

The grass is greener on the net zero side

What the *Seventh Carbon Budget* tells us about the net zero transition

26 February 2025

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In today's *Seventh Carbon Budget*, the Climate Change Committee (CCC) recommends that, by 2038-42, the UK should reduce its emissions by 87 per cent on 1990 levels. To reach this, we must enter a new era of climate policy in which changes to families' spending patterns will play a crucial role, primarily by swapping their petrol cars and gas boilers for electric vehicles and heat pumps.

This new era promises big wins for households, who will enjoy average savings of £1,080 a year in today's prices from lower electricity prices, cheaper cars and driving, and cheaper heating from efficient heat pumps by 2050. But there will also be upfront costs, particularly for heat pumps, which the CCC now suggests will still be more expensive than gas boilers by 2050. The challenge for governments between now and 2050 is to drive changes in household behaviour in a way that shares both the upfront costs and the ongoing savings fairly.

We're entering a new era of climate policy

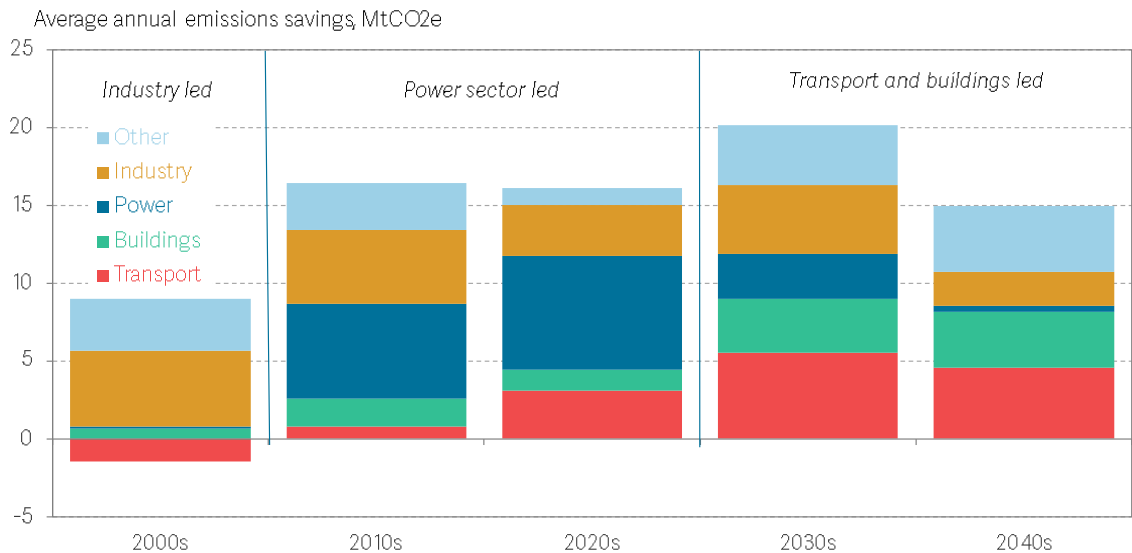
Today the Climate Change Committee (CCC) has published its [Seventh Carbon Budget](#) (CB7), which recommends a path towards reducing emissions by 87 per cent compared to 1990 levels by 2038-42, on the way to reaching net zero by 2050. If this recommendation is accepted, this would be another step in the UK's ambitious and world-leading climate reduction. In today's report, the CCC shows that the transition to net zero is on track but, more significantly, it also sets out its modelling of *how* the UK can make it all the way to net zero, including what low carbon solutions we should use, how much they will cost and quickly they need to be deployed. The picture painted by this exercise makes it clear that big changes are in store for families over the next three decades.

Most obviously, it is now the turn of households to take centre stage in the transition to net zero. Emissions savings since 1990 have been concentrated in two areas that most consumers have little cause to notice: the decarbonisation and offshoring of industrial emissions, which fuelled most of the fall in emissions in the 2000s compared to the 1990s; and the replacement of dirtier power sources like coal with cleaner sources over the

following two decades. But as Figure 1 shows, the UK must now turn to the biggest components of household emissions: buildings and transport.

Figure 1 **Decarbonisation is starting to focus more on household-facing sectors, namely transport and buildings**

Average annual emissions savings by sector and decade: UK, 2000-2050



Notes: Bars represent average annual emissions reductions by sector when comparing all years in one decade with all years in the previous decade. 'Transport' includes surface transport, aviation and shipping. 'Buildings' includes residential and non-residential buildings. 'Industry' also includes fuel supply. 'Other' includes waste, land use, land use change and forestry, agriculture, engineered removals and F-gases.
Source: RF analysis of CCC, Seventh Carbon Budget.

This will mean changes to what households buy, mainly the replacement of petrol vehicles with electric vehicles, and gas boilers with heat pumps. Together, these two technologies alone account for 41 per cent of the emissions reductions needed between now and 2040. Unfortunately, making the switch is a large expense – the CCC estimates that a heat pump currently costs £11,400, while most new cars cost more than that – so the big challenge ahead is to change patterns in these large areas of household spending.

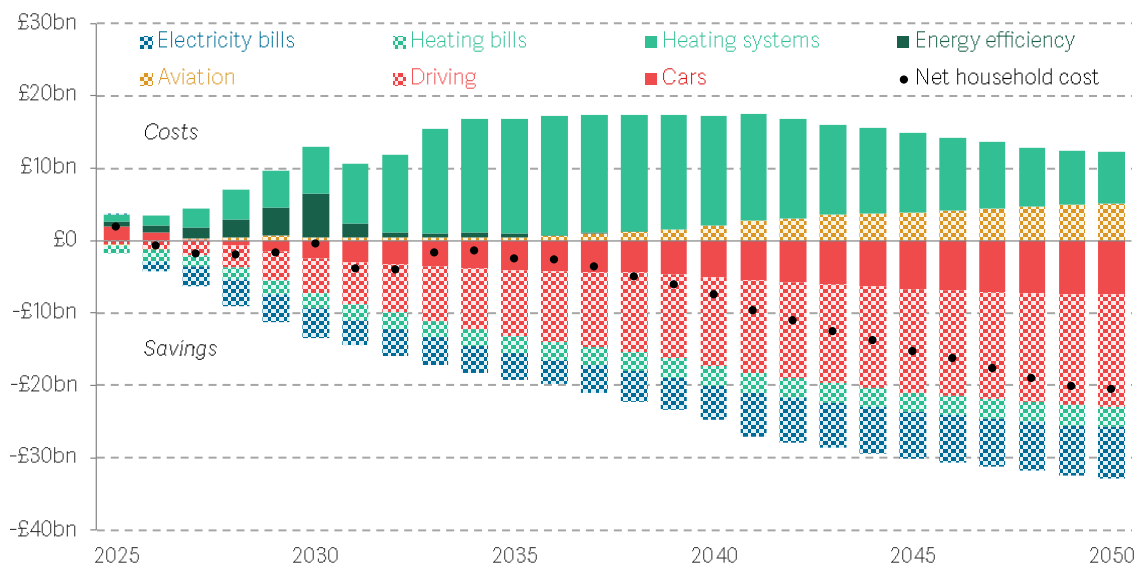
The good news is that there are big savings on the table for families

Fortunately, the move to net zero is not all about higher costs for families: the CCC suggests that there will be benefits and (crucially) in aggregate the benefits will outweigh the costs. Indeed, its estimates suggest that, from 2026, net zero should show up as a net positive on average household expenses.¹ These savings are particularly stark in the transport sector. Five years ago, the CCC estimated that [the UK would spend an additional £8 billion a year on buying cars and vans](#) by 2030 because of the higher cost of electric vehicles over petrol and diesel cars. But cost reductions have come so fast that it now estimates (as Figure 2 shows) that electric vehicles (EVs) will soon be cheaper to buy than petrol cars – thanks largely to rapid falls in the cost of batteries – meaning that it now predicts that households will save an aggregate £3 billion a year on the cost of buying new cars by 2030, as well as the £6 billion a year households will save on cheaper electric driving (i.e. using electricity rather than petrol),

all in today's prices. To top it off, the CCC also thinks that, by 2030, households will be spending £6 billion less on energy bills in today's prices, as cheaper renewables bring down the cost of electricity, and efficient heat pumps bring down heating bills.

Figure 2 **In the next decade, decarbonisation will have big direct impacts on household budgets – for both good and bad**

Additional capital and operational costs due to decarbonisation that have direct household impacts, excluding any tax impacts: UK, 2025-2050, 2023 prices



Notes: This chart includes costs and savings that directly impact household budgets, but does not include any additional taxes that is likely to fund other forms of decarbonisation, such as peatland restoration or direct removals. It is assumed that operational cost reductions and increases in the electricity and aviation sectors feed through to prices, and capital costs of upgrading rented homes flows through to renters. Operational cost reductions from reduced demand for aviation are excluded.
 Source: RF analysis of CCC, Seventh Carbon Budget.

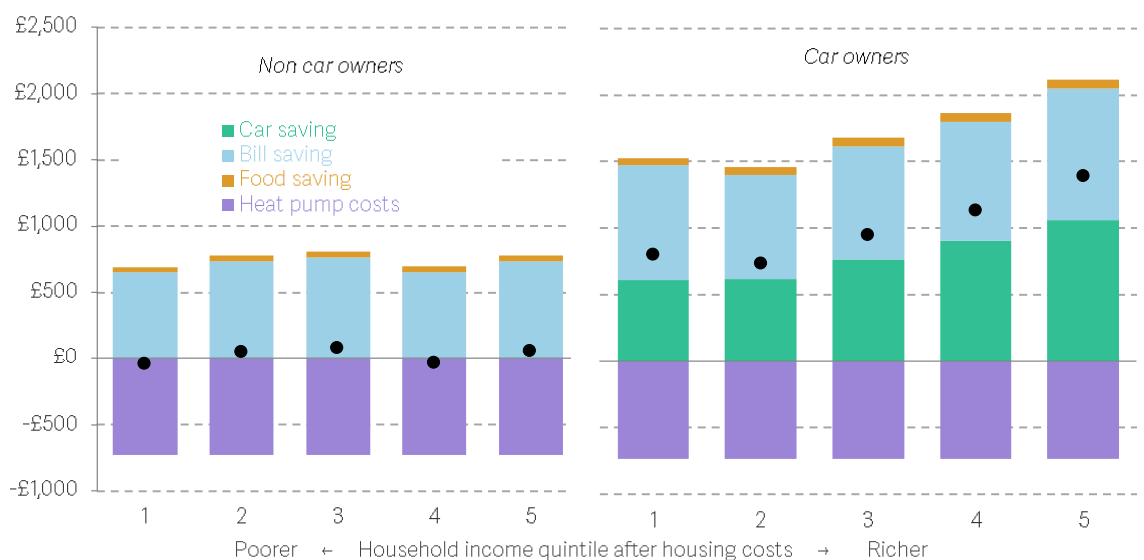
But, to access these savings, families must pay high upfront costs. The CCC estimates that households will need to fund an extra £147 billion in today's prices worth of home upgrades during the 2030s, mostly in additional costs for heat pumps over gas boilers. Despite the hopes expressed in the previous [Government's heat and buildings strategy](#) that the cost of buying and installing a heat pump would soon reach parity with a gas boiler, the cost of these heating systems has remained stubbornly high; the CCC now estimates that, even by 2050, buying heat pumps will cost three-times as much as a gas boiler is today, and though they will be cheaper to run that will not be enough to compensate for higher upfront costs. This bleak analysis highlights the scale of the challenge facing this and future governments into sharp relief: how can we catalyse a mass switching to a more expensive form of heating? The challenge is particularly acute for lower-income households who will struggle to stump up £2,500 for a boiler, never mind £11,400 for a heat pump. This challenge will be the subject of forthcoming Resolution Foundation research.

When net zero savings come, they shouldn't be hogged just by car users

Put together, the CCC estimates that net zero will bring households an average of £1,080 a year in savings at current prices, with the higher cost of heat pumps offset by cheaper electricity and driving. But that is just an average, and there is a risk that these savings will be unequally shared between households, particularly when it comes to driving. As Figure 3 shows, cheaper cars and driving account for a large chunk of the wins from the transition, meaning that a typical car user will win big, but a household without a car may see no savings at all. Cheaper motoring could make car ownership more affordable for some (which would good news for those priced out now), but there will still be households who either cannot afford a car or have no use for one.

The fact that net zero savings come mainly from car savings will also drive bigger gains for richer households: [the richest fifth of households account for 58 per cent of spending on new cars](#), and [drive more than twice as far as low-income households](#). Car owners also typically live in larger houses with higher bills than their non-car-owning counterparts, meaning they will also benefit more from lower energy bills. (This should be mitigated in part by the higher costs of installing carbon-free heating in larger houses, but assumptions on extra heating costs by house type aren't available.)

Figure 3 The big winners from the transition will be car-owning households
Estimated annual household savings in 2050 compared to 2025, by decarbonisation sector, after housing costs income quintile, and car ownership status: UK, 2023 prices



Notes: The analysis applies CCC findings on the proportional reduction in areas of household expenditure to 2023 expenditure data from the Living Costs and Food Survey. This does not account for the ways that net zero may change the composition of consumption baskets and thus does not sum to the CCC's estimated average saving. Additional heat pump costs are assumed to be the same for all households, but this is likely a simplification and heating system transition costs will depend on factors not possible to capture here.
Source: RF analysis of ONS, Living Costs and Food Survey and CCC, Seventh Carbon Budget.

The Government can – and should – grapple with these distributional challenges. Protecting poorer households from disproportionately large upfront costs of home upgrades will be key to a successful and fair transition. And when the price of electricity has fallen enough that heat pumps bring heating bills down, the Government should ensure that support is

designed so poorer households aren't the last to get these benefits. At present there are twice as many heat pumps in the richest fifth of neighbourhoods, meaning savings on heating bills will also be concentrated in richer areas.²

The same logic applies to the transport sector: given that [low-income households are more likely to buy cars from the used market than the new](#), we need a swift transition that develops the used car market as quickly as possible so as to get EVs – and the consequential savings – into the hands of low-income households. At present, just [9 per cent of EVs](#) are owned by the poorest fifth of households, four-times fewer than the richest fifth. Until this changes, low-to-middle-income families will be missing out on the biggest benefit of net zero. And for those that don't and won't own a car, it will be important that there also tangible benefits ([for example, lower prices for the users of public transport](#)), something unlikely to happen without targeted Government support. For these households it will also be important that Fuel Duty is replaced fairly. This tax currently brings in [£24 billion](#) in cash terms but will fall to zero as EVs are rolled out. Failure to replace this revenue with a new tax on driving electric cars ([such as road pricing](#)) would risk an unfair shift of the tax burden from drivers to non-drivers, not to mention spiralling congestion.

Overall, then, the CCC's *Seventh Carbon Budget* in many ways paints an optimistic picture of the wide benefits from the transition to net zero. But the challenge for governments between now and 2050 is to drive the large changes in household behaviour that will be required in a way that shares both the upfront costs and the ongoing benefits fairly.

ⁱ This estimate excludes the impact of any new taxes needed to fund public spending on net zero, or any costs that are expected to fall on companies rather than households

² RF analysis of MCS, Installation dataset by postcode, 2024