



**Zemo
Partnership**
Accelerating Transport to Zero Emissions

Actions for Accelerating the Decarbonisation of Commercial Vehicles in Wales

Executive Summary

Prepared by Zemo Partnership
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Zemo Partnership

3 Birdcage Walk,
London,
SW1H 9JJ

T: +44 (0)20 3832 6070

E: Hello@Zemo.org.uk

Visit: Zemo.org.uk

 [@Zemo_org](https://twitter.com/Zemo_org)

 [Zemo](https://www.linkedin.com/company/zemo)

 [Zemo YouTube Channel](https://www.youtube.com/channel/UCZemo)

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Authors:

Alec Thomson, Brian Robinson, Daniel Hayes, Emily Stevens, Jackie Savage, Jonathan Murray

Project Stakeholder Working Group Organisations:

Astra Vehicle Technologies
Bennamann
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Executive Summary

Zemo Partnership was commissioned by the Welsh Government to assess the policy options to decarbonise the commercial vehicle (CV) sector in Wales utilising the main technology pathways. This report represents the findings of Zemo Partnership, working together with Zemo's members and a broad cross section of stakeholders involved in the freight and logistics sector, which is presented to Welsh Government to consider and respond. This will be followed by further consultations with stakeholders.

The road freight and logistics sector provides the life blood for commerce and trade but is also a significant source of greenhouse gas emissions (GHG), 2MtCO₂e in 2022 which represents 34% of total surface transport emissions in Wales. The decarbonisation of this sector needs to be undertaken in a sensitive and appropriate manner, aligned with the rest of the UK. Zemo Partnership, working in consultation with industry stakeholders in Wales and across the UK, has identified a range of 'no regret' actions that can be taken by Welsh Government and industry today that would support an accelerated decarbonisation of the sector. This package of measures would save 8.4MtCO₂e by 2050 and be highly cost effective with a benefit-to-cost ratio of 5.9 representing a significant benefit over the cost of the package of policy interventions required over the period. In addition, the proposed policy programme would unlock significant operating cost benefits for the commercial vehicle sector in Wales over the period to 2050. Each pound invested in the transition to decarbonising the sector would unlock almost eight pounds of benefit to industry in terms of fuel costs. Cumulatively, this could amount to a £2.1 billion reduction in fuel costs to commercial vehicle operators over the period to 2050 given current energy tax policy.

In 2021 the Welsh Government published the Wales Transport Strategy, setting out Welsh Government's priorities and ambitions. This was followed by the Net Zero Wales Carbon Budget 2 and the National Transport Delivery Plan, aligning its transport strategy with plans to decarbonise the Welsh economy. One of the nine modes of transport covered relates to freight and logistics, which is vital to the well-being of the people and economy of Wales. Developing a sustainable and efficient approach to freight and logistics for Wales, has to be done against a changing UK policy environment.



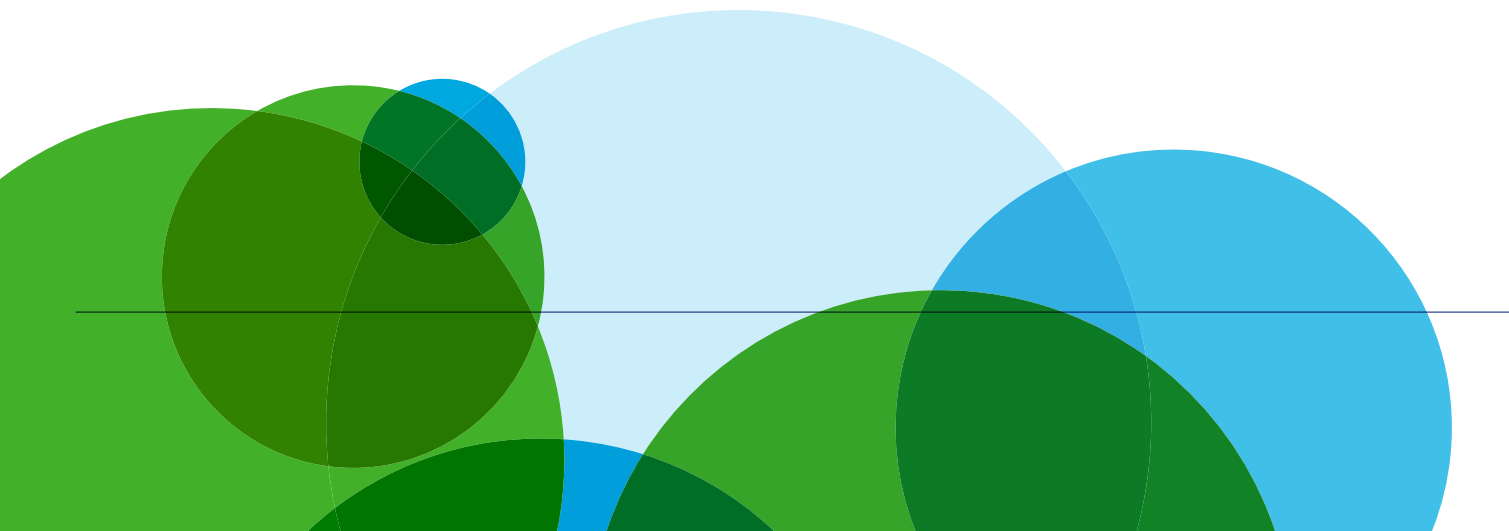
The UK Government's vision for road transport decarbonisation is focused on replacing the internal combustion engine with electric propulsion technology, with the phase-out of non-zero emission Light Goods Vehicles (LGVs) by 2035. Along with a proposed longer phase-out of non-zero emission Heavy Goods Vehicles (HGVs) (under 26t by 2035 and all HGVs by 2040).

Against this background there are both near-term as well as long-term actions that can be implemented to tackle decarbonising commercial vehicles operating in Wales, utilising all the major technology pathways to decarbonisation. Implementation of these actions needs to be driven forward by industry and requires Welsh Government to play an important facilitation role to achieve successful implementation in Wales.

The decarbonisation of the commercial vehicle sector is a process which is already underway, driven initially by legislation at international and national levels, and in the freight and logistics sector by consumer preferences and household brands and will in turn be driven along the supply chain. There will be revenue, cost and brand image benefits which will accrue to industry from the transition to net zero road transport. However, the Welsh freight and logistics sector need to be prepared for this transition, especially SMEs. Welsh Government, working as a facilitator, can help Welsh industry to prepare while tackling climate change and meeting Carbon Budget targets.

Pathways to Decarbonisation

The long-term primary pathway to decarbonising the commercial vehicle sector will be electrification. However, this will take time and there are types of operation where electrification may not currently be a viable option. Therefore, to maximise the decarbonisation of commercial vehicles in Wales, all pathways must be adopted in parallel. Low carbon fuels can decarbonise the existing fleet that runs on fossil diesel, with a role for 'repowering' vehicles in special use cases to zero tailpipe emission. The natural replacement cycle of aging diesel vehicles with new battery electric vehicles will contribute to reduced overall energy consumption and improved life cycle emissions. Hydrogen as a road fuel also has an opportunity to play a role in the late 2030s, once a significant supply of low carbon hydrogen production has been reached.



The Role for Electrification

Electrification of transport provides the most energy efficient solution and greatest GHG saving of zero emission powertrain technologies when using renewable electricity. Electrification of cars is already accelerating along with the deployment of charging infrastructure, which will in turn increase infrastructure availability for vans. However, access restrictions and appropriately designed charging bays remain a barrier. The UK Government's Zero Emission Vehicle (ZEV) Mandate will see a significant number of electric vans deployed in the next 5 years and steps must be taken to support community-based vans which lack dedicated infrastructure.

Trials of larger HGVs are underway but are limited given the significant additional capital cost of electric compared with diesel vehicles today. New innovative financial models could enable an accelerated uptake of vehicles, as proven in the UK's bus sector. With HGV manufacturers expecting around 50% of new HGVs produced in 2030 to be zero emission, there is significant support needed for operators to begin planning the transition through education and upskilling.

Wales has made positive steps in support of the development of Local Area Energy Plans (LAEPs) to support holistic transport and energy planning. This data has been passed over to the DNOs and will influence the Distribution Future Energy Scenarios (DFES) to inform their ED3 planning, where DNOs assess their network for future load growth to identify constraints and plan network investments for submission to Ofgem. However, more detailed operational data, such as demand forecasts and grid impact assessments, is required by Ofgem for the electricity Distribution Network Operators to be allowed to invest in additional grid capacity ahead of need. Coordination between the national Regional Energy Strategic Plan (RESP) and LAEPs will be essential. Power banks, made of second-life battery packs, could be deployed where grid infrastructure is limited to provide an interim solution while grid reinforcement takes place.

The Role for Low Carbon Fuels

To complement the long-term strategy of electrification, Low Carbon Fuels (LCFs) present an affordable decarbonisation solution that can be deployed today with minimal impact to operational procedures, particularly in HGVs where zero emission solutions are not yet available.

The Renewable Transport Fuels Obligation (RTFO) mandates the overall proportion of sustainable road fuels in the UK. Effectively this currently mandates up to 10% in petrol and 7% in diesel. However, there are options to go further as diesel earmarked for use in cars declines, freeing up more biodiesel that could be redirected in the commercial vehicle fleet at higher blends.

FAME biodiesel and renewable diesel (HVO) are being adopted for displacement of diesel in HGVs, while biomethane compressed gas trucks are being introduced in long-haul operations due to its well-to-wheel benefits. Increased support for appropriately placed infrastructure will maximise the benefits of LCFs in the next decade.

There will be an extensive diesel fleet continuing in operation through the 2030s and 2040s, so ensuring the RTFO mechanism works for Wales will be crucial to minimising Wales' contribution to climate change and meeting Carbon Budgets.

The Role for Hydrogen

While it is clear hydrogen will be a part of the mix in the future energy system, the role of hydrogen in transport is likely to be focused on applications which are hard to electrify with battery technology. The scale of hydrogen's role will depend on the availability and affordability of low carbon hydrogen, supported by a sufficient, robust refuelling infrastructure to ensure greenhouse gas savings are realised.

There are two primary alternative distribution models for hydrogen: centralised mass production and tanker distribution, or decentralised electrolysis close to refuelling points. There are potential cost and practical benefits to centralised production and distribution of hydrogen especially to locations with limited electricity grid connections. Alternatively, hydrogen can be generated close to refuelling infrastructure locations and can play a role in levelling the load on the electricity grid.

The operational benefits of hydrogen include quick refuelling and the ability to distribute by tanker, analogous to the current diesel fuel distribution model. There are also weight benefits compared to today's battery electric technology, where heavy batteries reduce load carrying capabilities. These characteristics indicate that the role of hydrogen in road transport will be in long-haul HGV operations and applications which are weight constrained.

There is potential for the production at scale of low carbon hydrogen for use in transport, through collaboration with heavy industry that will also require low carbon hydrogen as a pathway to decarbonisation. The utilisation of the significant renewable energy resources in Wales will also provide opportunities for low cost electricity needed for electrolysis of water to produce low carbon hydrogen to supply Welsh industry.



Key Actions

There is an extensive range of innovative and easy, 'no regret' actions that can be taken by Welsh Government and industry today that could facilitate the accelerated decarbonisation of the commercial vehicle sector.

These actions will present a range of new opportunities for the Welsh CV industry and wider economy to capitalise on its existing industrial strengths, its significant renewable energy resource and potential new collaborative partnerships which will improve efficiency, upskill workers, reduce greenhouse gas emissions and improve total cost of ownership.

While achieving price parity for new zero emission vehicle solutions will have the greatest impact on reducing greenhouse gas emissions by 2050, there is a huge role for low carbon fuels to decarbonise the existing diesel commercial vehicle fleet which will operate into the 2040s.

Operators are already reacting to customers seeking to reduce their associated supply chain emissions (Scope 3). This commercial pull is already leading to operators switching fossil diesel with renewable diesel, procuring battery electric rigid HGVs and biomethane articulated HGVs.

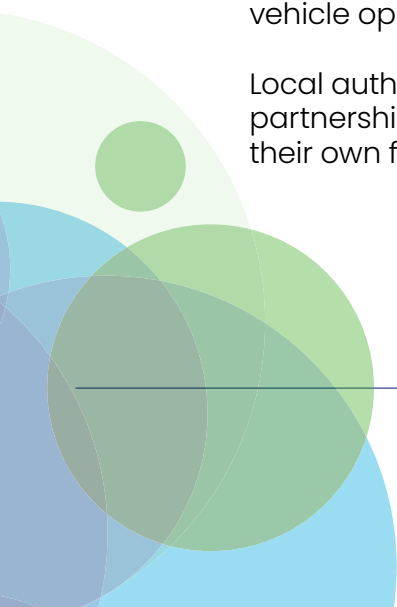
Many actions suggested in this report seek to facilitate partnerships, remove barriers, support innovation and educate operators. Importantly these do not require significant capital outlay and can be implemented today.

Welsh Government can facilitate improved access to capital, in particular for SMEs, through working with the finance sector to understand the transition, derisk investment and bring together investees and investors with an appetite for green investment.

Welsh Government can facilitate partnerships between key stakeholders, support 'first-of-a-kind' infrastructure deployment and encourage new innovative financing and business models to give the market confidence in decarbonisation solutions.

A key partnership will be with UK Government; clarity from the new UK Government on a number of policy and regulatory reforms which were unresolved under the last Government is needed. This includes: the Renewable Transport Fuels Obligation, grid connection and processes, vehicle operators' licences etc.

Local authorities can help foster local refuelling or community charging partnerships to reduce complexity for SMEs wishing to decarbonise, using their own fleet decarbonisation as a foundation for engagement.



Operators can prepare for the transition to zero emission today, through improved understanding of operations using telematics and rapid improvement of technology. There will be long-term benefits to total cost of ownership and staff satisfaction in the switch to zero emission.

With a significant number of second-hand commercial vehicles registered in Wales, there is an extensive long-term role for low carbon fuels. Renewable diesel (HVO) and high blends of FAME biodiesel are already being deployed today. With greater awareness of the options, operators could make significant emissions savings without significant operational changes.

Biomethane is being deployed in new CNG HGV fleets due to lower costs and lower well-to-wheel GHG emissions, enabling decarbonisation of large 40t truck operations. There are opportunities for domestic low carbon fuel supply chains in Wales to support Welsh farmers and businesses by encouraging production of biomethane or HVO using existing waste feedstocks.

Advanced planning and coordination will be required to prepare local authorities and industry for the impacts of the ZEV Mandate, where 70% of new vans registered in 2030 will be zero emission. This will require significant installations of suitable van and truck charging infrastructure across Wales, with Welsh Government encouraging industry to share infrastructure to maximise utilisation and minimise cost.

A sustained myth-busting and education campaign is needed to raise industry awareness of the rapidly improving technologies and required operational changes to prevent a backlash to decarbonisation.

Reforming planning rules to support, prioritise and speed deployment of low carbon fuel and charging infrastructure will allow industry to act now and get on with decarbonisation.

International trades links through Welsh ports and into England present opportunities to work with multinationals and Irish and UK governments, to ensure Wales can support and benefit from international efforts to decarbonise freight.

Wales has a number of key industries such as petroleum and steel that are developing plans for decarbonisation, including large scale production of low carbon hydrogen. Alongside the growth of offshore wind farms in the Irish and Celtic seas, Wales has opportunities to benefit from increased grid capacity over the coming decades to support the decarbonisation of transport and heat.



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3 Birdcage Walk, London, SW1H 9JJ

T: +44 (0)20 3832 6070

E: Hello@Zemo.org.uk

Visit: Zemo.org.uk



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