

Written evidence submitted by Green Alliance (EVP0125)

About Green Alliance

Green Alliance is an independent think tank and charity focused on ambitious leadership for the environment. Since 1979, we have been working with the most influential leaders in business, NGOs and politics to accelerate political action and create transformative policy for a green and prosperous UK.

Summary

Bringing forward the ban on the sale of new petrol and diesel vehicles to 2030 is an important step to reduce emissions from the largest emitting sector in the UK and remove the most polluting vehicles from the road. Crucially, to maximise the benefits of the transition to clean vehicles, the adoption of electric vehicles (EVs) must be scaled up significantly during the 2020s. This will maximise emission savings, putting the UK on a stronger footing to meet its decarbonisation commitments. It will also save costs to consumers and promote clean vehicle manufacturing in the UK.

A range of interventions will be required to ensure rapid adoption of battery electric vehicles over the next decade:

- Regulating car manufacturers to ensure adequate supply of EVs. In particular, we recommend the use of a zero emission vehicle (ZEV) mandate, with interim targets over the next 15 years, to require car manufacturers to sell an increasing proportion of ZEVs.
- Incentives for EV adoption. Apart from the existing incentives, we recommend the government consider progressively raising 1st year vehicle excise duty (VED) rates for cars with engines and using revenues to support grants for battery electric vehicles (BEVs), and encourage the uptake of BEVs by fleets.
- Ensuring adequate supply of charging infrastructure. We recommend the government to develop a comprehensive strategy to facilitate delivery of charging infrastructure including through empowering local authorities, tackling the cost of strategic grid connections for fast charging and setting policy to promote delivery of charging at home and workplace.

Accelerating the shift to zero emission vehicles

The feasibility, opportunities, and challenges presented by the acceleration of the ban of the sale of new petrol and diesel vehicles to 2030;

Key opportunities include:

- Emission savings
 - With transport now the highest emitting sector, it is vital to promote rapid decarbonisation. For this, the focus should be on maximising adoption of full electric vehicles, and limit the role of hybrid - including plug-in hybrid vehicles

(PHEVs), as these do not contribute to significant emission savings compared to conventional internal combustion engine vehicles. Analysis by Transport & Environment shows that PHEVs are responsible for only about 30% fewer emissions compared to ICEs.¹

- The UK is currently not on track to meet its 5th Carbon Budget. We estimate that, based on the new Climate Change Committee (CCC) assessment of the emissions reduction needed between 2028-2032, the UK is still projected to generate 849MtCO₂e in excess over that five-year period. The UK is also not currently on track to meet its new 2030 Nationally Determined Contribution target, with an expected 91MtCO₂e/year excess emission projected in 2030.
- Our analysis has shown that a 2030 ban on the sale of new internal combustion engine (ICE) - as well as plug-in hybrid - cars and vans would deliver significant emission savings during the 5th Carbon Budget, with savings of ranging between 90 - 117 MtCO₂e over the five year period depending on the rate of adoption over the 2020s (assuming between 38% - 50% of new sales are BEVs in 2025). While these emission savings would not be sufficient by themselves to close the gap for the UK to meet the 2030 NDC target and the emission reductions needed over the 5th Carbon Budget, ensuring strong EV adoption and limiting as much as possible the role for PHEVs post 2030 would put the UK on a stronger footing to meet its decarbonisation commitments.
- Similarly, the CCC has indicated in its 6th Carbon Budget advice that the government should be aiming for rapid adoption of EVs over the next decade, with BEVs representing nearly half of new vehicle sales in 2025, and with non-zero emission vehicles representing an extremely limited share of the market post 2030. They have also recommended a comprehensive policy package for the government to deliver the phase out of new petrol and diesel vehicles by 2030, including a ZEV mandate, expansion of EV charging infrastructure and stronger consumer incentives.²
- Therefore, while the government's decision to allow the sale of hybrid vehicles until 2035 is a missed opportunity to turbocharge the transition to zero emission cars and vans, government should maximise emission savings by accelerating adoption of battery electric vehicles over the next decade, including through regulating the car industry to sell a rapidly increasing share of zero emission vehicles over the next 15 years, and limiting the sales of hybrid and plug-in hybrid vehicles after 2030.³
- Job creation, clean vehicle manufacturing and wider economic benefits
 - In promoting the transition to electric vehicles, the UK has the opportunity to develop leadership in clean vehicle manufacturing. Building on the UK's automotive sector and strong science base, the UK could lead on a new clean vehicle manufacturing industry, benefiting regions across the country through direct job creations and wider positive economic impacts. Analysis by Cambridge Econometrics finds if the UK motor industry, with the support from the government, could leverage a rapid transition to electric vehicles to improve their competitiveness. They could enjoy substantial positive economic benefits of a 0.6%

increase in GDP and create 63,000 direct jobs in 2030 by securing a greater share of the domestic market.⁴

- There is also the opportunity to support job creation through the delivery of the required charging infrastructure. IPPR estimates that the installation and maintenance of chargers and battery cell manufacturing could create 27,000 jobs in the UK.⁵
- The more rapid transition to electric vehicles is expected to bring wider economic benefits due to the lower overall costs of mobility resulting in higher consumer spending on electricity and other goods and services. The same analysis done by Cambridge Econometrics estimated a 0.2% increase in GDP and creation of 32,000 direct jobs across the economy in 2030. Even though the rapid transition to electric vehicles will lead to a decline in Government tax revenues mainly from the fall in fuel duty revenues. The overall economic gains lead to increased revenues elsewhere in the economy, particularly from income tax, could lead to a £1.9 billion increase in government revenue in 2030.⁶
- Cost savings to consumers
 - With the current subsidy scheme, the total cost of ownership (TCO) of EVs is already lower than that of conventional cars and the CCC estimates that EVs will be cost-saving compared with a conventional car in 2025 subsidy free (on a TCO basis). The lower operating cost of EVs is due to greater efficiency and lower fuel and maintenance costs.⁷ This is particularly beneficial for fleets where there is an intensive use of vehicles.
 - Second hand EVs could also benefit lower income households due to lower overall costs. Our analysis shows that low income households could save £3,000-£5,000 per car if they were to buy or lease a used EV, compared to the cheapest diesel vehicle, on a total cost of ownership basis.⁸
- Further benefits
 - Electric vehicles and repurposed vehicle batteries could support a more flexible energy system, charging at times of high supply and feeding energy back into the system when needed.⁹
 - The transition to EVs will also help improve air quality, particularly nitrogen dioxide (NO₂) and non-methane volatile organic compounds (NMVOC) levels, by reducing the number of petrol and diesel vehicles on the road.¹⁰

Some of the main challenges related to the transition to electric vehicles are:

- While electric vehicles significantly reduce greenhouse gas emissions compared to ICEs, their impact on air quality is more limited. This is because a significant share of air pollution is associated with braking and tire wear. Furthermore, there is a risk that lower operational costs of EVs will lead to higher mileage, therefore raising the impact of air and water pollution from braking and tire wear.
- The lower operational costs of EVs could potentially dissuade people from using public transport, potentially worsening congestion. A survey asking public transport commuters

on how they plan to change their journey to work post-lockdown has shown that 43% were considering an EV rather than public transport.¹¹ There is a need for policies to support adoption of EVs, these need to be combined with policies to promote the use of public transport and reducing car mileage.

- Lower operational costs of EVs also pose a risk of deterring the efforts in promoting reduced car ownership, limiting efforts to reduce embodied carbon emissions associated with the vehicle fleet. As recommended by the CCC, policies to strengthen schemes to support active travel and public transport are needed to reduce demand for car travel. In addition, the government must set policy for manufacturers to reduce embodied carbon through better design, and greater vehicle and battery reuse and remanufacturing.¹²
- There is also an equity issue in the transition to EVs. Lower income households with less access to EVs could be paying fuel duty and supporting the transition to EVs through their electricity bills and general taxation. While securing ample supply of second hand EVs could address the affordability of EVs, studies have shown that lower income households who are least likely to own a private vehicle are more susceptible to suffer from poor air quality. Therefore, alongside boosting access to the second hand EV market, complementary policies aiming at improving air quality, promoting access to public transport and active travel infrastructure are needed to ensure a fair and just transition.¹³
- Green Alliance is part of the ‘CREDS FAIR’ project, which looks at the relationship between fuel and transport poverty to understand which groups are most likely to be impacted by both. Low income households in rural communities are one of the most likely groups to be affected by both forms of poverty, due to poor efficiency of homes and isolation due to a lack of transport infrastructure. Government must ensure that future policies to incentivise EV are designed with vulnerable communities in mind. Further research from this project, due over the next couple of years, will provide further evidence on the impact of decarbonisation policies on these vulnerable groups.¹⁴

The actions required by Government and private operators to encourage greater uptake of electric vehicles and the infrastructure required to support them;

A comprehensive suite of measures is required to promote the EV transition and maximise the benefits to communities and businesses across the country.

Government action is needed in the following areas:

- Regulating manufacturer
 - An appropriate balance between policies to increase both supply and demand is essential in driving the EV transition. Incentives to promote EV uptake must be complemented with the regulation of car manufacturers. Effective regulation for the car industry is essential to guarantee adequate supply of ZEVs well ahead of 2030/2035, promote rapid cost reductions thanks to economies of scale and innovation, and ensure emission savings and benefits to consumers. It is recommended to regulate by a ZEV mandate - to require car manufacturers to sell an increasing proportion of ZEVs, with interim targets over the next 15 years.¹⁵

- The government should set regulation to limit the sales of all hybrid vehicles post 2030. Regulation will also be needed to ensure a continuous reduction in emissions from ICE while their sale is still permitted, as recommended by the CCC.¹⁶
- Charging
 - The government should implement policies to facilitate the deployment of charging infrastructure and ensure a good coverage of charge points throughout the UK. This should be part of a comprehensive charging strategy, which should address the need for on-street charging¹⁷, home charging and charging in workplace.¹⁸
 - As part of this, government should support deployment where cost of grid upgrades would limit coverage or where the business case is weak to ensure national coverage. Rural areas in particular have been struggling to access funding for installing EV charging points as there is currently a poor business case for doing so, due to lower population density and higher grid connection costs. The Local Energy Hubs developed by BEIS are a great example of how government can support local authorities to access more funding, pool together resources and attract private investment. A roll out of this model, or a similar scheme, can support the increase in EV charging infrastructure.¹⁹
- Incentivise uptake
 - It is positive that the government has provided more incentives to EV purchase as committed in the Ten Point Plan. As part of a longer term strategy to support the adoption of EVs, the government should consider reforming 1st year VED, progressively raising 1st year VED rates for fossil fuel cars and using revenues to support grants for EVs is the most equitable way to incentivise the purchase of ZEVs in coming years.²⁰
- Policy for resource efficient design, reuse and recycling of EVs and EV batteries
 - Government should set policy to reduce emissions associated with vehicle and battery manufacturing.²¹ Policy should promote design for disassembly, resource efficient manufacturing, longer vehicle and battery life, reuse, remanufacturing and recycling of EV cars and batteries. This should be couple with policy to scale up the required infrastructure for reuse and high value recycling, boosting the resilience of UK businesses by limiting the reliance on imported materials. We estimate that the UK could meet nearly half of its demand for cobalt in 2035 through domestically sourced, recycled cobalt.²²
 - There is also the opportunity to leverage new digital technologies, including smart battery management systems (to optimise the use of batteries and determine the best time to repurpose EV batteries for stationary storage) and the use of digital passports for tracking batteries.
- Policy to promote a system wide transition to low carbon transport, including reducing the need for travel, greater use of walking and cycling, and boosting public transport. As discussed in the previous section, EV adoption needs to be complemented by a suite of other policies to support alternative forms of low carbon transport, in order to maximise air quality and health benefits, and lower congestion.

The particular challenges around decarbonising buses and how these should be addressed;

- On a TCO basis, battery electric buses can already offer a cost effective zero emission option for the replacement of conventional buses, With the projected battery cost reductions, the TCO of battery electric buses will be 10% cheaper than that of diesel buses. The switching to battery electric buses could enable passenger fare reductions of ca. 2p per km due to significant fuel savings.²³
- The government should also incentivise the continued roll-out of zero-emission buses and empower Local Authorities to continue driving zero-emission bus uptake. While the recent announcement of Coventry and Oxford becoming the first all-electric bus towns, this funding must now be rolled out to support the bus sector while also delivering on the 4000 zero emission buses pledged for this parliament.
- Incentivising modal shift will make buses more economical to run due to higher passenger numbers. Policies to decarbonise buses should go hand in hand with incentivising the shift away from private vehicles to public transport, through promoting policies such as clean air zones in city centres to disincentivise driving, or the uptake of workplace parking levies by local authorities.

The Government's ambition to phase out the sale of new diesel heavy goods vehicles, including the scope to use hydrogen as an alternative fuel.

- Phasing out diesel heavy goods vehicles (HGVs) is vital in the UK's overall effort in reducing GHG emissions. Road transport represents 68% of all transport emissions (including international aviation and shipping), 19% of which are from HGVs.²⁴
- As indicated by the CCC, the best solution to decarbonise heavy goods vehicles (HGVs) is still uncertain, with potential options including battery-electric, hydrogen and pantograph.²⁵ The government must make the best use of the investments in freight trials and innovation programmes as committed in the Ten Point Plan and Energy White Paper to develop the best solution for broad application.²⁶ In the meantime, the government should avoid lock-ins of particular options by maintaining a level playing field - not to subsidise certain options until it is proven to be better in terms of cost and efficiency.
- According to analysis by Transport & Environment, the ICE sales phase out must happen before 2035 for trucks below 26 tonnes and before 2040 for heavier vehicles. Even with these dates, a circulation ban on legacy diesel fleet in 2050 will be needed to fully decarbonise the freight sector.²⁷
- The government should act in pace with trials and planning to meet the 2040 phase out date for new diesel HGVs recommended by the CCC. At the same time, support schemes to reduce HGV usage and set ambitious CO2 emissions standards for HGVs to achieve interim emission reduction.²⁸

Road pricing

The case for introducing some form of road pricing and the economic, fiscal, environmental and social impacts of doing so;

The level of public support for road pricing and how the views of the public need to be considered in the development of any road pricing scheme;

- Road pricing can be an important tool in ensuring that, as the UK vehicle fleet moves away from polluting vehicles towards zero emission alternatives, there remains an incentive to reduce vehicle miles. As emphasised by the CCC, there is an “urgent need for stronger policies to reduce growth in demand for travel” and we have discussed previously in this submission how a reduction in vehicle miles is essential to maximise air quality and health benefits, reduce congestion and maximise emission savings.
- However, careful design is vital to ensure road pricing is applied in a fair and equitable way, including taking into consideration the impact on rural areas and communities with limited access to public transport and infrastructure for walking and cycling. It’s therefore essential that introduction of road pricing is complemented by a set of supportive policies to maximise effectiveness and fairness.

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Endnotes

¹ The CO₂ emissions from a typical PHEV are about 117g CO₂/km on the road only slightly better than from a conventional hybrid car like a Toyota Prius 135g CO₂/km. A conventional new ICE car has emissions of 164-167g CO₂/km on the road (diesel and petrol respectively). T&E, 2020. [UK briefing: The plug-in hybrid con](#)

² CCC, 2020. [Sixth Carbon Budget](#)

³ Green Alliance and Greenpeace, 2020. [Ending the sale of new diesel, petrol and hybrid cars and vans: the contribution to UK emissions targets](#)

⁴ Cambridge Econometrics and Element Energy, 2020. [The impact of a 2030 ICE phase-out in the UK](#)

⁵ IPPR, 2020. [Transforming the economy after Covid-19: A clean, fair and resilient recovery](#)

⁶ Cambridge Econometrics and Element Energy, 2020. [The impact of a 2030 ICE phase-out in the UK](#)

⁷ CCC, 2020. [Sixth Carbon Budget](#)

⁸ Green Alliance, 2019. [Going electric](#)

⁹ Green Alliance, 2019. [Smarter transport](#)

¹⁰ CCC, 2020. [The UK's transition to electric vehicles](#)

¹¹ Drive Electric, 2020. [Commuters swap public transport for cheaper electric cars](#)

¹² Green Alliance, 2018, [Less in more out](#); CCC, 2020. [Sixth Carbon Budget](#)

¹³ Joanna H. Barnes, Tim J. Chatterton, James W.S. Longhurst, 2019. [Emissions vs exposure: Increasing injustice from road traffic-related air pollution in the United Kingdom](#)

¹⁴ Mari Martiskainen et al., December 2020. [New Dimensions of vulnerability to energy and transport poverty](#)

¹⁵ T&E, 2020. [Phasing out sales of new cars with engines](#)

¹⁶ <https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Surface-transport.pdf>

¹⁷ CCC, 2020. [The UK's transition to electric vehicles](#)

¹⁸ Green Alliance, 2020. [Going electric how everyone can benefit sooner](#)

¹⁹ Green Alliance, 2020. [The local climate challenge: a partnership approach](#)

²⁰ T&E, 2020. [Phasing out sales of new cars with engines: A UK approach](#)

²¹ Green Alliance, 2019. [Smarter transport](#)

²² https://www.green-alliance.org.uk/resources/Completing_the_circle.pdf

²³ Green Alliance analysis.

²⁴ Transport & Environment, 2020. [How to decarbonise the UK's freight sector by 2050](#)

²⁵ CCC, 2020. [Sixth Carbon Budget](#)

²⁶ BEIS, 2020. [Energy White Paper](#)

²⁷ Transport & Environment, 2020. [How to decarbonise the UK's freight sector by 2050](#)

²⁸ CCC, 2020. [Sixth Carbon Budget](#)