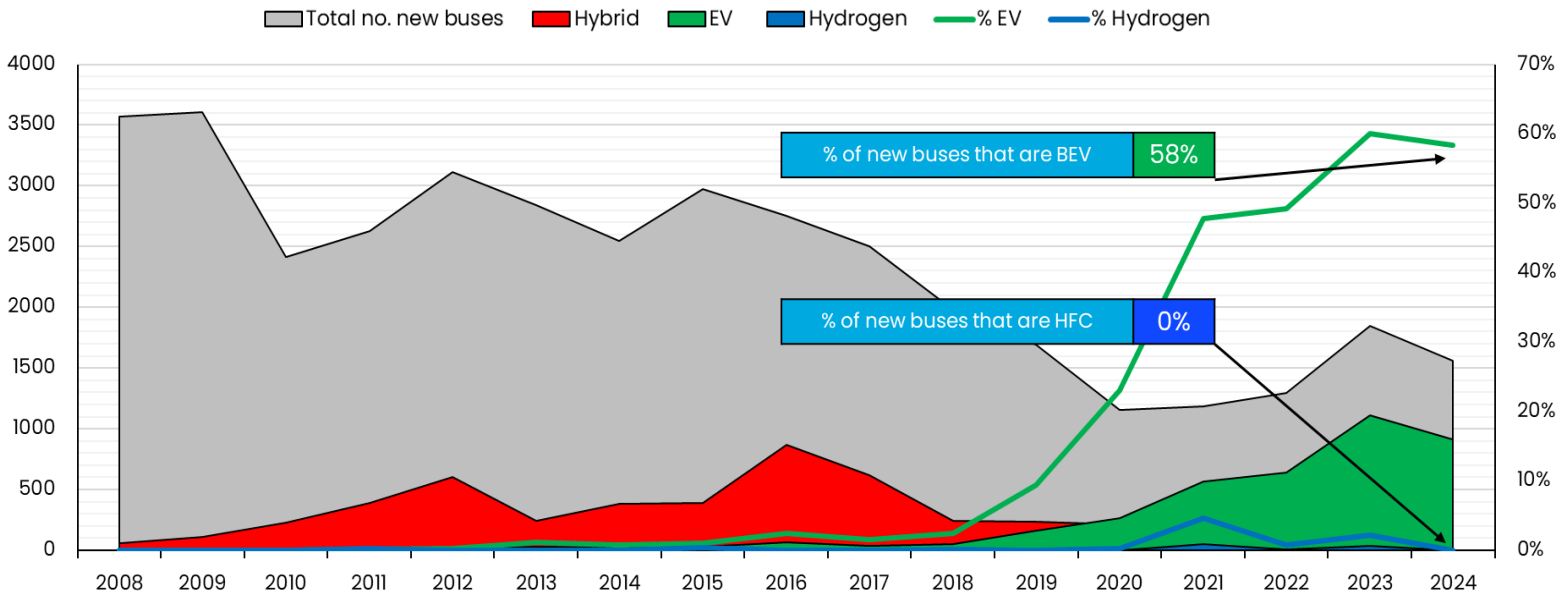
- World's first diesel to electric bus conversion programme. Approves technology suppliers.
- Integrated into UK Clean Air Zone policy, influenced fiscal support for bus operators

Supporting fleet transition

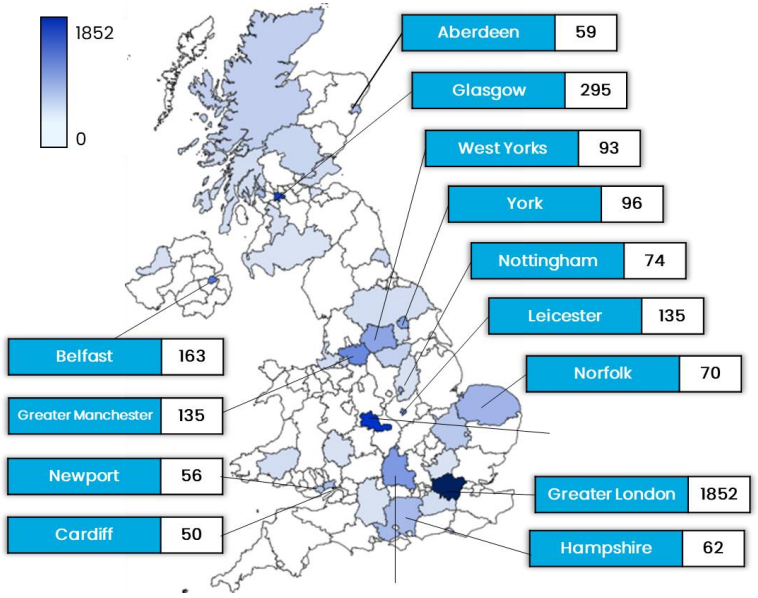
- ZEB guides and roadmaps, ZEB certificates, TCO analysis, stakeholder workshops

UK has the largest ZEB market in Europe

- **4,000 zero emission buses in-service, across 14 cities**
- ~10% of the UK bus fleet is 'zero emission' including 80 repowered e-buses
- Battery electric buses dominant market share, <1% hydrogen fuel cell
- Bus manufacturers – Alexander Dennis/BYD, Wrightbus, Yutong
- Decarbonizing diesel fleet - 1800 buses using biodiesel blends (B10/B15)



3800 electric buses UK wide



45% of city buses are now electric

Supporting fleet transition – key learnings

Hosted workshops and webinars to share knowledge and best practise

Infrastructure planning is critical

- Early co-ordination with electricity grid operators
- Regulatory requirements – local planning, health & safety
- Energy resilience through on-site solar and storage

Innovative business models

- Battery leasing spreads CAPEX – ‘electrification as a service’
- Diesel bus repowering offers a lower cost solution
- Sharing charging infrastructure at depots – income source

Data and monitoring is essential

- Track performance, optimize charging & power management
- Route planning for range limitations

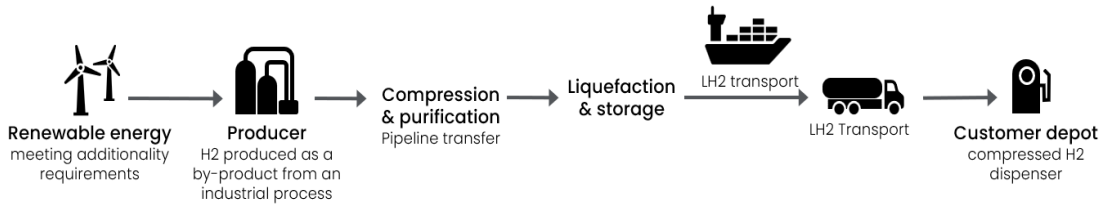
Confidence in renewable fuel claims

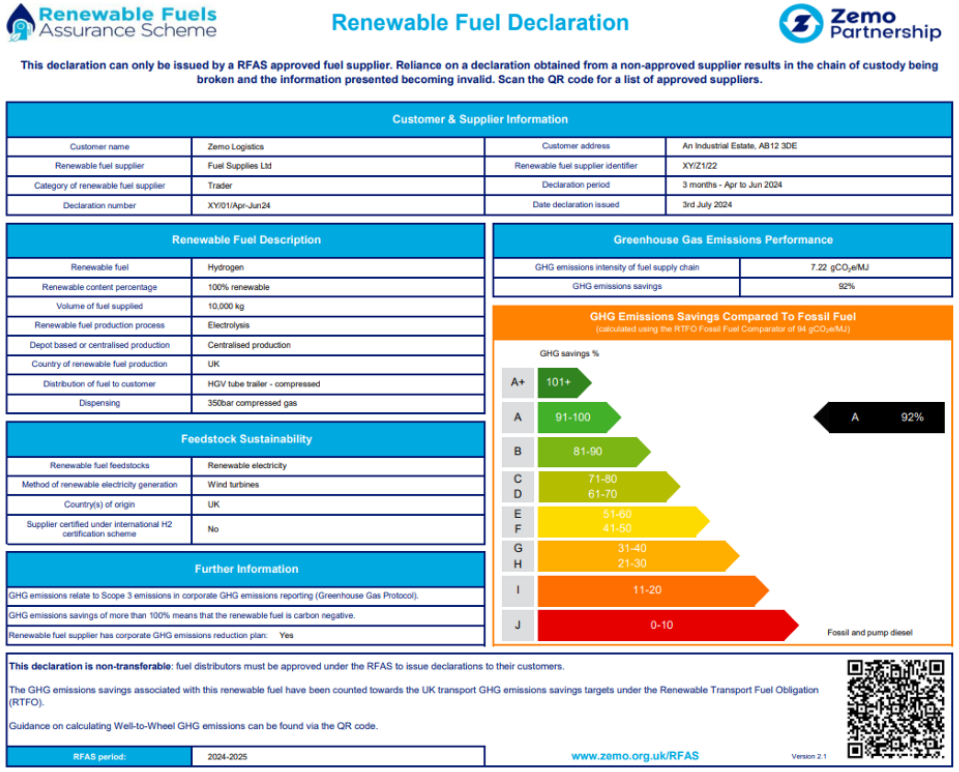
- Renewable hydrogen must have traceable and verifiable sustainability credentials.

Renewable Fuels Assurance Scheme

Zemo Partnership

- Voluntary certification scheme created & managed by Zemo to verify the sale of sustainable, low carbon fuel to fleet operators in the UK and Europe.
- Raises confidence in environmental claims - sustainable feedstocks, traceability, life cycle GHG emissions.
- World's first certification scheme for renewable hydrogen covering the entire supply chain.
- Estimate 500 fleet operators purchasing RFAS approved fuels – two bus operators using renewable hydrogen & biodiesel B15 .





Renewable Fuels Assurance Scheme — Renewable Fuel Declaration — Zemo Partnership

This declaration can only be issued by a RFAS approved fuel supplier. Reliance on a declaration obtained from a non-approved supplier results in the chain of custody being broken and the information presented becoming invalid. Scan the QR code for a list of approved suppliers.

Customer & Supplier Information

Customer name	Zemo Logistics	Customer address	An Industrial Estate, AB12 3DE
Renewable fuel supplier	Fuel Supplies Ltd	Renewable fuel supplier identifier	XY/Z1/22
Category of renewable fuel supplier	Trader	Declaration period	3 months - Apr to Jun 2024
Declaration number	XY/01/Apr-Jun24	Date declaration issued	3rd July 2024

Renewable Fuel Description

Renewable fuel	Hydrogen
Renewable content percentage	100% renewable
Volume of fuel supplied	10,000 kg
Renewable fuel production process	Electrolysis
Depot based or centralised production	Centralised production
Country of renewable fuel production	UK
Distribution of fuel to customer	HGV tube trailer - compressed
Dispensing	350bar compressed gas

Feedstock Sustainability

Renewable fuel feedstocks	Renewable electricity
Method of renewable electricity generation	Wind turbines
Country(s) of origin	UK
Supplier certified under international H2 certification scheme	No

Further Information

GHG emissions relate to Scope 3 emissions in corporate GHG emissions reporting (Greenhouse Gas Protocol).

GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

Renewable fuel supplier has corporate GHG emissions reduction plan: Yes

Greenhouse Gas Emissions Performance

GHG emissions intensity of fuel supply chain	7.22 gCO_2e/MJ
GHG emissions savings	92%

GHG Emissions Savings Compared To Fossil Fuel
(calculated using the RTFO Fossil Fuel Comparator of 94 gCO_2e/MJ)

GHG savings %

A+ 101+
A 91-100 — A 92%
B 81-90
C D 71-80 61-70
E F 51-60 41-50
G H 31-40 21-30
I 11-20
J 0-10

Fossil and pump diesel

This declaration is non-transferable: fuel distributors must be approved under the RFAS to issue declarations to their customers.

The GHG emissions savings associated with this renewable fuel have been counted towards the UK transport GHG emissions savings targets under the Renewable Transport Fuel Obligation (RTFO).

Guidance on calculating Well-to-Wheel GHG emissions can be found via the QR code.

RFAS period:	2024-2025

www.zemo.org.uk/RFAS Version 2.1

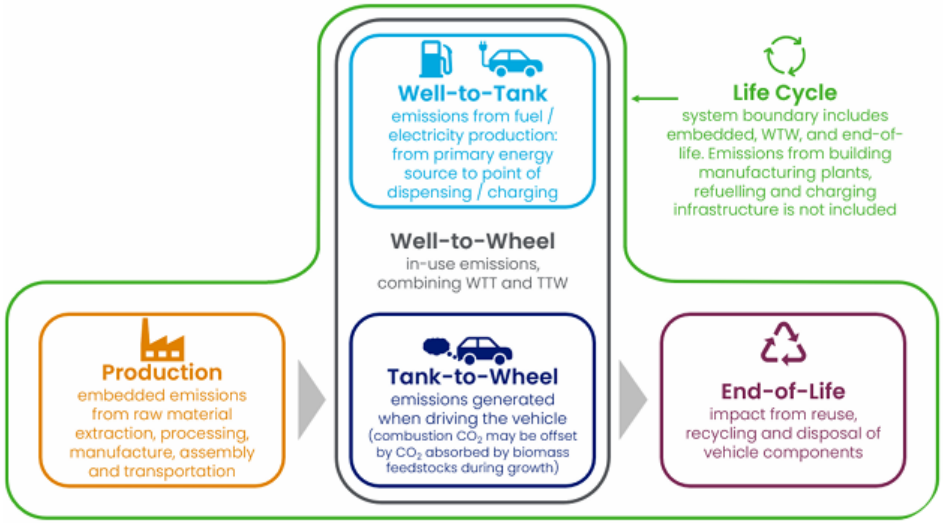
- Fédération Internationale de l'Automobile (FIA) commissioned Zemo to manage the Sustainable Racing Fuel Assurance Scheme for F1 motorsports championships.

Ensuring the transition to ZEB fleets is sustainable

Zemo is exploring bus life cycle GHG emissions and wider environmental impacts

Evolution of policy - integration of vehicle life cycle

- **ZEB grants** - set criteria for life cycle GHG emissions, recycled materials, battery second-life & recycling
- **Incentivise green manufacturing** - ZEB & components
- **Battery regulations** - mandate battery recycling, responsible critical mineral sourcing, life cycle GHG reporting.
- **Green public procurement** – award contracts on TCO & life cycle GHG metrics, ZEB environmental labelling scheme.



Environmental impacts of ZEB production and end-of-life must be assessed and mitigated

Thank you

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Any questions? Please get in touch

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Interested in joining the Partnership?
Please contact: Members@Zemo.org.uk