

Losing energy

How have households across the country responded to fuel-price shocks?

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The huge rise in energy prices following Russia's invasion of Ukraine has forced families to adjust to a new reality of high energy prices. Indeed, while energy use has fallen by over a quarter since 2010, just over a third of that has come in just two years – 2022 and 2023, when energy prices soared. But the process of cutting back on energy use has not happened evenly across the country. So in this spotlight we look at how it has varied across neighbourhoods.

What is clear is that cutbacks have been broad-based. The vast majority of neighbourhoods (79 per cent) reduced gas use by at least 10 per cent and electricity use by at least 5 per cent in 2022. Neighbourhoods in the north of England and in Wales cut use the most, but all regions saw substantial falls – even London, the region economising least. But there are key differences. Places where poor and rich families lived responded differently. At the height of the crisis, the richest neighbourhoods reduced electricity use by almost two thirds more than the poorest, but turned the heating off 15 per cent less. Even after controlling for other factors, income was still the most important predictor of greater gas use reductions, closely followed by temperature and poor energy efficiency, with colder, leakier places seeing sharper falls.

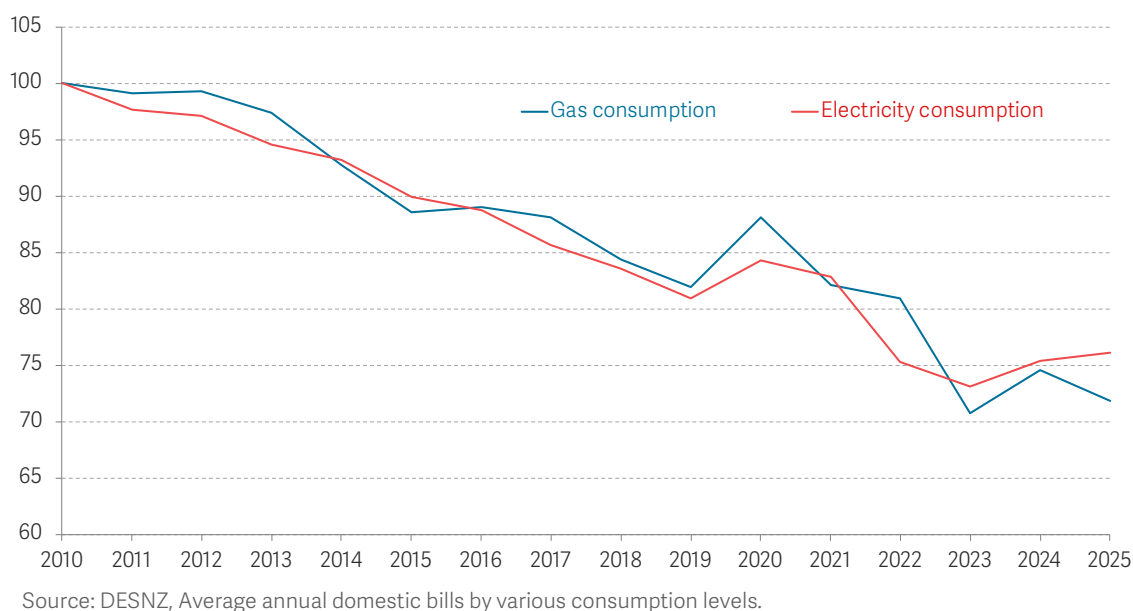
This pattern comes on top of large gaps that already exist between gas use in the poorest tenth of neighbourhoods and the richest, which total 2,500kWh (over a quarter of the typical household's consumption), even after controlling for other characteristics. This suggests poorer places could be cutting back more despite having less room to cut. This distributional pattern supports the idea that any additional support for energy costs this winter must be targeted. And, although the Government's recent VAT cut on electricity will provide some welcome support with bills, and is consistent with our net zero ambitions, our analysis suggests that policy makers should be particularly attentive to further rises in already high gas prices given the risks of underconsumption in poorer places.

Household energy consumption has been in decline since the early 2000s, dropping by more than a quarter since 2010 (see Figure 1). This is reflected in Ofgem’s recent [reduction](#) in the typical domestic consumption values (TDCVs) used to calculate the typical bill in price caps: as of July, Ofgem now says the typical household uses 9,500kWh of gas, down 17 per cent from its previous 11,500kWh level, and 2,500kWh of electricity, down 7 per cent from 2,700kWh.

Figure 1

Energy use has been trending down but accelerated in the gas crisis

Index of mean gas and electricity consumption, temperature adjusted (2010 = 100): UK



Falling use this decade is largely a product of the gas crisis

Ofgem’s decision reflects a trend that has been in place for a while, but this latest adjustment – the [first to consider evidence from after the gas crisis](#) – follows a substantial acceleration of the trend in the early 2020s. In fact, falling energy use this decade can largely be attributed to a two-year period, 2022 to 2023, which accounts for over a third (36 per cent) of the fall in electricity consumption and almost two-fifths (39 per cent) of the fall in gas consumption experienced since 2010. The decline in energy use in that period is equivalent to saving £228 a year, on average, at today’s prices.

The main driver of lower use in 2022 was the rising cost of energy. The typical household energy bill in 2022 was 62 per cent higher than in 2021, owing to huge spikes in wholesale gas prices following Russia’s invasion of Ukraine. In 2022, bills rose twice as much as they had from the first price cap in 2017 to the eve of the crisis in early 2022. That rise would have been substantially higher had the Government not intervened by [capping bills with the Energy Price Guarantee](#) from October 2022.¹

It’s possible that higher prices weren’t the only cause. As Figure 1 shows, there was a sharp spike up in household energy use in 2020 when people spent much more time at home.

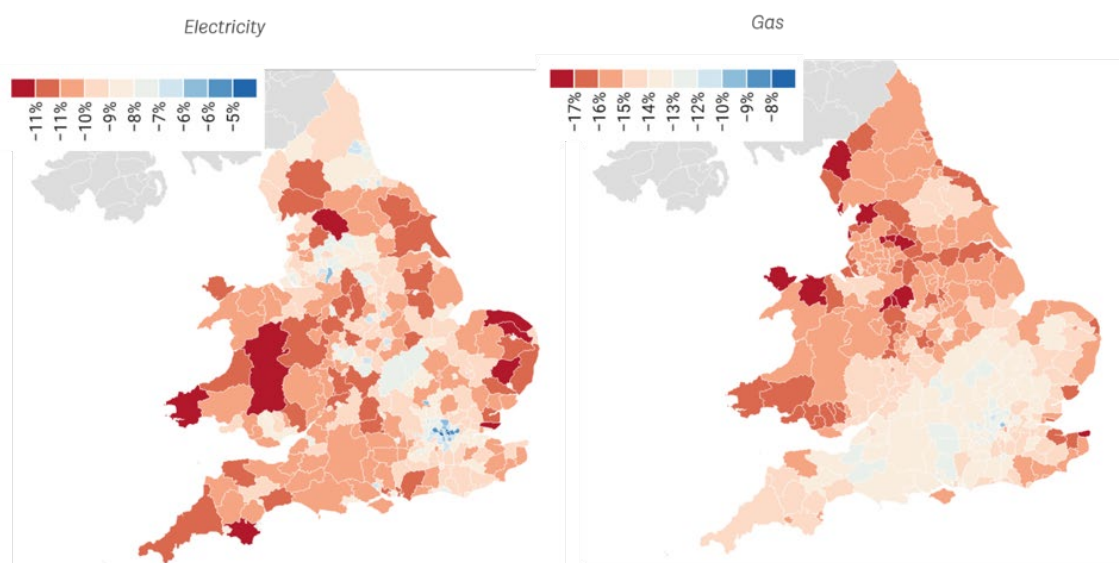
These rises went into reverse in 2021, suggesting that the ending of Covid restrictions don't play much role in explaining the subsequent sharp decline in energy use. Over a longer period, falling use reflects increases in energy efficiency for boilers and appliances and the growing popularity of home generation.²

As continued volatility in the Middle East risks a repeat of the price spike earlier this decade – already set to [push prices up again slightly in October](#), with bills expected to end up 16 per cent higher than they were at their lowest between April and June this year– it's worth exploring exactly who and where responds most to these price shocks. So in this spotlight we look at how responses to the crisis varied across neighbourhoods, using [granular regional data on median energy use](#) in 'lower super output areas' (LSOAs), a geography comprising 400 to 1,200 households. This data allows to identify demographic determinants of whose behaviour could change most this winter if prices rise.³

Energy use fell everywhere in 2022 – but there are some differences

Before digging into patterns across neighbourhoods, it is worth looking at the trends across the regions and nations of the UK. Figure 2 shows reductions in median household gas and electricity consumption by local authority between 2021 and 2022.⁴ Due to the way the data was collected, gas and electricity consumption cover slightly different periods: the 2022 gas data covers mid-May 2022 to mid-May 2023, while the electricity data covers 31 January 2022 to 30 January 2023. Using these date ranges, the steepest falls for both fuels were between 2021 and 2022 (rather than in 2023, as shown in Figure 1).

Figure 2 **During the gas crisis energy use fell sharply pretty much everywhere**
Changes in use of electricity (left panel) and gas (right panel) by local authority: 2021-2022, England and Wales



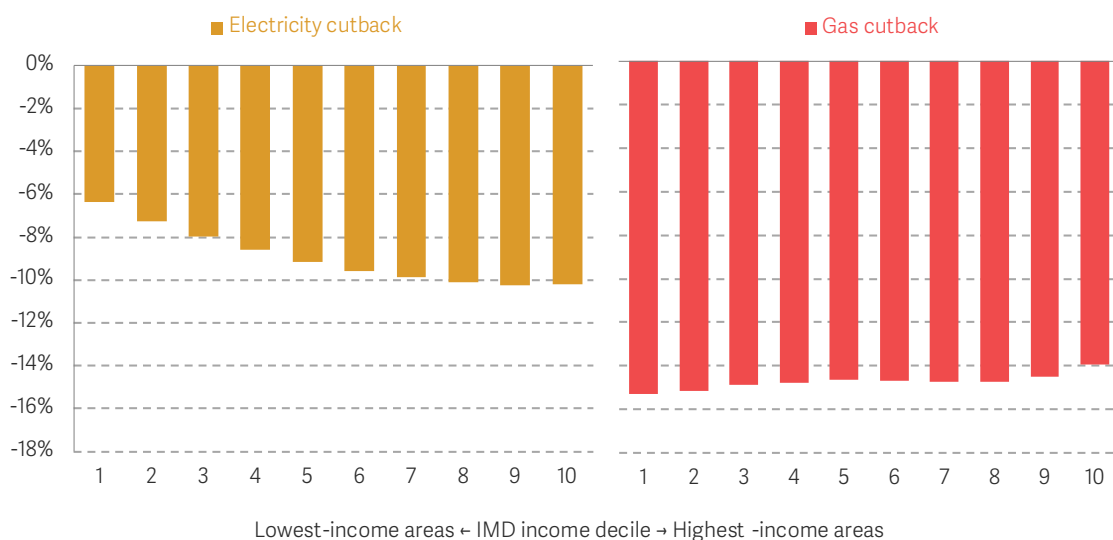
Notes: Gas consumption is temperature adjusted and covers mid-May to mid-May; electricity consumption is not temperature adjusted and covers 31 January to 30 January, so the two panels are not directly comparable.
Source: DESNZ, Subnational electricity and gas consumption, 2026.

There are clear differences across the country. Areas in Wales and the north of England cut back more on gas more than those in the south. More rural regions seem to have been those that economised most on electricity. But there were no places where energy use did not fall substantially in 2022: even in London, which economised the least, gas use fell by 13 per cent and electricity by 7 per cent.

Wealthier areas saved on bills by cutting back on electricity, whilst lower- income areas looked to gas

But, although the decline in energy use was seen around the country, there are still differences. Zooming in on neighbourhoods and looking at how usage varies by income (as ranked by the [index of multiple deprivation](#), or IMD) reveals substantial differences in energy consumption behaviour by demographic characteristics.⁵ Here, it might have been reasonable to expect poorer places to have economised more. But Figure 3 shows that this story differs by type of fuel. In the period we focus on, electricity unit prices rose by 48 per cent but gas unit prices by 110 per cent. As a result, gas use fell more steeply for all groups, but the balance between the fuels was uneven between richer and poorer places. Figure 3 shows that during the period in which electricity use fell most sharply (January 2022 to January 2023), the wealthiest places cut back on electricity use by almost two-thirds more than the lowest income areas. In the period in which gas use fell most precipitously (May 2022 to May 2023), the richest turned the heating off 15 per cent less.

Figure 3 **Rich places cut back more on electricity, poorer places more on gas**
Reduction in LSOA-level median electricity and gas consumption, by IMD income domain decile: 2021 to 2022, England and Wales



Notes: Gas and electricity are shown in separate panels and are not directly comparable: gas consumption is temperature adjusted and covers mid-May to mid-May, while electricity consumption is not temperature adjusted and covers 31 January to 30 January.

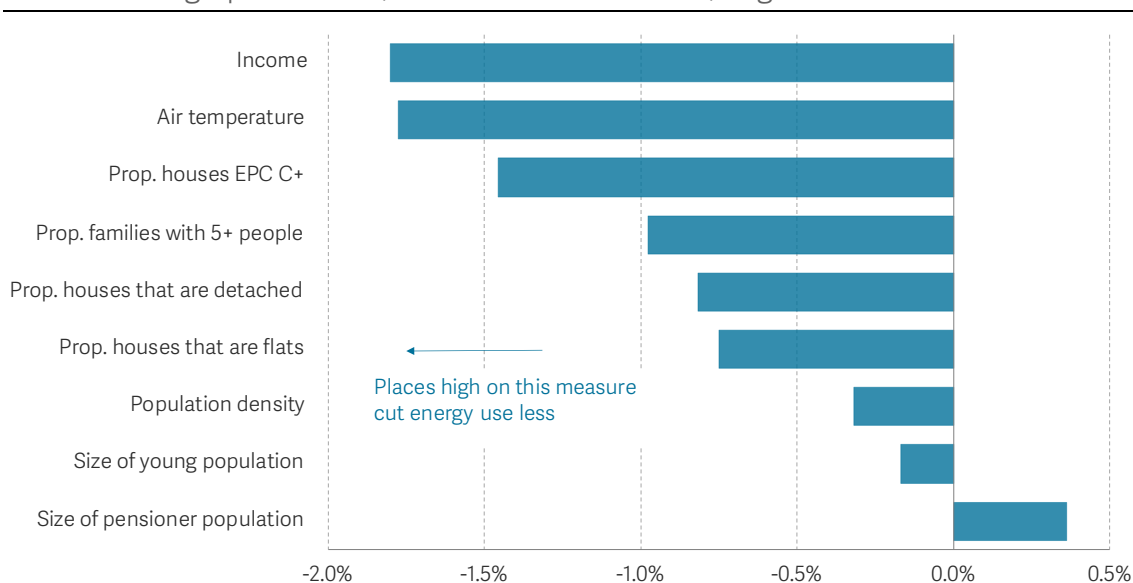
Source: DESNZ, Subnational electricity and gas consumption, 2026.

It is plausible that richer families simply have greater access to electricity intensive tech to turn off – while many poorer families have already stripped back to essential use of electricity in cooking, lighting, and laundry. For example, [80 per cent of the richest tenth of households owned a dishwasher, compared to just 27 per cent for the poorest tenth](#).⁶ All households, however, can turn the heating off and stay colder for longer.

Income and local air temperature were the largest determining factors in how an area reduced their consumption

It could be that this trend is well explained by other aspects of poorer places – such as the types of houses, their age profiles or urban density. Figure 4, therefore, shows how well an LSOA's ranking on various characteristics that relate to energy use predict the reductions in gas consumption. The figure shows the difference in the size of the reduction in gas use if we compare LSOAs at the 10th percentile and 90th percentile of a given characteristic, holding all other characteristics equal (this is calculated by regressing an area's reduction in gas consumption against its relative ranking on a variety of demographic characteristics).

Figure 4 **Poorer and colder places cut gas use more**
Change in gas cutback at the 90th percentile compared to the 10th percentile for various demographic factors, with controls: 2021-2022, England and Wales



Notes: Variables controlled against each other: income, proportion of pensioners, middle aged, and younger populations, population density, annual average air temperature by LSOA, proportion of large, medium, and small household sizes.

Source: DESNZ, Subnational electricity and gas consumption, 2026; Census, Various demographic characteristics, 2022; MHCLG, Index of multiple deprivation 2019; DESNZ, Energy efficiency statistics; Met office, HadUK-Grid.

The one positive value in the chart tells us that areas that have a high number of pensioner households cut their gas use by more than areas with few. For the other characteristics, the negative values mean that areas ranked near the bottom of these distributions cut back by more than those near the top, with the size of the negative bar indicating a stronger relationship. Overall, income was quantitatively the largest factor in predicting the size of gas use reductions, closely followed by temperature and poor energy efficiency. An LSOA at the

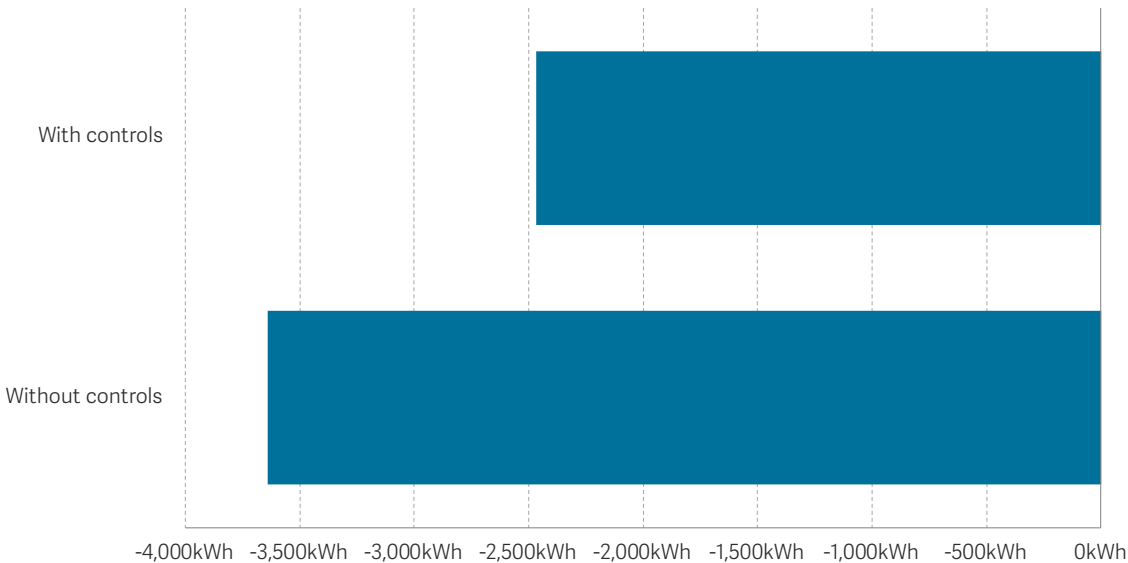
10th percentile of income or local temperatures cut gas 1.8 percentage points more than one at the 90th percentile. The analysis shows that the types of places forced to turn their heating off most by the 2022 crisis were those that are poor, cold, and have a leaky housing stock. For example, the local authority which adjusted energy use least was the City of London – a place that is distinctly wealthy and warm.

Poorer areas continue to use substantially less gas than the wealthiest 10 per cent

We can also see how energy use changed through to 2024, two years on from the crisis. The worst of the crisis is over, with prices almost one-third lower than their peak by the end of 2024 in real terms. But consumption has not substantially recovered: only one-sixth of the cuts in gas consumption made by the poorest places had been reversed by 2024. Across rich and poor places, electricity consumption has settled at a new lower level.

Poorer places economising more on gas matters when they already look to be at risk of consuming less energy than needed. As Figure 5 shows, even after controlling for key energy use determinants such as housing type, insulation levels and demographic factors, the gap in gas use between the poorest tenth and richest tenth of areas was still 2,500 kWh. This is equivalent to more than a quarter of typical consumption (of 9,500 kWh), a staggering difference. Previous work has shown that differences in energy need (that is, the energy required to maintain a given standard of welfare, based on family size and property type) between income groups are [comparatively modest](#). This suggests that poorer places are consuming a lot less already than would be deemed comfortable, and that if further reductions were to come after another price spike, then are unlikely to be painless.

Figure 5 **Poorer places are still left using a lot less gas than richer places**
Gap in median gas use between the tenth poorest and richest LSOAs, with and without controls: 2024, England and Wales



Notes: Income is regressed against median gas use by LSOA, with controls including types of houses, age profiles, regional temperatures, household sizes, energy efficiency ratings, and population density.
Source: DESNZ, Subnational electricity and gas consumption, 2026; Census, Various demographic characteristics; MHCLG, Index of multiple deprivation; DESNZ, Energy efficiency statistics.

Future support should target income

Looking ahead to winter and the possibility of more gas price pain for UK households, our analysis provides strong support for the idea that any new measures should be targeted by income. Those who sit at the juncture of already-depressed energy use and price-sensitive energy demand are most in need of help to avoid the risk of underconsumption, which poses [substantial risks to health and causes significant hardship](#). This is another reason to think that targeting support by income is the way forward (explored in more detail [here](#)). So, although the Government's recent VAT cut on electricity will provide some help with bills, and is consistent with our net zero ambitions, the evidence presented here suggests that it is high gas prices that create the biggest underconsumption risk for poorer places.

¹ Other forms of bill support were provided, such as the Energy Bill Support Scheme which provided a flat £400 discount to most households' electricity bills, but these did not change the price of electricity, offered no incentive to increase consumption and thus are not included in the calculation of how bills changed.

² In 2022 only 64,000 houses received energy efficiency measures from the government's flagship insulation scheme ECO, the median energy efficiency score increased by just 1 point (from 66 to 67), the share of boilers that are condensing (and therefore more efficient) rose by 2 percentage points, and only another 0.5 per cent of households installed solar panels. It is hard to believe that changes of this magnitude can drive down median demand as much as happened in 2022.

³ Analysis in this note covers England and Wales only: the neighbourhood-level characteristics used, including the index of multiple deprivation, are not produced on a consistent basis for Scotland and Northern Ireland.

⁴ Gas consumption figures are temperature adjusted to account for weather-driven variations in national consumption between years. Electricity consumption figures are not temperature adjusted. Further details can be found [here](#).

⁵ Analysis in this note uses the 2019 index of multiple deprivation, which is closer to the analysed years than the more recent 2025 index.

⁶ Other possible explanations include use of electric cars and heat pumps, but take-up of these technologies was too low in 2021 and 2022 to explain substantial variations in median usage. Different patterns of electric resistive heating could be a factor, but results would suggest that poorer places see smaller declines in electricity consumption only if electric heating is less common. In fact, electric heating is more common among poorer households.