

Reforming transport taxes

“ green
alliance...

A fair share package



Reforming transport taxes: a fair share package

Authors

By Stuart Dossett and Johann Beckford

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Green Alliance

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Contents

Summary	2
Introduction	7
Why UK transport tax reform is needed	8
How equitable are transport taxes?	11
What is a good transport tax?	12
Modelling a fair share transport tax package	14
Impact on emissions	19
Impact on government revenue	21
Impact on households	22
Fair share tax alternatives	28
How to reform transport taxes	37
Our recommendations	40

Summary

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Taxes do not reflect the share of greenhouse gas emissions being generated by road transport, aviation and shipping.”

Transport is responsible for more of the UK’s greenhouse gas emissions than any other sector, yet current policy is not on track to reduce emissions in line with the government’s climate commitments.^{1,2}

Some road transport policy is heading in the right direction. Sales of new petrol and diesel cars and vans are set to end in 2030 and a new zero emission vehicle mandate will help to set the trajectory for manufacturers to sell more electric vehicles (EVs).³

There are fewer concrete proposals for aviation and shipping, raising questions as to whether climate commitments can be met. Emissions projections rely heavily on technologies untested at scale and not due to show results until at least the 2030s.

Taxes do not reflect the share of greenhouse gas emissions being generated by road transport, aviation and shipping. They could be used much more effectively to steer the UK towards lower carbon transport.

Transport tax reform should also be an urgent priority for those concerned about government revenue. The rise in EVs will cut this by up to £28 billion per year through lost fuel duty over the coming decades, which is equivalent to almost the entire 2021-22 budget for the Department for Transport.⁴

**“
The impacts of
current transport
taxes are not
experienced
fairly.”**

The impacts of current transport taxes are also not experienced fairly. Fuel duty and vehicle excise duty are regressive, in that the poorest households spend a much higher proportion of their income on them than wealthier households.

For this report, we worked with WPI Economics to model a series of reforms that meet these three requirements and could be implemented between 2025 and 2035.

Our ‘fair share’ tax package contains proposals for road pricing, emissions based vehicle purchase taxes and aviation and shipping fuel taxes. These would sit alongside existing transport taxes.

This package is designed to be resilient to changes up to 2050 and beyond, minimising the need for further reform in the coming decades.

Reform is not about preventing families enjoying a holiday to Spain or creating barriers for those who rely on driving for their work, but rather putting forward a new tax system that is aligned to meet net zero and can stabilise public finances.

Crucially, it helps to close the gap between current policy and what the Climate Change Committee (CCC) advises is necessary to reduce greenhouse gas emissions between today and 2037 (which is the period up to and including its sixth carbon budget advice).

We have measured our proposals against the CCC’s projections rather than the government’s net zero strategy. The government’s strategy relies heavily on technological solutions to bring down transport emissions. If this development is slower than hoped, there is a risk that climate targets will not be met, as the strategy discounts any need for managing demand as a backstop measure.

“

Broader social and economic benefits can be gained from reforming transport taxes.”

Our reforms would be an incentive for continued technological development as part of a set of tools that enable policy makers to keep emissions reductions on the right track. At the levels we recommend, these would also reverse the trend of declining transport tax revenue as a proportion of total taxes, leading to an increase of 1.4 percentage points compared to 2019-20, which would provide the Treasury with an additional £37 billion annually by 2035, in 2022 prices.

But ensuring UK transport pays its fair share for the greenhouse gas emissions it produces does not mean the total tax take has to rise. The additional revenue provides scope for tax cuts elsewhere or for greater spending on public services.

Importantly, our tax proposal achieves positive outcomes for the environment in a fair way, with richer households contributing proportionately more than the poorest, to reflect the greater climate impact of their actions.

While this would be a big step forward in transport tax policy, the full range of possible options was too large for us to consider every possible variation within the scope of the modelling. Nevertheless, we consider how variations in design and implementation could play a role in aligning transport with net zero. For instance, we compare a frequent flyer levy with a kerosene tax as alternative solutions for aviation.

This report focuses on arguments around climate, fairness and government revenue, but broader social and economic benefits be gained from reforming transport taxes, including better health from modal shift, reduced air pollution in urban areas and potential early mover advantage for new zero carbon

“Ensuring reforms are clearly and honestly discussed with the public is vital to the acceptance of any change.”

sectors, including carbon neutral shipping and aviation fuel.

Tax reform may be challenging and, therefore, politically unappealing but, as we show, the time for action is now. Ensuring reforms are clearly and honestly discussed with the public is vital to the acceptance of any change. Political parties will be reluctant to start this conversation before the next general election, but the next government should be ready to act. The main parties should, as a minimum, agree publicly on the need for an independent commission to examine options for reforming tax on road transport.

From our analysis, we conclude that the government should start a public conversation about the need for transport tax reform and publish a green tax roadmap clarifying how taxes will support, and be adapted for, a low carbon economy.

Our proposed reform package includes:

Road transport

- An independent commission to design an equitable road pricing scheme to replace lost fuel duty revenue.
- An emissions based vehicle purchase tax set at:
 - 20 per cent on sales of new petrol, diesel and hybrid cars and vans from 2025;
 - seven per cent on sales of used petrol, diesel and hybrid cars and vans from 2035.
- A national scrappage scheme for the most inefficient vehicles, starting in 2035, alongside the emissions based vehicle purchase tax.

Aviation

- A kerosene tax from 2025 for flights not within the scope of the UK emissions trading scheme, rising to a level consistent with the government's carbon value by 2035.
- A review into the feasibility of administering a frequent flyer levy, to report by 31 March 2024.

Shipping

- A shipping fuel levy from 2025 on all domestic and international shipping, rising to a level consistent with the government's carbon value by 2035.
- A mandate for zero emission shipping fuel to reach five per cent of UK fuel blend by 2030.

Introduction

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To meet the UK’s climate commitments, how we travel will have to change over the coming decades.”

Transport is a necessary component of a flourishing society. It brings people together and facilitates social, cultural and economic exchanges. But how we travel can have negative impacts: road vehicles, planes and ships all cause social and environmental harms, such as air and noise pollution, damage to nature and climate change.

Surface transport accounted for 23 per cent of UK greenhouse gas emissions in 2019, the last full year unaffected by the coronavirus pandemic.⁵ And the share of transport emissions from aviation and shipping will rise as other forms of transport decarbonise faster.⁶

To meet the UK’s climate commitments, how we travel will have to change over the coming decades. Getting transport to net zero carbon emissions will require significant policy interventions, but tax, one of the most effective policy tools, is not yet aligned with this mission. At the same time, changes in transport already underway are eroding previously stable sources of tax revenue, leaving the Treasury with a large revenue gap to fill.

This report follows our earlier publication, *Reforming transport taxes: the case for change*, which sets out in more detail why reform is necessary.⁷ Here, we present some of the ways it could be done.

We consider the need to accelerate transport decarbonisation, alongside the revenue and equity challenges of the current tax system, before putting forward a new ‘fair share’ package of taxes to address them. We also consider other tax proposals, policy design and implementation timelines, and the position of tax reform in a challenging political context.

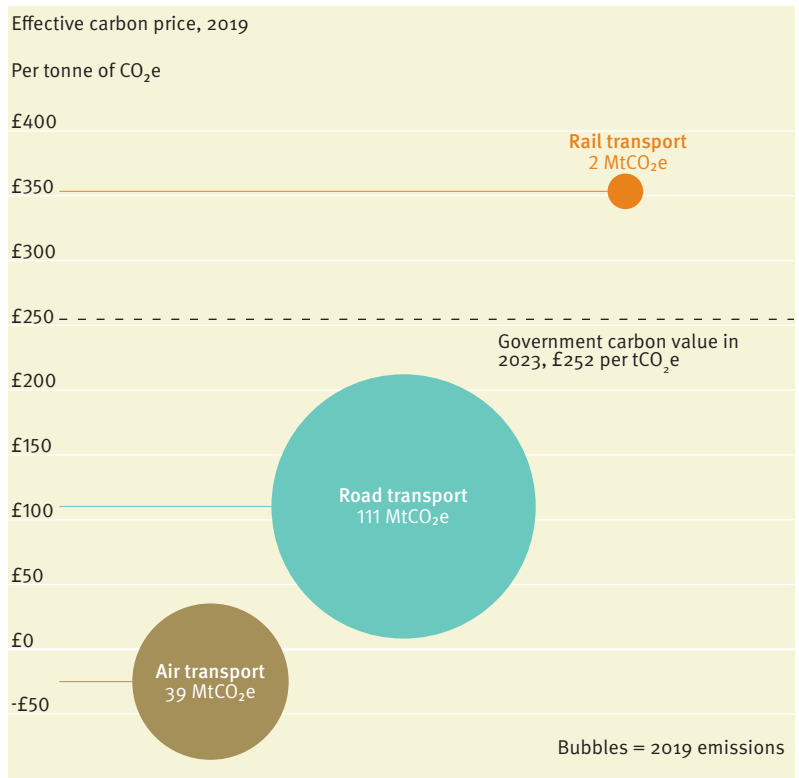
Why UK transport tax reform is needed

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The aviation industry is effectively subsidised to pollute.”

Transport is the biggest source of greenhouse gases in the UK, but the taxes applied to it do not reflect this impact. The Energy Systems Catapult has created an ‘effective carbon price’, which shows the price per tonne of greenhouse gas emissions produced by different modes of transport, based on all taxes, subsidies, regulations and standards.⁸ It shows that the aviation industry is effectively subsidised to pollute, and that both road transport and aviation pay far less than the government’s carbon value, a figure used to represent the monetary value needed to avoid one tonne of emissions.

Road and air transport do not pay their fair share to prevent climate impacts⁹



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Tax should be used as an incentive to bring down aviation and shipping emissions.”

Faster action is needed on aviation and shipping

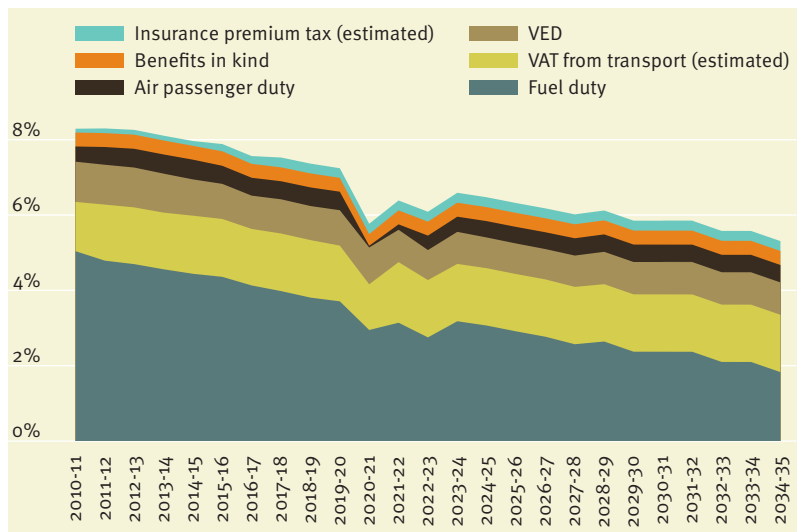
The technological future of road transport is becoming clear, with the electrification of cars, vans and, increasingly, heavy goods vehicles.¹⁰ Further work is needed to reduce total miles driven to meet road transport climate targets, based on the government’s proposed zero emission vehicle (ZEV) mandate sales targets.¹¹

But the path to decarbonise aviation and shipping is much less certain. New fuels are required but are not yet available at scale and, unlike road transport, the aviation and shipping industries have no clear incentives to develop them at the speed required. The government’s own Jet Zero Strategy notes this technological uncertainty and relies on high levels of carbon offsets to reach net zero, while still encouraging airport expansion.¹² Tax should be used as an incentive to bring down aviation and shipping emissions, and guard against delays in the development of new technologies.

Without intervention, tax revenue will fall

In 2019-20, transport raised £53 billion (VAT included), or 7.2 per cent of total government tax revenue. The most significant contributor was fuel duty on petrol and diesel which raised £28 billion. Vehicle excise duty (VED) raised a

Estimated annual transport taxes as a percentage of total taxes



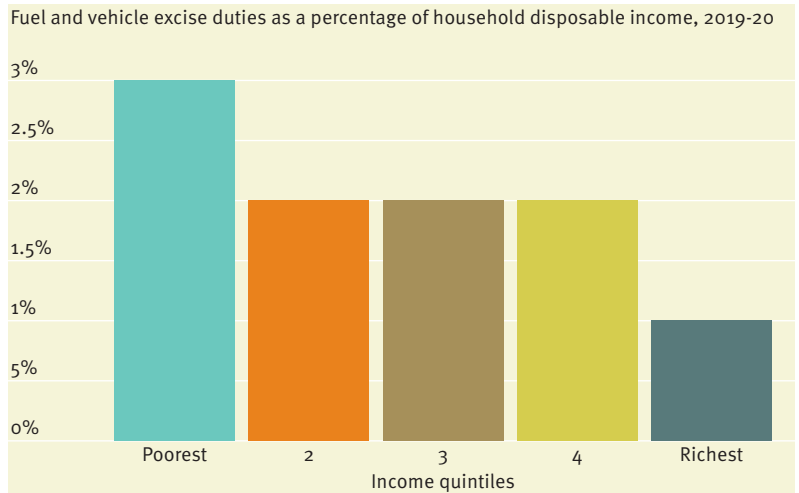
further £7 billion and is set to be extended to electric vehicles (EVs) from 2025.¹³ This extension, however, only covers a small portion of the revenue that will be lost from electrification, reducing transport tax income significantly as a proportion of total taxes.

**“
Both international
and domestic
shipping emissions
are untaxed.”**

By comparison, aviation paid just £4 billion in air passenger duty (APD) to the exchequer in 2019-20, and both international and domestic shipping emissions are untaxed. All domestic and European Economic Area (EEA) flights are within the scope of the UK’s emissions trading scheme (ETS), while the possible inclusion of domestic shipping is the subject of a consultation.^{14,15} While not technically a tax, the ETS fulfils a similar function in raising revenue for the Treasury.

How equitable are transport taxes?

Transport taxes affect poorer people more¹⁶



Despite flying less, poorer people spend proportionately more on air passenger duty^{17,18}



Please see endnote 19 for an explanation of the income quintile distribution used throughout this report.

What is a good transport tax?

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Where any tax disproportionately affects lower income households, government policy should mitigate the impact.”

Tax increases and new taxes are usually controversial. The government must make clear that, as some taxes increase, others will fall. If overall revenue increases as a result of changes, the government will need to make the case for higher public expenditure. For more discussion on the political context in relation to transport taxes, see pages 38-39.

As we have previously described, effective tax reforms should:²⁰

- align with the UK’s legal requirement to reach net zero by 2050;
- target negative social and environmental externalities to reduce their impacts;
- not affect low income groups disproportionately;
- have a clear and easily understood purpose;
- be easy to collect and comply with, and hard to avoid.

Where any tax disproportionately affects lower income households, government policy should mitigate the impact before the tax is introduced. The perceived fairness of taxes influences compliance and can be the cause of social and political unrest in extreme cases.²¹

An effective transport tax system needs to exhibit a sustainable revenue raising function, to make up for declining fuel duty, and to influence desired behaviour, either by limiting excess demand or spurring investment in lower carbon technology.

Calculating a fair share?

The government has calculated a 'carbon value', used to value the impact of policy interventions on greenhouse gas emissions. This is a monetary value that society places on one unit of emissions (tonne of CO₂e).²²

It is set using a marginal abatement cost curve to determine the price level to achieve emissions reductions that meet UK domestic and international targets.²³ Expressed in 2020 prices, the 2023 carbon value is £252 per tonne of CO₂e, rising each year thereafter.²⁴

Importantly, the carbon value is different from a carbon price which is the observed market price of a permit to emit one tonne CO₂e, traded under the UK ETS.²⁵

We have used the carbon value as the basis for our 'fair share' tax rates, calculating what they should be in relation to the emissions associated with each transport mode.

Modelling a fair share tax package

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The tax package was devised to work alongside existing transport taxes.”

Using our guiding principles (see page 12) as a framework, we commissioned WPI Economics to model a series of tax changes to 2035, to examine the impact on government revenues, household budgets and carbon emissions.




The baseline emissions in the model closely mirror the Climate Change Commission’s (CCC’s) 2020 baseline, adjusted to include expected fuel efficiency improvements across road, aviation and shipping, including the emissions abatement from the move to zero tailpipe emissions road vehicles.

The model looks ahead to 2035, as an important milestone on the road to the government’s target of net zero by 2050. The taxes it features are designed to be resilient to change over the longer term.

From this, we devised a tax package that best met our criteria. It is designed to work alongside existing transport taxes: fuel duty, vehicle excise duty, air passenger duty, benefits in kind, insurance premium tax and VAT.

Our fair share transport tax package

“
Current taxes on road transport do not take account of driving’s full costs to society.”

	Road pricing	A phased in charge to replace the lost revenue from fuel duty. Car charges starting at 2p per mile in 2025 rising to 6p per mile in 2035 with more stringent rates for vans and trucks. Additional charges for cars and vans are then added over certain thresholds to encourage reduced driving and cleaner drivetrains.
	Emissions based purchase tax	A charge on purchase of non-zero emission vehicle purchases. Charge introduced for new sales from 2025 and second hand sales from 2035.
	Kerosene (jet fuel) tax	A phased in charge per litre of fuel used for flights not within scope of the UK ETS. Introduced in 2025 and rising steadily before reaching ‘fair share’ levels in 2035.
	Shipping fuel levy	A phased in charge per tonne of shipping fuel, used for all jurisdictions. Introduced in 2025 and rising steadily before reaching ‘fair share’ levels in 2035.

Road transport

While the scope of our work was to align transport taxes with net zero, road transport has other negative impacts on society that need to be mitigated, such as congestion and air and plastic pollution. Current taxes on road transport do not take account of driving’s full costs to society.²⁶ It is worth noting, however, that driving does bring benefits and that some groups, notably rural or disabled households, may rely on it.

We set a condition on our modelled road transport taxes that they should not reduce the cost of driving relative to 2019-20.

EVs need to be brought into the tax system. A start will be made from April 2025, when their exemption from VED ends. But this, on its own, does not satisfy the condition that the cost of driving should not fall overall. Nor does it

**“
Road pricing is a
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to congestion,
falling fuel duty
revenue and to
reduce emissions.”**

provide a direct price incentive to buy EVs. We modelled the following two road taxes:

- Road pricing
- Emissions based vehicle purchase tax

Road pricing

Road pricing is a potential solution to congestion, falling fuel duty revenue and to reduce emissions. It applies a cost to driving, according to the distance travelled: the more you drive, the more you pay. It can be designed in many ways, ranging from all vehicles paying the same rate per mile, through to a much more differentiated system based on vehicle type, time of day, location and level of congestion.

Despite road pricing’s promise, the Treasury has not seriously considered reform. This omission has been highlighted by the House of Commons Transport Select Committee and across the political spectrum, from Policy Exchange to Campaign for Better Transport.^{27,28,29} Consensus is emerging that further investigation is needed.

To maintain the cost of driving at the level of 2019-20, we modelled a phased in flat rate per mile pricing scheme.

We also aim to encourage the use of EVs and lower mileages by applying top up, per mile charges for cars over 2,500 and 5,000 miles travelled, with these charges rising faster for petrol, diesel and hybrid vehicles. Top up charges also apply at higher mileages for vans, with additional charges first applied at 5,000 miles, before ratcheting up over 10,000 miles. These figures were informed by baseline estimations of average distances travelled per vehicle.

There are trade-offs between the environment, equity and simplicity when designing road pricing. We modelled a relatively simple scheme, focused on environmental aims, but also explored more complex alternatives with a stronger focus on equity.

Road pricing and VED will not be enough to close the gap between government policy and the emissions reductions advised by the CCC. New sales of petrol and diesel cars and vans will continue until 2030, with new hybrid sales ending in 2035. Reducing the number of new sales beforehand, and

**“
A kerosene tax
can encourage
the use of
alternative fuels,
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increased flight
path efficiency.”**

then removing older fossil fuelled vehicles from the used vehicle market will be vital to cut emissions by the necessary amount. Therefore, for our package, we modelled an emissions based vehicle purchase tax for new vehicles from 2025 and second hand vehicles from 2035, which could be tied to a scrappage scheme targeted at the most polluting vehicles.

Aviation

The government’s aviation policy relies on long term technology innovation. To guard against delays to this and guarantee that the shortfall in emissions reductions from transport can be solved, the CCC’s sixth carbon budget balanced pathway says there should be no increase in passenger numbers before 2035. Tax could help to achieve this.

In determining our fair share package we modelled two primary aviation taxes to sit alongside air passenger duty (APD), the only current tax applied to aviation. The first taxes fuel and the second directly taxes the flyer:

- Kerosene (jet fuel) tax
- Frequent flyer levy

Kerosene tax

A kerosene tax, which is effectively a fuel duty for aeroplanes, ties taxation to the polluting activity itself: the burning of jet fuel. This can encourage the use of alternative fuels, fewer flights and increased flight path efficiency. We modelled a tax applicable on flights not within the scope of the UK ETS which covers domestic, European Economic Area (EEA) flights, Gibraltar and the Crown Dependencies.

Frequent flyer levy

The richest ten per cent of UK travellers produce 7.5 times more flight emissions than those on lower incomes.³⁰ A levy, where fliers pay an increasing cost for each additional flight they take in a year, is suggested as an equitable solution. This is popular with the public, with 89 per cent public supporting frequent flyers paying more the more they fly.³¹ The proposed approaches do not distinguish, however, between the greenhouse emissions of a flight taken from

**“
Our fair share
package directly
targets airline fuel
use and manages
demand.”**

the UK to Australia or to the Republic of Ireland, or whether sustainable aviation fuel is part of the fuel blend.

In comparison to a kerosene tax and its relative ease of implementation, a frequent flyer levy is more difficult to administer.

Our fair share package combines a kerosene tax with APD rising in line with inflation. This combination directly targets airline fuel use and manages demand.

While a frequent flyer levy is not included in our overall package, insight into the relative impacts of a kerosene tax and the levy are further discussed on pages 33-36.

Shipping

Shipping emissions are currently untaxed. Climate policy for shipping focuses on the development of more sustainable fuel, but there is uncertainty around which solution is best. Decarbonised shipping is likely to include a variety of fuels for different routes and types of ship.³²

There are two main solutions to pricing shipping's greenhouse gas emissions: to include it in the UK ETS or to introduce a levy on shipping fuel. The UK has consulted on including domestic shipping in the UK ETS but no policy to cut emissions has been finalised.

A levy on shipping fuel is favoured by the International Maritime Organization (IMO).³³ For simplicity, we modelled a shipping fuel levy which fulfils a similar function to aviation's kerosene tax. This could be modified if both international and domestic shipping emissions were included in the UK ETS, aligned with the net zero target.

Impact on emissions

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The reforms we propose would provide a significant proportion of the emissions reductions needed.”

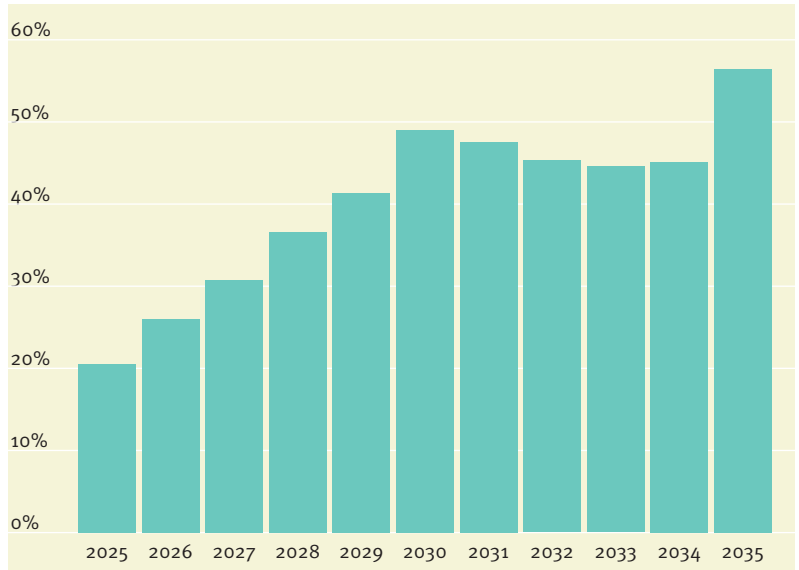
The government is not projected to cut enough emissions to reach its legal climate commitments and is behind in fulfilling its pledges under the Paris climate agreement. In transport, it is relying heavily on new technologies, with no back up plan to reduce demand if rollout is delayed. This increases the risk of not achieving the net zero target.

As a result, we have measured policy impacts against the CCC’s recommended balanced net zero pathway which recognises that demand management must play a role.

Our modelling shows that the reforms we propose would provide a significant proportion of the emissions reductions needed. They would result in 21 per cent of the necessary reductions in 2025, rising to 56 per cent of the reductions needed in 2035. An average annual reduction of 10.6 MtCO₂e between 2025 and 2035 is equal to roughly half the annual greenhouse gas emissions of Northern Ireland.³⁴

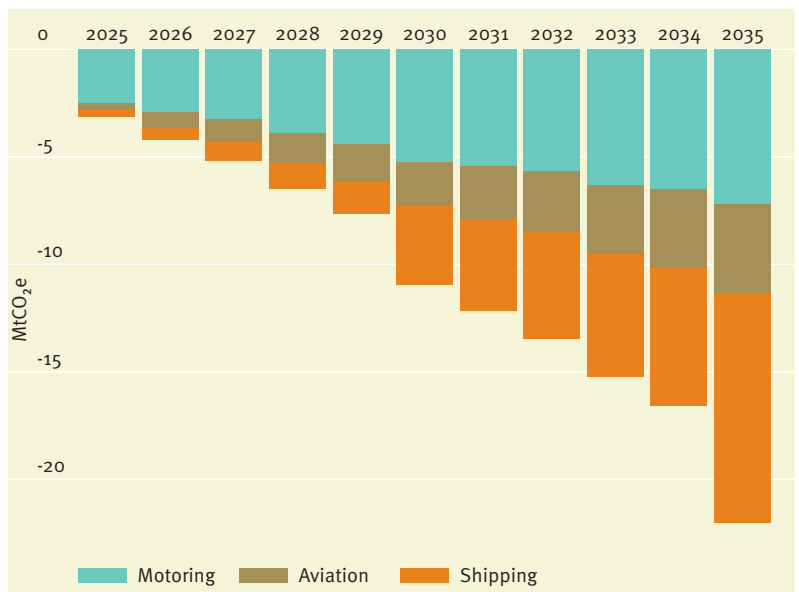
These savings were calculated by assessing the impact on transport demand. Our reported emissions reductions show only additional savings gained from implementing our fair share tax package, they do not include savings from new technologies and existing policies, such as the 2030 ban on fossil fuelled vehicles.

Fair share package: percentage of the CCC's required transport emissions reductions achieved, 2025-35



The greatest reductions are in road transport, mostly because it is the largest source of greenhouse gas emissions in the transport sector. Proportionately, our tax package has the biggest impact on shipping, reducing the sector's emissions by 66 per cent by 2035.

Fair share package: projected annual emissions reductions, 2025-35

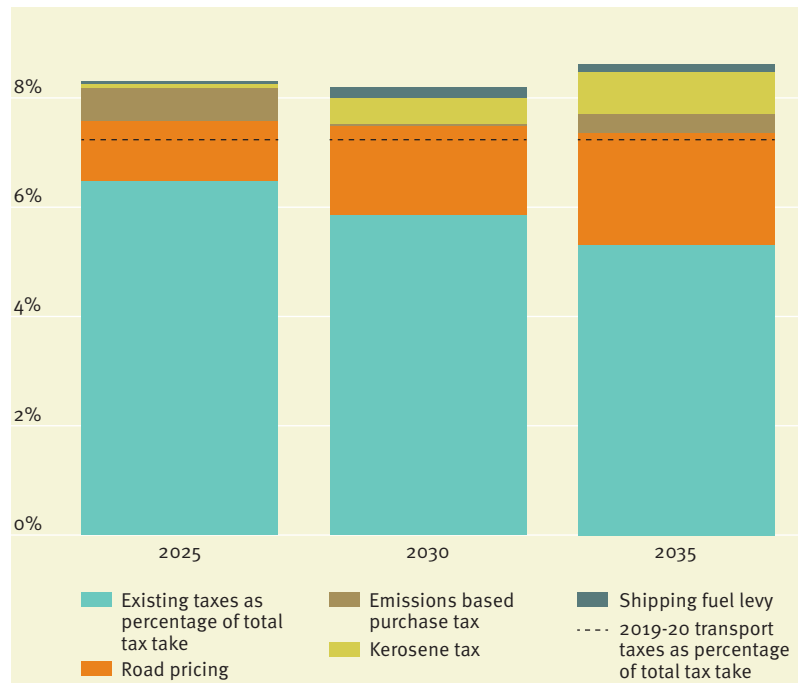


Impact on government revenue

Our model demonstrates that transport taxes, as a percentage of future projected tax revenue, will be 1.4 percentage points higher in 2025 than in 2019-20, and 0.3 percentage points higher than in 2010-11. We predict that annual revenue generated by the fair share package would raise £37 billion in 2035, in addition to the £60 billion raised from existing transport taxes at 2022 prices.³⁵

“
Annual revenue generated by the fair share package would raise £37 billion in 2035.”

Fair share package: transport tax as a percentage of total tax revenue, 2025-35



The graph above demonstrates the increasing gap in revenue caused by declining fuel duty. We have included flat rate road pricing in our package, designed to mitigate that fall, bringing revenue back up to 2019-20 levels. Other taxes in our package, including top up road pricing charges, could raise an additional £17 billion in 2035, in 2022 prices.

As the taxes take effect and stimulate the transition to a cleaner transport system, beyond 2035 we would expect to see transport tax revenue decline as a proportion of total taxes.

Impact on households

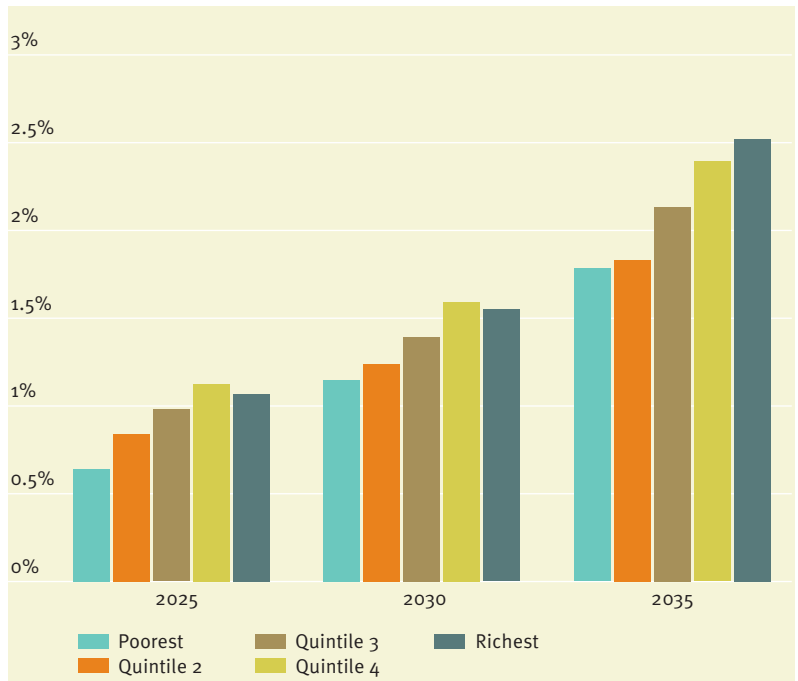
Not every tax needs to be progressive, as long as the tax system is progressive overall.³⁶ Our fair share package was designed with this in mind, but aiming for progressive outcomes where possible for individual taxes.

**“
Our fair share package was designed for progressive outcomes where possible for individual taxes.”**

Overall, it would mean that transport tax increases for all households as a proportion of their income up to 2035, with the poorest paying the smallest proportion of the additional taxes and the richest paying the most, making the package progressive.

The impact of the shipping fuel levy is not included in our distributional analyses, as shipping fuel costs are only a small percentage of the value of goods. Therefore, we assume it does not materially affect consumers.

Fair share package: average cost as a percentage of household income

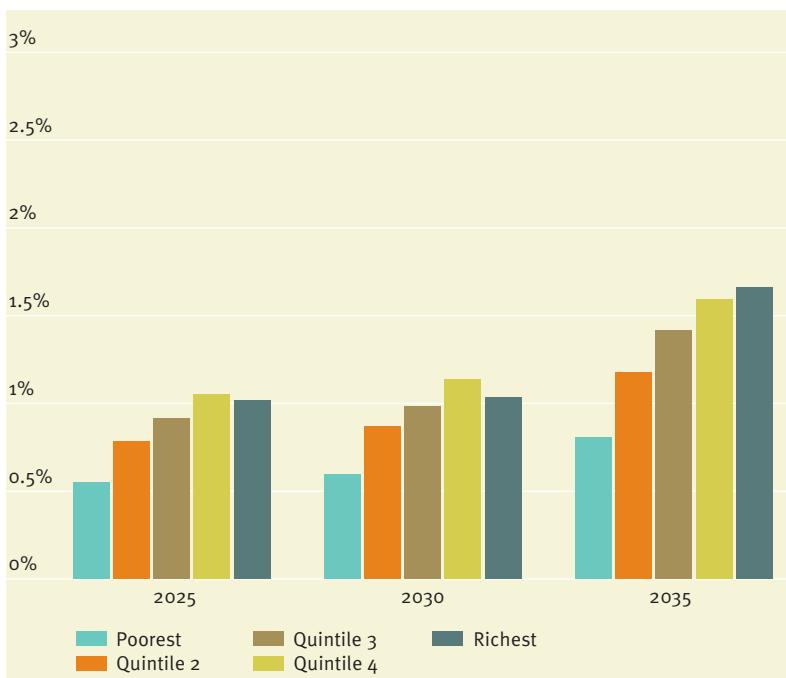


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Road pricing and
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progressive
impact.”

Road pricing and an emissions based vehicle purchase tax are progressive

Road pricing and an emissions based vehicle purchase tax would have a progressive impact across the income distribution, in the form we propose. This is compared to the situation now, where fuel duty is regressive, as the poorest pay the highest proportion (see page 11).

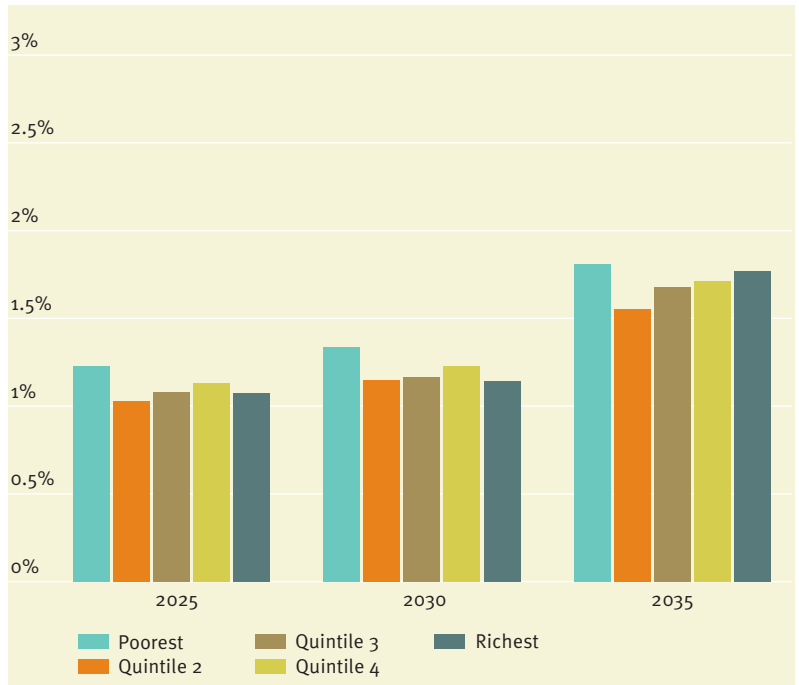
Fair share package: average cost of road pricing and an emissions based vehicle purchase tax, as a percentage of household income



Lower income households will still be subject to fuel duty until there are more affordable and second hand EVs on the market. The emissions based vehicle purchase tax on new polluting vehicles, discussed on page 27, is a way to encourage people to buy EVs, alongside an ambitious ZEV mandate which would ensure more new and used EVs will be available to buy sooner.

When households without a car are excluded from the distributional analysis, the outcome is still preferable to the impact of regressive fuel and vehicle excise duty in 2023, but those on the lowest incomes are disproportionately affected.

Fair share package: average cost of road pricing and emissions based vehicle purchase tax, as a percentage of a car owning household's income

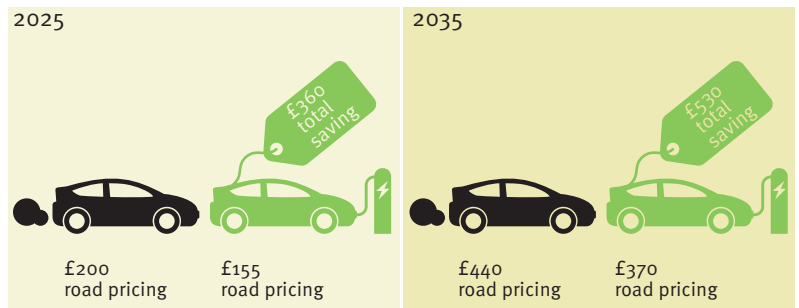


How will the cost of driving change?

Fuel duty is largely disguised in the price paid at the pump, but on a £1.47 litre of petrol it is 36 per cent of the price.³⁷ A challenge for road pricing will be its increased visibility.

Using 2022 prices, in 2025, under our proposed reforms, the driver of a small petrol car travelling 6,000 miles a year would pay a road pricing charge of £200. An EV driving 6,000 miles in a year would pay £155 to drive the same distance.

The cost of 'fair share' road pricing would change over time



“
There are equity concerns for lower income drivers, who are more likely to purchase an EV later.”

Including fuel costs, a small EV would pay £360 less than a small petrol car in 2025, with the savings widening over time as road pricing charges rise and electricity costs decrease.³⁸ Our model shows they would save £450 in 2030 and £530 in 2035, at 2022 prices.

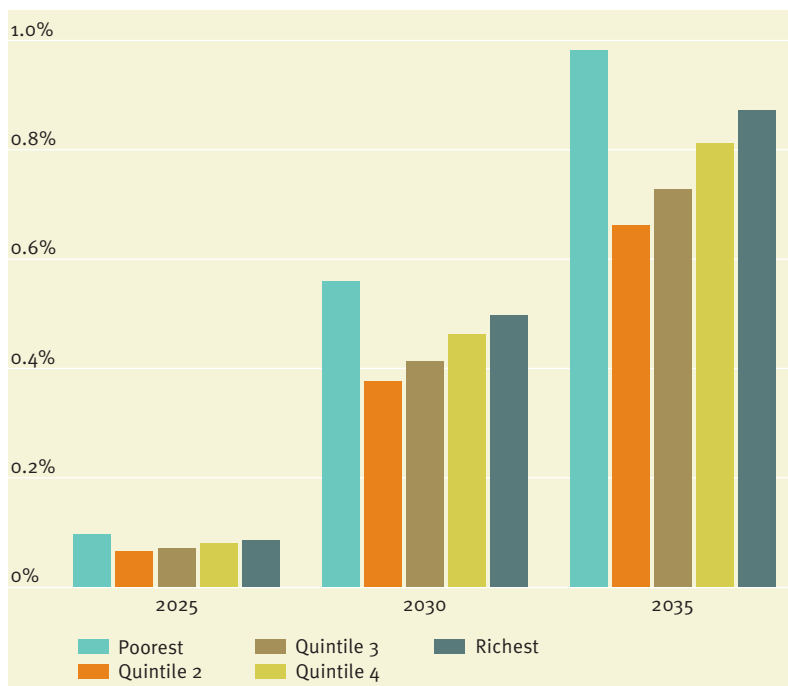
There are equity concerns for lower income drivers, who are more likely to purchase an EV later than higher income households. We discuss this further on pages 28-29.

Tax will be a higher proportion of the overall costs for EV drivers, compared to petrol and diesel vehicle drivers, but that is because the other costs of driving are lower.

A kerosene tax is partially progressive

Taxing jet fuel affects those on the lowest incomes most, as a percentage of household income, but for all other households it follows a progressive pattern, where the higher the household income, the greater the share paid.

Fair share package: average cost of a kerosene tax as a percentage of household income

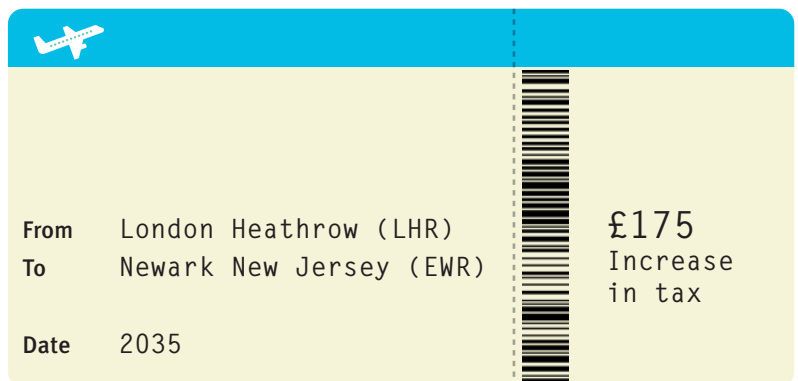


Despite this, those on the lowest incomes are least likely to fly, but when they do they are affected disproportionately. We explore the extent to which a frequent flyer levy could lead to a better outcome for this group on pages 34-37.

How will the cost of flying change?

“**Airlines could choose to distribute a greater share of the higher cost to their wealthier business and first class passengers.**”

A kerosene tax for journeys outside the EEA (where the ETS applies) would increase the cost of those flights. The tax would add £16 to the price of a ticket from London Heathrow to Newark, New Jersey in 2025, at 2022 prices, assuming the airline allocates the tax equally to all passengers, irrespective of cabin class. It would then go up to £95 in 2030 and £175 in 2035, if the plane continues to fly solely on fossil fuels. Rather than pass on those rises equally, airlines could choose to absorb them or distribute a greater share of the tax to their wealthier business and first class passengers.



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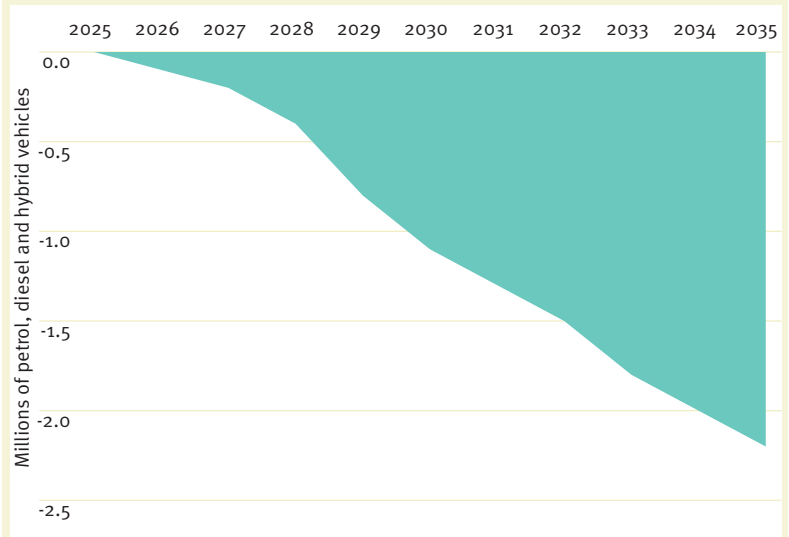
Switching quickly to EVs is crucial for the UK to meet its targets to reduce climate impacts.”

The impact of an emissions based vehicle purchase tax

Switching quickly to EVs is crucial for the UK to meet its targets to reduce climate impacts. An ambitious ZEV mandate on car manufacturers and an emissions based vehicle purchase tax, with a complementary scrappage scheme, are important policy tools to achieve it.

A 20 per cent tax on new petrol and diesel car and van sales from 2025 and a seven per cent tax on used petrol and diesel car and van sales from 2035 would reduce the number on the road by 2.2 million (13 per cent) by 2035, due to falling sales.

Fair share package: the impact of an emissions based vehicle purchase tax on non-EV vehicle sales by 2035



A scrappage scheme is best introduced at a time when a significant proportion of the second hand car market is EVs. If tied to the implementation of emissions based purchase tax for second hand vehicles, this will provide a strong incentive to replace older vehicles with cleaner alternatives. A successful scrappage scheme should offer mobility credits to encourage those who can to prioritise walking, cycling and using public transport instead.³⁹

Fair share tax alternatives

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We recommend an independent commission to consider progressive and equitable road pricing design.”

Within the scope of our modelling we were not able to assess all the possible tax variations, as the range was too large. The tax package we have outlined aligns transport taxes with net zero. But, while what we propose is largely progressive, some individual taxes could still disproportionately impact the poorest. To minimise this risk, we consider a range of potential amendments below. These require more research before incorporating into the package but we believe they are worth exploring.

Other road pricing options

The transition period to a fully electrified vehicle fleet will be the most challenging time to achieve equitable road transport taxes.

In any road pricing system, there is a trade-off between environment, equity and simplicity. A scheme designed to tackle congestion will be more complex than a scheme designed solely to raise revenue. The government must be clear what it is trying to achieve. We recommend an independent commission to consider progressive and equitable road pricing design.

Here we discuss some of the options for road pricing and their impacts.

EV-only road pricing

EV-only road pricing would avoid the double charge of road pricing on top of fuel duty for petrol and diesel vehicle owners. But it may slow the take up of EVs by increasing the cost of owning one relative to a petrol or diesel vehicle. It is possible that a pricing structure that maintains the cost of driving at the 2019-20 level may not provide enough financial incentive to purchase an EV, so further analysis is required.

Also, if exempted from road pricing, plug-in hybrids might become more attractive to buy, despite having higher emissions than EVs. If not exempted, they would have to pay fuel duty and road charges, as real world data shows that they mostly run on fossil fuel, rather than electricity.

**“
Removing fuel
duty and
concurrently
introducing road
pricing avoids
double charging
petrol and diesel
vehicle drivers.”**

The argument that EV drivers should be brought into the tax system to contribute fairly to infrastructure maintenance is widely supported. As a result, an EV-only approach may be viewed as more politically feasible.

Remove fuel duty and introduce road pricing

Removing fuel duty and concurrently introducing road pricing avoids double charging petrol and diesel vehicle drivers, making the scheme fairer during the transition to EVs. It is potentially simple, as one tax is removed at the same time as another is introduced.

It requires full implementation of road pricing on day one, removing the phase in period we suggest in our fair share package to allow households to adjust to a new system and keep the cost of driving at least equivalent to 2019-20 levels.

Maintaining a financial incentive to drive an EV over a petrol or diesel vehicle still requires differentiated pricing according to tailpipe emissions.

A low income rebate or free miles allowance

Our model shows that our tax package has a disproportionate impact on the poorest car owning households, but a road pricing scheme with a rebate for low income drivers or a free miles allowance could mitigate this.

The increased equity of this scheme, however, requires greater complexity and administration. It could also have the perverse effect of increasing the miles driven by low income drivers which would need to be offset elsewhere, either by reducing the miles driven by higher income drivers or a faster EV transition than planned through the ZEV mandate.

**“
The earlier aviation
and shipping are
taxed in relation
to their climate
impacts, the greater
the emissions
savings.”**

Variable road pricing

Differentiating road pricing based on location or time of day can align driving costs with negative impacts, helping also to address air pollution and congestion.

While more targeted, this is complex as it requires telematic data from all vehicles or a significant rollout of ANPR cameras, increasing administration and the potential for opposition. Variable road pricing may also not be fairer in some cases. Detailed research is required to determine if it would be.

However, variable road pricing could be fairer for people living in rural areas, who have to travel further to access essential services, work and for social purposes.

Alternative aviation and shipping options

Phase in timelines

The earlier aviation and shipping are taxed in relation to their climate impacts, the greater the emissions savings. In our modelling, we investigated alternative tax phase in trajectories for reaching our fair share tax rates for aviation and shipping.

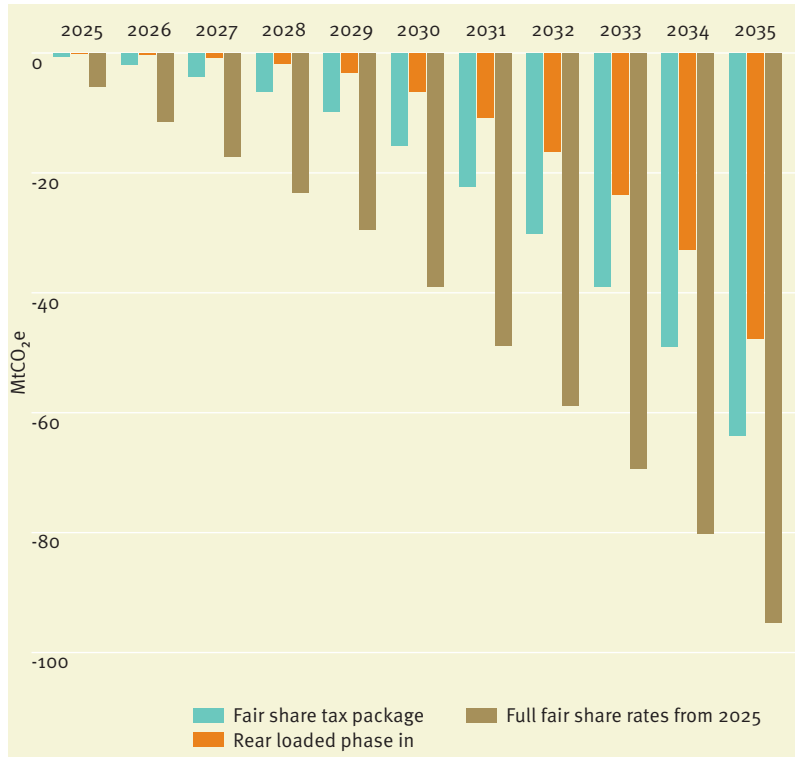
Alongside our preferred linear phase in rates to achieve the fair share for these sectors in 2035, we modelled the full fair share tax rate introduced from day one in 2025 with no phase in period, and a rear loaded trajectory where the larger increases would be phased in later, in the 2030s.

The difference in cumulative emissions reductions between a 2025 full fair share tax rate and a rear loaded phase in, between 2025 and 2035, is 46 MtCO₂e, a saving roughly equivalent to a year's worth of Scotland's emissions.⁴⁰

“

This analysis shows the benefits of starting early and the risks of waiting too long.”

Cumulative emissions reductions from different phase in rates for proposed aviation and shipping taxes



The feasibility of implementing a kerosene tax and a shipping tax at our proposed level in full from 2025 is low for political, economic and equity reasons. Also, it is unlikely because of the limited availability of alternative fuels. But this analysis shows the benefits of starting early and the risks of waiting too long.

Extending kerosene tax to all flights

The kerosene tax in our package applies to those flights not covered by the UK ETS. We predict this will lead to air passenger movements of 173 million in 2035. This is eight million fewer than if no tax was implemented. Although this still does not meet the CCC’s requirement that air passenger movements should not exceed 149 million by the mid 2030s, it would help to close the gap.

If the kerosene tax were to be extended to all flights taking off in the UK, including domestic and EEA flights covered by the UK ETS, passenger movements would be reduced further to 153 million in 2035.

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Aviation receives
free allowances,
which are
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pass to continue
polluting.”

Extending the tax to all jurisdictions creates duplication with the UK ETS. We have avoided this with our proposal. But, the UK ETS emissions cap is higher than the emissions level consistent with meeting net zero. Aviation also receives free allowances, which are effectively a free pass to continue polluting. The government should end aviation’s UK ETS free allowances in 2025, at the same time as introducing a kerosene tax on all flights not covered by the scheme. If it does not do this, it should extend the kerosene tax to all jurisdictions, at a rate that ensures all flights taking off in the UK pay a comparable price for their emissions.

Aviation and shipping fuel policy: international comparisons

UK



The UK has introduced a sustainable aviation fuel (SAF) mandate that includes a sub-mandate for the development of power to liquid fuel (PtL), as the only alternative fuel which can be carbon neutral.^{41, 42}

EU



The European Commission has proposed an end to the exemption of aviation kerosene and shipping heavy fuel oil from taxation for all intra-EU journeys. These taxes sit alongside a proposed strengthening of the EU ETS, that will expand to incorporate shipping emissions and end aviation’s free allowances.^{43,44}

It has proposed a sustainable fuel mandate for both aviation and shipping. This includes a solution to the problem of fuel bunkering, a technique of over-fuelling in a previous destination beyond EU borders to avoid fossil fuel taxes or clean fuel mandates, by proposing minimum fuel purchase for all departing vessels.

US



In the US, the Inflation Reduction Act has created new grants totalling \$297 million, along with tax credits. Together, they promote the development, production and use of sustainable aviation fuel.⁴⁵

**“
It is a common
misconception
that a tax on
aeroplane fuel is
prohibited under
the Chicago
Convention.”**

Global



The international scheme for decarbonising aviation, CORSIA, will require airlines to purchase offsets to compensate for their emissions.⁴⁶ However, the CCC recommended against allowing CORSIA credits to qualify for the UK ETS until the offsets meet strict eligibility criteria. Therefore, we have not included consideration of CORSIA in our package.^{47,48}

It is a common misconception that a tax on aeroplane fuel is prohibited under the Convention on International Civil Aviation (Chicago Convention). Bilateral air service agreements can require countries to agree any tax before implementation, but this is not the case for UK air service agreements with the EU or the US which, combined with UK domestic aviation, account for 90 per cent of UK departing flights and 58 per cent of the fuel burnt.⁴⁹

There is no global shipping fuel tax or CORSIA equivalent for shipping. The International Maritime Organization is slowly moving towards supporting a carbon levy on fuel, but progress has been slow.⁵⁰

Tax the flyer instead of fuel

The impact of kerosene tax is only partially progressive across the income distribution, with those on the lowest incomes most affected as a proportion of household income. We also modelled a frequent flyer levy to determine if it could be more progressive than a kerosene tax, using a cost schedule developed by the New Economics Foundation and Possible.⁵¹

Compared to a kerosene tax on departing flights to non-UK ETS covered jurisdictions, a frequent flyer levy leads to greater emissions reductions at a lower average cost.

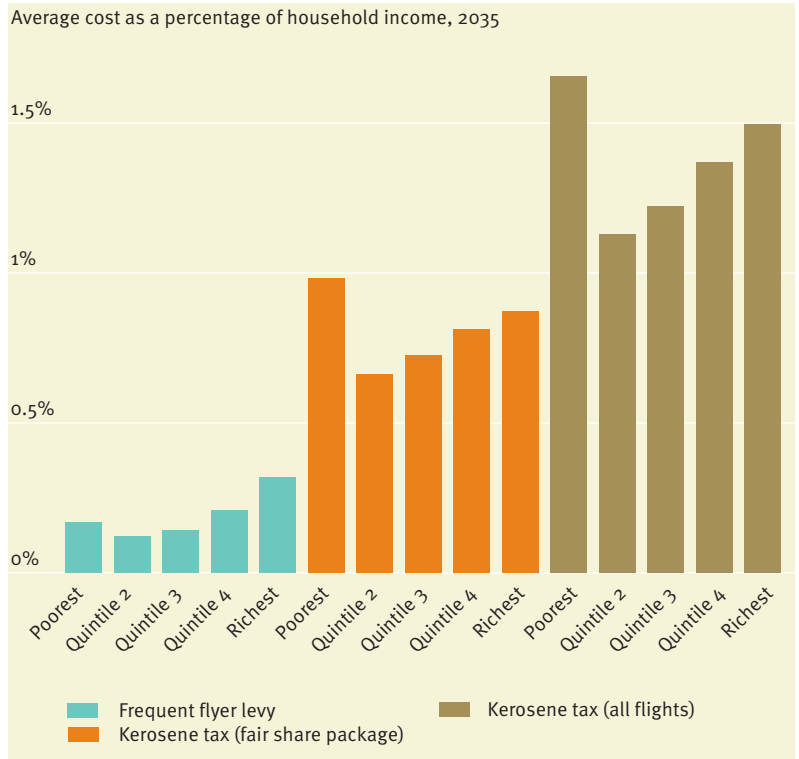
Kerosene tax and a frequent flyer levy compared



Compared to a kerosene tax on departing flights to all countries, a frequent flyer levy leads to lower emissions reductions and higher passenger numbers in 2035.



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A frequent flyer
levy is more
progressive
across the income
distribution than
a kerosene tax.”



Regardless of the jurisdictions of departing flights, a frequent flyer levy is more progressive across the income distribution than a kerosene tax. It is also more efficient, with greater emissions reductions per pound raised in tax. It still results in a disproportionate impact on those on the lowest incomes, but by a smaller margin than a kerosene tax.

While a frequent flyer levy has potential benefits in relation to emissions reductions, fairness and public support, there are drawbacks. The biggest is the difficulty of implementation. It would require a new database of passport and travel information, linked directly to ticket sales and prices, or a system for frequent flyer cards that charge the tax separately from ticket purchases.

Existing frequent flyer levy proposals do not consider flight distance and, therefore, the emissions caused by flying. A passenger taking four flights a year to Europe would pay the same as a someone taking four flights to Australia, despite the huge difference in emissions. A kerosene tax more accurately reflects the emissions caused by a journey.

**“
Greater taxation
of private air
travel should be
explored.”**

Finally, the levy may not encourage airlines to invest in sustainable aviation fuel, as the increased cost of flying is borne by the flyer, regardless of how they fly. Complementary policy, such as a SAF mandate, would solve this.

Further work is needed to address these drawbacks. The Treasury and the Department for Transport should carry out a feasibility study into how it could be administered. This study should report back before the implementation date of a kerosene tax, to allow for a full comparison of the two

Private jets

There were 90,000 private jet departures from the UK to Europe in 2022, contributing 500,000 tonnes of CO₂e.⁵² While this is a relatively small proportion of total emissions, it represents a significant inequality in pollution generated by individuals. A specific focus on private jets was beyond the scope of our modelling, as we have concentrated on the largest collective sources of transport emissions. But greater taxation of private air travel should be explored as a source of government revenue and as a means of ensuring greater equity in the taxation system.

How to reform transport taxes

“

Six out of ten people support using tax to make environmentally damaging behaviours more expensive.”

Public attitudes and engagement

There is a consensus for action on climate change, with two thirds of Britons concerned.⁵³ On transport, polling by Public First on behalf of Green Alliance highlights that 50 per cent support government action to reduce the number of flights taken.

A greener tax system is widely supported. Our research in 2021 found that six out of ten people support using tax to make environmentally damaging behaviours more expensive. Only one in ten opposed the idea.⁵⁴

Effectively communicating proposed tax reforms to the public is vital for acceptance. Public First’s polling revealed a wide range of views on road transport tax reform. Attitudes varied geographically. Urban respondents supported increasing taxes on high mileage drivers, with 42 per cent in favour compared to 29 per cent opposed. But, unsurprisingly, the result was reversed for rural respondents, with 45 per cent opposed and 25 per cent in favour. The reality of people’s circumstances shapes their perceptions of fairness.⁵⁵

But, wherever people live, having good, reliable public transport alternatives increases acceptance of the need to drive less. Research we commissioned in 2021 found support for a driver charging scheme, if coupled with greater investment in public transport.⁵⁶

How arguments for tax changes are framed affects the level of support. Campaign for Better Transport has shown that, when discussing road pricing, certain arguments are more persuasive than others. The idea that EV drivers should be brought into the tax system to contribute their fair share of infrastructure maintenance is supported as an argument for road pricing, as is the concept that those who drive less should be rewarded.⁵⁷

Early signalling, clear public communication and careful framing will be vital in reforming transport taxes.

Political leadership

Attempts are being made to draw environmental policy into broader culture war debates. Several high profile but small organisations and campaigns challenge climate policy, such as Net Zero Watch and the Global Warming Policy Foundation. These question the costs of net zero and the speed of reforms.

Although in the minority, these voices can have an outsized impact on debate and encourage backlash against environmental policies. London Mayor Sadiq Khan, for example, has hit out at an “orchestrated campaign” against the proposed expansion of London’s Ultra Low Emission Zone (ULEZ).⁵⁸ Similar campaigns have emerged around Oxford’s changes to inner city driving, Cambridge’s congestion charge and attempts to implement a clean air zone in Manchester.⁵⁹

Environmental policies related to transport have to contend with the fact that cars are embedded in society. Research shows that cars are a source of social identity, status and pride.^{60,61} Other academic work highlights that the economy is based around car dependency, encompassing industry, infrastructure and urban planning, which maintains the car’s primacy in the transport system.⁶²

Tax reform is a political challenge. UK tax rates are the highest they have been as a percentage of gross domestic product (GDP) since the end of the Second World War, presenting a political opportunity for reform. However, tax in the UK is still lower than in many other Western European and G7 economies.⁶³

The impacts of policy on household budgets will have a strong bearing on the popularity of reforms. Complementary action is needed, to support lower income households to access EVs, improve public transport and encourage people to walk and cycle.

A central argument in favour of our fair share tax package is its progressive impact, affecting those on lower incomes

**“
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**“
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less than higher income households, compared to today's taxes. Current taxes on driving are regressive because of political choices and political decisions can change this, while also benefiting the environment.

Building a broad consensus for tax reform is best achieved with cross party support. Setting a net zero target into law in 2019, for example, was achieved with strong support across the political spectrum. Many controversies are short term and can be overcome, leading to longer term consensus. The introduction of congestion charging in central London was initially controversial but is now widely accepted.

Ultimately, political decisions on transport tax reform are inevitable, to maintain government revenue and steer optimal system design in the transition to a net zero future.

Our recommendations

“

The government should start a public conversation now about the need for transport tax reform.”

The fair share tax package we have outlined shows how tax reform could be powerful in supporting the changes needed to meet legally binding climate targets.

Our modelling shows that the emissions reductions achieved by this package would close the gap to meet the CCC’s recommendation by 21 to 56 per cent of annual emissions between 2025 and 2035.

But tax reform, by itself, will not achieve all the emissions cuts necessary. Complementary policies are needed, including ambitious targets in a ZEV mandate, aligning the UK ETS emissions cap with net zero, ending aviation’s free ETS allowances, aviation and shipping clean fuel mandates and more investment in public transport, cycling and walking infrastructure.

From our analysis, we conclude that the government should start a public conversation now about the need for transport tax reform and publish a green tax roadmap clarifying how the system will support, and be adapted for, a low carbon economy.

A fair share tax reform package should include:

Road transport

- An independent commission to design an equitable road pricing scheme to replace lost fuel duty revenue.
- An emissions based vehicle purchase tax set at:
 - 20 per cent on sales of new petrol, diesel and hybrid cars and vans from 2025;
 - seven per cent on sales of used petrol, diesel and hybrid cars and vans from 2035.
- A national scrappage scheme for the most inefficient vehicles, starting in 2035, alongside the emissions based vehicle purchase tax.

Aviation

- A kerosene tax from 2025 for flights not within the scope of the UK ETS, rising to a level consistent with the government's carbon value by 2035.
- A review into the feasibility of administering a frequent flyer levy, to report by 31 March 2024.

Shipping

- A shipping fuel levy from 2025 on all domestic and international shipping, rising to a level consistent with the government's carbon value by 2035.
- A mandate for zero emission shipping fuel to reach five per cent of UK fuel blend by 2030.

Endnotes

- 1 Department for Business Energy and Industrial Strategy (BEIS), 2023, 'Final UK greenhouse gas emissions national statistics: 1990 to 2021'.
- 2 Green Alliance, 2023, *Net zero policy tracker: March 2023 update*
- 3 BEIS, 19 October 2021, *Net zero strategy: build back greener*.
- 4 HM Treasury (HMT), 19 May 2022, 'Public spending statistics: May 2022'
- 5 Department for Transport (DfT), 15 December 2022, 'Greenhouse gas emissions by transport mode: United Kingdom'
- 6 Climate Change Committee (CCC), 2020, *The sixth carbon budget: the UK's path to net zero*.
- 7 S Dossett and S O'Connell, 2023, *Reforming transport taxes: the case for change*, Green Alliance
- 8 Energy Systems Catapult (ESC), May 2018, *Rethinking decarbonisation incentives: current economic signals for decarbonisation in the UK*
- 9 ESC, *Rethinking decarbonisation incentives*
- 10 BEIS, 2021, *Net zero strategy*
- 11 H Bennett and C Brandmayr, 2021, *Not going the extra mile*, Green Alliance
- 12 DfT, 19 July 2022, *Jet Zero: delivering net zero aviation by 2050*
- 13 HM Revenue and Customs (HMRC), 21 November 2022, 'Introduction of vehicle excise duty for zero emission cars, vans and motorcycles from 2025'
- 14 HMRC, 30 June 2022, 'Air passenger duty statistics tables May 2022'
- 15 UK ETS Authority, 25 March 2022, 'Developing the UK Emissions Trading Scheme (UK ETS)'; while not being a tax as such, the ETS would fulfil a similar function by providing government with some revenue from the sector.
- 16 Adapted from Office for National Statistics (ONS), 2020, 'Effects of taxes and benefits on household income'
- 17 ONS, 2020, op cit
- 18 Figures calculated using HMRC, national travel survey, ONS household and ONS income data
- 19 All distributional analyses in this report are broken down by the median household income quintiles based on Office for National Statistics data. This refers to the middle household income value for each fifth of the population, from the poorest 20 per cent to richest 20 per cent.]
- 20 Green Alliance briefing, May 2021, 'Reforming the tax system to support a green and fair transition'
- 21 A Chrisafis, 7 December 2018, 'Who are the gilets jaunes and what do they want?', *The Guardian*
- 22 BEIS, 2 September 2021, 'Valuation of greenhouse gas emissions: for policy appraisal and evaluation'
- 23 Ibid
- 24 Ibid
- 25 Ibid
- 26 S Adam and R Stroud, 4 October 2019, *A road map for motoring taxation*, Institute for Fiscal Studies
- 27 G Raccuja, 2017, *Miles better: a distance-based charge to replace fuel duty and VED, collected by insurers*, Policy Exchange

- 28 S Barrett, 2022, *Pay-as-you-drive: the British public's views on vehicle taxation reform*, Campaign for Better Transport
- 29 House of Commons Transport Committee, 25 January 2022, *Road pricing*³⁰ M Büchs and G Mattioli, 12 September 2022, 'How socially just are taxes on air travel and 'frequent flyer levies'?', *Journal of sustainable tourism*
- 31 Demos, September 2021, *The climate consensus*
- 32 Green Alliance briefing, 31 January 2023, 'Decarbonising shipping'
- 33 DNV Maritime, 20 December 2022, 'MEPC 79 in focus – revising future GHG ambitions'
- 34 Department of Agriculture, Environment and Rural Affairs, 'Northern Ireland greenhouse gas inventory 1990-2020'
- 35 Figures expressed in 2022 prices
- 36 P Johnson, 2023, *How much does Britain Cost*, Institute for Fiscal Studies
- 37 RAC, 'Petrol and diesel prices in the UK | Latest fuel price data from the RAC', accessed 2 February 2023
- 38 Electricity and petrol prices for this analysis projected forward to 2035 by WPI Economics
- 39 Transport for London (TfL), 2023, 'Scrappage Scheme'
- 40 Scottish Government, 7 June 2022, 'Scottish greenhouse gas statistics 2020'
- 41 DfT, 23 July 2022, 'Mandating the use of sustainable aviation fuels in the UK'
- 42 ONS, 29 July 2022, *Effects of taxes and benefits on UK household income: financial year ending 2021*
- 43 European Commission, 9 December 2022, 'European Green Deal: new rules agreed on applying the EU emissions trading system in the aviation sector'
- 44 European Parliamentary Research Service, March 2023, *ReFuelEU aviation initiative: sustainable aviation fuels and the 'fit for 55' package*
- 45 J Herbert, 17 August 2022, 'Sustainable aviation taking off thanks to Inflation Reduction Act', Third Way
- 46 International Civil Aviation Organization, 'Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)'
- 47 CCC, 30 June 2021, 'Letter: UK emissions trading scheme and CORSIA'
- 48 For information on the challenges surrounding nature-based carbon offsets see J Elliott and J Ritson, 2020, *The flight path to net zero: making the most of nature based carbon offsetting*, Green Alliance
- 49 Transport & Environment, 2022, *Applying kerosene duty to aviation*
- 50 DNV Maritime, 20 December 2022, op cit
- 51 New Economics Foundation, 2021, *A frequent flyer levy*
- 52 J Faber and S Raphaël, March 2023, 'CO2 emissions of private aviation in Europe', CE Delft for Greenpeace'

- 53 J Morris, 22 November 2022, 'Most people are worried about climate change – but what are they willing to do about it?', YouGov
- 54 L Peake, April 2021, *The green light for change: what people think about environmental tax reforms*, Green Alliance
- 55 R Allen, et al, 2023, *Moving on: greener travel for the UK*, Green Alliance
- 56 Research completed by Element Energy on road pricing designs for internal Green Alliance use
- 57 S Barret, 2022, op cit
- 58 M Theil, 21 March 2023, 'Sadiq Khan says there is an 'orchestrated campaign' against Ulez expansion', *The Big Issue*
- 59 R Kinchen, 8 January 2023, 'Low-traffic zones, emission charges... is this the end of driving in cities?', *The Sunday Times*
- 60 D Metz, 3 February 2023, 'Drivers' perspective on car dependence', *Urban Planning*
- 61 Ibid
- 62 G Mattioli, et al, 2020, 'The political economy of car dependence: a systems of provision approach', *Energy Research & Social Science*
- 63 Office for Budget Responsibility, 15 March 2023, 'The UK's tax burden in historical and international context', *Economic and fiscal outlook – March 2023*

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