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Green uplift

How a net zero economy can reduce fuel and transport poverty

CREDS

CENTRE FOR RESEARCH INTO ENERGY DEMAND SOLUTIONS

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How a net zero economy can reduce fuel and transport poverty

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About CREDS
This report is jointly produced with CREDS, the Centre for Research into Energy Demand Solutions, which is looking at how reductions in energy use can support the transition to a net zero society. It works with researchers, businesses and policy makers to support the net zero transition. This report sits within the FAIR work programme, researching the intersection of fuel poverty, transport poverty and the low carbon energy transition.

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Quotes used in this report are taken from CREDS FAIR research interviews on the lived experience of fuel and transport poverty. They have been anonymised to protect participants' identities.

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Summary

“A net zero carbon economy can reduce fuel and transport poverty.”

As the cost of living crisis takes hold, an increasing number of UK households are falling into fuel and transport poverty. It is also becoming clearer that the enormous challenge of climate change is threatening health and wellbeing. As we describe in this report, these two problems are connected. But a net zero carbon economy, delivered in the right way, can reduce fuel and transport poverty while helping to grow the economy and employment across the country.

With our partners in the FAIR work programme at CREDS (the Centre for Research into Energy Demand Solutions), we have examined the effects that different carbon cutting strategies may have on people vulnerable to fuel and transport poverty.[1]

Analysis from a range of sources shows that decarbonisation can lead to positive outcomes across the environment and society over the longer term, and that the economic impacts are more favourable than allowing climate change to continue unchecked.[2,3]

Detailed assessment of some potential impacts of the net zero transition on different groups in society, conducted by Cambridge Econometrics for CREDS, and conversations with a range of stakeholders, has highlighted the need for careful management of this process, to ensure it does not lead to unfairness.[4] While some groups stand to benefit, especially from

the switch to electric vehicles (EVs), where running costs are substantially lower than for petrol and diesel cars, this may not be universal.

Some people will be particularly vulnerable to poorly designed policies, especially those on low incomes already experiencing fuel or transport poverty, or both, as their vulnerabilities may increase as a result of the electrification of heat and transport.[5] Others more at risk include households with children, people with health or mobility difficulties, people from minority ethnic groups and those living in rural locations.

> “It is more important than ever to intervene and reduce the structural susceptibility of those most at risk.”

The government has responded to the cost of living crisis with the Energy Price Guarantee and the bus fare cap in England. Alongside these emergency measures, it is more important than ever to intervene and reduce the structural susceptibility of those most at risk of fuel and transport poverty over the longer term.

It is these longer term actions that this report focuses on; although, if implemented early, some of our recommendations will have short term benefits too. Our recommended policy actions are complementary and will maximise benefits if implemented together.

We recommend that a policy package to address fuel and transport poverty should include:

Sharing access to, and the benefits of, electrification of heating and travel fairly across households with different income levels, with:

- an ambitious zero emissions vehicle (ZEV) sales mandate that quickly translates to a growing used EV car market;
- an ambitious sales mandate for heat pumps, like

the ZEV mandate for cars, to drive reductions in the upfront cost of heat pumps;

- financial support for heat pump installation in households vulnerable to fuel poverty.

Reducing the cost of electricity, and its cost relative to the price of gas, to guarantee cost savings from the electrification of heating and travel.

Supporting households to attain a necessary level of heating and transport by:

- putting proposed minimum energy efficiency standards into law, for the domestic private rented sector and social housing, to reach energy performance certificate (EPC) band C by 2028;
- providing financial and non-financial support for households in fuel poverty to install energy efficiency measures;
- improving non-car travel choices by expanding public transport route provision, reducing the end user cost, and integrating public transport, micro-mobility, and walking and cycling networks.

Better understanding the scale of the problem by improving the monitoring of transport poverty, including a standardised definition of transport poverty across the UK.

Introduction

> “The number of households in fuel and transport poverty has risen in recent years, largely due to increases in fossil fuel prices.”

Cutting the greenhouse gas emissions of home heating and transport will be necessary for the UK to reach net zero carbon by 2050. Transport is responsible for more of the UK’s emissions than any other sector, while residential properties are the third highest source.[6]

The scale of change in home heating and transport over the coming decades is a major opportunity to remove structural causes of fuel and transport poverty, through the design of policies that speed up the transition.

But the number of households in fuel and transport poverty has risen in recent years, largely due to increases in fossil fuel prices. It is estimated that, in 2022, as many as 6.7 million UK households may be in fuel poverty.[7]

The government’s *Net zero strategy* committed to low carbon buildings that are affordable and achievable for all by making heat pumps cheap to buy, improving home energy efficiency and ensuring energy prices are such that low carbon heating is cheaper to run than a gas boiler.[8] It also committed to a transition that electrifies road transport and invests in active travel (walking and cycling) and public transport networks.[9]

This report summarises the main findings from our collaboration with CREDS and their research partners Cambridge Econometrics, about how the net zero transition can be designed to reduce fuel and transport poverty. We consider the impact of decarbonisation policies on the whole economy, before delving down to the household level to assess the effects on fuel and transport poverty over time as the net zero transition progresses.

Policy pathways to net zero

> “Heat pumps and EVs are significantly more efficient than their fossil fuelled predecessors.”

Solutions to decarbonising home heating and car transport are clear. In both cases, there are immediate options available, eg better insulation and using other modes of travel like buses and cycling. But we also need basic infrastructure to change, like the rollout of heat pumps and electric vehicles (EVs) fuelled by cheap renewable energy sources.

Both heat pumps and EVs are significantly more efficient than their fossil fuelled predecessors, meaning both technologies have the potential to reduce consumer bills and carbon emissions. Although there are other low carbon technologies, like hydrogen, they do not offer the same system efficiencies and are at earlier stages of development.

Questions around how energy efficiency measures, heat pumps and EVs use can be scaled up across the UK, and who bears the costs, are still being resolved by the government. But resolving them quickly will be vital to understand how the design of the net zero transition can reduce fuel and transport poverty.

Modelling by Cambridge Econometrics, as part of the CREDS FAIR project research, sought answers by analysing three pathways to a net zero economy: a version of the government’s *Net zero strategy* (NZS), alongside two other scenarios, one based on regulation and one based on a market based instrument (MBI). In the regulation scenario, the net zero goal is achieved only by regulating energy and equipment suppliers. The MBI scenario achieves net zero solely through carbon pricing which, wherever it is applied throughout value chains, is likely to influence what consumers pay (see more on this below).

The regulation and MBI scenarios were created to compare the impact of policies at both the macroeconomic and

household levels. There is no expectation that they will be completely realised and not all scenarios include accompanying measures, such as a programme of household energy efficiency investment.

The unanticipated gas price increase in 2021-22 was not a factor in this modelling but, if high energy prices persist, it only serves to increase the favourability of a net zero pathway that can quickly move to clean, cheaper technologies. Switching more swiftly to EVs and renewable power will help to keep everyday household energy and transport costs down.

The emissions reductions achieved in Cambridge Econometrics' modelling of the government's NZS do not meet net zero by 2050. This is expected, as the NZS sets out policies for meeting the volume of greenhouse gas emissions permitted within the government's sixth carbon budget, covering the period up to and including 2037. Additional policy beyond 2037 will be needed in other sectors, such as land use, to meet climate change goals.

To meet net zero by 2050, some assumptions in the regulation and MBI scenarios are necessarily extreme. This reflects the exclusive focus on a specific type of policy within each scenario. Assumptions, such as a phase out of sales of new petrol and diesel cars in 2022 in the regulation scenario or a carbon price of £500 per tonne of CO_2 by 2030, are not intended to suggest this is a wholly practicable or implementable policy.

Three scenarios to net zero, modelled by Cambridge Econometrics

Sector	Net zero strategy (NZS)	Regulation	Market based instrument (MBI)
Power generation	40GW offshore wind capacity by 2030 Fossil fuel shut down by 2035 £500 million public investment in nuclear & offshore wind	Phase out of new capacity additions: – oil and coal by 2022 – gas by 2028 Fossil fuel shut down by 2050	Carbon price reaching £500/tCO_2 by 2030 (at 2020 values), rising with inflation thereafter
Transport	Phase out new fossil fuel vehicle sales: – internal combustion engine vehicles (ICE) by 2030 – hybrids by 2035 Net zero rail by 2050	Phase out new vehicle sales: – ICE by 2022 – hybrids by 2030 Biofuel mandate for vehicles: 50% by 2035, 100% by 2050	
Heating	Phase out gas boiler sales by 2035 Mandate 600,000 annual heat pump installations by 2028 and 1.7 million by 2035	Phase out sales of new gas boilers from 2029 Mandate 600,000 annual heat pump installations by 2028 and 1.7 million by 2035 Renewable heating capital subsidy: – 75% until 2030 – falling to 0% by 2050	
Others	Capture 20-30 MtCO2 per year by 2030 across the economy, including: – 6 MtCO2 industrial carbon capture and storage (CCS) – 5 MtCO2 engineered greenhouse gas removals Halving emissions from oil and gas sector by 2030 Plant 30,000 hectares of trees per year by 2025 £11.4 billion public spending commitments from 2020-30	Energy efficiency investments (all sectors except residential, transport and steel) Forced switching from fossil fuels to industry (other final uses and other industry) Biofuel mandates	

Net zero is good for the economy, environment and society

“The rise in fossil fuel prices since 2021 has changed the context of the net zero transition.”

All three of the CREDS modelled pathways to net zero lead to improved economic growth, higher employment and lower carbon emissions when compared to a baseline scenario that does not introduce new net zero aligned policies. This is consistent with findings from a range of organisations, including the Climate Change Committee, the Office for Budget Responsibility and the International Monetary Fund.[10,11,12]

GDP growth in the modelled NZS and regulation scenarios is driven by investment in the expansion of clean technologies, renewable energy capacity and heat pumps. This causes a shift in spending, away from imported fossil fuels and towards domestic goods and services which is likely to increase the UK’s energy security.

In 2035, net employment in the NZS scenario is projected to be 157,000 higher than the baseline. Underlying this is a reduction in jobs in the oil and gas sector (in extraction, refining and supply) and a large rise in service jobs, along with increases in electricity and manufacturing employment.

This aligns with Green Alliance’s findings that low carbon sources of electricity generation “support at least three times more secure work per megawatt of capacity than gas, with solar and offshore wind supporting five times more”.[13] In a future electricity mix with a higher share of onshore and offshore wind, these jobs would be spread more evenly across the UK’s regions.

The rise in fossil fuel prices since 2021 has changed the context of the net zero transition, as gas prices are predicted to stay high, at least into the mid-2020s.[14] As the Office for Budget Responsibility states, “not getting to net zero has become more expensive as a result of higher fossil fuel

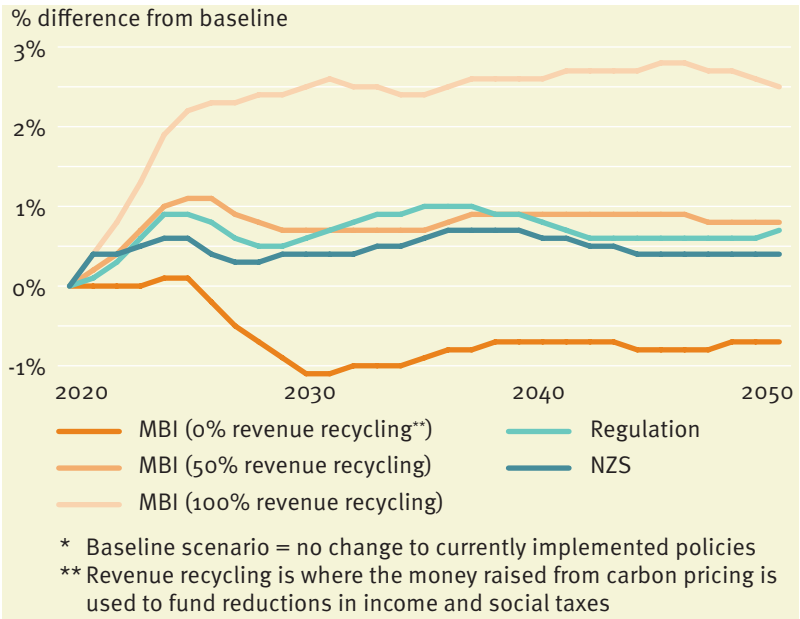
prices", with public debt expected to be 14 times higher than if earlier action were taken.[15]

The market based instrument (MBI) scenario suggests the kind of situation that could arise if the cost of gas and oil increased further and remained at an extremely elevated level throughout the net zero transition. Fossil fuel prices would increase due to the tax of £500 per tonne on their carbon content by 2030, with economic growth and higher employment determined by the extent to which associated tax revenue is used to fund reductions in income and social taxes (see the graph below for the impact of 100 per cent, 50 per cent and zero per cent recycling of tax revenue into income and social tax reductions).

The higher fossil fuel prices experienced recently effectively mimic a carbon tax, but with a lower associated increase in government revenue as a result (in this case from VAT and fuel duty) that could be used to reduce income taxes. It is important to note that the recent rise in fossil fuel prices has been far lower than the energy price impact modelled in the MBI scenario and this scenario assumes no other government interventions.

GDP change to 2050 under each scenario

Percentage difference from baseline*, 2020-50



* Baseline scenario = no change to currently implemented policies

** Revenue recycling is where the money raised from carbon pricing is used to fund reductions in income and social taxes

From macroeconomics to household economics

> “Those on higher incomes can easily access cleaner, cheaper to run technology and reduce their expenditure.”

It is clear that net zero policy can improve the UK’s macroeconomic outlook. But, for a transition that is fair for everyone, it is necessary to translate the macroeconomics down to the household level and understand how decarbonisation solutions, including heat pumps and EVs, will affect those in fuel and transport poverty.

EVs are cheaper to run than petrol and diesel cars. Heat pumps should reach this point too, assuming innovation progresses as expected and current projections of future gas and electricity prices are accurate.[16]

To realise the full benefits of heat pumps and, to a lesser extent, EVs, the price of electricity is of primary importance. Until 2024, gas and electricity prices under the government’s new Energy Price Guarantee mean an average performing heat pump should be cheaper to run than an average performing gas boiler.[17,18] Longer term, the price of electricity, relative to gas or petrol and diesel, will determine whether the running costs of clean technology remain cheaper than fossil fuel alternatives (see page 19).

The high upfront costs of heat pumps and EVs is a barrier to their adoption by lower income households, giving rise to equity concerns. Those on higher incomes can easily access cleaner, cheaper to run technology and reduce their expenditure in ways those on lower incomes cannot. If preferential early access to low carbon solutions was given to those on lower incomes, it could help to address these inequalities.

While people on lower incomes should benefit from EVs, as they filter through into the used car market, there is no equivalent route for heat pumps. Here, the upfront cost needs to come down far enough for lower income households – or their landlords – to consider installing them.

To understand the impacts of different policy choices for scaling up heat pumps and EVs on different parts of society, researchers at Cambridge Econometrics translated their macroeconomic modelling onto 13 household archetypes, adapted from Ofgem's energy consumer household archetypes.[19] This provides an indication of possible impacts on energy bills and motoring expenditure in 2035, to get a sense of different peoples' vulnerability to fuel and transport poverty. We summarise their findings in this report.

What is fuel poverty?

Fuel poverty is a devolved matter and comparing rates across the UK is complicated by the different definitions used by each nation. Each incorporates a comparison with household income, but there are additional elements that prevent direct comparison.[20,21,22,23] England's definition, for example, includes the energy performance rating of a dwelling and residual income after heating bills, in relation to the poverty line, while other nations ignore dwellings and look at the percentage of household income, defined in different ways, spent on energy bills.

A broader definition is when a person or household is unable "to attain a socially and materially necessitated level of domestic energy services".[24] In practice, this could mean that someone is unable to heat their home to a comfortable temperature needed to stay warm and healthy, take a hot shower or cook a hot meal. In response, people are likely to ration their heating or reduce consumption elsewhere, which has a negative impact on their wellbeing and can lead to social exclusion.[25]

"An estimated 6.7 million UK households are living in fuel poverty."

At the time of writing, in 2022, an estimated 6.7 million UK households are living in fuel poverty according to National Energy Action, up from 4.5 million in October 2021.[26]

Causes of fuel poverty encompass a broad range of socioeconomic and spatial factors, beyond the traditional notions of it affecting older people and those on low incomes. Other factors that increase vulnerability can include those living in private rental or social housing, due to lower quality housing stock, and households in isolated and rural locations which are not connected to the gas grid, making them reliant on expensive forms of heating.

"I am constantly finding that I sit in the dark on my laptop just doing stuff, instead of having the lights, the TV on and everything, as I would normally. I am trying to cut back on all that energy use. So, I make little adjustments by sitting in the dark."

Luca, England, CREDS FAIR interviewee

"I haven't turned my gas central heating on for seven years because it's too expensive. So, what I do is, I budget for an electric heater. Because it is basically a bedsit, the rooms are quite small, I use a small electric heater for warmth."

Joe, Scotland, CREDS FAIR interviewee

What is transport poverty?

Transport poverty has no official definition in the UK and is not as well researched as fuel poverty. However, it can be thought of in a similar way, ie when a person or household is unable "to attain a socially and materially necessitated level of transport services".[27] In practice, this could mean they are unable to access transport services, for example a car or public transport, to travel to work, education, healthcare or leisure facilities.[28]

People in transport poverty are likely to ration the journeys they make or reduce their consumption elsewhere. Households living in transport poverty prioritise spending on transport over other expenditure, including home heating.[29] This is often because they need to get to work.[30]

There is no accepted estimate of the number of households in these circumstances, but it is almost certain to have increased during 2022, due to petrol and diesel prices being at an all-time high, at close to £2 per litre, bus and rail ticket price rises and bus service cuts.[31,32,33]

The causes of transport poverty encompass a broad range of socioeconomic and spatial factors, beyond the traditional notions of low incomes and rural location. Other factors that increase vulnerability can include households with old and inefficient vehicles and people with health or mobility difficulties.

"People in transport poverty are likely to ration the journeys they make or reduce their consumption elsewhere."

"Bus routes would be so handy even to be able to get to doctors, and stuff like that. As I say, it wouldn't really work out for shopping, because you can't just bring loads of bags on a bus, you're not able to carry them. But, just for getting to the hospital, doctors, things like that...for some people...cost can just play such a part in being able to travel for appointments."

Amanda, Northern Ireland, CREDS FAIR interviewee

"I just have to choose to just walk to the town, even though it is quite far... my preference would obviously be to travel by bus, but bus is too expensive. Before, the prices were much more reasonable... I think a single was £1.20, like three years back... they've increased the price a bit too much."

Ibrahim, Scotland, CREDS FAIR interviewee

Double energy vulnerability

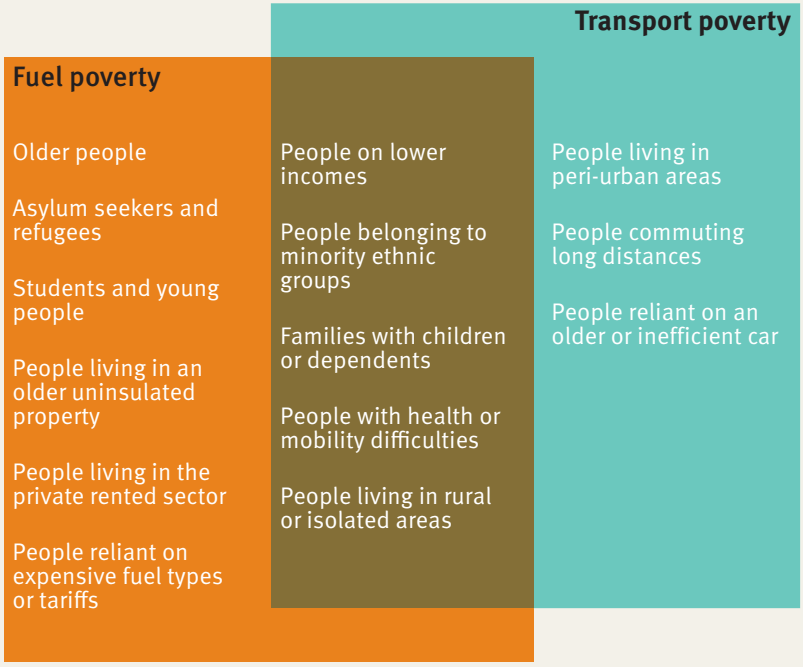
> “Through the net zero transition, those on low incomes, from minority ethnic groups and who live in social housing will be most exposed to fuel poverty.”

‘Double energy vulnerability’, as defined by researchers, is “the likelihood of experiencing negative impacts upon wellbeing owing to the intersection of both fuel poverty and transport poverty”[34]. Fuel poverty and transport poverty can be mutually reinforcing: exposure to one can increase exposure to the other.[35] And this vulnerability is also likely to increase other forms of deprivation, such as food poverty.

CREDS FAIR’s research has identified socioeconomic and geographic characteristics associated with this vulnerability.

Cambridge Econometrics’ analysis is consistent with this, finding that, through the net zero transition, those on low incomes, from minority ethnic groups and who live in social housing will be most exposed to fuel poverty. While young adults (ie those aged 25-34) with low incomes, older adults, people from minority ethnic groups and those with disabilities will be the most susceptible to transport poverty.

Factors influencing double energy vulnerability[36]



Warm homes for all

“To decarbonise home heating, a fast and widespread rollout of heat pumps is required.”

Solutions to fuel poverty and decarbonising home heating are well known: they are heat pumps, better insulation and cheaper electricity. Below we set out how effective the modelled scenarios would be at rolling out heat pumps and explore complementary policy measures to reduce fuel poverty.

Rollout heat pumps

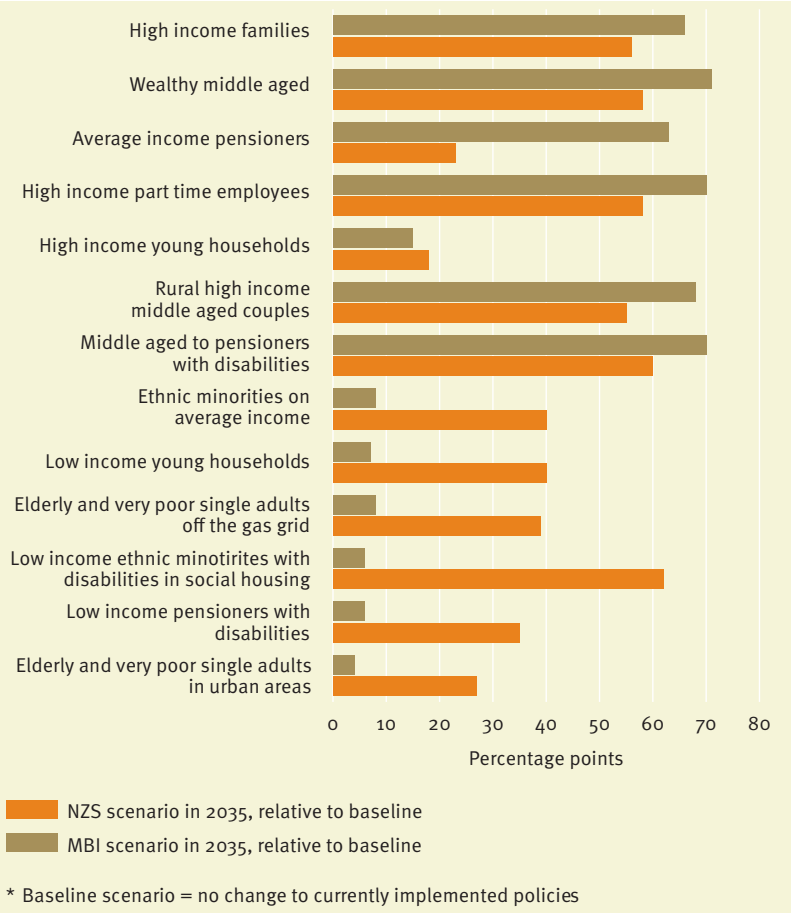
To decarbonise home heating, a fast and widespread rollout of heat pumps is required. Cambridge Econometrics’ NZS and regulation scenarios model an ambitious rollout of heat pumps, based on the government’s target to install 600,000 per year by 2028 and then 1.7 million per year by 2035. The NZS scenario has the highest heat pump adoption in households vulnerable to fuel poverty, with at least 20 per cent of all vulnerable households able to access clean heating. However, neither the heat pump installation targets, nor the government funding underpinning the commitment, are aimed at households vulnerable to fuel poverty.

In contrast, the MBI scenario uses high fossil fuel prices, driven by a carbon tax, as an incentive to switch to cheaper, clean technology. Amongst households vulnerable to fuel poverty, fewer than ten per cent are able to afford a heat pump by 2035 in this scenario, so most would remain reliant on increasingly expensive gas boilers. Instead, heat pumps would be clustered only in those households able to afford the upfront costs. The MBI scenario results in the most socially regressive outcomes for heat pump adoption.

These different policy designs demonstrate that, depending how the the rollout of clean heat technology happens, there can be very different impacts on peoples’ ability to switch to low carbon lifestyles and access potential financial savings.

> “Poorly designed policy could hinder the take up of heat pumps in households vulnerable to fuel poverty.”

Percentage point change in the proportion of heating units that are heat pumps in 2035, relative to baseline*



* Baseline scenario = no change to currently implemented policies

Poorly designed policy could hinder the take up of heat pumps in households vulnerable to fuel poverty. The government intends to introduce a low carbon heat market based mechanism. This will be an obligation on manufacturers or energy suppliers to sell and install low carbon heating appliances, such as heat pumps.[37] It could potentially be similar to the zero emissions vehicle (ZEV) mandate, which will set a sales target for manufacturers of ZEVs. As with the ZEV mandate, a target for the heat pump market could help to shift costs onto equipment suppliers and encourage innovation and upfront cost reductions. Although this will increase uptake, it is likely there will still be many households in fuel poverty that cannot afford to buy a heat pump.

> “The rate of home energy efficiency improvements has dropped significantly since 2013.”

For this reason, a dual strategyto increase heat pump adoption should include financial support for lower income households and a reduction in the upfront cost of heat pumps to ensure the fair distribution of the net zero transition’s benefits and to protect against fuel poverty. This must also be accompanied by action to guarantee that the expected fall in electricity prices, relative to gas, is delivered.

Reduce energy waste

Helping households out of fuel poverty and to decarbonise their home heating, through access to low carbon technology, is just part of the picture. Another major solution is better insulation to cut the amount of energy people need to buy in the first place.

In 2020, nearly half (47.9 per cent) of low income households in England lived in a home with an energy efficiency rating EPC band D or worse.[38] An average home rated EPC D may use 27 per cent more gas and 18 per cent more electricity than one rated EPC C.[39]

Previous CREDS research has found that although many dwellings do not need additional insulation to successfully use a heat hump, they would still benefit from improved health and comfort if extra insulation was installed.[40]

Existing schemes with a proven track record are helping to install energy efficiency measures and heat pumps in low income households and households experiencing fuel poverty, across the UK’s nations. These include the Energy Company Obligation (ECO), the Social Housing Decarbonisation Fund (SHDF) and Home Energy Scotland. But, despite their existence, the rate of home energy efficiency improvements has dropped significantly since 2013, when government funding for was drastically reduced.[41]

The government must now provide sufficient funding to meet its statutory target for England to ensure fuel poor households achieve a minimum EPC band C by 2030. This could be through an existing scheme or a new initiative. Supply chains will take time to adjust, so deployment of improvements needs to ramp up urgently to meet the target in time.

> “Policy makers have considerable control over the relative cost of electricity and gas.”

Coupled with this, the UK government must provide a legal underpinning for its energy efficiency targets, to ensure that necessary energy efficiency improvements are undertaken. In England, this means putting into law the government’s proposed minimum energy efficiency standards (MEES) targets for domestic private rented sector and social housing to reach EPC band C by 2028. However, to reach EPC C, older gas boilers should not be replaced with new gas boilers, as this would lock in a decade or more of carbon emissions that could be avoided with a heat pump installation.

Reduce fuel prices

The third way to help households out of fuel poverty and to decarbonise home heating is to reduce the price of electricity and its price relative to gas.

Under the Energy Price Guarantee, set on 1 October 2022, the electricity unit cost is 3.3 times more than gas, meaning an average performing heat pump should be cheaper to run than an average performing gas boiler.[42,43] This is because a heat pump is significantly more efficient than a gas boiler at converting its input energy into heat output.

Electricity is expected to become cheaper. As the electricity sector reduces its reliance on gas through the 2020s and early 2030s, research by Imperial College London predicts that the electricity system could become 19 per cent cheaper than in 2020.[44] A decarbonised grid will also be less exposed to geopolitical risks and volatile international markets.

The future price of gas is less certain for the same reasons. Gas bills may also fall at some points if demand falls or new sources of supply are developed due to the price incentive.

Policy makers have considerable control over the relative cost of electricity and gas to consumers and could ensure a stable investment case for heat pumps. Control mechanisms include how environmental and social levies are applied to electricity and gas bills and adjusting how the price of electricity is determined, also called marginal pricing, to decouple it from the price of gas. These kinds of mechanisms should be used to ensure electrifying home heating meets its full potential to tackle fuel poverty.

> The government has committed to address distortions in the prices of electricity and gas in its *Net zero strategy*."

The government has committed to address distortions in the prices of electricity and gas in its *Net zero strategy*, to ensure that low carbon heating technologies, such as heat pumps, are no more expensive to run than gas boilers.[45] The government should fulfil this commitment as soon as possible to ensure homes vulnerable to fuel poverty can benefit from the switch.

With financial support for heat pump and energy efficiency installations to households vulnerable to fuel poverty, legislating for energy efficiency improvements and reducing the price of electricity and its cost relative to gas, net zero policy will help to reduce fuel poverty. These policies should be enacted together as a package, for the full benefits of the net zero transition to be realised.

Affordable transport

> “Twenty two per cent of UK households did not own a private vehicle in 2018.”

As with fuel poverty, solutions that can reduce transport poverty and the reliance on fossil fuels are well known. They include providing accessible and affordable public transport and integrated travel networks, support for active travel, such as walking and cycling, and micro-mobility, EVs and cheaper electricity, as well as better planning of service accessibility, for instance with ‘15 minute neighbourhoods’.[46]

Transport poverty is multi-faceted and incorporates issues around access to and the affordability of transport, including private vehicles, public transport and active travel. Twenty two per cent of UK households did not own a private vehicle in 2018.[47]

Due to the lack of an agreed definition of transport poverty and a lack of data to model public transport provision, Cambridge Econometrics’ modelling for CREDS FAIR focused on motor fuel expenditure to judge vulnerability to transport poverty.

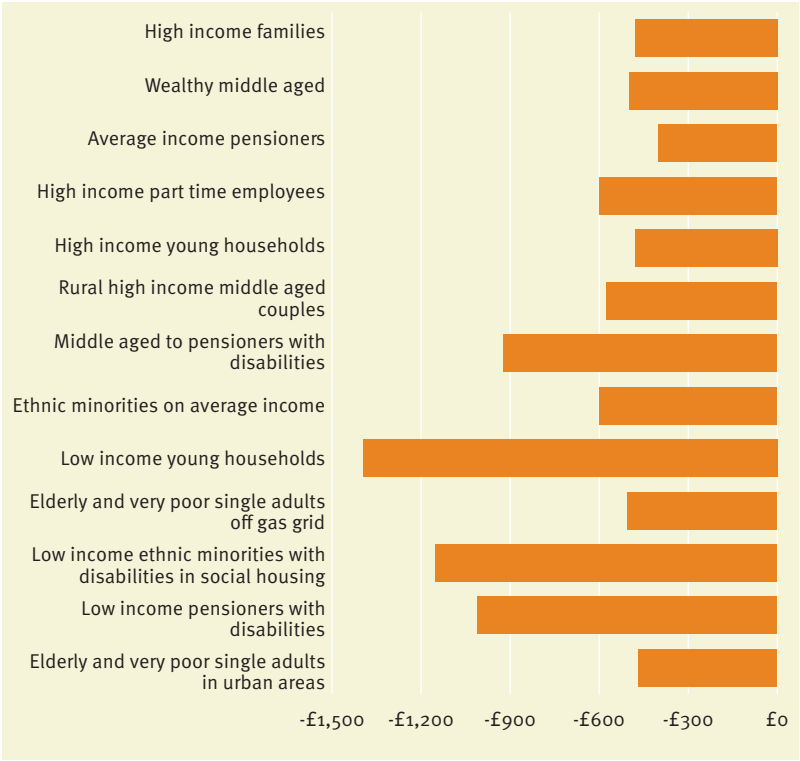
The NZS scenario includes the government’s phase out of new petrol and diesel cars by 2030 and hybrid cars by 2035 and results in a minimal change in motor fuel expenditure for those vulnerable to transport poverty. These people will still be mostly driving older petrol and diesel vehicles due to the high upfront cost of buying a new car of any type.

For more affluent households, the move to EVs significantly reduces their fuel expenditure. As the power sector decarbonises and electricity costs fall the fuel cost of running an EV will fall further.

The regulation scenario sees a reduction in motor fuel expenditure for all households. This is due to the earlier phase out of petrol and diesel vehicles than under the NZS scenario, leading to higher early uptake of EVs among

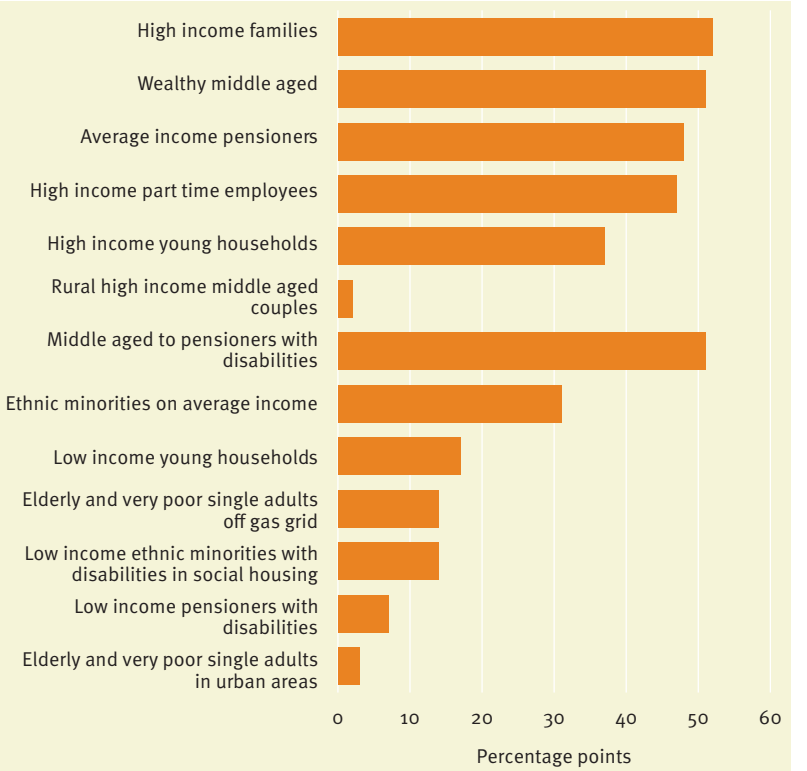
households in transport poverty, who can access a larger second hand market. On an equity weighted basis, the reduction in annual motor fuel costs is largest for households vulnerable to transport poverty. However, uptake is still higher among those average and high income households who can afford a new EV. So these households will inevitably accrue immediate and cumulative savings unavailable to poorer households.

Annual reduction in equity weighted household motor fuel expenditure from switching to an EV, 2035 (regulation scenario)



> “Policy that increases the number of EVs reaching the used car market can help to lower transport poverty.”

Percentage point change in proportion of cars that are EVs in 2035, relative to baseline* (regulation scenario)



* Baseline scenario = no change to currently implemented policies

Reducing transport poverty for car owners

As shown, policy that increases the number of EVs reaching the used car market can help to lower transport poverty in car owning households. This is consistent with previous Green Alliance analysis from 2021 which found that, once new battery electric cars reached the second hand market, at that time their owners would have saved between £700 and £2,300, on a total cost of ownership basis at current prices, compared to a diesel or petrol equivalent.[48]

The single most important step the government can take to boost EV sales across the board would be to set a more ambitious level of expectation on manufacturers in its forthcoming ZEV mandate than currently proposed (see page 17).

> “A million people in Britain live over a mile away from a regularly served bus stop.”

Another unfairness is in the way EV charging is paid for. The cost is higher at public charging points than it is on driveways, in part due to VAT levied at 20 per cent at public charge points and only five per cent on domestic electricity. So households, often on lower incomes, without access to home charging are disadvantaged financially compared to those who have off street parking facilities.

Reducing transport poverty for those without cars

Almost a quarter of households do not own a vehicle, so rely on lift sharing, public transport or walking or cycling to get to work, school, medical appointments, social and leisure activities.[49] The switch away from petrol and diesel vehicles to EVs will not reduce transport poverty for these households.

The bus network is vital in giving people access to affordable travel. Fifty seven per cent of all public transport journeys taken in the UK in 2019-20 were made by bus.[50] Bus passengers are most likely to be those without access to private cars, and tend to be younger and older, people with disabilities and those on low incomes. A million people in Britain live over a mile away from a regularly served bus stop.[51]

Increasing service provision and reducing travel costs will help tackle transport poverty immediately and over the longer term. By the government’s own figures, capping bus fares in England at £2 in the first three months of 2023 will only cost £60 million.[52] This will particularly benefit lower income households, who make almost twice as many bus journeys a year than the highest income households.[53]

The four UK nations should use their respective transport plans, ie Local Transport Plans in England and Wales, National Transport Strategy in Scotland, and Transport Plans in Northern Ireland, to support the creation of co-ordinated public transport, micro-mobility and walking and cycling networks, such as the Manchester Bee Network and commitments made by the Welsh Government under its Llwybr Newydd (A New Path) plan. These co-ordinated networks should integrate pricing, ticketing and infrastructure. This will improve service provision and help to lift people out of transport poverty, while at the same time decarbonising transport.

Solutions to fuel and transport poverty that work

“The timescale of clean technology rollout needs to ensure that vulnerable households benefit early.”

Fuel and transport poverty are on the rise in the UK. The impacts are devastating for people and whole communities. It affects personal and economic well-being and is regressive for society and the country as a whole.

Our conversations with experts, and the net zero scenarios modelled as part of CREDS’ research, highlight that the net zero transition can help to reduce fuel and transport poverty, but it needs to be designed with this in mind. An important factor is the timescale of clean technology rollout which needs to ensure that vulnerable households benefit early.

Effective policy to address fuel and transport poverty should include:

Sharing access to, and the benefits of, electrification of heating and travel fairly across households with different income levels, with:

- an ambitious zero emissions vehicle (ZEV) sales mandate that quickly translates to a growing used EV car market;
- an ambitious sales mandate for heat pumps, like the the ZEV mandate for cars, to drive reductions in the upfront cost of heat pumps;
- financial support for heat pump installation in households vulnerable to fuel poverty.

Reducing the cost of electricity, and its cost relative to the price of gas, to guarantee cost savings from the electrification of heating and travel.

Supporting households to attain a necessary level of heating and transport by:

- putting proposed minimum energy efficiency standards into law, for the domestic private rented sector and social

housing, to reach energy performance certificate (EPC) band C by 2028;

- providing financial and non-financial support for households in fuel poverty to install energy efficiency measures;
- improving non-car travel choices by expanding public transport route provision, reducing the end user cost, and integrating public transport, micro-mobility, and walking and cycling networks.

Better understanding the scale of the problem by improving the monitoring of transport poverty, including a standardised definition of transport poverty across the UK.

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