

## Potential risks for an electric vehicle future

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## Potential risks for an electric vehicle future

### At glance

- The paper examines the Government's new policy to address air pollution from road transport and assesses certain risks associated with this new approach.
- This policy is premised on technological change which entails a transition to electric vehicles and an end to the sale of new conventional petrol and diesel cars and vans by 2040.
- By taking this primarily technological approach, the government should ensure that other risks are effectively identified and mitigated. These include social and economic, environmental, as well as regulatory and governance risks.

### Introduction

Over the last year, we have seen a significant level of governmental activity on air pollution. The Government published several policy papers addressing different issues related to air quality.<sup>i</sup> Most recently, the Government published the Environment Bill which aims to strengthen the air quality regulatory framework as one of its priorities, while the 2019 Clean Air Strategy sets out a comprehensive action plan to address air pollution from different mobile and stationary sources of pollution. Transport still remains a significant area of concern as, along with the industrial sector, it represents a major source of air pollution. The Clean Air Strategy commendably addresses emissions from all transport modes, as well as emissions from non-road mobile machinery. Nonetheless, this will be primarily achieved through measures related to road transport and a transition to electric vehicles by 2040.<sup>ii</sup> Furthermore, the Clean Air Strategy identifies the Government's ambition to use this new policy shift as an industrial stimulus "through leading the world in the development, manufacture and use of technologies, systems and services that tackle air pollution".<sup>iii</sup> There is no doubt that this is a very ambitious policy premised on technological change. However, a closer examination of the Strategy's measures and its technological focus raises some concerns about potential risks that will be explored in this paper.

### The primacy of technology

A technological theme pervades these documents and is indicative of a policy primarily focused on technological change. There is a recent and familiar precedent for this; EU law and policy in this area was previously based on diesel engine technology, while both the EU and UK's current policies are based on zero emissions vehicles as the new technology that will address the problem of air pollution. This approach can be seen as technological determinism whereby technological change is autonomous and technological development and innovation are the primary drivers of a change in the society.<sup>iv</sup> This approach assumes that other non-technological drivers of change, for example social, economic, cultural or other processes, have little or no effect. If the regulator primarily assumes that technology will be the primary determinant of change then risks and issues in the social, economic and environmental arenas are likely to remain unidentified or under-rated and lead to potential problems. A further risk is the possibility, even likelihood, of unintended consequences. The EU's law and policy on air pollution primarily focused on reducing CO<sub>2</sub> by relying on diesel engine technology and this led to series of unintended consequences, from unlawful levels of air pollution to significant losses for the car industry and car owners.

### Risks associated with the transition to electric vehicles

Given the similarity between the EU's and UK's policy approach to road transport, it is worth identifying potential longer-term risks that the regulator should seek to mitigate. In its Clean Air Strategy, the Government pledges that the transition to zero emission road transport will be "industry and consumer led", supported by measures set out in Road to Zero Strategy.<sup>v</sup> In the first place, UK consumers will face significant costs in purchasing zero emissions vehicles and those with lower incomes will be hit the hardest. Despite this, the government recently reduced the subsidies for electric cars from £4500 to £3500, while the subsidies for plug-in hybrid vehicles were abolished. There will also be higher costs for owners of diesel vehicles who initially bought their vehicles in good faith and were incentivised to do so by the Government. It was not surprising to see that one of the initial causes of the yellow vest protests in France was the imposition of higher tax on diesel. This especially affected working people in rural areas who are heavily reliant on cars as the only available means of transport.

Similarly, the transition to zero emission vehicles needs to be considered in the light of changing consumer behaviour. Though recent studies indicate a decreasing number of younger drivers,<sup>vi</sup> we can see the opposite trend in an increasing number of private vehicles,<sup>vii</sup> which are the most common means of transport accounting for 80 per cent of passenger kilometres.<sup>viii</sup> At the same time, we see a rising number of vans as retailing becomes more delivery based.<sup>ix</sup> Though the European car industry is fast catching up with American and Asian competitors in regard to electric cars, the industry is still faced with a complex and sudden transfer to new technology which requires significant investment in research and development. This is particularly important in regard to the development of new battery technologies which will improve electric cars' performance, as well as technologies for their safe re-use and recycling.<sup>x</sup> To that end, there needs to be a greater focus on cooperation with international and EU partners in technology development and innovation which is essential in securing clean growth and innovation in the UK. Thus, the car industry will face a challenge to scale up production to a level where electrical vehicles will be affordable and accessible.

The Clean Air Strategy recognises the need to deploy funds for development of infrastructure associated with the zero emission vehicles. One of the main measures will be to ensure "that 95% of the network will have a chargepoint for electric vehicles every 20 miles".<sup>xi</sup> However, the development of future infrastructure needs to be assessed in the wider context of future population and traffic growth, as well as the UK's ambition to position itself as a world leader in manufacturing and exporting zero emission vehicles. Aside from the low level of infrastructure investment relative to other European countries, the UK's track record in delivering complex transport infrastructure projects has room for improvement. Furthermore, there should be a better use green infrastructures (e.g. well sited trees and habitats) as a way of gentrifying our environments and improving air quality.<sup>xii</sup>

The transition to zero emission road transport carries several environmental risks that may lead to potential unintended consequences affecting human health and the environment. Although the Clean Air Strategy and the Road to Zero encourage different forms of active travelling and more investment in public transport, both policy documents are mostly positioned around an 'individual transport' modal form. In the first instance, this raises concerns about sustainable consumption, as this policy approach will gradually lead to an even greater number of vehicles. Equally, there are significant environmental impacts resulting from manufacturing and disposal of electric vehicles which need to be more comprehensively addressed. This is particularly salient in regard to construction and disposal of batteries, processes that require appropriate regulation of battery life cycle and subsequent enforcement. There are concerns about the environmental impact of mining in countries such as the Philippines and Russia where nickel mining for battery production has led to negative environmental impacts.

A related environmental risk is where the power for electric vehicles will come from. The new regulatory shift to zero emission road transport is highly dependent on the total energy mix. The gap between what is currently used in fossil fuels in cars and the required energy for future electric vehicles should predominantly come from renewable sources of energy. This requires a more detailed policy and better alignment between Clean Air Strategy and the Clean Growth Strategy commitment for “more diverse and reliable energy mix”.<sup>xiii</sup> It is still not clear if the UK will continue to follow EU renewable energy targets, which may lead to slower growth of the renewable energy sector. There is also uncertainty over foreign investments and future capacity in the nuclear energy sector in the UK, which at the moment accounts for 21 per cent of UK electricity generation mix.<sup>xiv</sup> Finally, there is the issue of hydraulic fracturing of shale gas and oil in the future energy mix which will inevitably have negative impacts on climate change and poses risks to humans and the environment.

Finally, the new policy approach to air pollution from road transport has potential governance and regulatory risks that may result in unintended consequences. Action at the local level lies at the heart of the Clean Air Strategy. While the Government is fully committed to leadership at all levels, it is particularly committed to facilitating action at the local level and to that end wants to ensure that “responsibility sits at the right tier of local government”.<sup>xv</sup> The focus is also on the preventive approach by local authorities by promoting an action before unlawful levels of emissions of pollutants occur. While it is commendable to address air pollution locally, activity at the local level will depend on capacity and resources deployed to local governments. Government funding for local authorities has fallen by 50 per cent since 2010.<sup>xvi</sup> One of the measures set out in the Clean Air Strategy is “continue working with the Ministry of Housing, Communities and Local Government to strengthen the planning practice guidance on air quality to ensure planning decisions help to drive improvements in air quality”. Providing better guidance will be of great importance for ensuring effective compliance with the air pollution legislation. However, planning at the local level is directly linked to capacity and expertise of local authorities to exercise a holistic approach to air pollution by ensuring sustainable housing and infrastructure in the light of rising demands. Equally, the Strategy should emphasise a more ambitious action at central level to avoid passing the burden to local government.

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<sup>i</sup> For example, the Road to Zero Strategy, Clean Growth Strategy, Resources and Waste Strategy for England and the Industrial Strategy

<sup>ii</sup> The Strategy set out plans to end the sale of new conventional petrol and diesel cars and vans by 2040” and to position itself to “as the best place in the world to develop, manufacture and use zero exhaust emissions vehicles” – see the Clean Air Strategy (2019) 9 <https://www.gov.uk/government/publications/clean-air-strategy-2019>

<sup>iii</sup> See Clean Air Strategy (n ii) 8

<sup>iv</sup> See more in Allan Dafoe, ‘On Technological Determinism’ [2015] Science, Technology and Human Values 40(6) 1047-1076

<sup>v</sup> See Clean Air Strategy (n ii) 45

<sup>vi</sup> Committee on Climate Change: Reducing UK emissions 2018 Progress Report to Parliament (2018) 152

<sup>vii</sup> Department for Transport: Vehicle Licensing Statistics: Annual 2016 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/608374/vehicle-licensing-statistics-2016.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608374/vehicle-licensing-statistics-2016.pdf) and Department for Transport: Vehicle Licensing Statistics: Quarter 1 (Jan – Mar 2018) [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/729581/vehicle-licensing-statistics-january-to-march-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729581/vehicle-licensing-statistics-january-to-march-2018.pdf)

<sup>viii</sup> Department for Transport: Transport Statistics Great Britain (2017) 1 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/661933/tsqb-2017-report-summaries.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661933/tsqb-2017-report-summaries.pdf)

<sup>ix</sup> According to the 2018 Progress Report, in 2016 emissions from vans increased by 5.5% to 19.2 MtCO<sub>2</sub>e – See 2018 Progress Report (n vi) 153

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<sup>x</sup> This issue is very briefly addressed in the 2018 Resources and Waste Strategy for England <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england>

<sup>xi</sup> See Clean Air Strategy (n ii) 46

<sup>xii</sup> This was suggested during the consultation on the draft Clean Air Strategy – See the draft Clean Air Strategy Summary of responses (2019) 28 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/770714/draft-clean-air-strategy-consult-sum-resp.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770714/draft-clean-air-strategy-consult-sum-resp.pdf) and the consultation response from the Wildlife and Countryside Link [https://www.wcl.org.uk/docs/Link\\_Clean\\_Air\\_Strat\\_response\\_Aug18.pdf](https://www.wcl.org.uk/docs/Link_Clean_Air_Strat_response_Aug18.pdf)

<sup>xiii</sup> Clean Growth Strategy: Leading the way to a low carbon future (2017) 10

<sup>xiv</sup> See Clean Growth Strategy (n xiii) 94

<sup>xv</sup> See Clean Air Strategy (n ii) 12

<sup>xvi</sup> National Audit Office: Financial Sustainability of Local Authorities (2018) 9