green alliance...

Locked out

Helping low to middle income households benefit from net zero

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Contents

"Building the green economy of the future is a chance to change our country so we put working people first. From a national Warm Homes Plan to insulate Britain's cold and draughty homes, to creating good jobs in the green industries of the future, tackling the climate crisis can help us become a fairer, more prosperous country. I welcome this report as a contribution to the vital national discussion on how we create a green economy which delivers for the British people in a just and equitable way."
Rt Hon Ed Miliband MP, Shadow Secretary of State for Climate and Net zero

"Low Benefit-in-Kind tax rates are making cleaner vehicles affordable to those on lower incomes. They play an integral role in whether we will meet the government's 2030 phase out target or fall short. Zero emission mobility is finally becoming an option to those beyond the highest earners, with fair taxation on EVs accelerating that shift via salary sacrifice schemes. As we weather the cost of living crisis, the government needs to keep up this fragile momentum for everyone's benefit."
Toby Poston, director of corporate affairs, British Vehicle Rental and Leasing Association

"We were already falling behind, but against the current economic backdrop a healthy transition to electrification by 2030 is increasingly at risk. Finance will play an integral role in making EVs more accessible to the mass market, but if we are to build a solid and sustainable pathway towards the government's admirable but ambitious targets, the industry will need fresh thinking and a new approach steered by real world data."
Marc Palmer, brand director, *AutoTrader*

"Low-to-medium income households value hard work and decency, family and fairness. Since 2010, these households have been an increasingly core part of the Conservative coalition. A swing back to Labour will accelerate if Conservatives fail to deliver on their 2019 promises, including the environment. To win over these households but also ensure that net zero is both fair and effective, both parties need to demonstrate how the transition will improve their everyday lives."
Rachel Wolf, founding partner at Public First and co-author of the Conservative Party's 2019 election manifesto

"Efficient low carbon technologies like heat pumps, electric vehicles and solar panels can save families money as well as protecting the climate. It is vital that we make these technologies affordable for families right across the income spectrum. Providing grants, cheap loans and lower running costs are all proven to increase demand for green technologies, and Green Alliance is right to call for more of this support for families that do not have money to spend upfront."
Andrew Sissons, deputy director for sustainable future, Nesta

Summary

“These households are once again under pressure.”

The transition to a low carbon economy needs to be built ‘from the middle out’ to be successful. The government currently offers support that enables uptake of green technologies to the two ends of the income spectrum but offers little to those in between: low to middle incomes (LMI) households.

Previously referred to as ‘alarm clock Britain’, the ‘squeezed middle’ and ‘just about managing’, these households are unable to afford the upfront costs of new technologies like electric vehicles, even with initial subsidies. Therefore, they miss out on the savings that come with them.

Low to middle income earners are overrepresented as employees in UK industries that will drive the move to net zero, like construction, mining and finance. As over 30 per cent of the adult population, they are also vital to a broad based adoption of new technology and behaviours.

Yet, these households are once again under pressure. The Office of Budget Responsibility has forecast the largest fall in real household incomes on record due to rising prices, higher taxes and stagnant wages. With less money to spend and the UK tipping into recession, LMI households will be locked out of the money saving advantages of green technology. This will hold back both the net zero transition and economic recovery.

The government and the opposition should develop a fresh approach that supports people in this income

bracket. Without a new strategy, they are in danger of being left behind. And, as perennial swing voters, this alienation could weaken the public mandate for climate action.

We recommend that a three point net zero consumer guarantee should be at the heart of all parties' offers to the country. This would ensure that no group in society is disadvantaged. It should make sure that, by 2035, those on low to middle incomes are benefiting from the following:

> "A three point net zero consumer guarantee should be at the heart of all parties' offers to the country."

1. Cost savings

If their homes are upgraded to EPC C, LMI households could achieve average energy bill savings of £306 per year. A further £552 a year could be saved on running costs if LMI households switched to driving electric vehicles (EV).[1]

2. Access to green infrastructure

Green infrastructure projects should prioritise LMI households, for instance with new, public electric vehicle chargepoints, supported by extra grid capacity.

3. Financial support

Means tested subsidies, affordable finance and financial incentives will enable all LMI households to access electric cars and low carbon heating before proposed phase-out dates for existing carbon intensive models (2030 for petrol and diesel cars and 2035 for gas boilers).

In this report, we focus on transport and housing, as almost a third of LMI household spending goes on these two areas alone.. They are also two of the UK's top emitting sectors and require significant behaviour and technology change.

> “LMI households are less likely to own a car and those that do drive less than other households”

To deliver this consumer guarantee, the government must use a policy combination that tackles the particular barriers faced by these households, notably high upfront costs, underdeveloped second hand markets, poor financing options and inadequate infrastructure.

We recommend the government takes the following action:

Electric vehicles

LMI households are less likely to own a car and those that do drive less than other households. Improving access to public transport and walking and cycling facilities will be vital. However, for many, it will be the switch to EVs that will bring cost savings and lower transport emissions.

Cheap and simple finance

Enable lenders to offer buyers an EV, chargepoint and energy tariff in one package.

Provide tax relief to car rental and leasing companies so savings can be passed onto consumers.

Subsidise second hand electric vehicle sales

Follow the example of other countries, notably the United States and France, in subsidising the cost of second hand electric vehicles for low to middle income households.

Provide priority access to public charging infrastructure

Although LMI households drive less than average, those that do cannot easily switch to EVs due to limited public chargepoints. The government should use a needs based approach, so that the most car dependent areas with the least charging infrastructure are prioritised.

> “There are far more households in need than £1 billion funding can support.”

Energy efficiency

The expansion of the government’s ECO+ home insulation scheme will allow some middle income earners to improve their energy efficiency. However, there are far more households in need than £1 billion funding can support, so further measures are required.

Warm homes regulation

Commit to a minimum energy efficiency standard of EPC C sooner than 2028 for private rented properties, alongside a 2030 EPC C target for all tenures of housing, at the point of sale.

Affordable retrofit

Give concessional loans to LMI households to meet the required efficiency standard, backed by public financial institutions, such as the UK Infrastructure Bank, and delivered through retail banks.

Stamp duty adjustment

Reward homeowners who invest in energy efficiency measures within the first two years of purchase with a stamp duty rebate.

Home heating

Energy efficiency will improve homes immediately but, in the medium term, as boilers reach their end of life, heating systems also need upgrading.

Means tested grants

Offer means tested heat pump installation grants to LMI households.

Fairer energy prices

Permanently remove green levies from electricity bills to make heat pumps more affordable and speed up roll out.

New build regulations

Bring the Future Homes Standard forward to 2023.

Low to middle income (LMI) households at a glance

6.2 million LMI households; 11.7 million LMI working age adults (30.8 per cent of the total adult population)

They are underrepresented in London (26 per cent) and the South East (24 per cent), but overrepresented in regions such as Yorkshire and the Humber (40 per cent), Wales (39 per cent), Northern Ireland (37 per cent) and the North West (34 per cent)

Share of jobs by sector: 43 per cent in construction, 39 per cent in mining, 39 per cent in finance and insurance and 33 per cent in retail, wholesale and the repair of motor vehicles

Just under a third (31 per cent) of their household expenditure goes on housing and transport

57 per cent live in homes rated EPC D or worse[2]

Close to a fifth (19 per cent) do not own a car

Over half of LMI household heads are in C1 (36 per cent) and C2 (17 per cent) social groups, 18 per cent are AB, 19 per cent are D, and ten per cent are E

Average gross income is £29,640 and the average disposable income is £19,760 (after housing costs)

Almost half (44 per cent) have total savings and financial assets of less than £5,000. Over a quarter (28 per cent) have less than £1,500

49 per cent are owner occupiers, 29 per cent live in the private rented sector, 22 per cent live in social housing

Introduction

> “There is a perception that these groups can pay, but most have little disposable income.”

The UK has a legal obligation and political commitment to achieve a net zero carbon economy by 2050. That mandate has not diminished and 64 per cent of the population – with a majority in almost every demographic – support it.[3,4] Central to achieving net zero, and maintaining public support, is the need for it to be delivered fairly and for public money to be spent effectively.

While emissions from the power sector have fallen rapidly, those from consumer facing sectors, such as transport, housing and agriculture have hardly fallen.[5] Decarbonising these sectors will alter the ways in which we work, live and consume, through new technologies and by changing behaviour.

To date, the government’s approach to increasing the adoption of green technologies has been to stimulate green markets, targeting wealthier households. Schemes like the Boiler Upgrade Scheme or plug-in car grant are helping to subsidise the upfront costs of heat pumps, energy efficiency measures and electric vehicles (EVs). It is hoped that this will bring costs down to enable wider uptake.

To a lesser extent, the government is also supporting the poorest households, through schemes such as the Energy Company Obligation and the Social Housing Decarbonisation Fund, although the focus of these is more on achieving social goals rather than environmental ones.

There is a significant policy gap in relation to low to middle income groups. There is a perception that these groups can pay, but most have little disposable income, savings or assets. Under current policy, LMI households may end up being the last to adopt green technologies, missing out on the financial benefits and incurring additional costs in the meantime. This could be compared with the rollout of

superfast broadband where, without targeted support, certain sections of society were left behind, requiring significant government intervention to rectify.

Superfast broadband rollout: a lesson in poor targeting

The rollout of superfast broadband has been led by private sector companies, such as Virgin Media and Openreach. Suppliers prioritised the most commercially viable urban areas first, leaving rural areas with lower population densities until last.

To provide coverage to those areas not reached by private investment, the government had to step in with the superfast broadband programme in 2010. This provided £1.9 billion in public subsidies to top up the budgets of local bodies and devolved administrations, enabling them to procure contracts to build infrastructure in hard to reach areas.[6]

The government's programme managed to extend coverage to 5.3 million UK households. Despite this, today there are still 1.3 million households without superfast broadband.[7] Areas with the lowest availability include mid-Wales, Devon and Somerset, where lack of coverage exacerbates economic challenges, limits access to health, education and government services and affects businesses.[8]

The government should avoid repeating this mistake with low carbon technology rollout, such as electric vehicles, heat pumps and energy efficiency measures, by focusing on the groups likely to be left behind, ie LMI households.

> "Housing and transport are a third of LMI households' spending."

In this report, we set out to understand how LMI households, previously characterised as 'alarm clock Britain', the 'squeezed middle', or 'just about managing', will be affected by the net zero transition and how policy can better support them.

We focus on housing and transport as these two areas are a third of LMI households' spending (see page 18), and they are two of the UK's largest emitting sectors, requiring significant behaviour change to decarbonise.

What does LMI mean?

There have been a number of different attempts to classify low to middle income households. The most comprehensive, which we have adopted and updated for this report, is defined in the Resolution Foundation's 2012 *Squeezed Britain: the annual audit of low-to-middle income households*.

This audit divides working age households into three distinct groups: benefit reliant, low to middle income and higher income.

LMIs are defined according to three criteria:

- working age adults;
- those between income deciles two and five;
- those receiving no more than a fifth of their household income from income related benefits.

Higher income households are defined as those with above median incomes (ie income deciles six to ten), whilst benefit reliant households are those in income decile one, as well as those who receive more than a fifth of their household income from income related benefits.

For full details and assumptions, see our methodology at www.green-alliance.org.uk/wp-content/uploads/2022/12/Locked-out-methodology.pdf

Characteristics of LMI households

> **“LMI households struggle to afford EVs, heat pumps or energy efficiency measures.”**

LMI households are those “too poor to benefit from the opportunities provided by the private market but too rich to qualify for substantial state support”.[9]

Green technologies often have high initial costs but lead to ongoing savings. LMI households struggle to afford EVs, heat pumps or energy efficiency measures, and so they cannot access the subsequent financial benefits. But their income is not low enough to qualify for support schemes that would enable them to make changes faster.

Currently, these households are at risk of missing out on the early benefits of the net zero transition because of constraints in relation to travel and their homes. Net zero policy needs to take this into account.

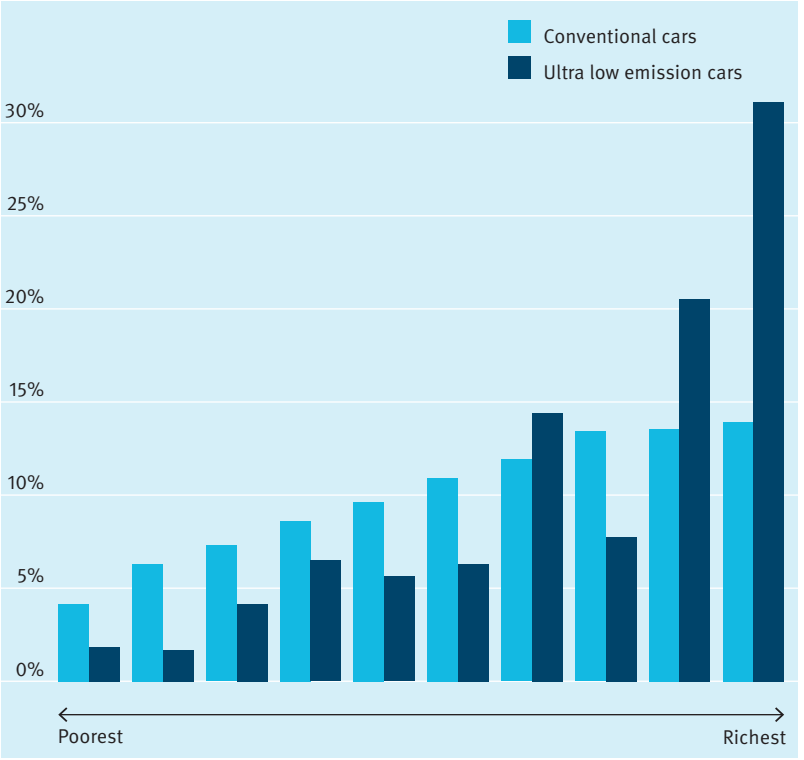
Travel

Just under a fifth (19 per cent) of households in these income groups do not own a car, compared to 12 per cent of those on higher incomes. Those without access to a vehicle rely more heavily on public transport.

Electric car ownership is also skewed towards higher income households. The top 20 per cent income bracket own half of the EVs sold, while the bottom 20 per cent own just four per cent.[10]

> “LMI households live in less efficient housing.”

Distribution of conventional versus ultra low emission car ownership, by income decile[11]



LMI households that have a vehicle drive less than higher income households. The average distance driven per person in the top two income deciles is almost 7,000 miles a year, compared to below 4,000 miles for those in income deciles three and four.[12]

And almost three quarters of high income households have access to a garage or off-road parking, compared to under two thirds of LMI households.[13]

Homes

LMI households live in less efficient housing. Over half (57 per cent) of them living in England reside in homes rated EPC D or worse. This is more than benefit reliant households (51 per cent), who are eligible for targeted government support.

There are some easy wins for the government to make progress on these issues. Twenty per cent of English LMI

homes have uninsulated cavity walls, while at least 1.3 million have loft insulation below the recommended thickness of 270mm, and half a million have insulation below 100m thickness.

They are less likely to own homes and more likely to live in social housing or the private rented sector than those on higher incomes. Of the 6.1 million LMI households in the UK:

- 3.0 million (49 per cent) are owner occupiers compared to 73 per cent of higher income households;
- 1.8 million (29 per cent) live in the private rented sector, compared to 21 per cent on higher incomes;
- 1.3 million (22 per cent) live in social housing, compared to just six per cent on higher incomes.

> “LMI homeowners with mortgages have less equity than higher income households.”

LMI homeowners with mortgages have less equity than higher income households. Twenty three per cent have less than £80,000 equity in their homes, compared to 16 per cent of higher income households.

Factoring these households into net zero policy making is also good politics, as this group is both electorally and economically important. Typically, they are:

- swing voters;
- located in regions central to the levelling up agenda;
- employed in important industries for the net zero transition.

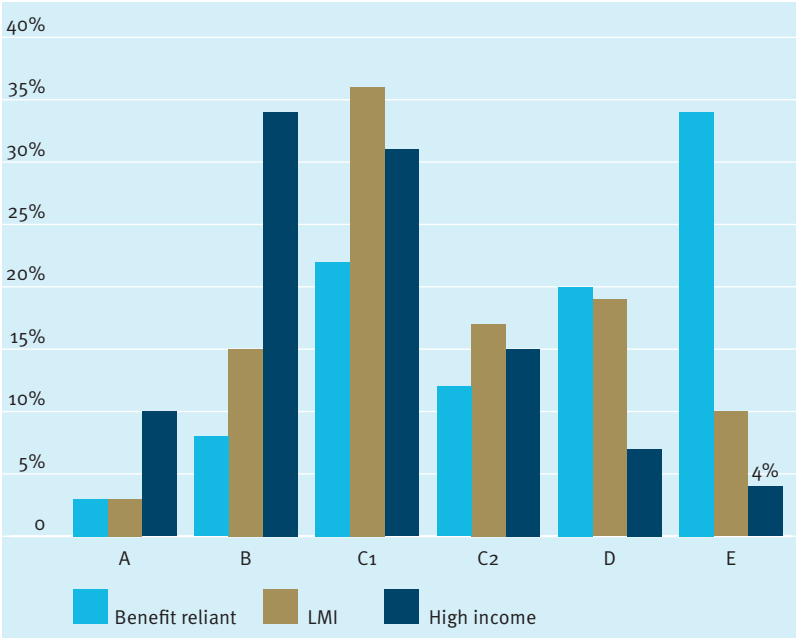
Voting behaviour

Developing policy that explicitly includes this group could pay electoral dividends. They are predominantly lower middle and working class. As the graph on page 15 shows, over half of LMI household heads are in social classes C1 (36 per cent) and C2 (17 per cent).

Research has found that many of those in C1 and C2 are swing voters, switching often between voting for Labour and Conservative, and they value family and fairness above all. [14]

> “To retain their vote, parties need to demonstrate that the net zero transition will benefit them and their families.”

Social class of household heads in Britain, by income group[15]



Since supporting Labour in 1997 and 2001, C1 and C2 voters have gradually moved towards the Conservatives, albeit with a slimmer majority in the C2 social class.[16]

Since 2010, they have become a core part of the Conservative coalition, and were an important factor in the government’s 80 seat majority in 2019.

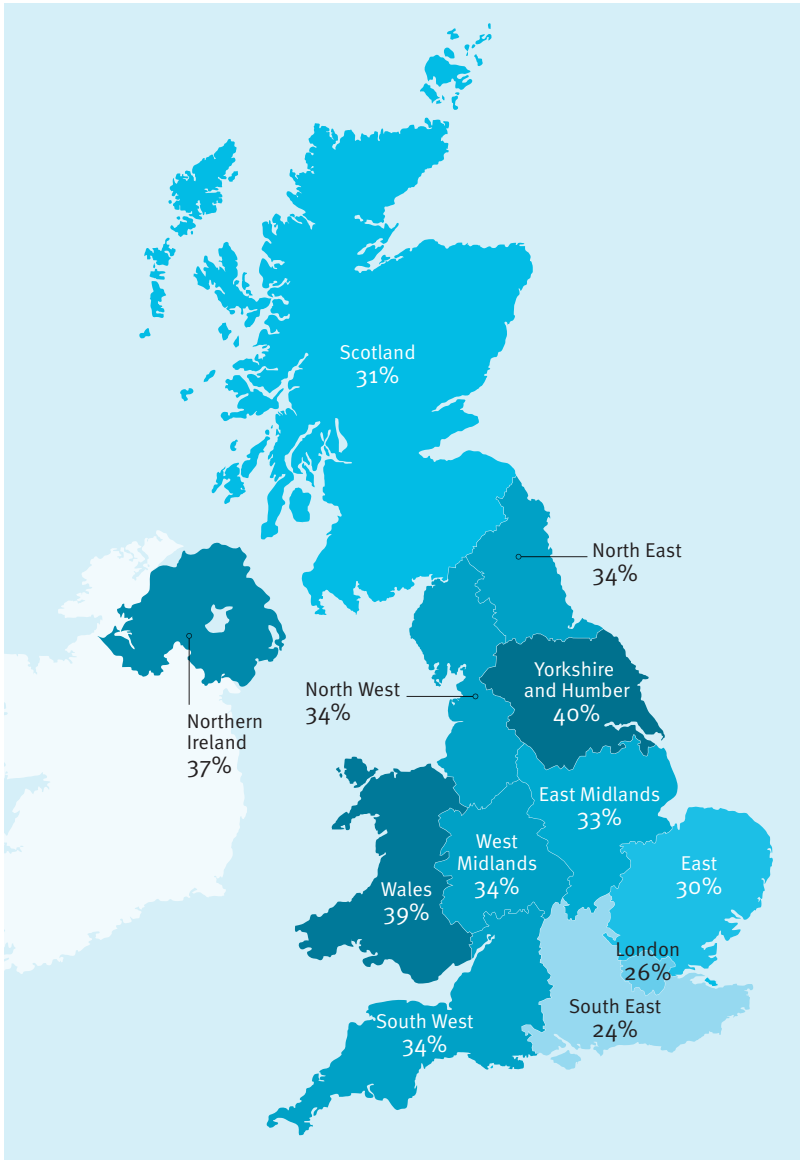
C1 and C2 voters are in the majority in ‘permanent marginal seats’, constituencies like Bury North, Warwick and Leamington, Colne Valley and Vale of Clwyd. This means that the party that wins most of these voters “can reasonably expect to be walking into Downing Street”.[17]

Developing inclusive net zero policy could also mitigate the return of populist party to British politics. There is a “sizeable group of voters [in the UK] who would be open to voting for a party of the populist right”, driven by a sense of economic unfairness.[18] They believe that, whilst those at the top of the income bracket prosper and those at the bottom are supported by the state through benefits, their living standards are being squeezed. To retain their vote, parties need to demonstrate that the net zero transition will benefit them and their families and correct any perceived unfairness.

Regional distribution

Although LMI households are distributed across the UK, there are relatively more in regions such as Yorkshire and the Humber, Wales, Northern Ireland and the North West. These broadly overlap many of the new constituencies that the Conservatives won in 2019 and have made the central focus of the levelling up agenda.

LMI households as a share of working age households, by region[19]



> “In real terms, LMI household incomes have fallen over the past decade.”

Jobs

There are 11.7 million LMI working age adults in the UK. They make up a significant proportion of the following sectors:

- Construction (43 per cent)
- Mining (39 per cent)
- Finance and insurance (39 per cent)
- Retail, wholesale, and the repair of motor vehicles (33 per cent)
- Agriculture, forestry and fishing (31 per cent)
- Transport and storage (30 per cent)

Each of these sectors are critical to the green economy, for example to maintain EVs, install low carbon heating, or help consumers to finance and insure green products.

Income and expenditure

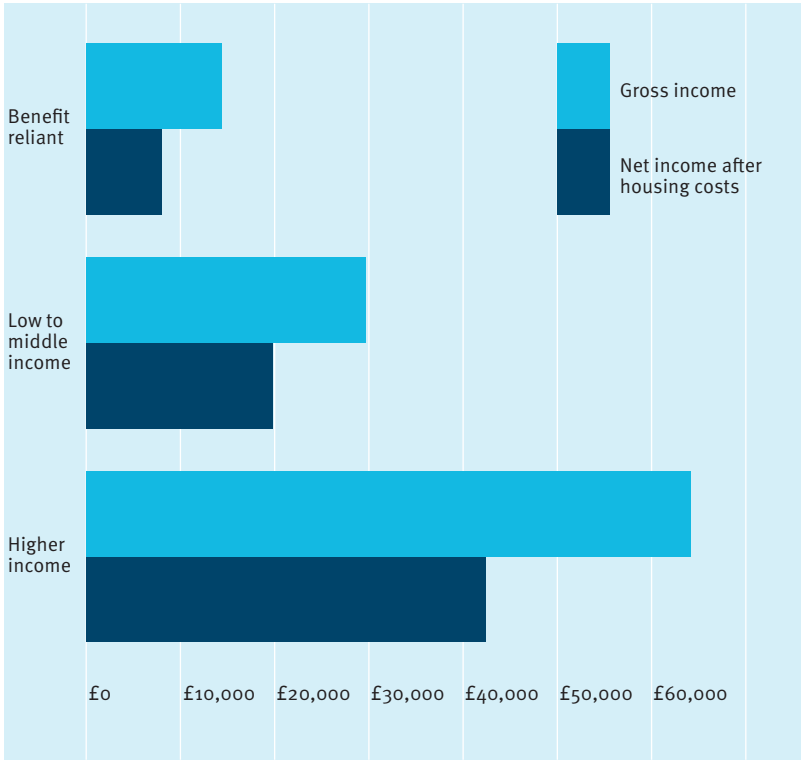
The average gross LMI household income in 2019 was £29,640 and their average disposable income was £19,760 after housing costs. This is below the median gross income for working age adults (£42,640), and under half the average gross household income and disposable income for higher income households, which is £64,116 and £42,432 respectively.

In real terms, LMI household incomes have fallen over the past decade. Alongside rising housing costs, this has suppressed their ability to save. Forty four per cent of LMI families have total savings and financial assets of less than £5,000, compared to 28 per cent of higher income households.

“They have been disproportionately affected by the rise in the cost of living.”

As a proportion of their average expenditure, 31 per cent is spent on just two categories: housing, water, and energy (17 per cent) and transport (14 per cent). Proportionally, this is more than higher income households’ expenditure on these areas (26 per cent). Since LMI households spend more on housing and transport, they have been disproportionately affected by the rise in the cost of living.

Annual household income[20]



Vehicles and homes

Actions to help low and middle income households benefit from the net zero transition

Electric vehicles

> “It is more expensive to finance an EV than a petrol or diesel vehicle.”

Transport is the largest emitting sector in the UK, responsible for 31 per cent of the country’s CO_2 emissions.[21] To meet reduction targets, these emission will need to fall by 70 per cent by 2035, with total car miles falling by about a tenth. Sales of electric vehicles will need to grow rapidly to 100 per cent by 2030.

Government strategy to increase electric vehicle uptake

To increase uptake of EVs, successive governments have focused on boosting supply and demand.

To increase supply, the government has made two significant policy interventions. First, it set a phase out date for the sale of new petrol and diesel cars and vans in 2030. Second, it is introducing a Zero Emission Vehicle (ZEV) mandate from 2024 requiring manufacturers to sell an increasing number of electric vehicles as a share of their overall UK sales.

To increase demand, the government has offered consumers a plug-in car grant (PiCG) to partially cover the cost of an EV. The PiCG provided 35 per cent of a car’s purchase price, up to £1,500, for a new car under £32,000. The scheme closed for cars in 2022 and is now offered for other road vehicles instead.[22] There is also support through the electric vehicle chargepoint grant, which cover 75 per cent of the cost to buy and install a chargepoint (up to £350) for flat owners.

Benefit-in-kind taxation is another incentive. The UK has a tax rate which increases based on car emissions.[23] Low benefit-in-kind tax rates offer lower income households a means to affordably finance a new EV. British Vehicle Rental and Leasing Association data reveals that 60 per cent of those using a salary sacrifice to finance the purchase of an

EV are lower rate taxpayers. Eighty per cent of them would not have opted for an EV without the scheme.[24]

The introduction, in the 2022 autumn statement, of vehicle excise duty (VED) on EVs from 2025 could have a negative impact on demand. Whilst this move was inevitable, the government did not also introduce new levies on polluting diesel vehicles to keep the differential proportionate. As a result, some diesel cars purchased between 2001 and 2017 will be taxed £145 less a year than EVs from 2026.[25]

> “With stagnant wages and limited savings, they are priced out of owning EVs.”

Overall, however, government measures have quickly increased the uptake of EVs, outstripping the OBR’s forecasts.[26]

Barriers to LMI households owning an electric vehicle

LMI households face three major barriers to purchasing or leasing electric cars: continued high cost, a limited second hand market and inconsistent charging infrastructure.

1. Cost

With stagnant wages and limited savings, they are priced out of owning EVs. A typical model is approximately 35 per cent more expensive than a petrol or diesel car, with a limited choice of models under £30,000.[27,28] Yet, over the past decade, upfront cost has fallen as the market has grown. Transport & Environment expects they will reach price parity in the mid-2020s.[29]

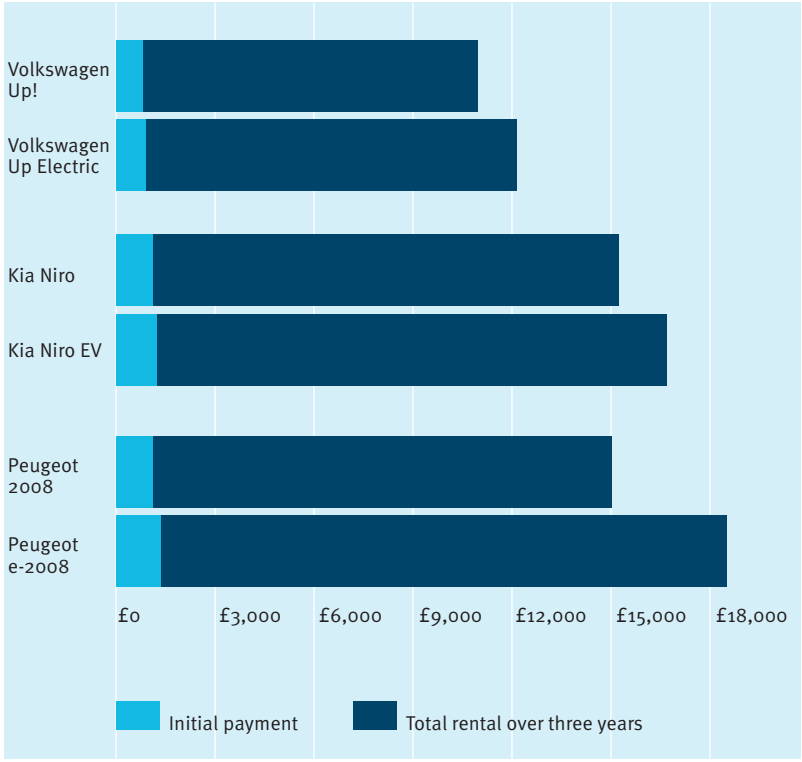
FairCharge’s survey of 2,000 new car buyers found that all of them would choose either an all-electric car (47 per cent) or a plug-in hybrid (53 per cent) over a conventional petrol or diesel car, if upfront costs and access to charging were equivalent.[30] However, considering that 94 per cent of new cars and 32 per cent of used cars are bought with consumer finance, reaching finance price parity is also vital for broadening uptake.[31]

Currently, it is more expensive to finance an EV (see below) than a petrol or diesel vehicle. This is largely because of the expected resale value at end of financing agreement (the residual price). Lenders also make more cautious assumptions about the future residual value of EVs because there is less information on the second hand market, and the

rapid pace of innovation means models go out of date fast, while higher initial prices means higher monthly payments.[32]

Leasing costs: EVs vs petrol vehicles[33]

EV vs petrol leasing costs



The cost of financing used electric vehicles is not much more appealing either, as interest rates for second and third hand cars are typically higher because of their lower value, higher potential of mechanical issues than new vehicles and a customer base with higher credit risk.[34]

2. A limited second hand market

LMI households more often opt for second or third hand cars, spending up to twice as much purchasing and leasing used cars than new cars.[35]

On a total cost of ownership basis, Green Alliance research from May 2021 showed that the owner of a second hand EV

could save between £700 to £2,300, compared to a diesel or petrol equivalent. Savings are even higher for third hand vehicles, with lower costs estimated at between £3,500 and £5,600, largely from lower fuel and maintenance costs.[36]

The CCC estimates that just under half of the cars on the road in 2035 will still be petrol or diesel. Without policy change, it is likely that these will be owned by LMI households, who will be stuck with polluting, more expensive to run vehicles. Since lower income households depend on the used car market, achieving a wider rollout of EVs relies on boosting new sales, to provide a steady flow of used models over time.

> “Whilst the UK has progressed on charging infrastructure, there are still large regional disparities.”

3. Inconsistent charging infrastructure

Unevenly distributed charging infrastructure and practicalities, such as parking, also prevent LMI households buying EVs.

Whilst the UK has progressed on charging infrastructure, there are still large regional disparities. London has 122 chargepoints per 100,000 people, Scotland 60 and the South East 49.[37] Whereas LMI household dominant regions have fewer: Yorkshire and the Humber has 33, Wales 39, the North West 30, and Northern Ireland 18 per 100,000 people.

The government’s electric vehicle infrastructure strategy estimates that 300,000 public chargepoints are needed by 2030, ten times the current amount.[38] Whilst the strategy committed £500 million in capital funding to local authorities, they lack the resources to develop plans, perpetuating the postcode lottery in access.

The other major issue is the discrepancy between the cost of public and private charging. VAT is levied on home electricity at five per cent but is charged at 20 per cent on the public network. This means households with off-street parking – which tend to be those on higher incomes – can access the financial benefits of cheaper electric car charging, whilst those who have to rely on street chargepoints lose out.

Analysis carried out in March 2022 found that using private chargepoints could mean annual fuel equivalent costs falling from £1,100 (for a petrol car) to £389 for an EV, or £139 with cheaper overnight tariffs.[39] Costs are significantly

higher when using public charging and can range between £480 to £1,000, depending on the operator. Savings on running costs have since narrowed as electricity prices have risen and petrol and diesel prices have fallen.

Recommendations on electric vehicles

> “Achieving mass uptake of EVs is dependent on creating a viable second and third hand market.”

In 2019, 75 per cent of all cars sold in the UK were used cars.[40] Achieving mass uptake of EVs, therefore, is dependent on creating a viable second and third hand market. The best way to do this is to boost new EV sales, which will then filter down into the used car market, at which point they will be more affordable to lower income households. The government can do this in the following ways:

1. Make financing cheaper and simpler

Financing an EV is complex and expensive. Reforming the Consumer Credit Act, which underpins transactions, can support lenders to offer consumers bundled finance packages. For example, offering a vehicle, chargepoint and energy tariff together in single monthly payment package. This would simplify the process and allow consumers to compare offers more easily.

Allowing rental and leasing companies to access the more generous parts of the capital allowance regime, such as super-deductions, would allow savings to be passed on to consumers via cheaper EV financing. Increasing the write down allowance rate to 100 per cent, for example, would result in a £35 a month reduction in rentals for a typical EV on a four year lease.[41]

2. Support the sale of second hand electric vehicles

As it takes time for EVs to enter the second and third hand market, used models are expected to reach price parity later than new ones. Ensuring LMI households can afford used EVs when they become available is necessary so that demand keeps up with supply, otherwise this will affect future residual values and the sale of new cars.[42]

The UK should follow the example of other countries in supporting lower income households to purchase used EVs. In the US, the new Inflation Reduction Act provides a used EV tax credit worth $4,000 or 30 per cent of the sale price

(whichever is less) for those on lower and middle incomes.[43] France also offers a €1,000 grant for used EVs, which can be used in combination with a scrappage subsidy (€2,500 to €5,000 depending on income) for old petrol and diesel vehicles. In addition, France is launching a 'social leasing' scheme from 2024, which will offer lower income households an EV for €100 a month.[44]

> "France is launching a 'social leasing' scheme from 2024, which will offer lower income households an EV for €100 a month."

3. Fix inconsistent charging infrastructure

The clean air fund is administered by central government on a needs based approach, supporting those local authorities with the worst air pollution to rectify the issue.

Charging infrastructure should follow the same route, so that the worst areas for public transport with the least chargepoints are prioritised for finance, rather than targeting areas which should be prioritising improving public transport, walking and cycling facilities. The government could use public assets in these areas to provide more sites for chargepoints, such as hospitals or municipal buildings.

The government can also help those without access to off-street parking by making sure they do not pay more. VAT on public chargepoints should be reduced from 20 per cent to five per cent, in line with VAT on household electricity bills.

Energy efficiency and home heating

> **“By 2030, low carbon heating technologies will need to make up 80 per cent of new heating installations.”**

UK buildings are responsible for 16 per cent of CO_2 emissions, principally from fossil fuel heating.[45]

High emissions from heating are compounded by poor energy efficiency, with the UK having some of the least energy efficient homes in Europe.

The CCC estimates that all rented and owned homes will need to be Energy Performance Certificate (EPC) Band C by 2028 to achieve net zero. In other words, 15 million homes will need loft, wall or floor insulation, and a further eight million will need draughtproofing.

By 2030, low carbon heating technologies – like heat pumps and heat networks – will need to make up 80 per cent of new heating installations.

Government strategy on home energy

On energy efficiency, the government has an aspiration for as many homes as possible to achieve EPC C by 2035 where “practical, cost-effective and affordable”.[46] There is an earlier legislated targeted of 2030 for fuel poor homes, and a consultation for an even sooner date for private rentals.[47]

The government is yet to announce a large scale public funded grant scheme to support households to make energy efficiency upgrades, since the Green Homes Grant scheme was scrapped in March 2021. Low income and vulnerable households can access upgrades through the Energy Company Obligation (ECO) scheme. Under this, energy suppliers provide improvements, such as, heating system upgrades, insulation or draughtproofing, to low income and low energy efficiency households, with the cost recovered through energy bills.[48] One and a half billion pounds has also been allocated for the Social Housing Decarbonisation

Fund, which funds upgrades for those living in social housing with an EPC rating of D or worse.[49]

The government will launch a new £1 billion ECO+ scheme in April 2023, offering grants of up to £1,500 to those in the least energy efficient homes and in lower Council Tax bands to make improvements. The scheme is intended to target those not currently benefiting from other government support.[50]

> “Many LMI households struggle to afford the upfront cost of installing energy efficiency measures.”

On low carbon heating, there is an ambition to phase out new gas boilers by 2035.[51] The government has also set a target to scale up heat pump installations to at least 600,000 a year by 2028.[52]

To help reach this target, the Boiler Upgrade Scheme will provide grants of £5,000 (for an air source heat pump) or £6,000 (for a ground source heat pump) to support 90,000 households.[53] The government also intends to introduce a low carbon heat market-based mechanism which, similar to the ZEV mandate, would require manufacturers and energy suppliers to sell and install an increasing proportion of low carbon heating appliances.[54]

Barriers to LMI households achieving low carbon, energy efficient homes

The two barriers faced by LMI households are the upfront cost and exclusion from existing schemes.

1. Cost

With savings and financial assets of less than £5,000, many of them struggle to afford the upfront cost of installing energy efficiency measures.

Costs vary considerably by property, location and consumer preference. External wall insulation, for example, ranges from £7,100 to £15,000 whilst double glazing costs in the region of £3,900 to £10,700.[55] Overall, though, the CCC estimates that, whilst the average total investment cost per household is less than £10,000, two thirds of UK homes only need to spend under £1,000 to reach EPC C.[56]

Based on the current unit price for gas (10.33p per kWh) and electricity (34.04 per kWh) under the Energy Price Guarantee (EPG), we calculate that LMI households would see average

savings of £306 a year if all their homes were upgraded to a minimum EPC C. Total savings in England would be almost £600 million a year.

Beyond April 2023, when the fixed unit price for gas and electricity will rise, LMI households living in energy efficient homes can expect to see greater energy bill savings than this. Although more energy efficient homes can save considerable amounts while energy prices remain high, long payback periods on some measures means that savings might mostly benefit the home's next occupiers.

> "If all LMI households were to upgrade their home to EPC C, total savings in England would be almost £600 million a year."

The average cost of installing an air source heat pump ranges from £7,000 to £13,000 whilst a typical ground source heat pump costs around £24,000.[57,58] Heat pumps also operate at higher efficiencies at low flow temperatures, meaning they are more effective and cheaper to run in more energy efficient homes.

Despite being three to four times more efficient than conventional gas boilers, heat pumps are still expensive on a lifetime basis at between £450 to £770 a year more depending on property type.[59] A major reason for this is that electricity prices are higher than gas prices. [60] This is largely because of how energy is priced. Whilst most electricity is now generated from clean and cheap renewable energy sources, its wholesale price is set by global gas markets. On top of this, environmental and social costs (£153 of Ofgem's October default tariff cap) have historically been levied on electricity bills, rather than gas bills.

The price of electricity relative to gas, over the long term, will determine whether heat pump running costs come down. Under the EPG, the ratio of electricity to gas prices is 3.3, compared to over 5 in 2021. Therefore, from October 2022, an efficient heat pump has similar running costs to an efficient gas boiler.[61]

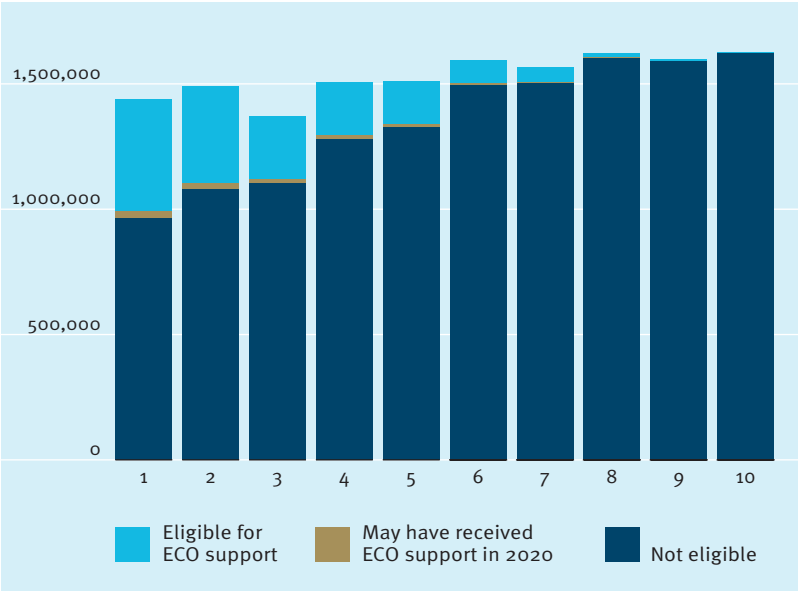
2. Exclusion from existing schemes

To date, the government has targeted its low carbon heating and energy efficiency policies at the wealthiest and the poorest, ie at the early adopters who can afford the upfront costs and will help to prime the market, and those who definitely cannot afford the upfront cost.

> **“Because of their income status, LMI households are largely ineligible for ECO scheme support.”**

The ECO scheme, for example, has provided £1 billion a year and saved the lowest income households £17.5 billion in total on lifetime energy bills since 2013.[62] But, because of their income status, LMI households are largely ineligible for ECO scheme support. In fact, 81 per cent of households with below average income, with homes rated D or worse, are not covered.[63] Whilst ECO+ broadens coverage to LMI households, £1 billion of funding over the next three years will only support a limited number of households. There are 1.9 million LMI households in England alone living in homes rated EPC D or worse.

Homes rated EPC D or worse eligible for ECO support, by income decile[64]



LMI households are also unlikely to benefit from initiatives like the Boiler Upgrade Scheme as the scale of the grant offered is insufficient to attract them. A £5,000 grant still leaves a bill of £2,000 to £8,000 to pay for an air source heat pump.

Without sufficient, targeted support they risk being stuck with the high and fluctuating cost of fossil fuel heating systems in inefficient housing stock. Those households slow to disconnect from gas might also be left paying an increasing proportion of gas transmission and distribution network costs as others move away from gas to heat pumps.[65]

Recommendations on home energy

Upgrading energy efficiency and heating systems will not only cut household energy bills, reducing wasted energy, but also make homes more comfortable to live in all year round. Increasing from an EPC G to EPC A or B rating can also increase property prices by up to 14 per cent. Regionally, the greatest potential increases are to be found in the North East.[66]

More help with upfront costs, better access to affordable finance and more public financial support will help many more LMI households shift to cheaper, more energy efficient, comfortable living.

> **“Minimum standards will be an incentive for homeowners and landlords to upgrade properties.”**

Energy efficiency

Regulate the private rented and owner occupier sector

The government should commit to a minimum energy efficiency standard of EPC C sooner than 2028 for private rented properties. Private rental homes are some of the coldest and most draughty in the country. The government should follow this with an EPC C target for all tenures of housing, at the point of sale, by 2030.

Minimum standards will be an incentive for homeowners and landlords to upgrade properties and will give confidence to manufacturers, installers and lenders that there is demand for their services.

This will have to be balanced with government support to ensure those who cannot afford to upgrade by the deadline do not become ‘mortgage prisoners’, unable to sell their homes or get another mortgage.

Reduce the cost of retrofit

Eighty eight per cent of people think home energy efficiency is important. Despite this, only 20 per cent are likely to use finance products to fund upgrades.[67] For many, existing financial products are unappealing because of high interest rates and added risk, or because they are inaccessible due to credit ratings or debt.

> “Stamp duty should reflect a property’s energy efficiency.”

The government should encourage the market to offer more attractive financial products like green mortgages, which release equity from homes to fund energy efficiency upgrades. And it should make financing cheaper through a programme of targeted, concessional loans to homeowners. Unlike the failed Green Deal scheme, where fixed terms and high interest rates were off-putting, these should be guaranteed and fixed at lower than the current interest rate. Loans at no interest could be administered by the UK Infrastructure Bank and channelled to consumers through retail banks, who are known and trusted. This follows a successful model in Germany underpinned by the state run KfW bank.

Green financial products will not be suitable for all households, particularly in properties at the lower end of the price bracket. For these, the government should provide other types of support, such as means tested grants and subsidies to bring down the cost of energy efficiency retrofitting.

Provide financial incentives for energy saving

Recent cuts to VAT on energy efficiency measures will help but changes to property taxes could also stimulate a higher rate of energy efficiency improvements by rewarding homeowners who upgrade.

Stamp duty should reflect a property’s energy efficiency, encouraging homeowners to invest in retrofitting measures. An effective but small tweak to the tax, as described by the UK Green Building Council, could introduce a price differential whilst remaining revenue neutral to Treasury.[68] It could be calculated in the usual way and then adjusted up, by a maximum of three per cent, for the least efficient homes, or down by a maximum of three per cent for the most efficient. The final payment would be finalised two years after purchase to enable home buyers to install upgrades and reduce their tax liability. This small adjustment would not be enough to prevent a sale going through but would still reward investment.

Home heating

Increase financial support for heat pump installation

The strongest factor influencing whether to install a heat pump is the initial cost of installation.[69] The Boiler Upgrade Scheme helps some households to cover part of this. However, it only targets 90,000 households and the scale of the grant is insufficient to encourage those worse off to switch. The government should offer means tested grants, such as £10,000, to lower income households to install heat pumps.

> “The government should offer means tested grants to lower income households to install heat pumps.”

Make heat pumps cheaper to run

Fifty five per cent of the total lifetime cost of a heat pump is running cost.[70] Reducing this means cutting the price of electricity. The government has announced it will move environment and social costs away from energy bills throughout the duration of the EPG. This makes heat pumps cheaper to run and more competitive, and is a fairer way to distribute costs, as those on lower incomes spend proportionately more of their income on energy than higher income households. [71]

The government could extend this change over the medium term, beyond the term of the EPG. When and if wholesale gas prices have stabilised, and all sections of society have appropriate incentives to switch to heat pumps, the policy costs should move from general taxation onto gas bills.

> “The Future Homes Standard should be brought forward to 2023.”

Regulate new builds

The Future Homes Standard, which will ensure all new homes are built with high energy efficiency and low carbon heating, will not be introduced until 2025. This delay is a bad deal for anyone purchasing a new home who will have to retrofit it in future, rather than housing developers taking that responsibility now.

According to the CCC, building an energy efficient home with low carbon heating at the outset costs in the region of £1,300 to £6,900 more, increasing a developer’s costs by 1.1 to 4.3 per cent. The cost of fitting it later is five times more.[72]

The Future Homes Standard should be brought forward to 2023. Installing heat pumps in as many new builds as possible would stimulate the market and bring down costs for everyone. Any grid capacity issues that arise around new developments can be mitigated with other measures, like adequate battery storage and smart controls.

Endnotes

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