Zemo Partnership

Accelerating Transport to Zero Emissions

Delivery Roadmap for Net Zero Transport in the UK

December 2024

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Foreword

We're at a critical moment in humanity's efforts to tackle climate change. The chances of achieving the Paris Agreement's aim of limiting the average global temperature increase to 1.5°C above pre-industrial levels are slipping away and we're seeing more and more of the consequences of our changing climate: storms, floods and dangerously high temperatures.

With wars, turbulence and political upheavals in many parts of the world, including in some of the most polluting countries, it's vital that the UK – as leaders of the first industrial revolution – are in the vanguard of this second great industrial transition. Not only is this essential for maintaining a planet with a habitable climate, but it's also surely the best way to safeguard the UK's economic and industrial future as well.

To coincide with COP29, recently held in Baku, the Prime Minister announced an enhanced UK target of an 81% reduction in greenhouse gas emissions by 2035, in line with requirements for the 1.5°C trajectory. It's critical that other countries follow suit, of course, but this is an important example.

Transport is one of the most challenging and complex sectors of the UK economy to decarbonise and is responsible for around a quarter of the country's greenhouse gas emissions.

If we're going to succeed in meeting the Prime Minister's enhanced targets for emissions reduction, the sector must play its full part.

With a new administration now establishing itself, it's time to focus all our efforts on delivery and accelerate UK transport's transition to net zero.

The size and complexity of the challenges we face will require unprecedented collaboration between the widest group of stakeholders in the transition and this Delivery Roadmap for Net Zero Transport in the UK will help guide us as we navigate our way towards a clean transport future.

Rt Hon Lord Deben
Chair
Council for Net Zero Transport

Preamble

The climate challenge has reached a critical point. 2024 is set to become the hottest year ever recorded, with temperatures briefly reaching 1.5 degrees Celsius above pre-industrial levels for the first time.

The world now faces unprecedented rainfall and flooding, increasingly powerful tropical cyclones, deadly extreme heat, relentless droughts, and devastating wildfires. Climate destruction is now reality for millions of people and presents a disturbing preview of what lies ahead.

Yet there is growing cause for optimism. Global renewable energy capacity grew by 50% in 2023, its fastest growth rate for twenty years. China's solar industry is rapidly expanding. The US is enjoying a clean energy boom, which the incoming Trump Administration is unlikely to derail. Europe, Brazil and India have also achieved impressive renewable energy growth. The momentum to reduce emissions is unstoppable.

In 2019, the UK led the world's major economies in setting a target of net zero greenhouse gas emissions by 2050. Emissions need to reduce much more rapidly during this decade to achieve the UK's targets. But there is a new promise of progress. In a welcome demonstration of climate leadership, Prime Minister Keir Starmer has committed the UK to an enhanced target of 81% reduction in emissions by 2035. The government's plans for a clean power system by 2030 are ambitious, but they are gaining respect and attention on the world stage. The new Industrial Strategy could offer fresh opportunities for businesses to seize the immense global opportunities from net zero for UK businesses.

Transport is the UK's largest source of emissions and one of the hardest sectors to decarbonise. Surface transport, by far the biggest contributor to the sector's emissions, offers significant opportunities to reduce UK GHG emissions and create thousands of jobs. However, much more action is needed to realise this potential. We must act swiftly.

Zemo Partnership has created the Delivery Roadmap for Net Zero Transport in the UK to show how the government and the whole road transport sector, working together, can accelerate the transition.

We are well placed to offer this Roadmap. For more than two decades we have been at the forefront of decarbonising road transport in the UK. Zemo uniquely brings together government, industry and experts across all fuels and technologies and all forms of road transport. We seek to build consensus across the sector and are unbiased by any interest group.

Our members, with their knowledge and expertise spanning the road transport sector, have informed the content of the roadmap. The paper draws on extensive consultations in 2023 and 2024, including stakeholder interviews, bilateral and roundtable discussions and a series of workshops involving our cross-sectoral membership.

The conclusions were clear. The UK can and must reduce its surface transport transmissions by taking a multi-path approach: expanding the use of zero emission vehicles, promoting low carbon fuels and encouraging changes in personal behaviours. We need action in all relevant policy areas and across the nations, regions, and local areas of the UK. And it is vital that we take people with us on the journey to net zero transport, with a fair and just transition.

This Roadmap explains how the government and the sector can work together to deliver net zero transport and ensure a cleaner, safer and fairer future for all of us.

Claire Haigh
Managing Director
Zemo Partnership

5 December 2024

Introduction

The transport emissions challenge

The UK has set ambitious, legally binding targets to achieve net zero greenhouse gas emissions (GHG) by 2050. These include a 65% reduction by 2030 and a newly increased target for an 81% reduction by 2035, relative to 1990 levels.

Overall UK GHG emissions have halved since carbon budgets started in 2008, mainly due to the phase-out of coal and ramp-up of renewable electricity generation.[1] The UK is not, however, on track to reach its emissions target for 2030.[2] The Climate Change Committee (CCC) has identified transport as one of the three sectors outside electricity where reductions in emissions must accelerate very rapidly to meet the target.[3]

Transport contributes around a quarter (26%) of total UK emissions, making it the largest emitting sector of the economy.[4] Since 1990, emissions from road transport, which accounts for 95% of the UK's transport total, have remained largely unchanged. The pace and scale of action to mitigate surface transport emissions will need to increase substantially if the UK's targets are to be met.[5] In its latest progress report to Parliament, the CCC concluded that the annual reduction in surface transport emissions across the rest of this decade will need to be more than four times the small (0.9%) reduction in 2023.[6] Delivering net zero emissions across the UK by 2050 will require reducing surface transport emissions to near zero.[7]

The surface transport sector is well-placed to make a substantial contribution to reducing UK GHG emissions. A rapid, sector-wide transition to vehicles that produce zero tailpipe emissions and increased take-up of low carbon fuels, along with improvements in petrol and diesel vehicle efficiency, could make a substantial contribution to cutting emissions. If people also change their travel habits by driving less and using cleaner transport options, surface transport emissions could drop by 70% by 2035.[8] The potential contribution of zero emission technologies has started to be realised. The slight fall in surface transport emissions in 2023, despite overall vehicle-kilometres increasing, was because by January 2024 one million electric vehicles (EVs) were on the road (out of a total fleet of 33.6 million cars).[9]

Opportunities from the transition to net zero transport

Decarbonising the transport sector offers significant opportunities to create new prosperity, with the potential for thousands of new jobs in manufacturing, infrastructure, and services. Bain & Company estimate that by the end of this decade 200,000 new roles will be created by the drive to decarbonise transport.[10]

The Faraday Institution has concluded that 270,000 UK jobs could be supported by the EV and battery industry by 2040 (compared to around 180,000 in 2025). This includes around 145,000 jobs directly supported in passenger and light commercial EV production, with a further 25,000 jobs supported by the manufacture of HGVs, buses and small lightweight vehicles. Although existing workers gradually transferring from ICE production to EV production will make up a large proportion of this, some 100,000 new, full-time equivalent (FTE) jobs will be supported in these new industries. Around 35,000 new jobs could be supported in UK battery manufacturing plants, with a further 65,000 jobs in the battery supply chain.[11]

Chris Skidmore's *Mission Zero: Independent Review of Net Zero* (2023) noted that the UK could capture a first mover advantage in road freight decarbonisation. There may also be significant growth opportunities for technologies, infrastructure and services that enable more sustainable travel options.[12]

There are also benefits for public health and quality of life. Reducing emissions from vehicles directly impacts air quality. The shift to electric vehicles and the reduction of diesel buses has already led to lower levels of nitrogen dioxide and particulate matter in urban areas. Cleaner air reduces the incidence of respiratory diseases, which in turn alleviates pressure on the National Health Service (NHS) and reduces healthcare costs.[13]

By promoting active travel and reduced car dependency, people in urban areas can enjoy less congestion, lower noise pollution, and a better quality of life for residents.

A new focus on delivery

The UK government has implemented significant policies to reduce GHG emissions from surface transport in the UK. The 'ZEV (Zero Emission Vehicle) Mandate', setting minimum EV sales targets for each manufacturer, came into force in Great Britain at the start of 2024, and provides financial incentives for delivery. The previous government set an intention to end the sale of all non-zero emission heavy goods vehicles (HGVs) from 2040, with lighter HGVs from 2035. The Renewable Transport Fuel Obligation (RTFO) provides incentives to supply low carbon fuels for road vehicles and non-road mobile machinery (NRMM). A grant funding competition for zero emission buses was previously available to local authorities in England outside of London.

As this paper makes clear, much more needs to be done to unlock the sector's full potential to reduce emissions and drive green growth. Some policies, such as the 'ZEV Mandate', need further reinforcement to promote zero emission technologies while others, such as the RTFO, lack ambition. There are major gaps in policies for HGVs, vans, buses, coaches, and low-carbon fuels, which are crucial for rapidly reducing surface transport emissions by 2035. Little progress has been made with encouraging people to change their travel behaviours and reducing car journeys.

Section one sets out the interventions required across all policy areas to bring forward investment in zero emission technologies and low carbon fuels and promote better travel choices.

A successful transition to net zero transport depends on having skilled workers, ensuring that investors can access the necessary finance and maintaining broad public support. Section two describes how to provide these key enablers for the transition.

There are challenges with the way transport policy is designed and delivered. Industry needs clear and consistent policies and with coherent approaches across the nations, regions and local authorities of the UK. Section three discusses how to address these challenges.

Zemo Partnership's Delivery Roadmap for Net Zero Transport in the UK sets out a long-term vision and a strategy to reduce investment risks and support the transition to net-zero transport in the UK.

1. The Path to Net Zero Transport

1.1. Decarbonise Vehicles

Reducing carbon emissions from road transport relies on replacing the internal combustion engine (ICE) with zero emission technology. While battery electric vehicles will dominate the emerging zero emission market, hydrogen fuel cell vehicles may have an important role to play, where adoption of battery electric vehicles and battery technology is more challenging. Long-haul HGVs, for example, have long journey distances and need shorter refuelling times. Investigation is needed of the cost, energy efficiency and durability of hydrogen-powered HGVs and of how the associated infrastructure will work in practice. Hydrogen fuel cell HGVs and refuelling sites are being trialled as part of the Zero Emission HGV and Infrastructure Demonstrator programme (ZEHID). Action should be also taken to ensure that a green hydrogen supply chain is in place to meet competing demands from a range of sectors.

Policy to deliver net zero transport should seek to reduce emissions throughout the life cycle of a vehicle: vehicle production, in-use and end-of-life. This requires life cycle GHG metrics to be integrated into the formation of transport policy. Furthermore, government policy must consider the wider environmental impacts of zero emission technologies and fuels, ensuring that measures to mitigate climate change do not result in unintended impacts.

A voluntary sustainability certification scheme should be established to verify the chain of custody for critical mineral supply chains used to produce lithium batteries and electric motors.

Sales of electric cars have grown rapidly in recent years, though there are concerns that the market is not growing quickly enough to meet targets under the 'ZEV Mandate', which requires car manufacturers to sell a minimum percentage of zero emission vehicles each year. Without supporting policies, consumers may not adopt EVs quickly enough. For example, the cost of between £800 and £1,500 for a home charger to be installed can be a significant barrier particularly in the used EV market, which is less well developed and remains volatile. Demand for new electric vans is falling behind the mandate because of high costs, lack of physically accessible charging infrastructure, and inconsistent information in the market.

Furthermore, no mechanism comparable to the 'ZEV Mandate' is in place for other vehicles. HGVs, for example, contribute one fifth of UK surface transport GHG emissions[14], despite making up slightly more than 1% of the UK's on-road vehicle mix[15], and present a much tougher challenge than cars. Despite the previous government's intention for all new HGVs to be fully zero emission at the tailpipe from 2040, zero emission HGVs account for less than 1% of all new HGV sales.[16] Policies are needed to address the high upfront purchase cost of freight assets, and a lack of charging infrastructure dedicated to HGVs.

The existing diesel-based bus fleet needs to be replaced with zero emission alternatives. Good progress has been made in recent years, with over 4,000 zero emission buses (ZEBs) in service across the UK, around 10% of the total fleet.[17] Zemo expects this figure to rise to 20% by 2026/2027. However, momentum in the ZEB rollout must be maintained, and attention must turn to decarbonising coaches. With fewer than 100 zero emission coaches currently on the road in the UK[18], technology options are limited and support from government is non-existent.

Decarbonising transport poses difficulties for parts of the transport sector. SMEs, which include around 85% of freight operators, face high upfront costs in making investments in, for example, zero emission vans.

The rapid rollout of zero emission vehicles and charging infrastructure will only happen if the electricity grid can accommodate higher demand in load and the rate of connections.

In November 2023, the Government and Ofgem jointly produced a Connections Action Plan to speed up the time needed to build new transmission infrastructure and improve queue management. The plan is welcome but further measures to prioritise low carbon projects are required. Electric vehicles must be charged with clean electricity to deliver their full benefits for the environment and to ensure that the credibility of the technology is not undermined. This means that the electricity grid needs to be decarbonised as quickly as possible.

It is also vital that the UK meets its target to have at least 300,000 public charging points by 2030. One of the biggest barriers to speeding up chargepoint installation is the delay in securing connections to local electricity grids. The Connections Action Plan will also help to address the delays currently experienced in the queue for grid connections and must be delivered at pace. The huge volume of connections that DNOs are handling has led to long lead times in delivery. If this continues, market and consumer confidence will be placed at risk. New investment will be required to reinforce local electricity networks and avoid further delays and bottlenecks.

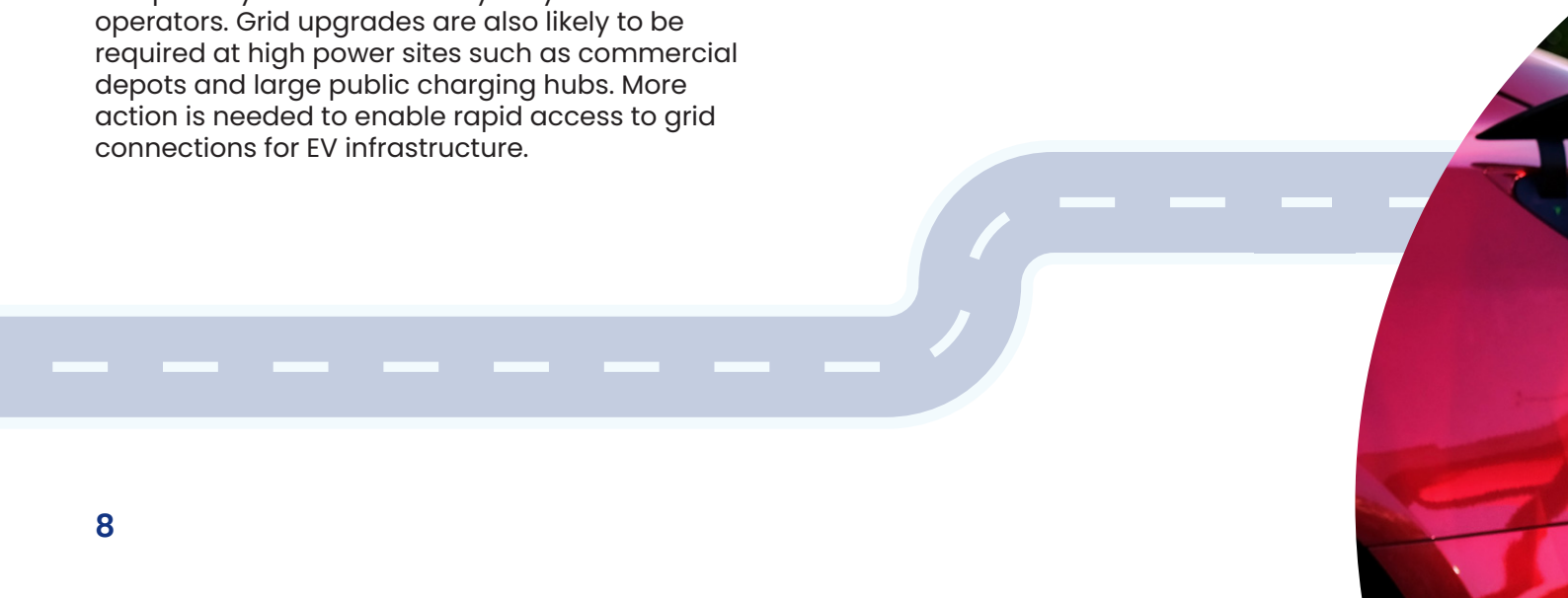
One solution is to allow further investment in grid upgrades ahead of need. Under the current price control for DNOs (RIIO-ED2), Ofgem has started to allow investment in the network ahead of connection requests, where it is well evidenced, but this is subject to tight criteria. The new flexibility, while welcome, is still not enough to support the level of investment in network reinforcements needed to accommodate increased levels of EV charging and other local demands. This is especially relevant to heavy duty vehicle operators. Grid upgrades are also likely to be required at high power sites such as commercial depots and large public charging hubs. More action is needed to enable rapid access to grid connections for EV infrastructure.

Another barrier is the planning rules associated with chargepoint installation. Planning processes are too often time-consuming and costly. Various consents are required for planning and permitting and these can overlap. Rules are often interpreted inconsistently across different local authorities. A comprehensive review of all relevant planning and consent rules is urgently needed.

Ofgem's priorities include enabling infrastructure for net zero at pace, reflecting the energy regulator's new statutory duty to support net zero. We look forward to seeing Ofgem, along with the new National Energy System Operator (NESO) and the UK Government, deliver these plans.

The number of public charging points is growing but they are not distributed evenly across the UK. London and Scotland had the most charging points per 100,000 people, with 221 and 93 devices, while the average provision for the UK was 89.[19] Rural communities face slower infrastructure development, leading to limited access to public charging points. These trends affect EV adoption rates.[20] The priority must be to provide enough high-quality chargepoints where they will be most needed and cater to diverse user needs (including vans and light commercial vehicles), rather than simply increasing the number of chargepoints.

The number of chargepoints is not a useful way to measure progress on charging infrastructure. For example, one rapid motorway-based chargepoint is very different from a slow lamp-post charger. More relevant metrics are needed for the rollout of charging infrastructure.



Cross-Cutting Proposals

Expand and improve charging infrastructure. More comprehensive, accurate and accessible data will now enable the private sector to develop solutions for growing the public charging network at pace. The next step is to develop more relevant metrics for the chargepoint rollout. A strategic review of the public charging infrastructure is required, including the number, type, and power of chargers, as well as mapping their distribution in relation to the location and usage of EVs. The government should support sites where they are needed but not commercially viable. Local authorities should be supported to access the information and expertise they need to make more chargepoints available.

Ensure fairness in VAT rates for charging by applying the lowest rate for electricity used to charge vehicles, no matter where they are charged. The Government should consider other mechanisms to limit the gap between typical energy prices paid by people who can charge at home and those who must use public charging facilities. These measures could include giving public chargepoint operators tariff options comparable in price to those available to domestic customers and reviewing how the costs of local network upgrades are shared between domestic customers and chargepoint providers. Consideration should also be given to delinking the price of electricity from fossil gas and reforming the standing charge rates applied to electricity at public charging sites.

Promote the decarbonisation of the electricity grid by speeding up the progress of low carbon energy generation projects through permitting and grid connection.

Future-proof local grids for the EV transition by allowing DNOs to invest in making upgrades ahead of need. This will also free up existing capacity and facilitate smart charging.

Bring forward the grid upgrades needed to deliver EV infrastructure. The government should designate grid upgrades that support chargepoint installations as 'nationally critical infrastructure' and fast-track the approval of such projects. The planning and approval processes for installing charging points should be accelerated and simplified.

Promote the reduction of emissions throughout the life cycle of vehicles by embedding life cycle GHG metrics into the formation of transport policy. The Government must introduce strict sustainability criteria for critical mineral supply chains associated with technologies required for the transition to net zero transport: notably lithium batteries and electric motors.

Ensure a secure green hydrogen supply chain by harmonising Government funding streams to stimulate investment in renewable hydrogen generation.

Specific Proposals

Personal Mobility

- **Disseminate robust and consistent information to the public about zero (tailpipe) emission vehicles**, including range, charging options, vehicle performance, running costs and full lifecycle environmental impacts compared with (ICE) vehicles.
- **Encourage consumers to buy EVs**, by, for example, expanding the availability and scope of salary sacrifice schemes and low interest loans for installing home chargers. Zero emission cars pay the lowest rate of Vehicle Excise Duty (VED) but only for the first year. VED should be on based size, weight and energy efficiency emissions across the life cycle of a vehicle, once suitable metrics are available.
- **Give car buyers the clear, easy-to-understand information they need to choose zero emission vehicles.** Zemo has developed a proposal for an enhanced digital 'new car environmental label' to help buyers choose the most environmentally friendly and cost-effective car for their needs. The digital tool could initially be used voluntarily across the industry and made mandatory later. The Government, working with industry, should create a comprehensive database showing emissions, energy efficiency, and resource impacts of vehicles.

Public Mobility

- **Support the rollout of zero emission buses** by providing greater clarity to industry. Three years after the previous Government's consultation, a date should now be set for ending the sale of non-zero emission buses. The introduction of a zero emission vehicle mandate to support an end of sales date should also be investigated to determine whether such a mechanism is necessary for zero emission buses.
- **Create a long-term funding mechanism for zero emission buses** by reforming the Bus Service Operators Grant (BSOG) to support the business case for purchasing zero emission buses.
- **Enable the UK to reach its leadership potential in zero emission coaches** by using grants to encourage the supply of new models.

TIMETABLE

By 2026

Develop more relevant metrics for chargepoint rollout.

Conduct strategic review of public charging infrastructure.

Reform VAT rates for charging.

Expand the availability and scope of salary sacrifice schemes and low interest loans for installing home chargers.

Introduce digital new car environmental label.

Set a date for ending the sale of non-zero emission buses.

Investigate a zero emission mandate.

Develop reforms to BSOG.

Increase the plug-in grant for zero emission HGVs.

Provide financial support with grid connections to SMEs.

Create appropriate metrics on the state of batteries and establish a battery certification scheme.

Introduce strict sustainability criteria for critical mineral supply chains associated with technologies required for the transition to net zero transport.

Moving Goods

- **Boost demand for zero emission HGVs**, by increasing the plug-in grant for zero emission HGVs and phasing in a 'ZEV Mandate' based on vehicle weight over three to four years.
- **Support the roll-out of a public charging infrastructure for zero emission HGVs.** Promoting the Zero Emission HGV and Infrastructure Demonstrator (ZEHID) programme more widely could show the sector the progress and potential for zero emission long-haul decarbonisation options, including hydrogen fuel cell HGVs. The ZEHID programme should be used to support the development of focused and granular policy approaches in a complex and diverse sector, including development of charging and fuelling infrastructure. Policies for zero emission long-haul decarbonisation can then be rolled out.
- **Encourage the use of zero emission vans** by tackling regulatory barriers and providing financial support with grid connections to SMEs. The government can boost the second-hand market for zero emission vans by requiring accessible data to be provided on the state of batteries and introducing a warranty scheme. These measures rely on the creation of appropriate metrics and the establishment of a certification scheme for batteries.

By 2029

Provide financial support for selected non-commercial chargepoints.

Improve local authorities' abilities to access the information and expertise they need to make more chargepoints available. (ongoing).

Speed up the progress of low carbon energy generation projects through permitting and grid connection.

Allow DNOs to invest in making upgrades ahead of need.

Designate grid upgrades that support chargepoint installations as 'nationally critical infrastructure'.

Speed up planning and approval processes for installing charging points.

Disseminate robust and consistent information to the public about zero (tailpipe) emission vehicles. (ongoing).

Reform VED.

Implement reforms to BSOG.

Introduce grants for new zero emission coaches.

Phase in 'ZEV Mandate' for HGVs based on vehicle weight

Use ZEHID to examine potential for zero emission long-haul decarbonisation options; develop policy approaches.

Require accessible data to be provided on the state of batteries and introducing a warranty scheme.

Embed life cycle GHG metrics into the formation of transport policy (ongoing).

Imlement delivery plan for green hydrogen supply chain.

1.2. Decarbonise the Existing Fleet

Even as zero tailpipe emission vehicles gain greater market share, it will take decades for the residual ICE fleet - cars, vans, trucks, buses and coaches to become fully electrified. More than a quarter of the UK car fleet is over 13 years old, a figure that is set to increase. With sales of ICE HGVs due to end in 2040, the continued deployment of diesel trucks is likely to extend to 2050. This presents a major obstacle to meeting UK emissions targets.

It will not be feasible for some sectors to shift to EVs immediately. HGVs, for example, are a complex transport mode, with many different configurations and operational profiles. The whole-life cost of zero emission HGVs, including charging infrastructure, is significantly higher than that of incumbent diesel HGVs.

Expanding the use of low carbon fuels, including liquid and gaseous biofuels, will encourage reductions in GHG emissions as the market for zero emission vehicles matures. They have an important role to play over the next decade. Any delay in the transition can be addressed through the wider adoption of low carbon fuels, especially in long-haul truck and coach fleets These vehicle modes and NRMM are the hardest to electrify in the near to medium-term.

Many transport operators face challenges and uncertainties in making the transition to low carbon fuels. Policy is needed to bridge the cost differential between low carbon fuels and diesel and provide long-term certainty for fleet operators.

Government policies to address these challenges and uncertainties remain stalled. The Renewable Transport Fuels Obligation (RTFO) lacks ambition and Government is failing to provide clarity on the role of low carbon fuels in decarbonising road transport over the next two decades. The low carbon fuels strategy promised under the previous government to give industry and investors more certainty has still not been published.

Delivering a clear plan and support regime for the long-term use of all types of renewable fuels, strategically across transport modes and NRMM would boost both production and demand as the transition to zero emission vehicles progresses.

Cross-Cutting Proposals

Increase the supply of high blend biofuels in the heavy duty vehicle fleet by increasing the RTFO target and extending the target beyond 2032.

Raise the proportion of renewable fuels in retail petrol and diesel by using the RTFO to encourage a greater supply of drop-in fuels.

Give the industry more clarity and confidence by setting out a long-term strategy to boost both production and demand for low carbon fuels. The strategy could provide fiscal incentives for fleet operators, set out a clear regulatory framework, and promote investment in R&D to support low carbon fuels.

Expand the uptake of high blend biofuels in heavy duty vehicle fleets. Zemo has developed a proposal for a UK renewable liquid fuels incentive, using a sliding discount on fuel duty based on life cycle GHG emission performance. Data on the greenhouse gas emissions of high blend biofuels is readily available through initiatives such as the Zemo Partnership Renewable Fuels Assurance Scheme.

Encourage greater GHG emissions savings in low carbon fuel supplied in the UK by moving the RTFO to a GHG emissions-based target.

Specific Proposals

Personal Mobility

Increase the proportion of renewable fuel in retail diesel and petrol by encouraging the development and use of drop-in fuels, fully compatible with existing vehicles. This could be achieved through the RTFO.

Public Mobility

Encourage the use of low carbon fuels in the bus and coach sectors. Our proposed UK renewable liquid fuels incentive would be available to heavy duty vehicle operators to encourage the wider adoption of higher blend biofuels. Such a fiscal incentive would work alongside bus and coach fleet electrification.

Moving Goods

Reward fleet operators for using renewable fuels. Our UK renewable liquid fuels incentive would also be available to heavy duty vehicle operators to encourage the wider adoption of higher blend biofuels. This fiscal incentive would work alongside HGV electrification.

TIMETABLE

By 2026

- Increase the RTFO target and extend the target beyond 2032.
- Use the RTFO to encourage a greater supply of drop-in fuels.
- Publish a long-term strategy to boost both production and demand for low carbon fuels.
- Introduce the UK renewable liquid fuels incentive.
- Move the RTFO to a GHG emissions-based target.
- Encourage the development and use of drop-in fuels, fully compatible with existing vehicles through the RTFO.
- Provide clear and consistent information to fleet operators on their GHG emission performance and whole life costs. (ongoing)

1.3. Promote Low Carbon Travel Choices

Vehicle electrification and decarbonising fuels are essential, but they alone won't be enough to significantly reduce road transport emissions. Decarbonising road transport at the required pace and scale will also require changes in personal behaviours and in travel and vehicle choices. This means driving fewer miles in smaller and better utilised vehicles and making better use of roads.

The Climate Change Committee (CCC) has concluded that a modal shift to walking, cycling and public transport, an increased level of car sharing and higher behavioural change could result in a reduction in vehicle miles driven of 34% by 2050 relative to baseline demand.[21]

The use of targeted emission zones can be a powerful instrument for achieving a modal shift. Local authorities use such zones to discourage the use of specific types of vehicles or to encourage people to use low emission vehicles, powered light vehicles (PLVs) or public transport. A range of low emission zones is in use across the country and some local authorities use more than one. It will be important to ensure that the frameworks and communications for implementing such zones are as clear and consistent as possible as they evolve and adapt to the changing on-road mix of transport modes.

There is a need for change in the freight and services sector also. Each tonne of freight transported by rail produces 76% fewer carbon emissions compared with road.[22]

Smaller and lighter Powered Light Vehicles (PLVs), such as mopeds, motorcycles, micro cars, and micro vans, use less road space, easing congestion, and are inherently more energy-efficient over their life cycle. Technical challenges, design issues and perceptions around safety present challenges in achieving a switch to PLVs. However, current government policies do not fully recognize the role they can play in reducing emissions and improving urban mobility.

Policies are needed to raise awareness and provide accurate information about greener travel and haulage options for individuals, businesses, and society. These should be paired with incentives and other measures to make these options more attractive.

We need a multi-path approach to decarbonising journeys.

Cross-Cutting Proposals

Paying for road use: the case for reform

The time has come for an honest national conversation about the potential role of fiscal measures in encouraging greener travel choices and more efficient road use. The existing forms of motoring taxation – principally fuel duty and vehicle excise duty - do not cover the external costs that road users impose on the rest of society. The average driver in the UK lost 61 hours due to traffic congestion in 2023, a four-hour increase from the previous year.[23] Traffic congestion costs the UK economy more than £7.5 billion a year.[24] New policies are needed to manage demand for road use.

The transition from conventional petrol and diesel to electric vehicles (EVs) strengthens the case for reform. First, the shift will make driving a cheaper option for growing numbers of people, which will lead to significantly increased levels of traffic and congestion by 2050. Without action to reform existing cost structures, there is a real risk that these trends will become permanent.

Second, the Office for Budgetary Responsibility (OBR) has shown that increased take-up of electric vehicles will cost the UK Government £13 billion a year in lost fuel duty revenues by 2030. This equates to around 4% of overall tax receipts in 2021–22.[25] A replacement source of revenue will be required, especially as tax receipts from fuel duty will continue to fall steadily in the 2030s and 2040s. Given that EV users tend to be from middle- and higher-income brackets, the replacement revenue should be raised in a way that is fair on the whole community.

Zemo Partnership is well placed to promote this vital discussion. We bring together a unique and extensive network of key stakeholders across road transport to develop policy recommendations based on evidence and robust data. We take a technology-neutral approach and work to build consensus in transport policy debates.

Specific Proposals

Personal Mobility

- **Provide greater support and information on alternatives to cars:** walking, cycling, public transport, car clubs and lift sharing. The Government should provide long-term funding settlements for local authorities to improve walking and cycling routes and improvements to help pedestrians. Funding for these options needs to be consistent so that local authorities can plan and invest for the long-term.
- **Promote smaller and lighter powered light vehicles (PLVs)** by streamlining user licensing to make access more affordable and straightforward. Action should be taken to increase public awareness of the benefits of PLVs among transport planners and to stimulate the industrial supply chain.

Public Mobility

- **Encourage the uptake of public transport.** The first, essential step is to make sure that people have access to reliable and convenient buses or train services with integrated ticketing and payment systems. Such measures as congestion charging and parking prices and restrictions can encourage people to use public transport. This model was developed in London, and the Government should promote its use in other areas, where applicable.
- **Support local authorities to reduce road congestion and pollution** by providing guidance around the communications and messaging for rolling out different forms of emissions zones. This will help local authorities maintain public understanding and support for such solutions.
- **Help people to make low carbon travel choices** by providing consistent information on the emissions produced by each option. Metrics for the cost, frequency and reliability of public transport options should be easy for people to access.

Moving Goods

Encourage the adoption of PLVs for last-mile deliveries by implementing consumer and business incentives that encourage operators to shift from ICE cars and vans to smaller, lighter micro cars and vans, which predominantly use battery-electric powertrains. A new vehicle category should be added to the L-Category framework to fill regulatory gaps. This is especially important for L7 (micro car) standards and to clarify and enforce rules around the use of illegal high-powered e-bikes and cargo bikes, making sure businesses comply with legal requirements. A joint government-industry awareness campaign is essential to educate businesses and consumers about zero emission alternatives to conventional delivery vehicles.

TIMETABLE

By 2026

Develop metrics for the cost, frequency and reliability of public transport options.

Begin reform of user licensing for PLVs.

By 2029

Deliver new funding strategies to promote walking, cycling and public transport.

Hold national conversation on paying for road use.

Ensure that people have access to reliable and convenient buses or train services with integrated ticketing and payment systems.

Promote congestion charging and parking prices and restrictions can encourage people to use public transport.

Provide guidance to local authorities around the communications and messaging for rolling out different forms of emissions zones.

Introduce consumer and business incentives to encourage the adoption of PLVs for last-mile deliveries.

2. Enabling the Transition to Net Zero Transport

2.1. Unlock Access to Green Finance

Delivering the transition to zero emission transport requires major investments in every mode. This will require public sector investment, but the size of the transformation means that it must also be combined with green private finance.

There are four main factors limiting the availability of private finance for decarbonising road transport at a suitable cost.

First, the green finance market is immature, with low carbon transport still seen as a developing, innovative sector. There are some funding opportunities through the Public Works Loan Board and the UK Infrastructure Bank, but they are not sufficient to provide finance on the scale that is needed. While some institutions are beginning to offer green finance, there appears to be a mismatch in terms of the size of investment being offered and sought in the market. Consequently, the overall supply of investment at the size being sought by investees remains constrained. An expansion of green finance opportunities from commercial and retail banks aimed at both the private and public sectors is required. An intermediary body able to aggregate demand for finance could help to match the availability of market finance with demand. The possible role of such an intermediary body requires further investigation.

Second, where private sector funding is available, lenders tend to take a cautious approach to the risks of decarbonising road transport. As a result, the limited available finance is priced too high or is simply not available. This is especially a challenge for SMEs, which are more reliant on the retail banks. The lenders' caution may be excessive, given the strong policy and regulatory support for the transition to net zero transport.

Third, greater use of asset finance or leasing could help to reduce risk. Asset financing can also be provided as part of a wider contract agreement for example by an Independent Distribution Network Operators providing network connection financing additional assets, such as charging equipment. A lack of tangible data available to allow investors to quantify the risk they face is a challenge. Ofgem imposes requirements on DNOs to provide open data on the use and state of assets. If this principle were extended beyond the meter and to assets, such as vehicle batteries and charging equipment, it would open up opportunities to de-risk investments and introduce innovative methods of financing

Fourth, Distribution Network Operators and retail banks tend to react to customer approaches individually rather than developing partnerships and consortiums that would help reduce the cost of finance for projects.

Proposals

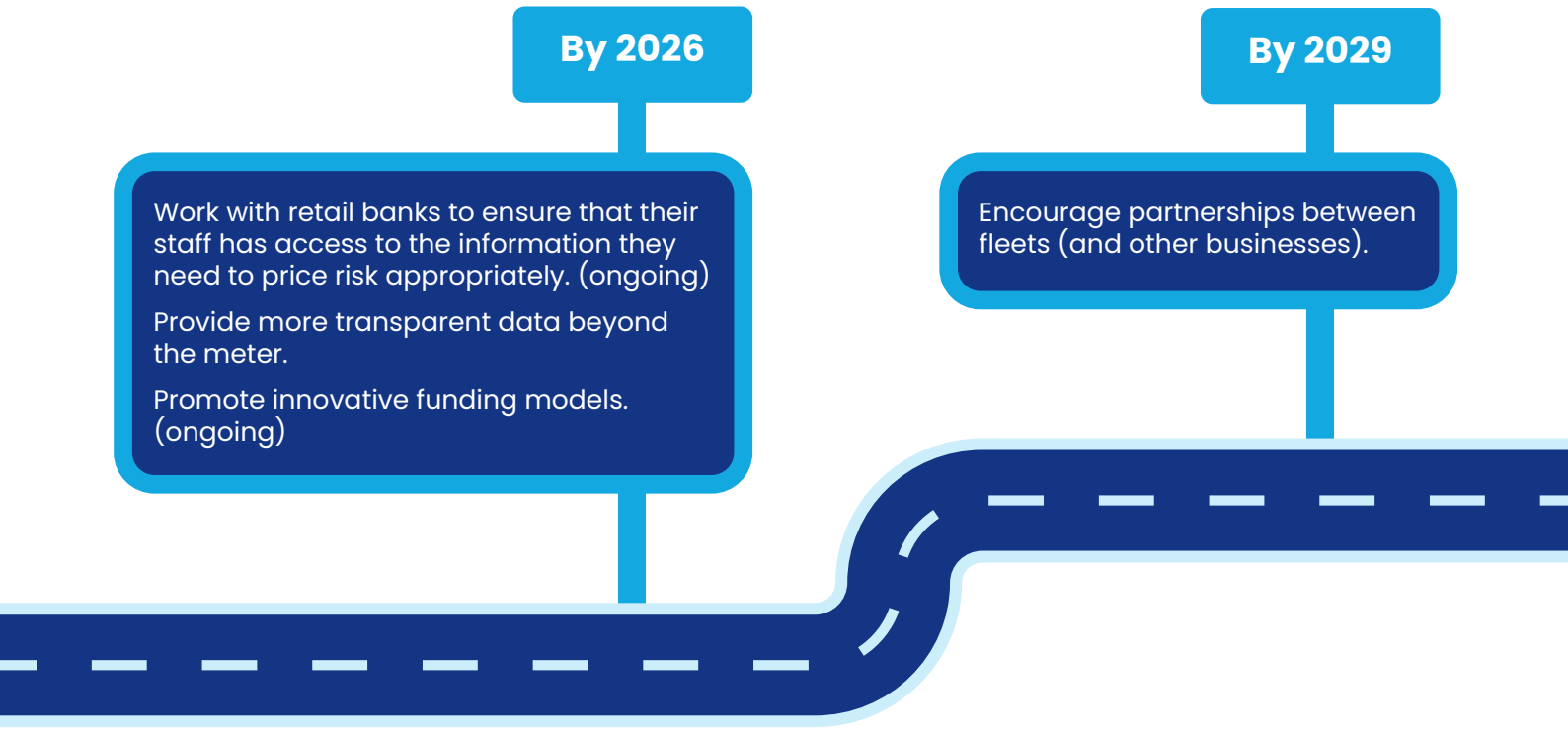
Work to improve lenders' perceptions of risk by working with retail banks to ensure that their staff has access to the information they need to price risk appropriately.

Facilitate the use of lower risk financing options, such as asset financing, by providing more transparent data beyond the meter to enable lenders to value assets and assess risk.

Promote innovative funding models that enable risk to be shared, such as the Green Finance Institute's Utilisation Linked Finance where repayments of finance are linked to use of charging infrastructure.

Encourage partnerships between fleets (and other businesses) to share facilities, improve asset utilisation and reduce risk.

TIMETABLE



2.2. Develop a Strong Skills Base

The UK needs a strong low carbon skills base to attract investment and achieve the transition to net zero.

There will be major and rapid changes in the transport sector, starting with a dramatic expansion of electric vehicle manufacturing, from around 30,000 electric cars in 2024 to as many as 900,000 projected by the end of the decade, according to SMMT.[26] This will require charging infrastructure designers, manufacturers and operators, battery development experts, micromobility manufacturers and regulators. Both new recruitment and the retraining of workers from other sectors, such as engine manufacturing, will be needed urgently to meet the growing demand for skilled labour.

The UK will also need skills to maintain the rapidly growing number of EVs coming into use. By the end of 2023, the UK had around 45,300 technicians qualified to work on EVs. Research by the Institute of the Motor Industry showed that around 107,000 technicians will be needed by 2030 when millions more EVs will be on the road.

There is evidence of an emerging skills gap. Green Alliance research in 2022 suggested that the UK transport sector would need an additional 175,000 employees by 2035 because of newly emerging demands from net zero. It found that the main skills gaps in transport are in chargepoint installers and operators, vehicle scrappage and recycling experts, battery manufacturers and operators, and electrification engineers.[27]

The need to reskill workers will be a parallel challenge. Research by Bain & Company suggests that the shift to electric vehicle manufacturing will be the biggest driver of change in the UK workforce during the 2020s[28]. The SMMT contends that 80% of automotive job roles that involve powertrain competencies will need to be reskilled or upskilled over the next ten years.[29]

Vehicle maintenance is one role that will need to adapt to new demands such as changes in vehicles or fuels. Differences in electric vehicles' engine and transmission systems mean that ICE mechanics will need a different set of skills. In July 2024, an NSAR study estimated that 85,000 existing transport employees currently working predominantly in maintenance areas will have to undergo either up- or re-skilling to continue in their roles.[30]

The sale of automative fuels in petrol stations will also be impacted as ICE vehicles phase down over the next two decades.

In general, however, there is still a shortage of consistent and reliable UK-wide data that can be used as the basis for designing and developing future government policy to address future skills requirements in surface transport.

Policies are needed to ensure that the surface transport sector has the skills base that it needs to attract low carbon investment and ensure a just and inclusive transition to net zero.

Proposals

Build a stronger evidence base to analyse where the transition to net zero will impact employment in the transport sector and where skills gaps are emerging.

Develop a long-term skills and retraining strategy for net zero transport. The strategy would set out the relevant skills standards, frameworks, and qualifications that need to be developed or updated. It would provide clear plans to direct policy and funding to close the skills gaps and, where necessary, reform entry criteria for occupations. The strategy would clarify the future roles of schools, further education and higher education in addressing net zero skills and deliver opportunities and incentives for workers to update their skills and qualifications.

Speed up reskilling and upskilling of existing workers. The Government should reform the Apprenticeship Levy to support upskilling where it most needed - for example, electrification of the automotive industry. The Government should launch a comprehensive review of qualifications and training pathways to ensure qualifications are transferable and relevant. A 'skills passport' would enable industries to recognise each other's skills and qualifications and make it easier for people to transfer them.

TIMETABLE

By 2026

Build new evidence base on skills needs.

By 2029

Publish skills strategy.

Hold review of qualifications and training pathways.

Develop skills passport.

Reform Apprenticeship Levy.

2.3. Take People With Us

Four out of five people in the UK are worried about climate change and its impacts.[31] This level of concern is highly unlikely to change. The dire threats to people, communities, and economies from a fast-changing climate are well known.

Moving to net zero in transport will, however, be challenging, as many people will need to make noticeable changes in the way they live. Some solutions or policies to decarbonise transport might seem too expensive, inconvenient, or uncertain, and if they are not designed or delivered carefully, could unfairly impact certain groups or businesses.

Without continuing public understanding and support, net zero policies could be at risk. In 2018, the "gilet jaunes" in France successfully mobilised against fuel tax rises. Last year, the Alternative for Germany (AfD) led a public backlash against a new law requiring households to install heat pumps powered by clean energy. Policies that seek to reduce the use of high-polluting vehicles can be particularly controversial, as demonstrated by the 2023 protests against the ULEZ in London.

Public support for the change to net zero will not last if too many people are excluded. The risks are already apparent. New job opportunities will be created in some areas, such as zero emission vehicles manufacturing, maintenance and infrastructure, but in others, roles and livelihoods will be impacted. Between 25% and 40% of households in the UK have no access to off-street parking and must rely on the public charging network for electric vehicles. People living in rural communities, low-income areas and multi-occupancy buildings are least likely to have access to public charging infrastructure.[32]

Consumers may lack the reliable information they need to make decisions – for example, they may believe that battery lifespans are shorter than they are. There are many myths and much misinformation about EVs that need to be corrected.

Concerted action is required to convince the public of the need to decarbonise surface transport and explain the benefits that for individuals and society.

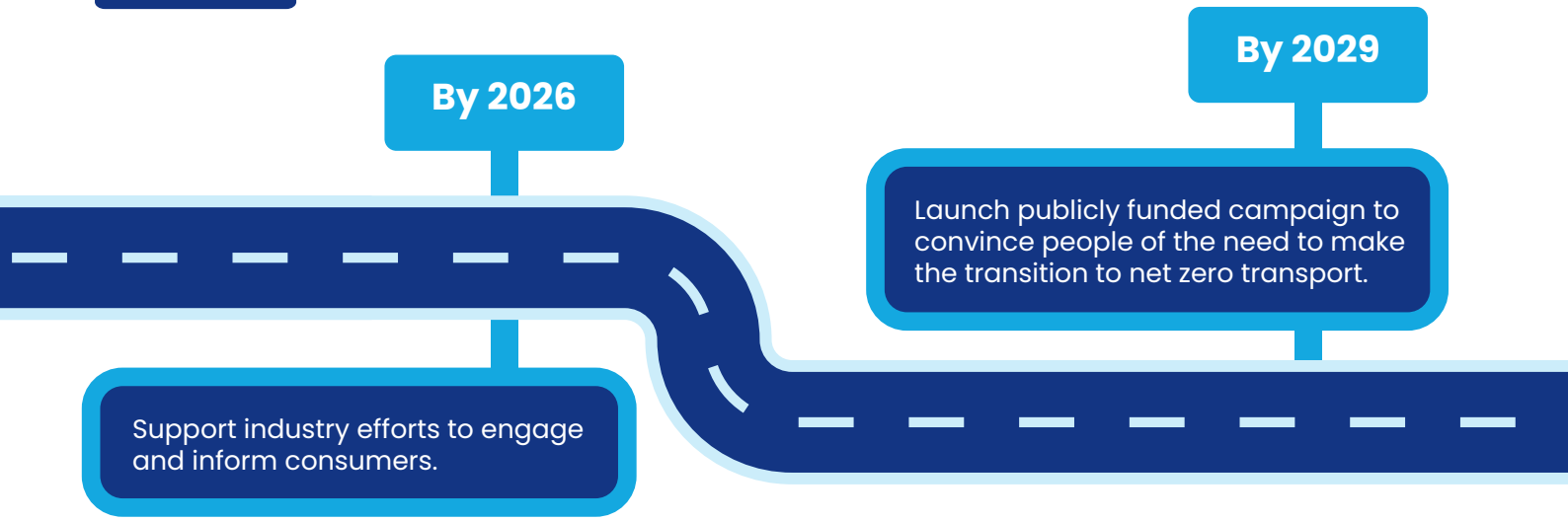
Proposals

Ensure a fair and just transition to net zero transport. Developing a long-term skills and retraining strategy [see above] will enable workers to be part of the change. Our proposals to expand and improve charging infrastructure aim to ensure that people from all income groups and in every part of the UK can access chargepoints. We have also set out proposals above to ensure fairness in VAT rates for charging electric vehicles.

Launch a publicly funded campaign to convince people of the need to make the transition to net zero transport. The campaign should present net zero as an historic opportunity to build a greener, more efficient transport system that will drive prosperity for everyone. It will need to highlight the co-benefits - cleaner air, less congested roads, better public health and improved public transport – for people, communities and businesses.

Support industry efforts to engage and inform consumers by, for example, challenging myths and misinformation on EVs, promoting greater awareness of zero tailpipe emission options and educating fleet operators on the benefits of renewable fuels.

TIMETABLE



3. Making and Delivering Policies for Net Zero Transport

3.1. Provide a Stable Policy Environment

To achieve the transition to net zero transport, businesses need long-term certainty to invest in low carbon technologies, infrastructure and fuels. This certainty relies on a stable and consistent policy environment, which should include clear targets, stable funding, and a consistent regulatory framework. The UK Government's approach to policy can be improved in three ways.

First, policy should be comprehensive, addressing the barriers to private investment. Targets and intentions have been set for some technologies and fuels, but they do not have policy trajectories to support them. For example, while the Government intends to phase-out the sale of new non-zero emission heavy goods vehicles (HGVs) by 2040, there is no clear policy framework for overcoming barriers to private investment. Similarly, the UK Government has long acknowledged the importance of low carbon fuels in reducing greenhouse gas emissions, with the Renewable Transport Fuels Obligation (RTFO) the primary policy measure supporting this sector. Although it was promised four years ago, a strategy for low carbon fuels has still not been delivered.

Second, the Government should use targets and mandates to send clear signals to investors and consumers. Sudden reversals of policy, without full consultation with the industry, can damage market confidence. Last year, for example, the previous government deferred the ban on the sale of new, non-hybridised petrol and diesel cars and vans from 2030 to 2035. Meanwhile, vehicle manufacturers were still required to meet a strict 'ZEV Mandate'. The motor vehicle industry had invested considerable time and resources in ensuring that the original deadline would be met, so the change raised questions about the Government's commitment to the EV transition.

Third, the Government's policy relating to the delivery of net zero transport needs to be more joined up. Several UK Government departments handle different aspects of transport policy covered in this paper. Energy policy is a key priority because timely access to the grid and the cost of electricity are major concerns for those developing net zero transport technologies. These come under the remits of the Department for Energy Security and Net Zero (DESNZ) and the energy regulator, Ofgem. The Department for Business and Trade leads on industrial strategy, covering innovation and skills. The Treasury is responsible for taxation policy, including motoring taxation. The Ministry of Housing, Communities and Local Government oversees planning policy. Policies on health, employment and education are relevant to efforts to reduce vehicle mileage. We need a whole-systems approach to delivering net zero transport, across all relevant areas of government policy.

Proposals

Support technology and fuel targets by providing long-term policy trajectories, where needed, as proposed elsewhere in this paper.

Maintain a clear commitment to delivering stated targets to deliver net zero transport and ensure that relevant policy trajectories remain consistent and credible.

Ensure joined-up approaches and avoid policy silos across all areas relevant to delivering net zero transport. All departments should apply a net zero test to all spending and taxation decisions to ensure that they are consistent with delivery of the UK's GHG emission targets.

3.2. Work Together Across the UK

The four nations of the UK are broadly aligned in their commitment to decarbonise their economies. The UK, Northern Ireland and Wales Governments have set a target to achieve net zero GHG emissions by 2050, whereas Scotland has a target to achieve this by 2045. But each nation uses differing combinations of carbon budgets, targets and policies to achieve its aims. In transport, the nations' targets for achieving their objectives diverge in important ways.

The Scottish Government has set targets to reduce passenger car kilometres by 20% by 2030 (from 2019 levels). It is committed to spending 10% of its transport budget on walking and cycling. Free bus travel is available to under-22s and over-60s.

The Welsh Government aims to reduce the number of car miles travelled per person by 10% by 2030 (from a 2019 baseline) and to increase the proportion of trips by sustainable travel mode (public transport and active travel) to 35% by 2025 and 39% by 2030. Last year, it halted 31 road-building projects following an independent review and introduced new tests for road construction aimed at reducing carbon emissions.

Despite these differences, the governments of the four nations must act together to meet their shared objective of reducing GHG emissions across the UK to net zero. The UK Government and the devolved administrations regularly collaborate on policies to decarbonise transport. For example, the UK, Scottish and Welsh Governments, and the Northern Ireland Executive worked together successfully on the 'ZEV Mandate' legislation.

Effective working relationships and close engagement between the four nations of the UK will be vital to achieving the transition to net zero transport.

Zemo Partnership is available to work with the governments of the four nations that make up the UK to facilitate discussions, share learnings and develop shared approaches to delivering net zero transport. With a membership base across the UK, Zemo is uniquely well-placed to provide a forum for high quality discussions on reducing surface transport emissions, delivering green prosperity and ensuring a just transition to net zero transport.

3.3. Deliver at Regional and Local Level

In this critical delivery phase, decisions on key infrastructure and investment will increasingly be made by devolved administrations and local government across the nations and regions of the UK.

This is an important opportunity to make more rapid progress on delivering net zero transport. It is easier for regional and local decision makers to break down policy silos and develop integrated strategies for transport, housing, skills and economic development.

Regional authorities in England have adopted ambitious net zero strategies. For example, the West Midlands Combined Authority has set the region a target to be net zero by 2041. Greater Manchester aims to be carbon neutral by 2038 and has a five-year Environment Plan focused on increasing public transport usage, expanding the availability of EV chargepoints, tackling freight emissions and increasing the number of zero emission buses.

Local authorities play a key role in decarbonising transport. Some use policy interventions such as local plans that embed active travel and public transport solutions, bringing in emissions-based parking permits to encourage lower emission vehicles and introducing workplace parking levies to manage congestion. Others have reformed their local infrastructure, ensuring good networks of EV chargepoints, introducing safe routes for active travel and providing secure bike parking options.

There are, however, challenges with local decision-making.

First, there is a major shortage of resources, skills, and knowledge at the local level, including a lack of transport planners. Planning and transport functions need to work together more closely. There are too many separate funding sources, which makes the bidding process inefficient, time-consuming, and hinders the coordinated decision-making needed. Funding and governance need to be reformed so that local leaders can make decisions on an integrated long-term basis with net zero at the heart of decision-making.

Second, most local authorities have declared a climate emergency but have yet to articulate what that means in practical and policy terms. Many do not have the practical information, expertise, knowledge or resources they need to deliver policies for net zero transport. The delivery of policies at the local level needs to be strengthened. A lack of resources and skills inhibits coordination between councils, creating barriers to key net zero solutions such as chargepoint connections.

Third, devolved and local decision-making has become fragmented and complex. Sub-national Transport Bodies (STBs) encourage more collaboration at a regional level, but do not tie in with government regions. Funding for local transport schemes has been moved from Local Enterprise Partnerships (LEPs) back to local transport authorities. The Strategic Road Network is handled separately from local roads and some investment is subject to a bidding process.

Action is needed to develop more consistent approaches across regions and in local areas and avoid 'patchwork' approaches to decarbonising surface transport.

Proposals

Enable regional and local decision makers to plan and invest in net zero transport on an integrated, long-term basis by moving to more devolved long-term financial settlements for local authorities. A comprehensive review of all policy tools and resources available to regional and local decision-makers is needed. This will enable local leaders to take advantage of their new powers under the English Devolution Bill, including over local transport networks and new Local Growth Plans.

Give local councils greater practical support to deliver net zero solutions. Zemo Partnership will collaborate with the Transport Knowledge Hub to create a 'Toolkit for Transition.' This toolkit will give local decision makers the guidance and information they need to drive transport investments that reduce GHG emissions and boost local jobs. It will share best practice case studies on such topics as expanding the number of chargepoints, planning, and fleet electrification. The initiative will also establish a 'one-stop' expert community to support local authorities in designing and implementing net zero policies and attracting new investments. Zemo can bring together local decision makers to help them navigate the existing information and advice.

Promote coordinated and coherent policy making for net zero transport. The Government should provide guidance to local councils on how to integrate transport planning into local area energy plans in a consistent manner. The Government should also encourage and improve coordination between local councils. A review of governance in transport policy is needed to clarify how, when and by whom decisions are made and investment priorities set.

TIMETABLE

By 2026

Provide guidance to local councils on how to integrate transport planning into local area energy plans.

By 2029

Move to more devolved long-term financial settlements for local authorities. (ongoing)

Review all policy tools and resources available to regional and local decision makers is needed.

Zemo to create a local councils' Toolkit for Transition.

Conduct a review of governance in transport policy.

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About Zemo Partnership

Zemo Partnership (formerly Low Carbon Vehicle Partnership) is a longstanding, public-private partnership established by the Government in 2003 to support the decarbonisation of UK road transport. An independent non-profit organisation, Zemo Partnership works with policy makers, businesses and experts to accelerate the transition of UK transport to zero emissions in line with the UK's legal targets under the Climate Change Act.

Zemo Partnership works in collaboration with government at central, regional and local levels, convening a uniquely broad range of representatives of stakeholder organisations from industry (transport and energy), academia, road user bodies, environmental groups and consumer organisations.

With its cross-sectoral membership, Zemo Partnership is uniquely well-placed to provide guidance to government, create opportunities for UK businesses and deliver a sustainable shift to net zero transport.

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Zemo Partnership

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