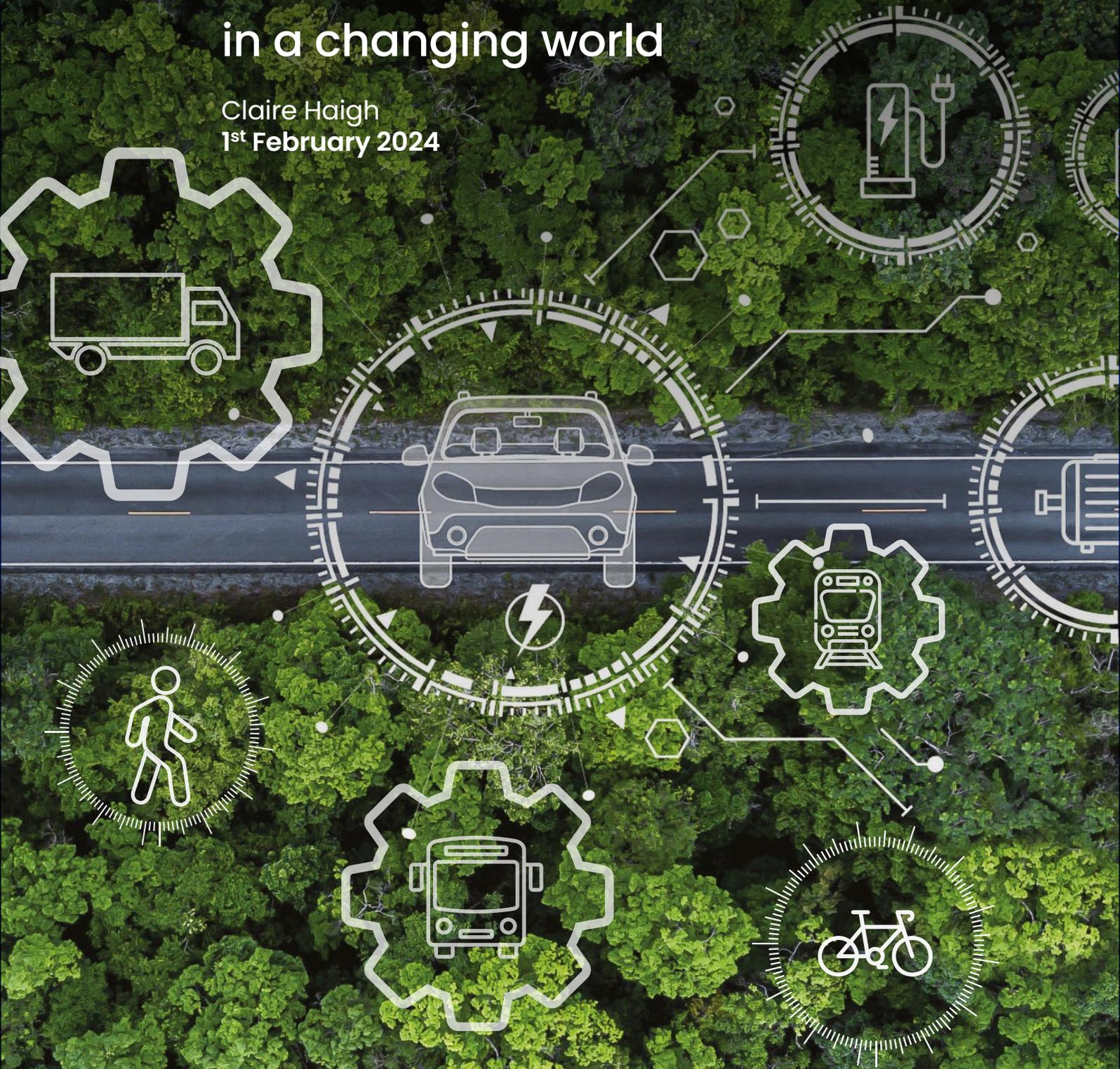




**Zemo
Partnership**
Accelerating Transport to Zero Emissions

Delivering Net Zero in a changing world

Claire Haigh
1st February 2024



About the Report

The UK can be proud of the example it has demonstrated in tackling climate change. The cross-party consensus forged at the time of the Climate Change Act in 2008 was critically important in establishing the UK as a world leader on this agenda. More than eight out of 10 people in the UK are concerned about climate change.

However, at a time of severe strain on public finances and rising geopolitical tensions, and with the country facing protracted cost-of-living and energy crises, the UK's commitment needs to remain unequivocal. Recent rollbacks by the UK government on net zero suggest a weakening of the once unshakeable political consensus.

As a key partner of government, Zemo Partnership has played an important role in accelerating the transition of transport to net zero emissions since 2003. Zemo uniquely brings together government, industry and a wide range of experts. This report draws on extensive consultation conducted for Zemo in 2023, including stakeholder interviews, roundtable discussions and a series of workshops. The key conclusion was that the priority now for net zero is delivery.

A new Council for Net Zero Transport, convened by Zemo Partnership, comprised of senior stakeholders will help steer UK transport's decarbonisation transition as it moves into the crucial delivery phase. The Council will be chaired by Lord Deben, formerly UK Environment Secretary and Chair of the Climate Change Committee. It will engage senior figures from government, industry, environment and academic sectors to forge a clear, strategic direction for road transport decarbonisation.

The UK must capitalise on the many opportunities offered by the fast-growing green economy. And to maintain support for this crucial agenda, it is vital that we ensure a just transition to net zero. If we get this right, we will build a cleaner, safer and fairer future.



A handwritten signature in black ink that reads "Claire Haigh".

Claire Haigh
Executive Director, Zemo Partnership

1st February 2024

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Executive Summary

The imperative to deliver on net zero presents the world with its greatest long-term challenge and its greatest opportunity.

We are living in an increasingly complex and uncertain world. Rising geopolitical tensions are exacerbating problems in a fragile ecosystem, where biodiversity has been degraded and we are already experiencing the impacts of climate change. Extreme weather events are a regular occurrence and migration patterns are set to rise as more parts of the world become uninhabitable. The world is currently on track for a 2.9°C temperature rise¹ which would unleash catastrophic consequences.

Conflicts in Ukraine and the Middle East are having a direct impact in the UK and across Europe in the form of rising energy bills, higher prices and growing business anxiety about the security of supply chains. It is impossible to develop effective net zero policies without simultaneously addressing the wider policy context. An equitable approach will be essential to maintain support for net zero. Policy must be designed to ensure that low income groups and SMEs especially are not penalised by the transition.

The rise of populism threatens an erosion of public debate and our capacity to make difficult decisions. Politically unpalatable choices are avoided, and we are witnessing a growing backlash against green policies. However, a much more positive narrative is possible. Chris Skidmore's Net Zero Review framed the net zero target as "the growth opportunity of the twenty-first century"².

The priority now for net zero is delivery.

The UK has some world leading, legally binding net zero targets. However, greater focus must now be given to the delivery of those targets. Policies are needed to enable the investment that will deliver the transition to zero carbon technologies and funding to enable the supply chain transition. Businesses have been willing to invest in net zero up until now, because the policy direction has been clear.

It is critical for business and investor confidence that targets are maintained. The decision on 20th September 2023 to roll back on some of the UK's biggest net zero commitments was widely criticized by businesses and investors for putting the UK's future economic prosperity and energy security at risk, increasing costs of meeting net zero and damaging inward investment.

Hugely consequential decisions are being made by the US, EU and China which will determine who wins the new green industries. The UK must move fast to seize opportunities presented by the net zero transition. An ambitious industrial strategy would act as a catalyst for new technologies and innovation, shorten supply chains and bring manufacturing and jobs to the

UK. A long-term vision and a strategy to reduce the cost of investment and underwrite risk is needed.

The new world is all about scale-up and tackling major implementation challenges.

If we are to achieve net zero transport, we must ensure the roll-out of zero emissions vehicles, the majority of which will be electric. Since 2019 there has been massive growth in sales of electric vehicles (EVs). A key lesson from the success of the EV roll-out so far has been that clarity of the technology at the outset was very important for businesses, as has been setting targets for ending the sale of petrol and diesel cars and vans.

However, for mass market EV penetration significant implementation challenges need to be tackled. Major supply chain issues are affecting availability. Equity issues need to be addressed. EVs are still perceived to be expensive and out of reach for most consumers, particularly those without off-street parking. Lack of charging infrastructure is seen as a major barrier to the mass roll-out of EVs.

The integration of the transport and energy sectors is critical. Connectivity to the grid and the cost of the electricity are key, as are planning permission and access to land. Bringing the right people together is essential. The Electric Vehicle Energy Taskforce (EVET), hosted by Zemo Partnership, was seen to be an excellent initiative that should be built on. Unsuitable EV charging infrastructure is a major barrier to the uptake of electric vans. Lack of charging infrastructure is a major barrier to the uptake of zero emission HGVs, as is lack of clarity on the future technology for HGVs.

It is hoped that the zero emission HGV and infrastructure demonstration programme (ZEHID) trials will help clarify the issues for HGVs and drive progress. Some argue that we should move as quickly as possible to electrify trucks and avoid the risk of locking in fossil fuels. Others say that electrification won't work for long distance trucks. Some argue for low carbon fuels such as biomethane and hydrotreated vegetable oil (HVO), but many operators consider the switch as too expensive. The structure of the freight industry presents additional challenges for the net zero transition, being wholly private and including many SMEs operating on tight margins.

The technology roadmap to deliver local zero emission buses is well understood, but what is now needed is a costed roadmap for making the transition. Much greater policy certainty is needed for bus manufacturing and the supply chain. Support is required in terms of how to mitigate risks, on installing the charging infrastructure and overcoming constraints arising from the capacity of the grid. The survival of local bus networks is vital for local economies. The business case needs to be developed so that bus companies can convert their fleets to zero emission without commercial risk.

Crucially, the impact of greenhouse gas (GHG) emissions is the sum of all the vehicles on the road. We must do more to maximise the use of low carbon renewable fuels in order to decarbonise the residual ICE fleet which will be on the road for some time. There is a view that dialogue in the EU and UK is too focused on the end-game of electrification and hydrogen fuel cells at the expense of low carbon fuels, not allowing for transition. Going forward the ambition for the Renewable Transport Fuel Obligation (RTFO) target should be raised. There is also strong support for the volume based RTFO renewable energy target to evolve into a GHG emission target.

We cannot plan for net zero in isolation from wider policy areas.

We need a whole-systems approach to net zero that reflects the shift to digital connectivity, and the integration of transport with planning, energy, green finance and the trip generating sectors of the economy such as health, employment and education. Many stakeholders consulted in the 2023 survey highlighted the need to reduce vehicle miles for both passengers and freight. This could be achieved through greater support for walking and cycling, investment in zero carbon bus and train services, and by reducing the need to travel through other measures.

We should support more micro-hubs to reduce freight emissions locally through greater use of cargo-bikes for deliveries. We should strive to use 'the right vehicle for the right journey' and maximise the potential of powered light vehicles. A key part of integration is how we configure transport, land use and telecommunications. 'Triple access planning'³ describes how giving people access to places, goods and services, employment and opportunities can be provided by transport, physical proximity or digital means. The pandemic gave us an experience of a triple access system. It was a source of resilience and adaptive capacity.

In developing net zero policies we must consider other environmental aspects such as air pollution e.g. NOx emissions, non-exhaust emissions from tyres and the environmental impacts of lithium battery production and disposal. It is felt that there is currently too myopic a focus on tailpipe emissions and insufficient consideration of whole life cycle emissions. We also need to consider the implications of net zero for roads policy. We need to rethink the combination of technologies and behaviour change, although without a step change in local transport plan funding it is not easy to scale up alternatives to the car.

Climate change has been described as "the biggest market failure the world has ever seen". At the root of this is a failure to price properly for carbon. We need to use pricing and changes to the tax structure to incentivise businesses and consumers, to accelerate the take-up of zero emissions products and encourage behaviour change. We need a cross-party agreement to look at new ways of paying for road use that replace lost fuel duty as the fleet electrifies and to incentivise more efficient use of our roads. Unless we address the cost structures, we are baking in rising traffic growth and congestion at the cost of more beneficial alternatives.

In this critical delivery phase, the focus must turn to local decision makers.

It is local decision makers who will make many of the key transport infrastructure and investment decisions. Decision-making across government has become very fragmented, a situation further complicated by the different time horizons considered for investment in road, rail and other infrastructure, such as water and energy. There are also some significant divergences in policy on net zero between the central government and the devolved administrations.

Greater progress on net zero can often be made through place-based solutions. It's easier at a regional level to break down government silos and develop integrated strategies for transport, housing, skills and economic development. Local leaders need to be able to plan and invest for net zero on an integrated long-term basis. Inviting bids for different pots of money is resource intensive and militates against the joined-up strategic thinking and planning needed. Moving to more devolved long-term financial settlements for local authorities (LAs) must be a priority.

Most LAs have declared a climate emergency, but many still need to articulate what that means. Practical help and advice are urgently needed. It is also important to consider the interface with the Strategic Road Network (SRN) run by National Highways. It is vehicles travelling on the SRN, not local roads, that are the source of most carbon emissions from road transport. To influence trips requires a consistent approach from start to finish. This requires LAs and National Highways to work closely together which can be challenging because a lot of the time vehicles are travelling beyond their boundaries into other authorities.

Maintaining momentum for net zero at a time of severe strain on the public finances will be a central challenge. Net zero is and must be presented as an opportunity.

A strong cross-party consensus has been critically important in establishing the UK as a world leader in tackling climate change. However, the easy wins in terms of decarbonising the power sector have happened. Little progress has been made in sectors where people need to make changes in their behaviour. As it becomes clear that net zero will be disruptive to the status quo, the political consensus looks increasingly less solid. The risk is that party-politicking focused on short-term electoral gains will undermine public support.

84% of people in the UK are concerned about climate change⁴ but are unsure what they should do. The challenge comes in the implementation of policies that might be seen as unfair, costly, or overly burdensome. Consumer engagement was identified as a key plank in the Skidmore Net Zero Review. We need an informed national public debate on net zero.

It is important to sell the benefits. Green growth is the only kind of growth possible. The net zero transition will mean cleaner air, reduced congestion, more equitable access and convenient transport, and enhanced energy security. A key lesson from Ukraine is the importance of energy independence, investment in renewables and energy infrastructure.

Maintaining momentum for net zero: moving beyond targets to delivery

The key question is how the UK can capitalise on the many opportunities for green growth and retain its position as a world leader on this agenda. The UK has a strong track record, having been the first major economy in the world to commit to achieving net zero by 2050. To maintain momentum, we need to move beyond targets to delivery.

The key conclusion of Zemo's extensive stakeholder consultation in 2023 was that urgent attention must turn to the delivery of net zero road transport. It was felt that a credible and detailed 'delivery roadmap' is needed to set out how we can achieve net zero and, in particular, how to achieve interim targets. Zemo is well placed to develop such a roadmap based on feedback from its cross-sectoral membership. Zemo uniquely brings together government, industry and the widest range of stakeholders and experts, and is unbiased by any interest group.

The net zero transition presents huge challenges but also opportunities. We cannot think about net zero policies in isolation from air quality, biodiversity, energy security, food and energy prices, social inclusion, skills, jobs, housing, economic growth and other key social and economic objectives. But if we can rise to the challenge, the net zero transition gives us the chance to secure a cleaner, safer and fairer future.

A Changing World

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Climate breakdown has begun. Scientists have long warned what our fossil fuel addiction will unleash. Our climate is imploding faster than we can cope, with extreme weather events hitting every corner of the planet.⁵

UN Secretary General Antonio Guterres

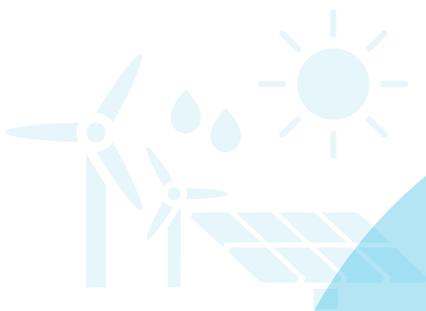
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2023 was the planet's hottest year on record, a year in which unprecedented temperature anomalies shocked the scientific community^{6,7}. Extreme weather events, record breaking heatwaves, lethal flooding, wildfires and typhoons are now a deadly norm. In a follow up to his 2015 encyclical, Pope Francis warned the world may be “nearing breaking point”.⁸

At the COP 28 UN Climate Change Conference, agreement was reached “to transition away from fossil fuels”, signalling at least “the beginning of the end” of the fossil fuel era. However, efforts need to be ramped up massively. The world is currently on track for a 2.9°C temperature rise⁹ which would unleash catastrophic consequences.

The world needs to deliver drastic emissions reductions at a time of huge challenges and complexity. Since Warren Bennis and Burt Nanus first coined the term, it is often observed that we are living through a “VUCA world” – period defined by volatility, uncertainty, complexity and ambiguity. Wars, political instability, geopolitical tensions, environmental and climate breakdown all have implications for the global net zero transition.

At the same time, we can take comfort from some key macro trends. For example, the IEA's World Energy Outlook 2023 says it expects carbon dioxide emissions to peak “in the mid-2020s”¹⁰, and we can expect renewable investments and EV sales to continue to show promising growth.



Importantly, the Intergovernmental Panel on Climate Change (IPCC) concludes we have the tools we need to halve emissions this decade and get on track for 1.5°C.¹¹ They have called for the “mainstreaming of climate action across society.”¹² We cannot rely on clean technologies alone. Reducing energy demand across all sectors could deliver a 40-70 percent reduction in global GHG emissions by 2050¹³.

There is potential to deliver significant savings by reducing energy demand, but politicisation can hinder the transition. The ‘gilet jaunes’ in France successfully mobilised against attempts to increase taxes on fuel. In Germany, the Alternative for Germany party successfully mobilised against a push to require installation of heat pumps. A recent report for the Green Alliance revealed “outright opposition” by some MPs to “the roll-out of heat pumps or congestion charge zones”, despite a general acceptance of net zero.¹⁴

The politics of net zero will be at the fore this year, with two billion people set to vote in national elections. The consequences of the US election will be highly consequential for climate diplomacy and global efforts to tackle climate change.



1. Seizing the Opportunity

“

Net Zero is the growth opportunity of the twenty first century.

The Rt Hon Chris Skidmore, MP ”

The UK has a strong record on tackling climate change and has world leading, legally binding net zero targets. However, greater focus must be given to the delivery of those targets. How can the UK capitalise on the many opportunities for green growth and retain its position as a world leader on this agenda?

Time for action

There was a strong consensus amongst all participants in the stakeholder consultation that the priority must be to bring the focus to a practical level. The Climate Change Committee is increasingly pivoting towards delivery questions. The UK has some good strategies in place, but we now need to get policies in place to enable the investment that will deliver the transition to zero carbon technologies and funding to enable the supply chain transition.

As one participant from a leading energy supplier commented, business is very willing to take the risk because policy direction has been clear, but it is now **‘caught up in the weeds of the machine of getting stuff done’**. As another noted, we have got beyond the ‘honeymoon period’ and are now into the execution. This is potentially a very fertile period.

“All of our members are committed to net zero. There are billions in terms of underwriting residual value in battery EVs, when no-one knows what the BEV market is going to look like in a week let alone three years’ time.”

A key conclusion of the consultation was that we need a credible roadmap to deliver net zero transport that is consistent with the Sixth Carbon Budget. This needs to be a combination of technology change and travel behaviour change, institutional and organizational change, skills and delivery. A central question is whether we can stay within the ceiling set by the Sixth Carbon Budget without a reduction in car traffic.

It is critical for business and investor confidence that targets are maintained. The decision on 20th September 2023 to roll back on some of the UK’s biggest net zero commitments, including pushing back the 2030 date for ending the sale of new petrol and diesel cars and vans, was widely criticized by businesses for putting the UK’s future economic prosperity and energy security at risk and increasing costs of meeting net zero¹⁵. Investors warned that the changes would damage inward investment¹⁶.

Green growth

Chris Skidmore's Net Zero Review helpfully framed the net zero target as an opportunity to driving forward green growth¹⁷. How do we align net zero with business efficiency, modernisation, and green growth? We need to be clear that net zero is an essential pre-requisite for sustainable growth. We need to build the case for green jobs, skills, value, industrial strategy, and why it is vital that we act now rather than later.

The green economy is the fastest growing part of the UK. According to the Office of National Statistics (ONS) the Low Carbon and Renewable Energy Economy grew by over 30% in 2021. Part of this can be attributed to the post-Covid recovery following 2020's lockdowns, but much of it was down to surging green investment.¹⁸

Renewable energy generation, electric car manufacturing, green agri-technology and retrofit technologies are all part of a net zero economy that is worth over £70bn, according to research commissioned by the Energy and Climate Intelligence Unit, with analysis provided by CBI Economics and the DataCity.¹⁹ That's more than twice the energy sector itself.

There are 20,000 net zero businesses across the UK, employing 840,000 people and paying them, on average, almost £10,000 more than they'd get in other jobs. Workers in these industries are 1.7 times more productive than the national average.²⁰

The net zero economy is stronger and significantly more productive in the UK regions; the study also identified twenty 'hot spots' across the UK where net zero makes up a larger than average proportion of the local economy. These include the Tyneside/Teesside coast, South Yorkshire/North Derbyshire, the Mersey River and Cambridgeshire. London though lags behind, suggesting net zero is playing an active part in 'levelling-up'.

International competition

The UK has a strong track record on net zero, but hugely consequential decisions are being made by the US, EU and China, which pose challenges for its global competitiveness. Many spoke of the need for a robust UK response to the Inflation Reduction Act (IRA).

The UK needs to double-down on consistent net zero policies. Business needs a stable policy environment and certainty to invest. One participant commented that the future of the refineries sector is very difficult in the UK, and as we move towards net zero there are better opportunities in the USA and EU. Another participant commented:

“There is a competition for that capex! Maybe we would be better off investing in Spain.”

Big decisions are being made internationally of which the UK is only a small player. There are challenges around trade tariffs, changes in rules of origin in terms of the materials used in batteries and energy competitiveness. The UK boasts of world leading growth in offshore wind and green energy, but making it cost competitive is a key aspect. As one participant commented:

“We need to get on the front foot to influence those international regulations, so that our indigenous industries can benefit from them. We need to go to the UN, take part in those discussions, go with the evidence, proper R&D!”

The UK needs to do some rapid learning based on what other countries have been doing. We need to cultivate foreign investment, which requires a change in body language and tone. The package the UK offers to foreign investors must become a lot more appealing. One of the biggest problems cited by some participants was lack of government focus. Rather than setting the overall direction the stance is to be agnostic on future technologies.

“There are a few things government could do to turn the tide on that, make the UK a green superpower.”



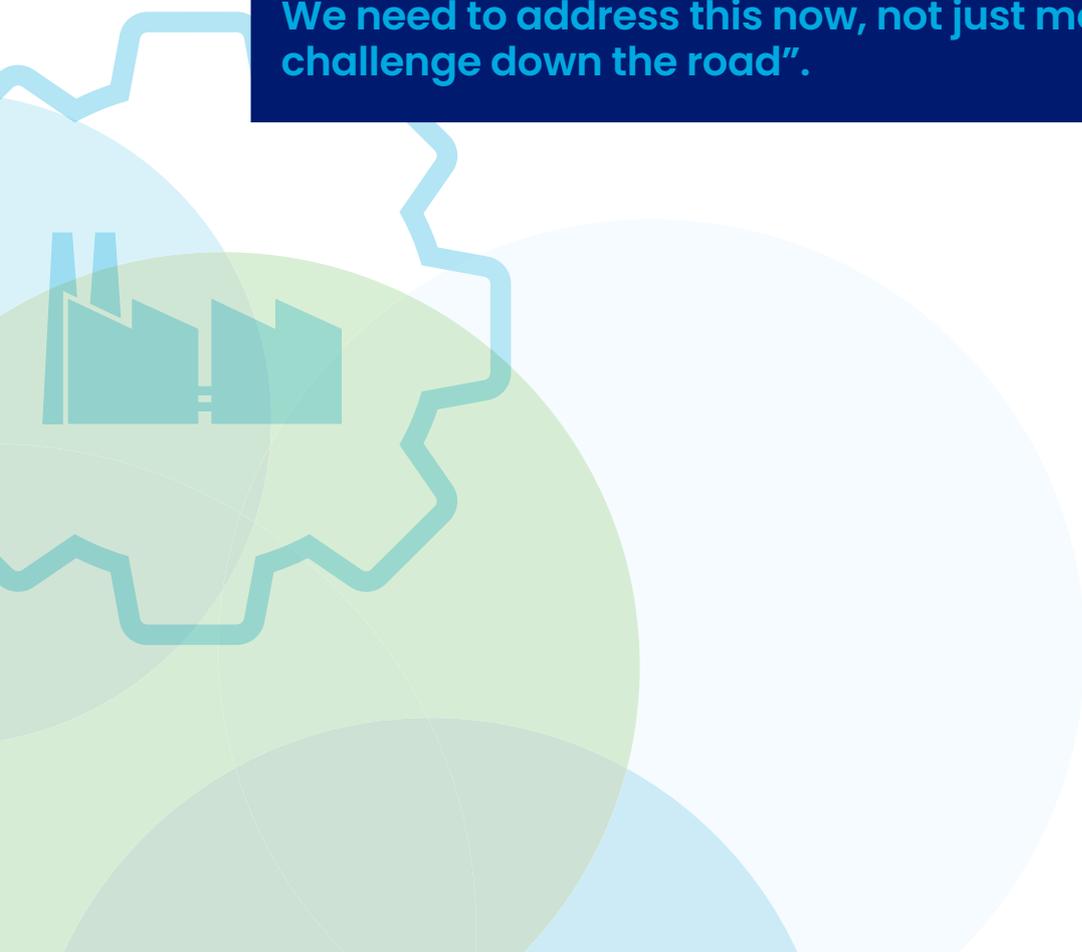
Industrial Strategy

Many participants felt that the UK needs an ambitious industrial strategy to act as catalyst for new technologies and innovation, shorten supply chains and bring manufacturing and jobs to the UK. The strategy will need to address issues arising from Brexit on regulatory alignment and recognise that transport is international with many vehicles bought outside the UK. Anything done on HGVs needs to be from global or, at least, a European perspective.

The key to a successful industrial strategy is a long-term funding commitment. Whether it be investment in R&D or infrastructure, we need a sustained long-term vision. Consistency of policy is essential if businesses are to invest. Where businesses choose to locate their operations and manufacturing facilities depends on the cost, quality and competitiveness of the growth that they can achieve. Access to a high skill labour market is key.

Innovation is driven by regulation, so clear guidance on what is required and what we need to do is also key. Where are the new sources of value in the transition, e.g. AI, services, interconnectedness with the energy system? Circular economy and systems thinking of operations is a key aspect. Embedded emissions are coming increasingly to the fore, as is material provenance and the way batteries are being produced. As one participant noted:

“We know that from a lifecycle perspective EVs have more embedded carbon than ICE vehicles. We need to address this now, not just move the challenge down the road”.

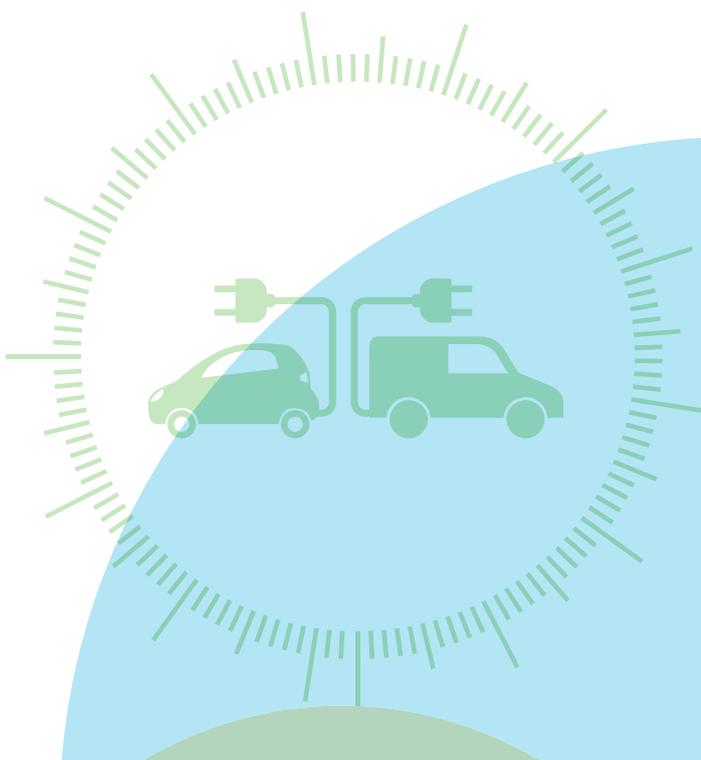


Ultimately nothing will happen without the business case. We need the tax/subsidy regime to be in favour of tipping the balance in favour of adoption of zero emissions vehicles. The level of support needed will vary depending on how energy prices change over time. The tax/subsidy regime needs to ensure that for each segment of the market the zero-tailpipe solution is lower TCO than diesel BAU. As one participant noted in relation to HGV:

One thing is super clear though: even with private money funding the infrastructure, the heavier the truck the greater the tax or subsidy will need to be, and it'll be huge.

An industrial strategy needs to reflect what we can do now, but also where we will get the benefits in the next decade e.g. Connected and Autonomous Vehicles (CAVs). We need to ensure future technologies are better environmentally and from a safety perspective. CAVs have a way to go before they can make a reduction in carbon. This won't happen by 2030. The benefits of CAVs will be longer term: greater safety features, more efficient use of resource, better road usage and traffic management, more efficient fuel consumption etc.

Local industrial strategies of the sort that were produced by Local Enterprise Partnerships in 2019 would enable an industrial strategy to be implemented locally. An industrial strategy provides a roadmap, acting as a catalyst for new technologies, identifying and supporting emerging industries, providing targeted funding, tax incentives, regulations. We need to look for where there are clusters of interesting capabilities in the UK. How can we build on these, and encourage more cross sector alliances?



2. Pivoting to Delivery

“

Our business needs three things from UK government: ambition, commitment and consistency.

”

Lisa Brankin, Ford UK Chair

In this critical net zero delivery phase, the integration of transport and energy systems is fundamental. We need to bring EVs to mass market; to scale-up electric buses and find solutions for freight and HGVs. We must also maximise the use of renewables and second-generation biofuels as part of the transition.

EV affordability and supply

If we are to achieve net zero transport, we must ensure the roll-out of low carbon vehicles and the majority of these will be electric. Whilst significant implementation challenges remain, as one energy infrastructure executive observed:

“Since 2019 there has been massive growth in EV sales. We are continually surpassing what last year’s prediction was. This is a success story, and we should celebrate that!”

How do we remove blockers associated with mass roll-out of EVs? What are the issues associated with the mass production, mass roll-out, for different parts of the system?

- **EVs are seen as too expensive and out of reach for most consumers.** The sharp increase in the price of electricity since the war in Ukraine and supply constraints have put off many from buying an EV. Supply chain issues have been affecting availability. Transport Focus research highlights how confusing and frustrating the picture is for consumers: **“There are lots of ads, but you can’t actually buy an EV!”**
- **Equity issues need to be addressed.** It was noted that the debate too often seems to be engaged with a very narrow group of people such as professionals, middle class groups. Low income households feel excluded, especially those without off-street parking. **“There is a high risk that EVs will be seen as a middle class project and will become a divisive issue around equity, especially in areas of deprivation.”**

- **Lack of charging infrastructure is perceived as a major barrier.** There are 10 times as many private charging points as public charging points and growth in EV sales has been driven by that. However, as one participant observed **“If you measured all the firm plans to invest in public charging you way surpass what is needed. To get to the next level we need that public charging infrastructure in place.”**

A key lesson from the EV roll-out is that clarity of the technology at the outset was very important for businesses. Signalling the ending of sale of ICE vehicles has also been critical. To maintain momentum, it is important to focus on successes and positive stories, instead of the ongoing narratives about lack of charging infrastructure.

Infrastructure & integration with energy systems

The key challenges are at the interfaces of complex systems. The integration of transport and energy sectors is critical. Energy and transport planning needs to be properly aligned. Connectivity to the grid and the cost of the electricity are fundamental, as are planning permission, access to land, access to sites in city centres etc.

This will require a whole system approach and major reinforcements to the grid. It will require activities to be synchronized between National Grid, DNOs, EV charging infrastructure providers, EV manufacturers, policy makers, financial service companies, funding bodies, local authorities, and anything else that is related to street works and lamppost installations etc. Challenges arise when, for example, a DNO is unable to unlock power supplies in their network because of significant upgrade works that will be needed. It is vital to bring the right people together. Working with local authorities is key.

Generally, it was felt that there needs to be greater co-ordination between all key parties. The Electric Vehicle Energy Taskforce (EVET) was seen as an excellent initiative – albeit that it only covered light duty vehicles, cars and vans – and it should be built on. Stronger, clearer leadership is also needed from government.

- Energy requirements are completely different to the 1980s when base load coal dictated the price. **Today there are many different energy suppliers: “Government is leaving the market to decide on infrastructure, and we will be left with a pretty inefficient network where energy companies cherry-pick what is profitable.”**
- Several participants highlighted the concern that insufficient and unsuitable EV charging infrastructure is a **major barrier to the uptake of electric vans.** **“In addition to the significant upfront costs we face, much of the EV charging infrastructure available is not large enough for vans.”**
- What infrastructure would be needed to support the electrification of trucks? Lack of charging infrastructure is a major barrier to the uptake of **low carbon or zero emission HGVs.** As one leading manufacturer noted: **“We’ve got these products but are being held back by energy infrastructure. As an industry we are ahead but energy and infrastructure are lagging.”**

Solutions for freight and HGVs

The future of low carbon and zero emission freight is a hugely complicated picture, made more challenging by the structure of the industry itself, with many SMEs operating on tight margins. Technology will be resolved eventually, but what is the industry view on how it will change? What's the role of last mile delivery? The blueprint for a business case doesn't yet exist. In contrast to cars, there is no clear policy direction on the future technology for trucks.

The solution is not obvious. It is hoped that the zero emission HGV and infrastructure demonstration programme will help clarify the issues, but what is also needed is an informed and impartial debate. It is not good when politicians try to "pick winners"; industry is best placed to work out the best technology solutions for the future, at the same time: **"There are plenty of evangelists, but we need a balanced view. What are the multiple paths that we should be supporting?"**

There are many divergent views. Some argue that we should move as quickly as possible to electrify trucks and avoid using low carbon fuels, because that would risk locking in fossil fuels. Others argue that electrification won't work for long distance trucks, and many solutions will be needed. Some argue for low carbon fuels such biomethane and hydrotreated vegetable oil (HVO), but many operators perceive them as too expensive. One participant commented: **"Long distance heavy vehicles will not be achieved with batteries. The only way I can see is hydrogen. Some say that they can convert ICE to hydrogen and make vehicles zero emission. I'm sceptical but we need to see the evidence. We should be setting what comes out of the tailpipe as the test."**

In the meantime, bridging solutions are needed for the existing fleet. As one leading HGV manufacturer observed, even if we have 50% EV sales at a global level by 2030, we will still have 90% of the rolling fleet with internal combustion engines, potentially not running on more than 7% of a biofuel because the right policy levers are not in place. **"The rolling fleet implications are massive and are going to come and hit us like a steam train in 2030!"**

The manufacturer commented that they were focused on trying to get the right technology in place to meet a short-term target in 2025 but, while there is confusion, people will keep on buying diesel. In manufacturing terms, truck options have advanced quicker than the infrastructure to support them. To have a chance of meeting interim targets there is a need to use more renewable fuels. **"We won't succeed on any of our carbon reduction plans if we don't start using a (greater) percentage of renewable fuels."**



Scaling-up zero emission buses

There is a technology roadmap for zero emission local buses but a costed roadmap for making the transition is needed. Greater policy certainty and consistent support is needed for bus manufacturing and the supply chain. As one bus operator put it: **“it’s currently a case of feast and famine”** causing surges in demand and supply chain issues. Credible, impartial analysis on both the carbon and cost aspects of electric bus roll-out is needed. Support is needed on how to mitigate risks, on installing the charging infrastructure and overcoming constraints arising from the capacity of the grid.

London has been driving the growth of electric buses because of the size of its fleet and the policy aspirations and certainty set by the Mayor. However, the funding promised and policy direction set by central government is insufficient to scale-up the roll-out of electric buses.

The survival of local bus networks is vital for local economies, local communities, and for society. However, a lot will hinge on commerciality, on how the scale and pace of transition is managed, as diesel fleets are decarbonised over the next 12 years in an industry still recovering from the pandemic. The business case needs to be developed so that bus companies can convert their fleets without commercial risk. Work is needed on the total cost of ownership and uncertainties for the industry in transitioning from diesel to electric propulsion.

Business cases that worked pre-Ukraine don’t now because the savings that would have been made by going electric have evaporated. This presents huge challenges for bus companies. Whilst progress has been made on capex, opex has gone up massively. As a senior executive from a major transport operator observed.

“Cost neutrality might have been in sight 12 months ago – but not now. When electrical energy triples in price that throws the model.”

Fuel prices are hindering the net zero transition. Hydrogen is still untested and electricity prices more volatile than previously thought. This also impacts on hydrogen because it is linked to electricity prices. For some industries, support such as a rebate mechanism (like Bus Subsidy Operators Grant (BSOG)) could be explored, to make volatility less sharp.

Low carbon renewable fuels

Crucially, the carbon outcome is the sum of all of the vehicles. It is vital that we do more to decarbonise the existing ICE fleet which will still be on the road for some time. One of the biggest opportunity in the near term is decarbonising the HGV fleet using sustainable low carbon fuels, especially regional and long-haul trucks. The UK should be doing more to maximise the use low carbon fuels as part of the transition to electrifying both the light and heavy-duty vehicle fleet. The RTFO has been highly beneficial in decarbonising road fuels. However, the RTFO renewable energy target must be increased and over time evolve into a GHG emission based target. Industry has been awaiting the publication of the Low Carbon Fuels Strategy by Government in order to provide clarity.

There is a lot of potential in the use of low carbon liquid fuels including higher blend biodiesel (eg B30) and HVO. It was suggested that we could do a lot on that front very quickly and achieve significant GHG savings.

“The RTFO has had a bigger impact on carbon savings in the transport sector than even the progress on EVs.”

We could push for biomethane in trucks as well. There are plenty of opportunities. There has been a huge growth in anaerobic digestion (AD) from 2015 to 2020; production has doubled. Much of it is going into home heating and electricity generation but should that be more targeted to road transport, especially long haul HGVs which are so hard to decarbonise and where we don't currently have obvious alternatives?

The UK has done well in terms of driving the use of biomass waste to produce sustainable biofuels. It was noted that the Sustainable Aviation Fuels (SAF) mandate will move a huge amount of waste-based biomass to aviation, however the interim period biomass feedstocks should be priorities for decarbonising the HGV fleet.

It was felt by some participants that dialogue in the EU and UK is too focused on the end-game of electrification and hydrogen fuel cells at the expense of renewable fuels, not allowing for transition. As one participant surmised:

“Meeting net zero is about accelerating GHG emissions reduction now. The only time we saw a big step forward was when the RTFO was updated in 2016-18 and then when we brought in E10.”

3. A whole-systems approach

“

Climate change is the greatest and most-wide ranging market failure ever seen.

The Stern Review, 2006

”

We cannot plan for net zero in isolation from other policy areas. The role of pricing is fundamental. We need a whole-systems approach that reflects the shift to digital connectivity, and the integration of transport with planning, energy, green finance and all the trip generating sectors of the economy.

The wider policy context

- We must consider other **environmental aspects** in creating net zero policy. It is not sufficient to focus on carbon emissions in isolation, we also need to consider air pollution from NOx emissions, non-exhaust emissions from tyres and the environmental impact of lithium battery production and disposal. In echoes of the “diesel-gate” saga, is there a future risk of “tyre-gate”?
- We need to understand **the energy system as a whole**. For the grid, EVs are just one aspect, we must also consider heat pumps, induction hobs, building regulations etc. Bi-directional charging presents huge opportunities for using EVs to optimise the system. We must consider how zero emission vehicles fit in with domestic energy use and the broader net zero agenda.
- There is currently too much focus on vehicle **tailpipe emissions rather than vehicle life emissions**. There has also historically been too little focus on the carbon in our roads. ADEPT Live Labs II, a three year £30 million UK-wide programme that will run until March 2026, will focus on decarbonising the highways asset including materials, street lighting and corridors.
- We need to consider the **implications of net zero for roads policy**. The Roads Review Panel, set up by the Welsh Government, recommended that road schemes should only be for four purposes: to shift trips to sustainable transport, to reduce casualties, to adapt to climate change and to access developments with sustainable transport.
- We must tackle the **root causes of climate change**. Failure to price properly for carbon is a key part of the problem and encourages unsustainable levels of consumption. Tackling this will require a whole systems approach with energy demand reduction at its core. We should price properly for carbon whilst ensuring a fair and just transition.

The role of pricing

For a net zero emission world, the current tax structure is not fit for purpose. We need an honest conversation about road pricing. There needs to be a agreement cross-party agreement to look at new ways of paying for road use that replace lost fuel duty, as the fleet electrifies, and incentivises more efficient use of our roads. Unless we address the cost structures, we are baking in rising traffic growth and congestion.

“If we just keep electrifying the fleet, and don’t do anything about the cost structures, i.e. greater up-front cost, lower usage cost, what outcome can we expect? A more congested, less safe environment!”

We need to use pricing and changes to the tax structure to incentivise businesses and consumers; accelerate the take-up of zero emission vehicles; and encourage behaviour change. Greater use of public transport and sharing vehicles would service mobility requirements more efficiently and make better use of our roads. If we are to decarbonise at the pace and scale required, pricing must be at the heart the strategy.

“Carbon is the problem, so we must attack carbon directly.”

We could ration carbon, which may or may not be feasible. The only other alternative is to price carbon properly, through taxation, and give consumers and companies the choice to pay more or less for the products and services they buy depending on the carbon content.

“Carbon taxation will give us half a chance of getting the balance across different sectors correct. Carbon taxation also provides revenues to mitigate negative social impacts, and for politicians any “bad news”.



Reducing vehicle miles

In addition to cleaner vehicles, many participants highlighted the need to reduce vehicle miles. This could be achieved through greater support for walking and cycling, investment in zero carbon bus and train services, sharing vehicles and reducing the need to travel. On the question of a national target for traffic reduction, one Parliamentarian replied: **“Funnily enough I asked a question in the last few days, what were the government targets on reducing the number of vehicles!”**

We need a whole system approach, and modal switch for both passengers and freight. We should support more micro-hubs to reduce emissions locally through greater use of cargo-bikes for deliveries. We need to reduce car travel and progress can be made much more quickly by improving public transport. As a bus sector participant commented: **“For us it is partly about converting vehicles and partly about converting journeys. This is a challenge that is not being grasped in England at least, but where you could make much more progress in the short-term.”**

One example is shifting products from trucks to lighter freight solutions, which could be accelerated if there were more urban logistics hubs. Problems arise when the cost of using land for these purposes is compared with other uses such as car parking. It is often not seen as commercially viable. By contrast, in Germany the value of an urban logistics hub is recognised as central to the future for cities and decarbonising transport.

A recent report into last-mile deliveries and local perspectives reveals that local authorities lack the people, skills/knowledge and capacity to tackle these issues²¹. In assessing freight options, it is also very important to look at the transport system as a whole. Some customers may be moving away from air to ground shipments, partly to reduce emissions and partly because it is cheaper. **“Modal shift from air to road is better overall, even if this increases road emissions.”**

We need to embrace the shift to digital connectivity and the integration of transport with planning, energy, green finance and all the trip generating sectors of the economy. A key part of integration is how we configure transport, land use and telecommunications: ‘triple access planning’. Travel is a derived demand, it’s all about access to people, places, goods and services, employment and opportunities. The pandemic gave us an experience of a triple access system. It was a source of resilience and adaptive capacity.

Decarbonisation of transport will require changes to the wider economy. Quantified carbon reduction is expected to be a target in the next round of Local Transport Plans. However, one participant noted that there is still too much focus on transport-only solutions, not enough on the local economy, what we want our places and communities to look like nor on reducing the need to travel. A straight switch to EVs is not the right solution for many areas as congestion is a big issue.

We need to rethink the combination of technologies and behaviour change. To decarbonise at the pace and scale needed, we will need to see a reduction in travel demand and a large-scale shift to public transport and shared vehicles – a step-change in the efficiency of passenger and freight movement. But without a step-change in local transport plan funding, it is not easy to scale-up sustainable alternatives.

Delivering behaviour change

It is important to recognise the challenge for local leaders in delivering behaviour change. It was suggested that demand management may not be a helpful way to frame the discussion. Choice and equity are better themes to focus on. Are people getting enough choice and incentives? Are there enough options for people at the lower end of the income scale?

Various policy levers can be used to affect behaviour such as parking charges, congestion charging, LTNs, use of bus lane powers, Workplace Parking Levy (WPL), moving traffic offence powers and clean air zones. Why aren't these being used more widely? It is also important to consider different locations. Rural areas need completely different solutions to urban areas for example.

The sector needs to do more to provide local leaders with the arguments and the evidence to sell solutions like WPL to their communities. They need to be briefed to put the points forward in such a way that will really sell the benefits. There needs to be greater focus on the co-benefits. Solutions that reduce carbon emissions from road transport can also help with tackling the cost of living, congestion, road safety and public health.

To deliver any kind of behaviour change there needs to be consistency on funding, policy and messaging. Currently there is too much instability. One participant asked why £200 million was suddenly cut from the Active Travel budget? Bus funding is equally inconsistent. £3 billion was promised, which was reduced to £1.1 billion, then a bit more was found. A scattergun approach is unhelpful when LAs need to be able to plan and invest for the longer term.

It is hugely challenging for LAs to go against the grain of the national stance. One participant commented that the Transport Decarbonisation Plan didn't even mention WPL or congestion zones, for example. The tools might be there but LAs need incentives and political support. There can be little prospect for any radical divergence in approaches to traffic levels locally if there is no commitment nationally.

By contrast, an example was cited of Zero Traffic Growth Deals that have been instigated in Norway. The national government asks local governments to say what funding is required to deliver economic growth for their cities with zero traffic growth. This is match funded through local toll rings. **“I think the national-local partnership part of Norway is very important – it stops one tier of government being hung out to dry.”**

4. Strengthening local delivery



Short-term funding cycles, competitively based, taking away from active travel to pay for potholes. It's a messy landscape!

Pathways to Net Zero Roundtable, June 2023 

We should be proud of our net zero targets and central government deserves credit for leading the way. However, in this critical delivery phase, increased focus must turn to local decision-makers across the UK who will make many of the key transport infrastructure and investment decisions.

Decision-making

Decision-making across government has become very fragmented. There is little clarity on how, when and by whom investment priorities are being set and decisions made. It is a highly complex picture and there is concern that a democratic deficit is opening up. The situation is further complicated by the fact that there are different time periods for the consideration of investment in road, rail and other infrastructure, such as water and energy.

Sub-national Transport Bodies (STBs) are encouraging more collaboration at a regional level, but these 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 (such as the Levelling Up Fund).

Devolved administrations

There are significant divergences in policy on net zero between the UK Government and the devolved administrations. One of the notable differences is the level of ambition in terms of reducing vehicle mileage and demand management.

- **The Mayor of London** has set a target for London to be a net zero carbon city by 2030. This includes a target to reduce car kilometres driven by 27% by 2030. The Ultra Low Emission Zone was extended in August 2023. The aim is to encourage people out of their vehicles and on to public transport, walking and cycling, with the remainder of trips to be electrified.
- **Mission Zero for Scotland** has given more focus to making sure people and places benefit fairly from UK central government policy. The Scottish Government has set a target to reduce car usage by 20%. 10% of the transport budget is to be spent on active travel. Free bus travel is given to under-22s and over-60s.

- **Net Zero Wales** sets out transport priorities with a focus on actions with greatest carbon savings. It prioritises removing the need for travel, active travel, public transport and then decarbonisation of vehicles. Following its Roads Review²², the Welsh Government is blocking two dozen new projects to cut emissions and 'protect vital habitats'.

It is felt that closer engagement and cooperation between central government and devolved governments on the net zero agenda would be desirable. As one participant observed:

“How DfT plays the Electric Vehicle Energy Taskforce successor vis-à-vis the rest of the UK will be key. We need a more collaborative approach.”

Regional & local government

Beyond Westminster, regional authorities have ambitious net zero strategies.

For example, the West Midlands has a target to reach net zero by 2041. Its hydrogen bus project is the biggest in the world outside China, and its hydrogen strategy covers domestic use as well as transport. Greater Manchester aims to be carbon neutral by 2038. Its five-year Environment Plan is focused on increasing public transport usage; increasing the availability of EV charge points; tackling freight emissions; and increasing the number of zero emissions buses.

Several participants highlighted the need for more investment and focus at a national level to improve the public transport offering. A third of residents in Greater Manchester do not own a car, so the public transport network is essential. People are increasingly motivated by climate change. A national information campaign is needed to encourage people to switch to public transport, highlighting the health and climate benefits.

Sub-national Transport Bodies (STBs) take a wider view on decarbonisation strategies across regions.

Transport for the North's (TfN) Regional Decarbonisation Strategy maps out different scenarios which balance investment in the highways with demand-side measures. TfN's widely acclaimed EV Charging Infrastructure Framework recognises the need to align investment with energy systems across wide geographical areas.

For TfN, modal shift, walking and cycling will be essential to achieve net zero. If electrification is the only answer to the decarbonisation of transport, we miss whole sections of the population who do not own a car: **“The push to buy EV is too easily seen as preaching and being pious to those who, frankly, are struggling just to get by, and if you encourage them to be greener in how they travel they would want to but don't have good options.”**

Transport for the South East's (TfSE) Strategic Investment Plan includes public transport (e.g. rail enhancements), road corridor improvements for mass transport, mobility hubs, cycling and walking improvements. It highlights the need for a proper demand management tool. TfSE is investigating what a road user charging scheme could look like, with the revenue invested in public transport.

Most local authorities have declared a climate emergency, but many still need to articulate what that means.

Practical advice is urgently needed, but the sector is very disparate and is not speaking with one voice. There is too much lobbying and a lack of balance in debate. A single clear voice is needed for local government, presenting evidence in a neutral way.

Local Government Association (LGA) members don't want to risk investing in a lot of infrastructure that becomes a 'white elephant'. As one local authority representative put it: **"They don't want to be left with duds!"** There is concern that the output focus on EVs has narrowed too much with risks of lock-in and tying-up costs. There are also serious equity issues around access to cars and car parking.

There is a need to better coordinate purchases of electric buses between producers and local authorities. Councils need support in making decisions on purchases, and around the provision of data, where buses should go etc. A huge amount of coordination is needed to make the market work more effectively.



How can we maximise the benefits of devolution?

More progress on net zero can often be made through place-based solutions. It is easier at a regional level to break down government silos and develop integrated strategies for transport, housing, skills and economic development. We should support collaboration across wider regional areas. Moving to more devolved long-term financial settlements for local authorities must be a key priority.

Government should enable local areas to plan and invest for net zero on an integrated long-term basis. This will involve reform of governance, funding and appraisal. The current strategy, however, seems to involve at least as much centralisation as devolution. Inviting Local Authorities (LAs) to bid for different pots of money is resource intensive and militates against the very joined-up strategic thinking and planning needed.

It is also important to think about interface with the Strategic Road Network (SRN) which is run by National Highways. It is the SRN, not local roads that is causing most carbon emissions from road vehicles. LAs need to work closely with National Highways which is challenging for LAs because most of the time a vehicle is going through an authority.

The roundtable considered how greater devolution could be of benefit and of the scope to develop Devolution Deals further. The location of developments for example, is fundamental to achieving decarbonisation. As one participant commented, the National Planning Policy Framework (NPPF) has been somewhat sharpened up, but we've got to keep strengthening the framework for where we locate developments:

“In the planning world, we feel there is no point in waiting for government. We need to be proactive locally, and devolution is the key. The Devolution Deals that are currently being sold out aren't really proper devolution deals, it's a scattergun approach. We need proper fiscal devolution.”

The reason cities in the US are able to make progress is because they have control over local taxation. In the UK, cities only have powers to raise business rates but so much more could be achieved if there was greater devolution of powers to raise income. An example of success is the Olympic Park in London, which shows how population density and having a master plan can really change habits. It is a case study of how to develop vibrant communities, reduce traffic and generate increases in walking and cycling.

It was noted that Mayors and (County) Combined Authorities (CAs) may be the right level for change to happen locally. The local politics are critically important. Councils with no overall control or who do elections by thirds are hamstrung from making long-term decisions.

5. Winning Hearts and Minds



We need to move away from treating people as customers, to treating people as citizens.



Pathways to Net Zero Roundtable, June 2023

Maintaining momentum for net zero at a time of severe strain on the public finances is a central challenge. The risk is that electioneering will undermine public support. Consumer engagement must be a key focus for scaling up the transition. Net zero must be presented as an opportunity.

Political context

The cross-party consensus forged at the time of the 2008 Climate Change Act was critically important in establishing the UK as a world leader in tackling climate change. However, the UK is going through a turbulent period politically in the build up to what is likely to be a highly consequential general election. There are fears that political and economic challenges could undermine the net zero consensus.

The challenge is to prevent focus from slipping as we tackle a protracted cost-of-living crisis, high inflation and energy bills. The easy wins in terms of decarbonising the power sector have happened. Little progress has been made in sectors where people need to make changes in their lives. As it becomes clear that net zero will be disruptive to the status quo, the once unshakeable political consensus looks less solid.

Cross-party consensus has started to fracture over some environmental transport policies. The expansion of London's Ultra Low Emission Zone being an example, and led to the Government reviewing a number of policies and subsequently announcing a scale down of some of the government's biggest net zero commitments including plans to phase out the installation of new gas boilers and delaying a ban on the sale of new, non-hybridised petrol and diesel cars and vans²³.

The change in these policies caused concern amongst the business community regarding the UK's future economic prosperity and energy security and the cost of meeting net zero²⁴. Investors warned that the sudden changes will damage inward investment²⁵. The Climate Change Committee (CCC) concluded that the weakening of key decarbonisation policies will make the UK's climate targets harder to achieve, undermine its position as a global climate leader and risk hampering ambition.²⁶ This emphasises the importance of a consistent and stable policy environment in delivering net zero.

In addition, according to the CCC, current policies have yet to be developed sufficiently to achieve net zero²⁷. Political impetus will make or break this agenda. The seminal report [I will if you will: towards sustainable consumption](#)²⁸ describes a 'triangle of change' whereby people, business and government work together in a supportive framework for collective action. People are often "locked in" to unsustainable consumption patterns through perverse incentives or economic constraints, despite pro-environmental attitudes. The role of government should be to create the right regulatory framework to incentivise businesses to get the right products on the shelves.

All political parties are under constant pressure to review environmental policies. Labour's 'green prosperity plan', originally proposed at £28bn has already been delayed and reduced in scope and is likely to be cut further.

Consumer engagement

How do we scale up the transition to net zero and keep the public on side? A key plank in the Skidmore Net Zero Review is pillar five: **consumer engagement**.²⁹ We've got to bring people on the journey with us. We need to sell this story properly as a huge opportunity.

- **The public shift will be massive.** Many people are waiting to see how technology and infrastructure evolves. **"We've done the easy stuff; we are now onto the tricky stuff. You might need to buy a new car, a new boiler. And all this while some people can't even afford both to feed themselves and heat their homes"**.
- **Government has yet to have a public debate about the behaviour changes needed.** However, evidence from IPPR's Citizen's Juries suggests that there is support for action on net zero and a recognition of what's at stake. The public intuitively understands that transport decarbonisation will help deliver social equity and health benefits, but **"who has a voice really matters. People don't want things done to them."**
- **We need a fundamental shift in the way the transport sector engages with people.** Public awareness of climate change as an issue is better than it was but consumers remain confused about what to do. The use of language is very important. **"We've got to move it away from a technical conversation to how does it affect Mrs Miggins?"**
- **We need to sell the benefits of making the transition.** It is important to demonstrate that you can have a green agenda and a better future. One participant suggested an alliance with the health sector encouraging people to get out of their cars onto public transport, walking and cycling. **"Everyone is worried about their health! We are killing ourselves with all these emissions and with our sedentary lifestyles!"**

Maintaining momentum

The risk is that a significant lack of political consensus will undermine public support. More than eight out of 10 people in the UK are concerned about climate change³⁰. However, the challenge comes in the implementation of policies that might be seen as unfair, costly or overly burdensome. Failure to inform and engage the public on the climate crisis could result in a 'vocal and unrepresentative minority' undermining net zero goals (Climate Outreach)³¹.

Maintaining momentum for net zero will, moreover, be challenging with the country facing huge financial challenges post-Covid. Public funds are at a premium. But green growth is the only kind of growth possible. And a key lesson from Ukraine is the importance of energy independence, investment in renewables and energy infrastructure.



Delivering Net Zero

“

We need a credible and detailed ‘delivery roadmap’, with cross sectoral input. Zemo has plenty of evidence of what is working, what is not working, what are the common challenges, and what we need to do to address them.

”

Pathways to Net Zero Roundtable, June 2023

The key conclusion of Zemo’s Stakeholder Consultation 2023 was that urgent attention must turn to the **delivery of net zero road transport**. It was felt that a credible and detailed ‘delivery roadmap’ is needed to set out how we can achieve net zero, and in particular how to achieve interim climate change targets.

Zemo is well placed to develop such a roadmap based on feedback from its cross-sectoral membership. As a key partner of government since its inception in 2003, Zemo Partnership has played an important role in transitioning transport to net zero. Zemo uniquely brings government, industry and experts together and is unbiased by any interest group.

The fact that government already has a pathway was acknowledged to be very positive. But political uncertainty doubles down on the importance of a delivery roadmap. The more detail behind a policy, the more locked in it becomes. As one participant commented,

“DfT will be asking themselves what do we need to do to get here? The opportunity is for Zemo to provide a deep dive evidence-based approach, with cross-sectoral input without government having to run a formal consultation.”

Zemo's trademark cross-sectoral membership and close links with government embody the whole essence of the 'triangle of change', bringing government, business and people together. The Delivery Roadmap for Net Zero Road Transport will:

- Complement the Automotive Council's technology roadmap. It will focus on where the gaps are and provide an overall picture of the mix of policy, consumer behaviour, demand and key aspects of technology all together. What are the feasible and incremental steps we can take? How are we going to build the new infrastructure required?
- Support the existing, detailed region-specific roadmaps across the country by identifying some of the common blockages, resolving some of the common challenges, identifying where policy changes are needed and where the power of greater collaboration would be very helpful, such as in data, finance, planning, and energy distribution.
- Recognise that a lot of the key interfaces are between different sectors, between the inter-urban and urban network, and that the reality of people's travel behaviour is multi-modal and multi-geographical, crossing multiple administrative boundaries. A roadmap and an orchestration of relevant bodies would need to reflect that complexity.



ANNEX I: Stakeholder Consultation 2023

As a key partner of government, Zemo Partnership has played an important role in accelerating the transition of transport to net zero emissions.

The objective of the stakeholder consultation, 'The role of Zemo in a changing world', conducted by Claire Haigh, then Vice Chair of Zemo Partnership, was to understand how the organisation was perceived and what the priorities for net zero road transport should be at a critical time for the agenda.

In January-February 2023, 86 stakeholders were consulted across the following groups:

- **Parliamentarians** – MPs/ Lords on relevant Select Committees, All Party Parliamentary Groups; former Ministers, Shadow Ministers
- **Senior civil servants and public body representatives** – DfT, BEIS, Defra, Climate Change Committee, National Infrastructure Commission, National Audit Office
- **Devolved, regional and local government** – Scotland, Wales, London; Local Enterprise Partnerships; Sub-national Transport Bodies; Combined/ Mayoral Authorities
- **Influential stakeholder groups** – Conservative Environment Network; Greenpeace, Green Alliance, Transport & Environment, IPPR, Automotive Council,
- **Industry** – CBI, SMMT, Fuels Industry UK (formerly UKPIA), and other leading trade bodies and businesses

Iain Stewart MP

Chair, Transport Select Committee
(Conservative)

Daniel Zeichner MP

Shadow Environment Minister (Labour)

Dr Alan Whitehead MP

Vice-Chair Net Zero APPG (Labour)

Gavin Newlands MP

SNP Transport Spokesperson & Transport
Select Committee Member (Scottish
National Party)

Baroness Randerson

Liberal Democrat Spokesperson, House of
Lords

Claire Wren

Director Future Transport Systems &
Environment, Department for Transport

Bob Moran

Deputy Director Decarbonisation Strategy,
Department for Transport

Natasha Robinson

Joint Head Office for Zero Emissions
Vehicles, Department for Transport

Nick Shaw

Joint Head Office for Zero Emissions
Vehicles, Department for Transport

Paul van Heyningen OBE

Deputy Director Net Zero Electricity
Networks, Department for Business, Energy
and Industrial Strategy

Simon James

Deputy Director Joint Air Quality Unit,
Environmental Quality Directorate,
Department for Environment, Food & Rural
Affairs

Debbie Owens

Deputy Director for Environment and Adaptation, Future Transport Systems and Environment Directorate, Department for Transport

Anna Leeson-Mayne

Policy Advisor, Department for Environment, Food & Rural Affairs

Eoin Devane

Transport Sector Lead, Climate Change Committee

Hannah Brown

Director of Policy, National Infrastructure Commission

Sophie Donaldson

Assistant Director, Transport & Place, National Infrastructure Commission

Kirin Mathias

Policy Advisor, National Infrastructure Commission

Jonny Mood

Director Value for Money Performance Audit, National Audit Office

Shirley Rodrigues

Deputy Mayor of London, Greater London Authority

Alejandro Colsa

Head of Air Quality (interim), Greater London Authority

Inga Mills

Air Quality Manager Transport Emissions, Greater London Authority

Lucy Hayward-Speight

Transport Strategy and Planning Manager, Air Quality & Environment, TfL

Morna Cannon

Head of Transformation Low Carbon Economy, Transport Scotland

Derek McCreadie

Senior Air Quality Emissions Manager, Transport Scotland

Dafydd Munro

Head of Transport Decarbonisation, Welsh Government

Robin Beckmann

Head of Transport Environment and Decarbonisation, Welsh Government

Steve Ward

Decarbonisation Programme Manager, Transport for Wales

Martin Tugwell

CEO Transport for the North

Rupert Clubb

Lead Officer, Transport for the South East

Hilary Chipping

CEO, South East Midlands Local Enterprise Partnership

Megan Black

Interim Head of Logistics and Environment, Transport for Greater Manchester

Ben Brittain

Policy Advisor West Midlands Mayor

Andy Street

West Midlands Combined Authority

Anne Shaw

Executive Director of Transport for West Midlands

Michael Anderson

West Midlands Metro Projects Director, Transport for West Midlands

Kate Taylor

Head of Finance Business Partnering and Strategic Planning, West Midlands Combined Authority

Steven Hayes

Head of Network Transformation, Transport for West Midlands

Andrew Page

Future Mobility Lead, Transport for West Midlands

Sam Hall

Director Conservative Environment Network

Paul McNamee

Director, Labour Climate & Environment Forum

Dr Doug Parr

Chief Scientist & Policy Director, Greenpeace UK

Dustin Benton

Policy Director, Green Alliance

Helena Bennett

Head of Climate Policy, Green Alliance

Richard Hebditch

UK Director, Transport & Environment (T&E)

Lauren Pamma

Programme Director, Green Finance Institute

Stephen Frost

Principal Research Fellow & Co-Head of Participative Research, Institute for Public Policy Research

Rosie Pearson

Corporate Director, Local Partnerships LLP

Kamal Panchal

Senior Adviser Transport & Local Growth Policy, Local Government Association

Simon Jeffrey

Policy Advisor (Transport) Local Government Association

Hannah Bartram

CEO, Association of Directors of Environment, Economy, Planning & Transport (ADEPT)

Anthony Smith

CEO, Transport Focus

Stephen Joseph OBE

Visiting Professor University of Hertfordshire & Chair of the Foundation for Integrated Transport

Professor Greg Marsden

Professor of Transport Governance, Institute for Transport Studies, University of Leeds

Philip Sellwood CBE

Chair, Zemo Partnership

Jonathan Murray

Policy & Operations Director, Zemo Partnership

Gloria Esposito

Head of Sustainability, Zemo Partnership

Richard Cuerden

Director TRL Academy, Transport Research Laboratory

Philippa Oldham

Stakeholder Engagement Director, Advanced Propulsion Centre

Tim Anderson

Group Head of UK Transport, Energy Savings Trust

Steve Gooding

Director, RAC Foundation

Professor Neville Jackson

Chair RAC Foundation & Chair Strategy Group Auto Council

Tom Thackray

Programme Director: Decarbonisation, Confederation of British Industry, CBI

Nick Jessop

Head of Transport, Confederation of British Industry, CBI

Anna Lindt

Head of Technical, Society of Motor Manufacturers & Traders SMMT

David Wells

CEO, Logistics UK

Chris Ashley

Head of Policy Environment & Regulation, Road Haulage Association

Dr Howard Porter

CEO, BEAMA

Gerry Keaney

CEO, BVRLA

Elizabeth de Jong

CEO, Fuels Industry UK (formerly UKPIA)

Chris Gould

Energy Transition Lead, Fuels Industry UK (formerly UKPIA)

Graham Vidler

CEO, Confederation of Passenger Transport

Martin Dean

Managing Director – Bus Development, The Go-Ahead Group plc

Rory Scanlan

Director External Relations, Arriva plc

Kyle Testo

Zero Emissions Technology & Solutions Lead, Arriva plc

Sam Greer

Regional Director for Scotland, Stagecoach UK

Tom Stables

CEO National Express UK, National Express Ltd

Paul Dight

Partner, Energy & Utilities Group, Addleshaw Goddard

Paul Hirst

Head of Transport Sector Group, Addleshaw Goddard

Roger Hunter

Vice President – Electric Mobility, Shell

Peter Harris

Vice President – International Sustainability,
UPS

Justin Laney

Partner & General Manager – Fleet, John
Lewis Partnership

John Lippe

Director City Engagement, Ford Mobility

Darran Messem

Director, Velocys

Tanya Neech

AIEMA, Head of Sustainability, Scania UK

Grant Pearson

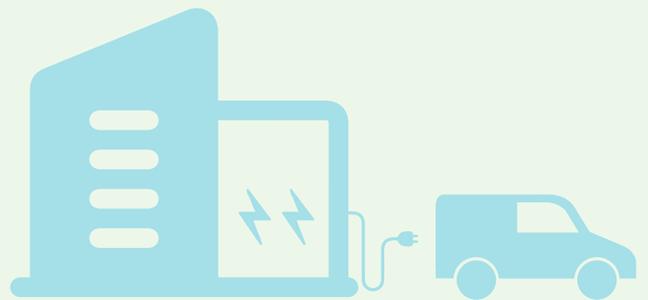
Chairman, Ensus

Glenn Saint

Vice President – Commercial Vehicles,
Arrival

Jonathan Wood

Vice President – New Power Engineering,
Cummins Inc



ANNEX II: “Pathways to Net Zero: Delivering Net Zero Road Transport”

Roundtable Discussion, June 2023

Transport is the biggest polluting sector of the UK economy. At 90% of all domestic transport emissions in the UK, road transport is a major contributor to the problem.

The roundtable discussion **Delivering Net Zero Road Transport** in June 2023 focused on the major policy and implementation challenges to be tackled if we are to successfully deliver net zero road transport. A full write up can be found [here](#).

The discussion built on the findings of the **Pathways to Net Zero** programme of 2022 which was developed by **Greener Vision** and overseen by the **Greener Transport Council** (GTC). More than 100 leading academics, local politicians, businesses, environmental groups, consumer groups and think tanks participated in the 2022 roundtable discussions. Further details on the series can be found [here](#).

Roundtable Attendees

Claire Haigh

Founder & CEO Greener Vision (Chair/ GTC)

Professor Greg Marsden

Professor of Transport Governance, Institute for Transport Studies, University of Leeds (GTC)

Professor Glenn Lyons

Mott MacDonald Professor of Future Mobility, University of the West of England (GTC)

Professor Jillian Anable

Chair in Transport and Energy, Institute for Transport Studies, University of Leeds (GTC)

Stephen Glaister CBE

Emeritus Professor of Transport and Infrastructure at Imperial College London, Associate of the London School of Economics (GTC)

Victoria Hills

CEO, Royal Town Planning Institute (GTC)

Hannah Bartram

CEO Association of Directors of Environment, Economy, Planning & Transport (GTC)

Hilary Chipping

CEO South East Midlands LEP (GTC)

Kamal Panchal

Senior Advisor Transport & Local Growth Policy, Local Government Association (GTC)

Anna Rothnie

Senior Transport Planner (GTC)

Paul Hirst

Head of Transport Sector, Addleshaw Goddard (GTC)

Andy Eastlake

CEO, Zemo Partnership (GTC)

Jonathan Murray

Policy & Operations Director, Zemo Partnership

Neil Wallis

Head of Communications, Zemo Partnership

Tim Anderson

Head of UK Transport, Energy Savings Trust

Philippa Oldham

Stakeholder Engagement Director, Advanced Propulsion Centre

Richard Cuerden

Director TRL Academy, Transport Research Laboratory

Peter Harris

Vice President: International Sustainability UPS

Roger Hunter

Vice President: Electric Mobility, Shell

Tanya Neech

AIEMA, Head of Sustainability, Scania UK

Grant Pearson

Chairman, Ensus

ANNEX III: Zero Emission Mobility Taskforce

In Autumn 2023, Zemo created a Zero Emission Mobility Taskforce, which convened a series of workshops to identify actions needed to deliver net zero 2035 ambitions.

The following high-level recommendations are drawn from workshops covering personal mobility, public mobility, moving goods and services, sustainable fuel supply, infrastructure supply and vehicle supply. These were attended by 123 members of Zemo Partnership.

Common Recommendations

- We must ensure transport and energy policy focuses on life cycle GHG emissions metrics (not just tailpipe emissions).
- We must harmonise sustainability criteria for feedstocks and raw materials required for the transition to net zero.
- We must secure emission reductions from the existing legacy fleet of road vehicles.
- We must promote greater consumer awareness of zero tailpipe emission options and associated uses and operations.
- We must challenge myths and provide the right information, in the right way, at the right time, to the right audience.
- We must ensure an equitable transition to zero emission vehicles.
- We must make sure that public infrastructure is used and usable for all (accessible, interoperable etc).
- We must bring forward the point that the Total Cost of Ownership (TCO) for ZEVs matches (or is better than) their internal combustion engine (ICE) equivalents for all users/operators.
- We must have clarity on ZEV mandates applied to Heavy Duty Vehicles (trucks, buses, coaches, and minibuses).
- We must have clarity on the future rollout of air quality initiatives (i.e. CAZ/ AQMA/ZEZ/LEZ etc.) on national and international scales to give operational certainty (to freight and coach operators).
- We must review the UK's infrastructure planning system and speed up the implementation process (electricity, fuels and hydrogen).

Transport Sector Specific Recommendations

Sector specific recommendations identified the need for more research and development in niche transport such as powered light vehicles and long-haul coaches, which until now have not received the same level of attention as more mass-market vehicles like cars, vans and buses. The recommendations not only look at the decarbonisation technologies for these types of vehicles, but also look at understanding innovative new business and operational models that can be unlocked through them.

Personal Mobility Recommendations

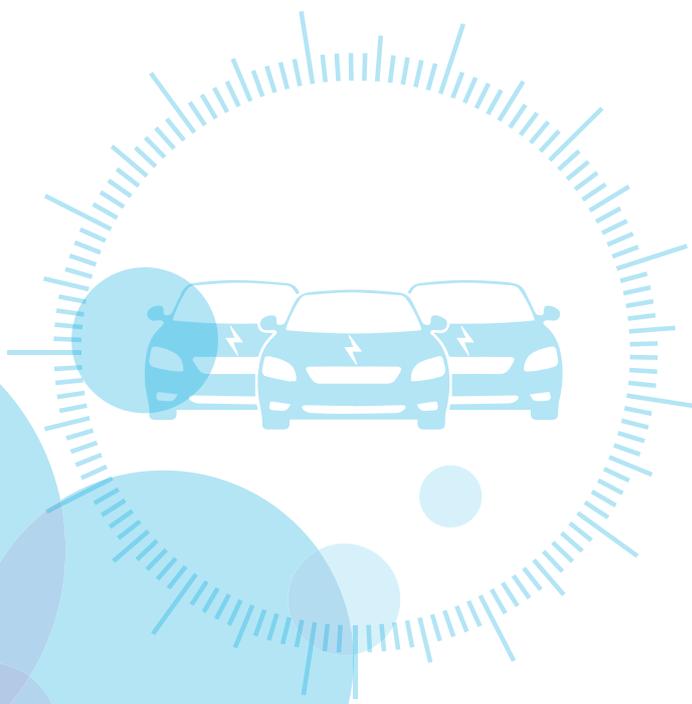
- We must establish a functioning used EV market.
- We must ensure zero emission vehicles are accessible to all.
- We must understand the full potential and specific requirements for Powered Light Vehicles (PLVs) (for Personal Mobility and for Moving Goods)

Public Mobility Recommendations

- We must understand the potential and specific requirements for net zero emission coaches.
- We must maximise the utilisation of assets.

Moving Goods Recommendations

- We must encourage the supply of zero emission commercial vehicles to the market.
- We must ensure zero emission commercial vehicles are accessible to all operations and businesses of all sizes, including public sector fleets.
- We must understand the specific requirements of innovative commercial business models.



Pathway Specific Recommendations

Low Carbon Fuel (LCF) Recommendations

- We must ensure the long-term supply of sustainable LCFs.
- We must make higher blend biodiesel and renewable diesel financially attractive through a national fiscal incentive.
- We must support the wider rollout of bunkering and refuelling infrastructure for LCF in heavy-duty vehicles.

Energy Infrastructure Recommendations

- We must review the UK's infrastructure planning system and speed up the implementation process.
- We must create commercial propositions to encourage uptake of charging infrastructure.
- We must ensure that local authorities have the tools, capabilities, powers and resources to integrate energy and transport planning in order to provide a robust public charging network.
- We must ensure smart charging takes place wherever appropriate if system costs are to be manageable, and that the correct incentives are in place to encourage its use.
- We must provide consumers with the right information to make informed choices about the range of charging options that are available to them.
- We must ensure that infrastructure being implemented now is robust

and future-proof for innovative developments later on (V2G etc). We must explore options for greater asset utilisation, including on-site generation and storage.

Hydrogen

It was felt that more evidence gathering is required before making any recommendations on hydrogen's role in road transport. It is proposed to run more dedicated member workshops specifically on hydrogen for road transport, and its use for internal combustion or fuel cell applications.

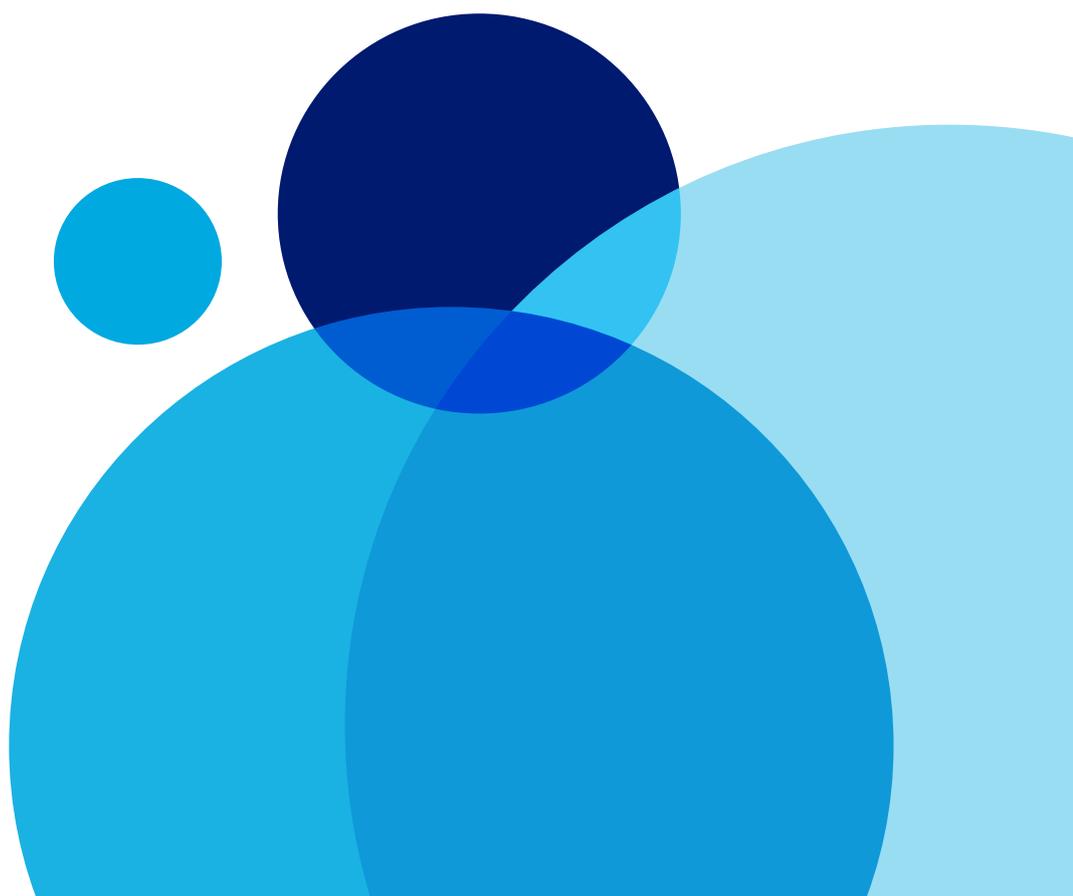
Broader Issues

It was felt that wider themes in the space of road transport decarbonisation need to be tackled. This includes UK economic growth and the jobs and skills that will be needed to support this growth, the need for a holistic approach to transport and energy planning, and the access to "Big Data" which will enable a joined-up approach to developing this new national critical infrastructure. Considerations should also be given to modal shift and encouraging the right vehicle for the journey.

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