Thank you for your invitation to submit views on air quality issues to inform the Committee's consideration of air quality in Scotland, in advance of the Scottish Government's publication of an Improvement Plan on this issue.

Modal shift: necessary, desirable and possible

As Cleaner Air for Scotland 2 (CAFS2) and the National Transport Strategy (NTS2) recognise, modal shift from travel by private car to mass transit is crucial to reducing emissions and improving air quality (rather than switching the type of car). CAFS2 also identifies bus as "arguably the single most important mode for reducing transport-related air pollution".

A 2022 report commissioned by CPT[1] agrees that technological change, for example, electrification of the car fleet, will not be enough and concludes that the UK will not meet its net zero ambitions without shifting some of the demand for cars into bus and coach travel. In addition to the direct difference in car and bus emissions, modal shift to buses and coaches can improve air quality by reducing congestion, a key driver of air pollution. Modelling for this report suggests a total of 5,600 ton reduction in nitrogen oxides (NOx) and 121 ton reduction in PM10 up to 2050, resulting from modal shift from car to bus.

A further report, published in February 2023[2], assesses the different policy options required to produce the scale of modal shift demonstrated as necessary. Although "75% of public transport trips are taken by bus" (CAFS2), passenger numbers are in decline, therefore a range of policies are needed which increase the attractiveness of the bus network, make buses cheaper, discourage the use of cars, and make behavioural interventions to influence consumer choices. The example package of policies modelled in this report could result in not just improvements to air quality but other health and socio-economic benefits.

The largest component of this policy package to make the modal shift required is ambitious investment in bus services and infrastructure. In terms of national funding for bus prioritisation measures this is delivered via the Scottish Government's £500m Bus Partnership Fund, which allows local authorities in partnership with bus operators to invest in bus priority measures and infrastructure,

The Fund, announced in 2019 and relaunched in 2021, has so far committed just £25m of its £500m budget, with operators and authorities highlighting the current Scottish Transport Appraisal Guidance (STAG) process as being overly burdensome.

CPT Scotland believes that bus prioritisation measures should also be delivered at a strategic level at the same pace, at the same time and with the same priority as active travel measures. If bus prioritisation and car demand management is delivered properly, it offers a huge opportunity to reduce car use and congestion which will result in more affordable and reliable buses, which will attract more

[1] '*The decarbonisation dividend: The economic, environmental and social benefits of more bus and coach journeys*', July 2022, WPI Economics. https://www.cpt-uk.org/media/fc0bzccy/decarbonisation-dividend-report.pdf

[2] '*Bus and Coach: The route to net zero in Scotland*', February 2023, WPI Economics ADD LINK

people to make the modal shift away from their cars, reducing car use and congestion even further. If the two are tackled separately it can mean they end up competing for the same limited road space, impacting on bus routes and journey times, and contributing to congestion and air pollution. Instead, active travel and public transport complement each other, for example, most bus journeys begin with a walk to the bus stop.

Cross-sectional studies have assessed differences between car, bus and train commuters in level of physical activity. In one study, those who walk to and from public transport stops obtained an appreciable amount of daily transport-related physical activity (median of 19 minutes). This study also suggests that 29% of public transport (train and bus) walkers achieve 30 minutes of daily physical activity solely by walking to and from transport stops. Overall, 21% of bus users achieved 30 minutes a day of physical activity in the course of their journeys.'[3]

Decarbonisation of vehicles

It is important to note that only around 5% of road transport emissions are attributable to bus and coach, compared to around 55% from private car.

A lot of progress has been made by the industry in reducing emissions and investing in zero emission vehicles. Supporting modal shift through policy interventions designed to increase passenger numbers and improve infrastructure also improves the economic and environmental case for operators (whatever their model of ownership/delivery)to invest in zero emission buses and coaches.

The Scottish Government has a stated aim that zero-emission buses will replace "the majority" of diesel buses in Scotland by the end of 2023. Work to progress this aim includes the Scottish Bus Decarbonisation Taskforce, a joint initative between industry and government, which published 'Scotland's Pathway to Zero Emission Buses'[4] in August 2022. This sets out what has already been achieved, the current picture and what is still to be done to realise a future where all buses are zero emission. It details the roles and responsibilities of partners including Scottish Government, bus operators, the energy sector, the finance sector, manufacturers and the supply chain.

Some funding support for new vehicles has been made available via the Scottish Ultra-Low Emissions Bus Scheme and Scottish Zero Emission Bus (ScotZEB) Challenge Fund (Phase 2 of this will be awarded later in 2023), however these still require a majority investment by the operator. There is also a limited supply chain – there are only a limited number of zero emission bus manufacturers in the world - and with many countries decarbonising their fleets, this means high demand.

In addition to the vehicles themselves, a supporting infrastructure, for example charging points and depots is also required. The set up and running costs of these, particularly in the current climate of soaring energy costs, are also a large barrier to realising this Scottish Government target.

[3] https://lovemybus.scot/about/choose-bus-for-health/

[4] https://www.cpt-uk.org/media/2mtn2efb/scotlands-pathway-to-zero-emission-buses-august2022.pdf

Coaches also provide a multitude of services including transporting tourists, home to school transport and school trips, travel to large scale events including sports fixtures, other private hire and as replacement for other modes. As many coaches also carry luggage as well as passengers and travel longer distances than a bus serving a scheduled route, these vehicles require different strategies for both vehicle and infrastructure to transfer to zero emission, research on which is being led at a UK-wide level by CPT's Zero Emission Coach Taskforce.

A report on the second phase of this work will be published later in March 2023, and focuses on possible solutions from Government, suppliers and operators to the particular challenges the coach sector faces in transitioning. We would be happy to share this with the Committee if useful.

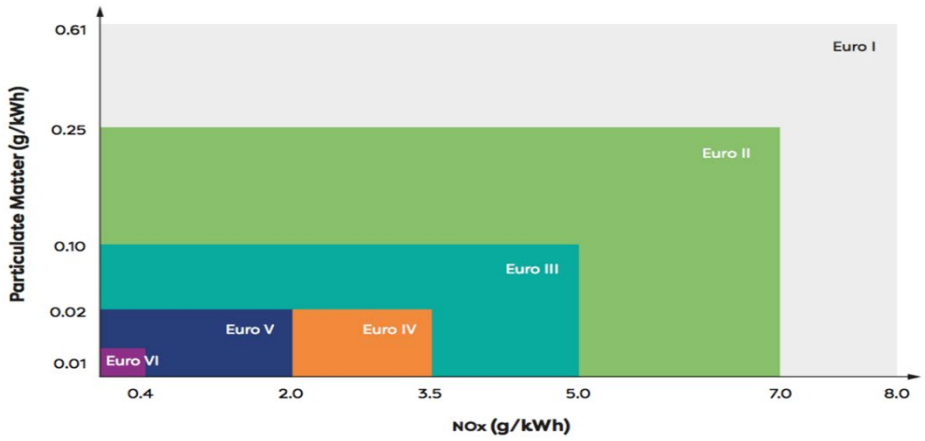
Low Emission Zones

Scotland's first Low Emission Zone, which only applied to buses was introduced in Glasgow at the end of 2018, with enforcement for other vehicles to begin in June 2023. LEZs have now been formally introduced in Aberdeen, Dundee and Edinburgh with enforcement due to begin in 2024. It is encouraging that these cities have not chosen to single out bus for early enforcement as was done in Glasgow.

It is unfortunate that the Low Emission Zone introduction was not more closely aligned with the Bus Partnership Fund. Meeting LEZ targets generates a cost to the operator as they accelerate fleet renewal. The two levers that operators can pull to meet additional costs are to increase fares or reduce services. However, investment in bus priority measures, be that through the Partnership Fund or directly by authorities, frees bus from congestion, reduces the operational costs of service provision, increases punctuality and reliability, attracts passenger growth and enables operators to generate the revenue needed to invest in fleet renewal.

A further benefit of introducing priority measures is the improvement in air quality that prioritising bus brings.

It is also unfortunate that Low Emission Zones set targets as they relate to the latest Euro diesel engine standards. The reasoning is sound in terms of the vastly improved emission profile of a Euro VI bus compared to a Euro III bus.



However, to meet LEZ targets operators faced investing in new diesel vehicles or retrofitting older vehicles to meet the emissions standards while targets for Zero Emission Buses (ZEBs) are round the corner. The average life span of a service bus is 13 years. It is difficult to make the business case to replace a Euro VI vehicle purchased to meet LEZ targets with a ZEB to meet the Programme for Government commitment on decarbonisation only a few years later.