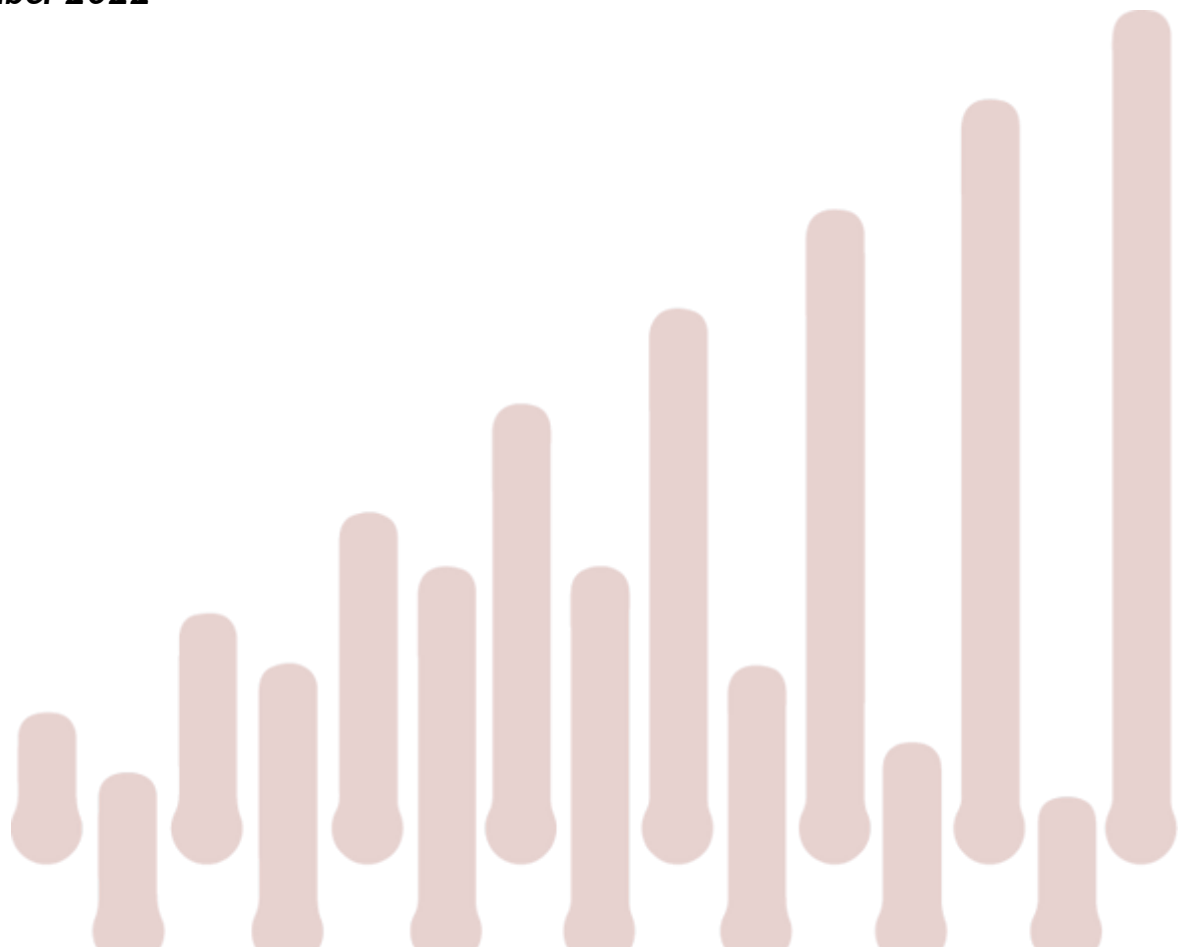


# A 'Variable Energy Price Cap' to Help Solve the Cost-of-Living Crisis

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## OVERVIEW

We suggest transforming the single point Energy Price Cap into a variable price cap where the price per unit of energy used rises with usage (Chadha, 2022). Such a sliding price cap means that marginal user costs increase. The effect would be to reduce energy bills for lower-income households in the country while higher earners, who consume more energy, bear a commensurate share of the higher costs. This could be designed in way that does not require further fiscal spending, thereby presenting a substantially more cost-effective way to cut the energy costs of the poorest compared with freezing all energy bills.

We do not propose eliminating other forms of support for lower-income families who may live in poorly insulated housing or for those who have larger families. We see this as a supplementary policy intervention to those already suggested by NIESR (Bhattacharjee et al., 2022a,b).

Our analysis finds that such a variable price cap:

- Could reduce the bills of the poorest households from nearly £3,000 to around £1,000 per year, a **70 per cent reduction**.
- Would be financed by **raising the cost of energy for those who use it most**, which are richer households that can afford this rise in energy bills in terms of their income and their savings, taking their energy bills from about 2 percent to just 3 per cent of their income.
- Could be a 'revenue neutral' which **would not require further fiscal support** such as extra borrowing or tax rises, unlike other policy ideas such as nationalising energy companies or freezing all energy bills.
- Could also be combined with more fiscal spending to help reduce the energy bills of both lower- and higher-income households.
- Would **incentivise energy saving, especially by higher-income households**, and thereby incorporate a green element into the cost structure.

## INTRODUCTION

The new Prime Minister Liz Truss and her government face a once-in-a-generation escalation in inflation and need to adopt policies that will meet the scale of the cost-of-living crisis and the impact of recession. We set out the case for a 'variable price cap', which would increase the unit cost of energy in proportion to the quantity of energy a household uses.

At the time of writing, support measures are predominantly focussed on general cash transfers. The challenge with this policy option is the time lag in getting 'cash' into the hands of those who need it most and the cost of so doing. Providing subsidies to all households is wasteful but does reflect the difficulty in designing targeted policy intervention when the state is attempting to identify the hardest hit households.

However, the biggest challenge has been the scale of the crisis. With each review of the Energy Price Cap by Ofgem, the subsequent rise has far outweighed existing policy support measures. With a 178 per cent rise in the price cap, from £1,277 in January 2022 to £3,549 planned this October, the size of prospective policy intervention needed to offset this price shock has continued to grow (NIESR, 2022).

NIESR has previously called for more fiscal stimulus, mostly via a substantial uplift of Universal Credit and targeted cash transfers to the 11 million lower-income households (Bhattacharjee et

al., 2022a,b). However, as the crisis has escalated, we suggest an innovation in the price cap. To meet this growing challenge, we propose a variable energy price cap to protect those may be unable to pay their energy bills while minimising the need for larger fiscal spending.

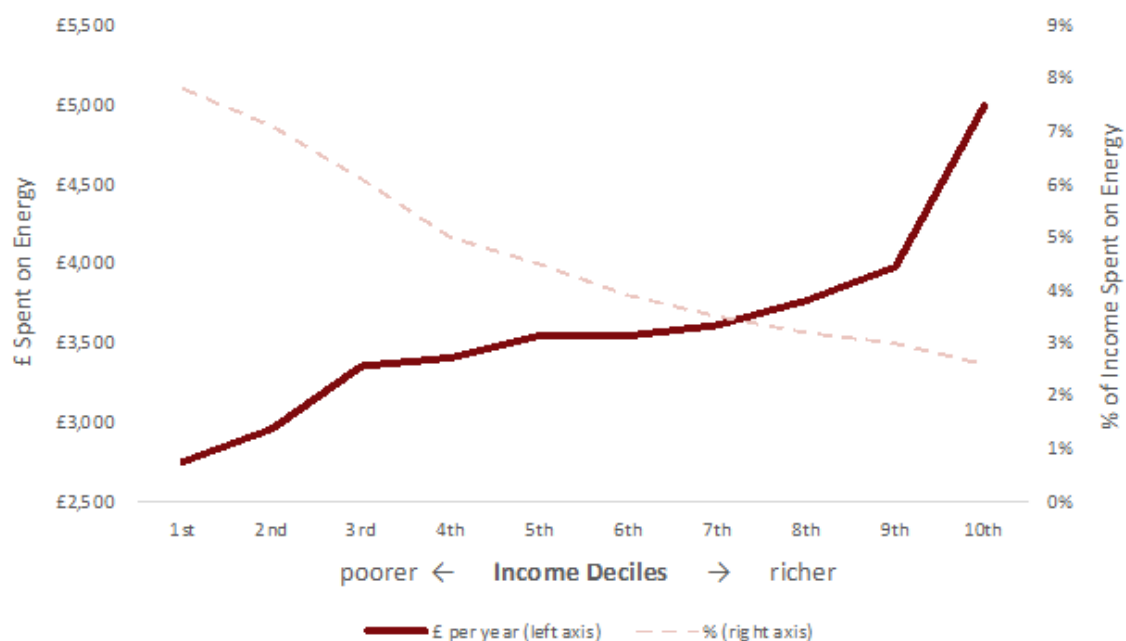
The logic behind this approach is that energy use is strongly correlated with household income. Therefore, making units of energy more expensive for those who use it the most affects higher-income households while making usage cheaper for lower-income households. There is, of course, considerable heterogeneity of energy use within each income bracket, so the variable price cap needs to be supplemented by Universal Credit and targeted cash transfers, so that more help is offered, for example, to low-income household with a large number of dependents in a poorly insulated home.

## PROOF OF CONCEPT

The Living Cost and Food Survey (LCF) allows us to examine the association between income and amount spent on energy bills. Figure 1 displays this association, where the dark continuous line shows the positive relationship between income and energy use and the dashed line the negative relationship between income and proportion of income spent on energy. This illustrates the logic behind increasing the unit price of energy for those who use more of it. And this increasing cost per unit can be used to cross-subsidise the costs of usage for less well-off households.

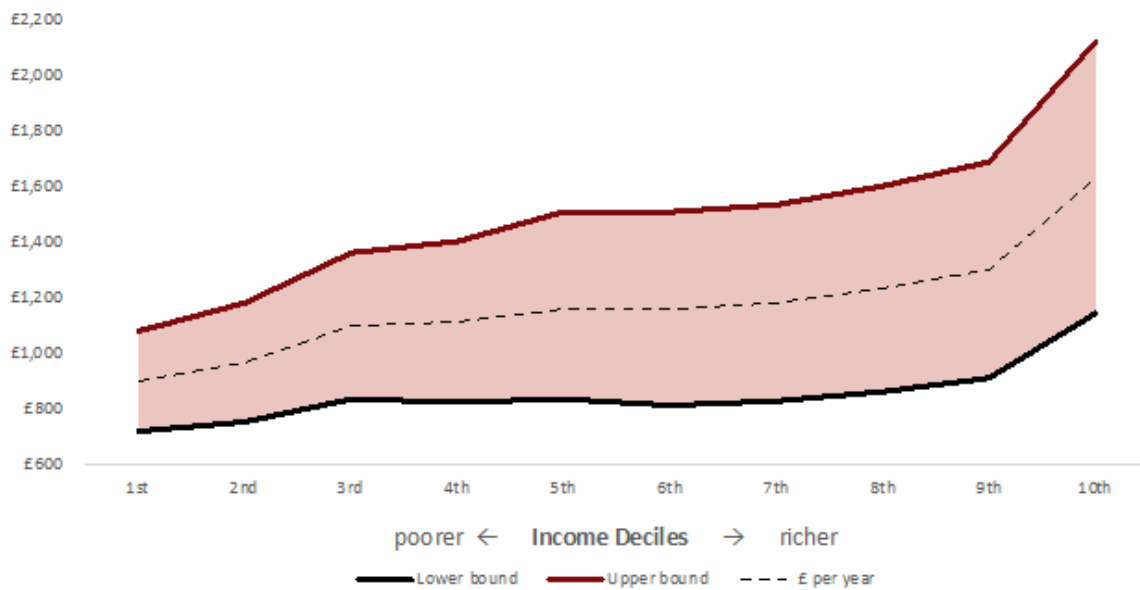
Of course, this is just an average use of energy in each income bracket and as such it masks heterogeneity, particularly for those poor households that use a high amount of energy due to poor insulation or a high number of dependents. We use existing estimates of household energy use by household composition in to estimate the upper and lower bounds of energy from Fig. 1. (JRF, 2022).

**Figure 1: Energy Expenditure by Income**



Source: NIESR Analysis of Living Cost and Food Survey (LCF)

**Figure 2: Variations in Energy Expenditure by Income**



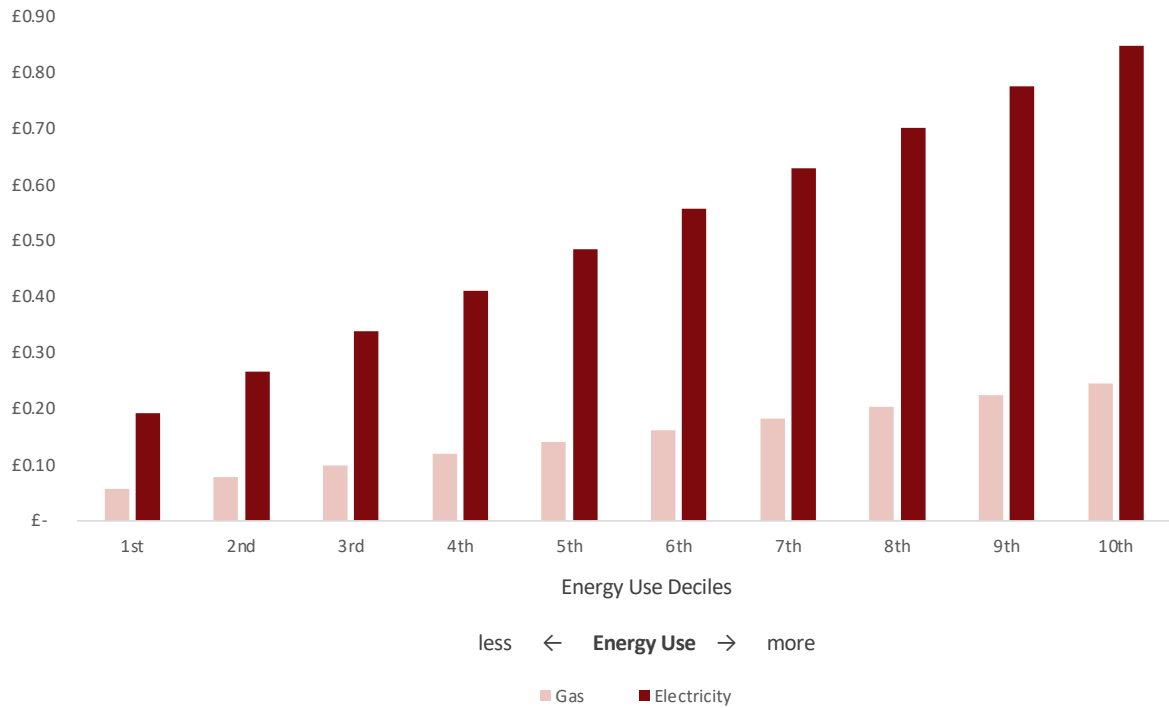
Source: NIESR Analysis of Living Cost and Food Survey (LCF), Joseph Rowntree Foundation (JRF)

We present this distribution at every income decile in Figure 2, which shows an increasing variation as income increases. The key takeaway here is that the upper bound energy cost for the poorest household is beneath the energy use of the typical high-income household, but only just. Therefore, a variable price cap would need to have a steep increase in the cost of energy per kWh used.

## **POLICY DESIGN**

For the purpose of this policy paper, we shall assume a 70 per cent variation rate to the proposed variable price cap. That means the per kWh cost of both gas and energy declines for the poorest households so that their total energy bill is 70 per cent lower than the new energy price cap, and therefore 70 per cent higher for the richest households. The changes to the price cap can be summarised in Fig. 3 which shows the marginal rates for each kWh used by the distribution of energy consumption

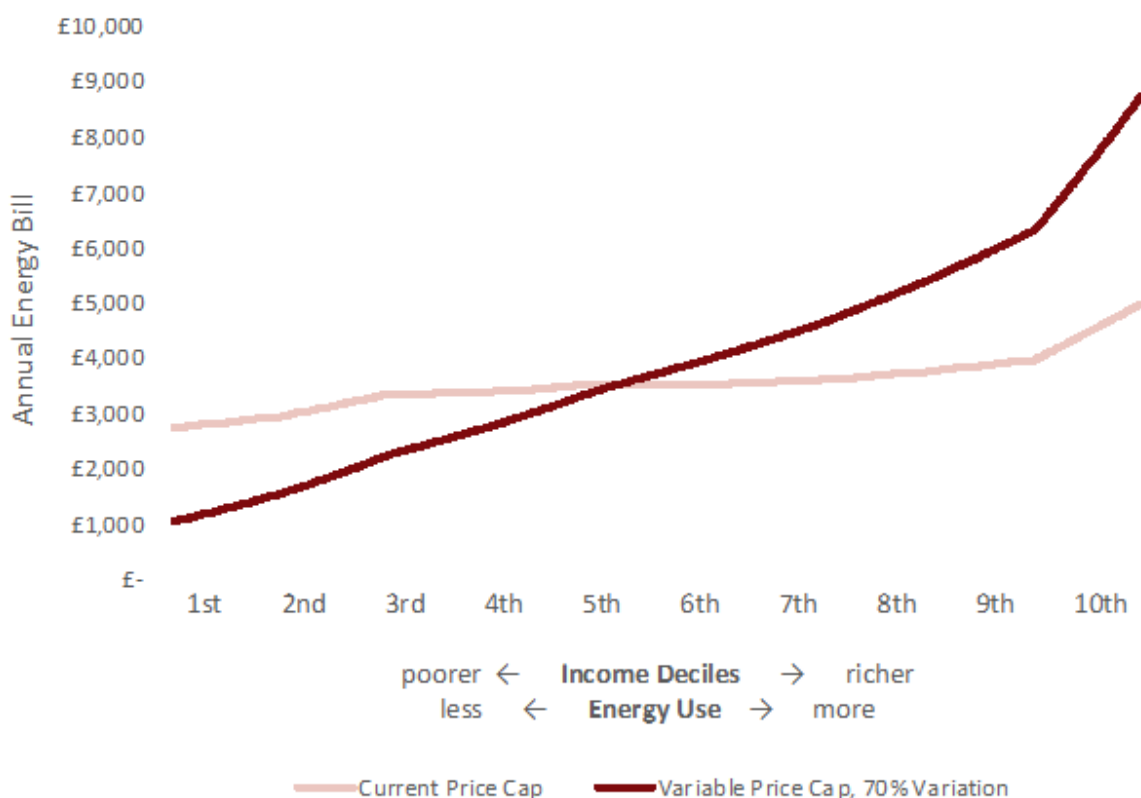
**Figure 3: Marginal Rates**



Source: NIESR Analysis of Living Cost and Food Survey (LCF)

*This implies that the price per kWh used increases linearly by 0.55 per cent per kWh used. We estimate the energy composition of each household based on their bills by reverse engineering each energy components of the current price cap and then we apply the new variable price cap based on where that household is in the income/energy use distribution. Once we apply the existing daily charge, we arrive at the following distribution of energy bills in Fig. 4.*

**Figure 4: Distribution of Bills**



Source: NIESR Analysis of Living Cost and Food Survey (LCF)

*This figure illustrates the revenue neutral option, such that the falls in the price level are entirely offset by rises elsewhere. This is the ‘first best’ design as it would involve no additional state support. Here we see the median household pay the same annual energy bill as a result of the latest price cap rise in October, but the poorest see theirs fall from around £3,000 to around £1,000 per year, a 70 per cent reduction. The highest income households – that is those above the median – with the largest capacity to shoulder the extra burden would see their bills rise to just under £9,000 if their energy usage rises along with the average in their income bracket.*

*Those high-income households that are negatively affected have the option to reduce their energy consumption as they likely have the capacity to do so. This would incentivise a reduction in energy usage and thereby incorporate a strong green element in the cost structure. Crucially, since increased energy bills represent only a small proportion of their ability to pay (2-3% of household disposable income for the top decile), this increased energy bills burden is very much affordable for those it would affect.*

*When compared to other policy proposals already enacted in other countries - specifically freezing energy bills – our proposal has a number of advantages. First of all, it is more cost effective as freezing energy bills has been predicted to cost around £100bn over the winter period. Although there is evidence to suggest that such a substantial approach is affordable, we*

propose a way to achieve the same goal without such a cost to the Exchequer and ultimately the taxpayer.

Secondly, freezing energy bills detaches the price signal mechanism from the purchase of energy, which would have the effect of locking in energy demand at its current level. This proposal not just leave this in place but allows for stronger incentives to bring energy consumption down.

Thirdly, as we do not know how long the current level of energy costs will last, the high cost of freezing all bills could be absorbed in the short-run, but if prices continue to stay high this policy likely becomes unaffordable in the long-run. Therefore, a more cost-effective alternative, like our proposal, presents a more sustainable option.

## CONCLUSION

The incoming government is inheriting one of the greatest immediate policy challenges for a generation. Existing support is neither sufficient nor sufficiently targeted at the poorest households or those low-income households that struggle to make ends meet. We therefore propose a variable energy price cap to help the poorest and lower-income households while not increasing public debt or raising taxes. Our proposal would raise the bills of those who can afford it, cut energy costs for those who cannot while simultaneously incentivising lower energy usage from every household.

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