DECARBONISE NOW

Submission of Evidence to the Department of Transport's Plan to Decarbonise Transport

Executive summary

Decarbonising transport across the 2020s is essential to reaching net zero emissions. The most important area that currently needs attention is a rapid uptake of electric vehicles. Action to address longer term decarbonisation areas such as HGVs, aviation and shipping must be built upon now, against a backdrop of modal shift away from private vehicles. Top priorities for the transport decarbonisation plan include;

- A binding 2030 ban on the sale of conventional petrol and diesel cars and vans, brought forward from the current 2040 target and proposed 2035 target.
- Binding sales targets for proportions of EVs in car sales, rising to 100% by 2030.
- Fiscal incentives for EVs and their infrastructure (such as production facilities and charging points) to continue and expand as necessary.
- Yearly charging infrastructure targets to be rolled out in conjunction with sales targets for EVs.
- Continue support and expansion for public transport, with expansion of walking and cycling access in urban areas and extension of bus and rail routes.
- Large scale low carbon HGV trials to begin in freight fleets.
- Incorporate international aviation and shipping emissions into the 6th carbon budget.

Importance of the transport sector

It is hard to overstate the vital nature of emissions reductions in the transport sector. Not only is it the largest source of greenhouse gas emissions, over a third of the UK's total in 2019 (see Figure 1), but together with the power sector, it is the only credible sector where radical, large scale cuts in emissions can be made over the 2020s. With more concrete policies (such as the offshore wind target of 40GW) in place for the power sector, whether the UK meets the fifth carbon budget or not most heavily rests on reductions in road transport emissions. Conversely, longer term the biggest technical barrier to reaching net zero emissions will be the ability to produce zero emission planes and ships, and with a long development timeframe, early adoption will be critical.

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DecarboniseNow is a volunteer run climate campaign network, aiming to promote the policies that will lead to the fastest emissions reductions possible. We hope that this evidence will therefore showcase how a radical but practical transport decarbonisation is possible with decisions that can be taken today.

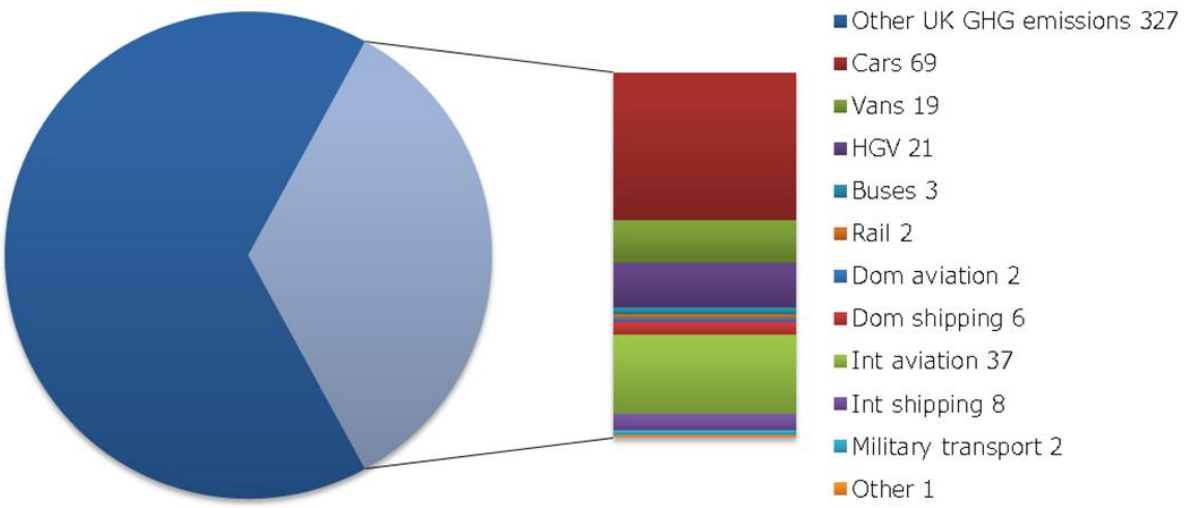

Figure 1: UK transport emissions makeup 2018 (figures in Mt CO_2e)[1, 2]

Electric vehicles

The most critical area for reducing emissions from transport will unquestionably be electric cars and vans. A rapid adoption of electric vehicles across the 2020s will be pivotal to meeting net zero and the 4th and 5th carbon budgets. We propose the following policies to achieve these goals;

- Implement a binding sales ban for 2030 on all new petrol and diesel cars and vans. This is the earliest date that manufactures and National Grid have identified production and distribution can be scaled up to this degree, with any later date slowing the speed at which the UK can reach net zero.[3, 4] We have submitted separate evidence to the Office of Low Emissions Vehicles inquiry on this. *Action to be undertaken: 2020*
- Set yearly binding sales targets for automotive manufacturers for proportions of electric vehicles sold, rising to 100% of sales by 2030.[5] This will ensure gradual and stable increase in production and distribution, reducing a bottleneck around 2030 and giving the government and relevant businesses the short term timescales required to make a longer transition achievable. *Action to be undertaken: 2020/21*
- Continue fiscal incentives for electric vehicles and their respective infrastructure, scrapping VAT for electric vehicles, continuing the plug in grant until 2025, enabling tax breaks for gigafactories and subsidies for charging infrastructure.[6] Electric vehicles will be cost competitive by 2025 at the latest, making these short term goals to speed up their integration into the vehicle market. *Action to be undertaken: 2020/21*
- Ensure business support for increasing electric vehicle production infrastructure, working with auto manufacturers on expanding existing facilities to accommodate new electric models, especially in economically deprived areas. *Action to be*

undertaken: across the 2020s

- Yearly charging infrastructure targets, with separate targets for rapid (50kW) and ultra rapid (150kW) chargers, closely linked with the sales targets for electric vehicles above. Also ensure a universal payment system for all charging infrastructure.[7] *Action to be undertaken: 2020/21*
- Give the electrical grid at all levels the investment required for grid reinforcement as additional demand is made on the system.[8] *Action to be undertaken: across the 2020s*
- Ensure that rare earth elements for battery production such as lithium are treated as valuable resources, and create reprocessing and recycling facilities for these elements to avoid scarcity in the future.[9] *Action to be undertaken: 2020-2025*
- With electric vehicle prices cost competitive by 2025 at the latest, a scrappage scheme post 2025 for conventional vehicles could speed up the transition to cleaner vehicles.[10] *Action to be undertaken: post- 2025*

Public transport/walking and cycling

Modal shift away from private vehicles to public transport, walking and cycling should be seen as essential but complementary to electric vehicle rollout. Private vehicles use and ownership is anticipated to increase throughout the 2020s, and greater modal shift can reduce this increase and result in a net decline in vehicles on roads. This has the additional benefit of making the transition to electrification faster. Policies to adopt include;

- Aim to offset car numbers growth by 2030 and reduce it. An increase in traffic numbers are anticipated in all scenarios to 2030,[11] and setting a departmental target to offset that growth allows a more manageable vehicle fleet to reduce emissions from. *Action to be undertaken: target set in 2020/21, uphold action across the 2020s and beyond*
- Ensure that walking and cycling access in cities and urban areas continues to increase, strengthening existing plans, as part of the economic recovery funding for local areas and cities.[12] *Action to be undertaken: economic recovery incentive packages 2020, continually increase access between now and 2050 as part of short and long term modal shift*
- Continue expansion of bus and rail routes. Potentially hundreds of miles of rail lines could be restored between now and 2050, subject to other concerns.[13] *Action to be undertaken: continually increase access between now and 2050 as part of short and long term modal shift*
- Ensure the rail industry receives the government support required for reaching the 2040 decarbonisation date.[14] This could include a review of previous electrification project cost overruns, commitment to electrify remaining major lines, and assistance in transitioning to hydrogen trains. *Action to be undertaken: now and 2040*

HGVs and buses

Greater technical and economic challenges present themselves for low carbon HGVs and buses compared to cars and vans, and therefore are considered here separately. This also makes the long term plans for HGVs less clear, as the speed of decarbonisation will be dependent on technologies that are not yet well developed enough to deliver clarity. However, phasing out of HGVs must begin in earnest by the middle of the decade. Policies should include;

- Create large scale trials of HGVs, both electric and hydrogen fuel cell, in existing fleets, to compare effectiveness. These trial results should be used to develop a

phase-out plan for the 500,000 HGVs on the road in the latter half of the 2020s.[15] *Action to be undertaken: 2020/21*

- The results of this phase-out plan should include the maximum ambitious date for a phase out of sales for conventional HGVs, and fiscal incentives for their either electric or fuel cell replacements. Fiscal incentives and a scrappage scheme could also be set up to speed up the transition in a similar way to electric vehicles. *Action to be undertaken: 2025 at latest*
- This should include combining electrical infrastructure such as charging points into existing plans for electric vehicles above, or developing a separate infrastructure strategy for fuel cell technology. *Action to be undertaken: 2025 at latest*

Aviation and shipping

The greatest challenge to decarbonising transport, and potentially reaching net zero itself, shipping and especially aviation will require longer term policies and planning than decarbonising road and rail transport. While zero emission ships are increasing, zero emission planes have an uncertain development trajectory, and simply discouraging and avoiding flying remains the best short term option. Policies should include;

- Include international aviation and shipping in the 6th carbon budget.[16] International shipping and aviation is an essential part of the UK's carbon footprint at home and around the world, and underpins the Committee on Climate Change's analysis of net zero. *Action to be undertaken: 2021 (before Summer Parliamentary Recess).*
- Introduce a frequent flyer levy, progressively taxing those undertaking more than one flight a year with the tax increasing for every additional flight.[17] *Action to be undertaken*: *2020/21*
- Aviation must have its own net zero goal for 2050 in the upcoming consultation and strategy, as well as greater plans for greater plane efficiency targets and a switch of low carbon biofuels from vehicles to planes.[18] *Action to be undertaken: 2020/21*
- Build on the Clean Maritime Plan goals of zero emission capable ships by 2025 to allow more fully zero emission ships past that date, and create hydrogen and ammonia fuel hubs in UK ports for these new ship fuels.[19] *Action to be undertaken: 2020/21*
- Continue research and development work for both short and long haul zero emission planes, in particular investigating the role of hydrogen for long haul flights.[20] *Action to be undertaken: across the 2020s*
- Focus on limited to no further expansion of the UK's airport capacity,[21] both in light of emissions and the potential long term downward passenger trends of flying caused by the Covid19 lockdown. *Action to be undertaken: now until 2050*
- Longer term goal of shifting fleets over to as many zero carbon alternatives as possible by 2050. This will be determined by the availability and technical progress on zero emission ships and especially planes.[22] *Action to be undertaken: now until 2050*
- Investigate the reduction and potential phase out of internal commercial flights within Great Britain, partially as a majority have indicated support of a ban.[23] *Action to be undertaken: 2020-2025*
- A scrappage scheme for low efficiency ships and planes should be considered longer term between companies responsible and the government.[24] *Action to be undertaken: long term, dependent on progress*

Potential future timescales

With all of these policies in place, the future decarbonisation of transport could proceed along the lines of the below descriptions, with estimations visualised in Figure 2:

- 2020s; Electric vehicle factories and charge points multiply across the country, along with grid upgrades, making the country easily ready for a transition to cleaner vehicles. With companies producing ever greater numbers of EVs, the ban on conventional vehicles goes seamlessly into effect. Meanwhile, fewer people are driving due to greatly improved walking and cycling facilities in cities, with expanded and more efficient trains and buses complementing a broader range of ways to travel. Zero emission ships dock at UK ports to refuel on hydrogen and ammonia, while fewer passengers fly to their destination. Zero carbon HGVs and buses become a common sight.
- 2030s; The last of the petrol and diesel cars disappear from the UK's roads, only leaving the occasional classic car driven by enthusiasts. HGVs and buses also transition to low carbon alternatives, leaving UK roads cleaner than ever before. The first zero emission planes for short and long haul take flight, and the UK leads the world on zero emission ports. The relentless push of public transport pulls the public away from private vehicles.
- 2040s; With a greatly expanded public transport system and zero emissions on the roads, only the skies and seas remain as areas of greenhouse gas emissions. These disappear from the seas due to generous scrappage schemes of old ships, and zero emission aviation expands to be a mainstream competitor to conventional jet fuel, the remainder of which is offset by UK land use.
- Beyond; Zero emission planes squeeze out the remaining conventional planes, allowing the UK to go beyond net zero and have a truly sustainable transport system nationally and internationally.

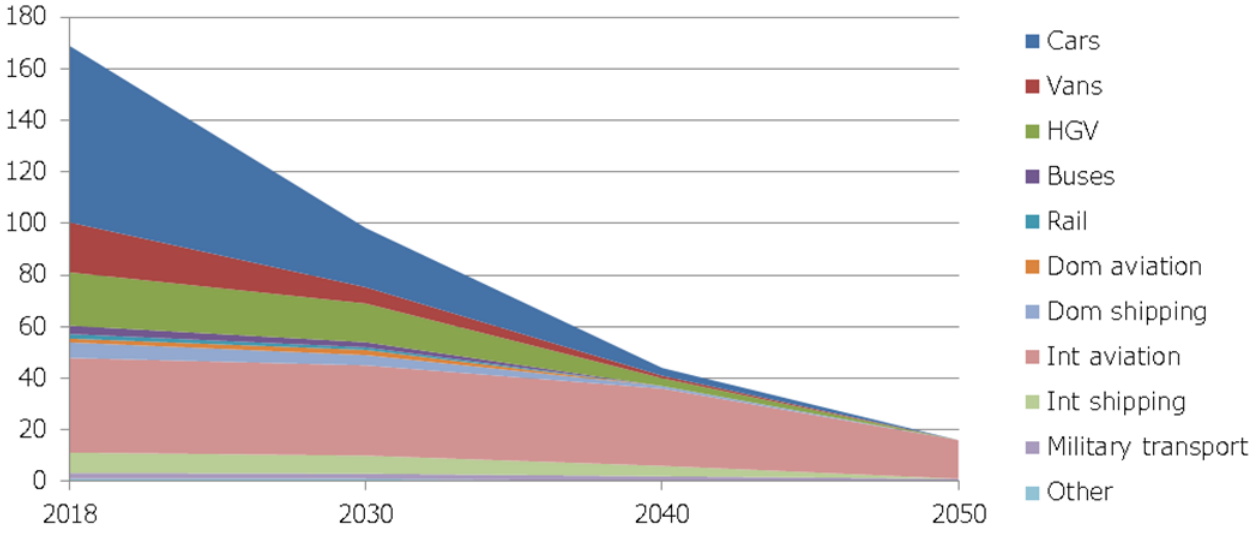

Figure 2: Potential transport decarbonisation pathways for net zero[25]

Conclusion and recommendations

The above policies should give a succinct but comprehensive approach to decarbonising transport, both with immediate actions that can be taken this year and a clear direction for policies to be taken between now and 2050. The biggest area which needs attention

is ratcheting up the production and market for electric vehicles between now and 2030, and should be thought of as the central pillar for decarbonising transport. However, the greater public transport is developed the better, and should aim to reduce to demand for vehicles growth, offset it, or even reduce vehicles and traffic numbers from the status quo. HGVs, aviation and shipping are longer term goals, but this does not preclude them from action in the present, as it will take years and in some cases decades to produce widespread zero emissions technologies in these areas.

DecarboniseNow is available to discuss this information further, and is happy to work with the Department of Transport on its future low carbon policies. We can be reached by email through contact@decarbonisenow.com

Endnotes

1 Department of Business, Energy and Industrial Strategy, 2019, *2018 UK greenhouse gas emissions: final figures - data tables*

2 Committee on Climate Change, 2019, *2019 Progress Report to Parliament*

3 Business, Energy and Industrial Strategy committee, 2018, *Electric vehicles: driving the transition*

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6 British Vehicle Rental and Leasing Association, 2019, *Road to Zero: Report Card 2019*

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8 Catapult Energy Systems, 2018, *Preparing UK Electricity Networks for Electric Vehicles*

9 Innovate UK, 2019, *Faraday Battery Challenge: funded projects to date*

10 Committee on Climate Change, 2019, *Net Zero - Technical Report*

11 Department of Transport, 2018, *Road Traffic Forecasts 2018*

12 Committee on Climate Change, 2020, *2020 Progress Report to Parliament*

13 Ibid, Campaign for Better Transport, 2029, *The Case for Expanding the Rail Network*

14 Rail Industry Decarbonisation Taskforce, 2019, *Final Report to the Minister for Rail*

15 Committee on Climate Change, 2020, *2020 Progress Report to Parliament*

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17 New Economics Foundation, Fellow Travelers, 2015, *Managing Aviation Passenger Demand with a Frequent Flyer Levy*

18 Committee on Climate Change, 2020, *2020 Progress Report to Parliament*

19 Department for Transport, 2019, *Clean Maritime Plan*

20 Department of Business, Energy and Industrial Strategy, 2020, *UK aerospace sector to benefit from £400 million funding to go green*

21 Finney and Mattioli, 2019, 'Guest post: Planned growth of UK airports not consistent with net-zero climate goal'

22 Committee on Climate Change, 2019, *Net Zero - Technical Report*

23 European Investment Bank, 2020, *The EIB Climate Survey 2019-20*

24 Committee on Climate Change, 2019, *Net Zero - Technical Report*

25 DecarboniseNow analysis, based on above endnotes and policies within this evidence submission

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