

Methodology



Mind the gap: cutting UK transport's climate impact

January 2025

Mind the gap quantifies the carbon emission abatement of a range of policy interventions which the government could adopt to close the emissions gap between current transport policies and the trajectory that emissions reductions need to be by the UK's sixth carbon budget (2033-37) to be on track for net zero by 2050. Emissions reductions we use in this analysis are therefore calculated across the preceding carbon budget period (fifth carbon budget, 2028-32).

Calculations use the quantification in the March 2024 update of Green Alliance's *Net zero policy tracker* as a baseline, which identified that 97 million tonnes worth of carbon dioxide equivalent (MtCO₂e), over and above the suggested net zero strategy trajectory, will be emitted on current trends, unless further policy is brought forward.¹

Mind the gap calculates the total of a suite of policy interventions the government could consider to bring emissions down further in the transport sector to keep within net zero strategy targets. We have focused on policies where potential carbon reductions can be quantified.

Baseline

One assumption that underlies our analysis is that we assume that emissions reductions accounted for in the previous government's March 2023 Carbon Budget Delivery Plan will take place. Although the future of this plan is uncertain as it was ruled unlawful by the High Court in 2024 (it is due to be reissued in 2025) it remains the best estimation of existing and future government policy that is publicly available.

Fuel duty

Fuel duty has been frozen since 2011 and was cut by 5p in 2022, reducing the cost of running a vehicle in real terms. By increasing fuel duty, the government increases the cost of driving, which is a potential incentive to switch to alternative modes of transport. Driving is, however, relatively 'inelastic' to changes in price, meaning that, as prices change, only modest behavioural impacts are seen. For this calculation, we adapted modelling originally conducted by WPI Economics on behalf of Green Alliance which measures how the change in fuel price shifts driving behaviour.²

Assumptions

- We used the price elasticity of demand figure from the Social Market Foundation's *Miles Ahead* report into road pricing.³
- We accounted for an increase in fuel duty rates of 2p per year from 2025 onwards.

Taxi licensing

To measure the impact of a policy to only grant licences to zero emission vehicles from 2028 onwards, we estimate the emissions of the business as usual scenario where the uptake of electric licensed vehicles is governed by the UK's zero emissions vehicle mandate.

The emissions are therefore assumed to be saved as the policy would prevent these vehicles from being used as licensed vehicles.

Assumptions

- We projected growth of the taxi and private hire vehicle fleet in line with predicted growth in the car market.
- We assumed all the emissions savings from ensuring a 100 per cent taxi and private hire vehicle fleet are additional to savings in the broader car market. There may be a case where some increased sales to the licensed vehicle sector replace private sales, as a way for manufacturers to fulfil their ZEV mandate requirements. But, due to the higher average mileages driven by taxis and private hire vehicles compared to private vehicles, this would still lead to a greater proportion of zero emission miles driven.

Distance banded HGV levy

We measured the impact of a per mile charge on HGV emissions, in line with models for truck tolling adopted in a number of European countries.

Assumptions

- We measured the per mile charge impact using a model developed for Green Alliance by WPI Economics in 2023 for our *Reforming transport taxes* report.⁴
- We exempted electric HGVs until 2030 from the HGV levy to support the economic case for adoption and set charges for diesel trucks at rates comparable to those set in European countries.

Cargo bikes

Our calculation is based on the number of vans that could be potentially replaced by cargo bikes for 'last mile' deliveries. We used a Transport for Quality of Life estimate that up to 7.5 per cent of urban traffic could be replaced by cargo bikes.⁵ We only applied this figure to minor urban roads,

reflecting the types of journeys most likely to be switched from van to cargo bike.

Kerosene tax and a moratorium on airport expansion

Our kerosene tax proposals are applied to domestic, EU and US flights and are introduced at £0.35 per litre in 2028, rising to £0.71 per litre by 2032. Legal analysis published by Opportunity Green suggests that many more destinations could be taxed than previously thought.⁶ But, without a comprehensive list of the UK's air service agreements, we chose only to apply rates to destinations where we are confident they can be applied.

A moratorium on airport expansion was calculated by holding projected jet fuel at 2025 levels compared to the growth rate set out in the sustainable aviation fuel (SAF) mandate. A moratorium on airport expansion alone would not achieve these savings and additional regulation in conjunction with a moratorium would be needed.

These figures discount SAF uptake as part of the fuel mix in line with both the government and Climate Change Committee's greenhouse gas accounting method. This is because most SAF accounting is focussed on lifecycle figures across the economy rather than in the transport sector alone.

We do, however, recognise that this accounting method is generous to SAF which continues to produce carbon emissions at the point of combustion and a more appropriate accounting methodology should be agreed. The emission reduction effect of holding total jet fuel levels steady would be greater than the figures we present in this analysis.

Shore power and zero emission fuel levy

The two policies explored to decarbonise shipping are mandates on the use of shore power from 2030 and on zero emission fuels, building from 3.5 per cent in 2028, to 11.5 per cent in 2023.

Assumptions

- We assumed the shore power mandate would result in a similar proportion of emissions reductions as is seen in the EU, at [2.2 per cent](#).
- These were applied to DfT's 2021 international shipping emissions, from [table ENV02](#).

Trafred model

Several modal shift levers used in this analysis are taken from Dr Crispin Cooper's [TrafRed model](#), developed for a previous Green Alliance project.

The levers include: increased rail use, increased rail frequency, increased bus use, increased bus speed through bus priority measures, integrated bus and rail timetabling, increased cycling uptake, parking charges, increasing average car occupancy and reducing speed limits.

These results were acquired by inputting a level of ambition into the model. Some of these levers were applied at a flat rate across the fifth carbon budget period, and some were ‘ramped up’ over the period.

Public transport electrification

Targets to increase the pace of electrification for buses and trains are quantified here:

Rail electrification

For this calculation, we use the [WSP figure](#) that an electrified train is responsible for 40 per cent less greenhouse gas emissions than a diesel train, assuming an ambitious level of track electrification. We also assumed rolling stock would be electrified at a pace of two per cent per year from 2025 onwards.

Bus electrification

The bus electrification outcomes presented are a combination of two policies: a target to electrify half of metropolitan bus fleets by 2030, alongside mandating the sale of zero emission buses.

Freight mode shift

This calculation assumed a linear mode shift, from moving freight by HGV onto rail, ramping up to a 15 per cent modal share for rail by 2032. This is comparable to targets set by France, Spain and Germany.

For more information, contact:

Nick Davies, head of climate, Green Alliance
[Ndavies@green-alliance.org.uk](mailto:Nd Davies@green-alliance.org.uk)

Endnotes

¹ S O’Connell and W Carr, March 2024, *Net zero policy tracker: March 2024 update*

² For more detail of WPI Economics modelling for Green Alliance see: S Dossett and J Beckford, 6 June 2023, *Reforming transport taxes: a fair share package*

³ S Corfe, 2022, *Miles ahead: road pricing as a fairer form of motoring taxation*, Social Market Foundation

⁴ S Dossett and J Beckford, 2023, *Reforming transport taxes: a fair share package*, Green Alliance

⁵ S Cairns and L Sloman, 2019, *Potential for e-cargo bikes to reduce congestion and pollution from vans in cities*, Transport for Quality of Life

⁶ D Kay, 2024, *Clearing the air on how we tax aviation fuels*, Opportunity Green.