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Climate Change and the Cost Of Living

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This research considers how climate change could affect the costs of living at the household level in the UK and the implications for low income households.

Key points

• While it will have wide ranging impacts on the man-made and natural environment, climate change will also affect everyday living expenses and the expenditure of households on goods and services.

• Households currently spend a high proportion of their expenditure on a number of items that are likely to be affected by climate change, notably food, energy, water housing maintenance and repair. The study has investigated the potential effects of climate change on these items.

• The biggest impact of climate change on average household costs is likely to arise from increased food prices. The potential increase could be substantial. Furthermore, these increases will have a higher impact on low income households, because they spend a greater proportion of their household budget on food.

• There are also large impacts from increased flooding, which will affect household costs of insurance. Importantly, floods have very large costs to those individual households affected, especially for those without insurance and critically, uninsured losses fall disproportionately on low income groups. In addition, there are higher risks of flooding for many areas with high levels of deprivation.

• As temperatures increase, this is likely to reduce costs for energy bills due to lower winter heating demand, but it will lead to additional costs from increased cooling demand (or leading to lower comfort levels and increased health risks from higher building temperatures). The effects on climate change on household costs for other items (such as water) are found to be low.

• The research finds that climate change is likely to lead to a relatively modest increase in the costs of living up to the 2050s (noting that the future socio-economic context and incomes are likely to be very different from today), though potentially large increases thereafter.

• A key finding is that **low income households are most affected by climate change** impacts, either because of the reduction in their buying power, a reduction in their quality of life or because of differentiated patterns of risks, though they will also benefit the most from the positive effects (e.g. of reduced heating demand).

• Based on these findings, the distributional impacts of climate change need to be considered in national, regional and local risk assessments, and there is a need to consider these factors when designing adaptation policy.

BACKGROUND

Climate change will affect people in the UK unevenly, and there could potentially be strong distributional variations. These differences were investigated in this research to explore how climate change could affect the future costs of living in the UK, particularly for those on low incomes. The research considered a broad range of impacts from climate change on households, including:

- Direct expenditures, e.g. changing temperatures affecting household energy-use;
- Indirect cost pathways, e.g. additional costs from the effects of flooding;
- International effects, e.g. affecting global agriculture and thus UK food prices;
- Non-market costs, which affect people's quality of life and well-being (economic welfare).

Climate change will lead to a wide range of impacts, with associated costs for households in the UK. This research analysed the evidence to explore how these impacts would affect main items of household spending. The research focused on how climate change could affect everyday living expenses and expenditure on goods and services, using current data from the UK Living Costs and Food Survey (ONS, 2014). Of particular relevance are those expenditure items which are most likely to be affected by climate change, i.e. food (11% of average household expenditure), energy costs (5%), water (2%) and housing maintenance and repair (1%). The analysis also considered the potential distributional effects of climate change on the cost of living, i.e. household budgets for different income deciles. This is important as higher costs for basic household goods are likely to affect low income households to a greater extent, because they spend a greater proportion of their income on these items.

The results are presented below. In each case, the costs are benchmarked against the budget that households need to spend for a minimum acceptable living standard, using the Joseph Rowntree Foundation's Minimum Income Standard (for a couple without children). This was used to rank the relative effects on the cost of living, on the basis of being:

- Negligible (<£50 per couple household (household [hh]) per year)
- Minor (£50-£150/hh/year equivalent to around 1% of minimum budget)
- Modest: £150-750/hh/year, 1-5% of minimum budget) and
- Substantial (higher than £750/hh/year, >5% of minimum budget).

For this analysis, the study has considered the future impacts of climate change on current households and current prices, but it is stressed that the actual effects will be strongly influenced by future socio-economic change (including changes in people's incomes) and are subject to high uncertainty. The results below are presented for the mid-century (2050s) for a central emissions scenario. As the analysis draws on a number of studies which use different scenarios, the values (and ranges) are not directly comparable, but they provide indicative estimates of the importance of climate change for key household expenditure items.

The effect of climate change on household expenditure items

A large household expenditure item is **food** (11% of average household expenditure) and agricultural production is a highly climate sensitive sector. Climate change may affect food prices, though there is a range of future outcomes. Based on literature review, the analysis indicates minor effects on households in the short-term, but with larger effects on family budgets towards the middle of the century. The food bill for an average household could rise by 9% by the 2050s, which would be substantial in terms of household costs, all other things being equal (an increase of £275 per household per year, with a range from 0 to £856 representing uncertainty around impacts and price changes). There would be a higher impact on low income households, because their average household expenditure on food is higher (16% rather than 11%). Indeed, for a low income family, this could add 2% (with a range of 0 to 6%) to overall household costs.

Climate change will also affect **energy** demand, noting heating forms around 5% of average household expenditure. Warmer temperatures will bring benefits in lowering winter heating demand and reducing household energy bills, leading to a minor to modest benefit on household costs by the 2050s (a reduction of £135 per household per year by the 2050s, with a range from £58 to £226, reflecting lower and higher warming scenarios). As low income households spend a higher proportion of incomes on fuel (10%), they will experience larger benefits. However, at the same time, increased summer-time temperatures and heatwaves will increase the demand for cooling, increasing household costs (from the costs of purchasing and operating cooling units) or leading to lower comfort levels/increased health risks from higher building temperatures. The increase in cooling demand is expected to be lower than the reduction in winter heating demand, but cooling is more expensive to deliver (due to the use of electricity) thus there are projected to be additional minor to modest costs for households by the 2050s, especially for households in the south and in London. Expenditures will increase more for high income households (due to the use of air conditioning) while low income households are more likely to feel the impacts in the form of discomfort and health impacts (i.e. as non-monetary economic welfare costs). There are also some types of housing which are poorly designed and subject to greater over-heating.

Climate change will also lead to other **housing costs** (e.g. insurance, maintenance), particularly from the increase in flooding. Recent estimates of the costs of flooding from climate change report large damage costs nationally. These are projected to lead to only minor to modest costs on average (at £4 to £37 per household per year by the 2050s for residential property flooding, reflecting uncertainty around climate scenarios). However, the costs are estimated at five to six times this amount when indirect effects are also included (costs to non-residential buildings, public infrastructure damages, transport disruption, etc.), i.e. to £19 to £174/household/ year. The actual increase in costs for households will depend how insurance premiums and indirect impacts pass through to households. However, flood events lead to very large individual costs for those households affected (typical insurance claims for property damage are £25,000 to 50,000 and even claims for damage to home contents can be high) and increases in flood frequency from climate change could affect property prices. There are also differential patterns of exposure, with higher risks of flooding for many areas with high levels of deprivation, particularly

coastal areas. This is particularly important with respect to contents insurance for rental properties, as up to 40% of people in the lowest income decile do not have any insurance. There is therefore the risk of major, life-changing impacts from floods for low income households.

Another relevant household cost relates to **water** (2% of average household expenditure). The regulated nature of the UK's water sector means that climate change impacts will increase water industry (supply-side) costs, which will then be passed through to households in water bills, though increases are estimated to be negligible for household budgets (£3 to £14 per household per year by the 2050s). Nonetheless, as the lowest income decile spends 3% on water supply services, this will impact more strongly on these households.

A large number of other **direct and indirect costs** from climate change could affect household costs and indeed, around 700 potential risks / opportunities were identified in the UK Climate Change Risk Assessment, of which 40 or so will lead to medium-high impacts. The analysis of household costs above only considers a small number of these risks and is therefore partial. Some of the omissions are very large, but it has been difficult to assess how these will pass through to increased prices for goods and services, or wider employment and economic prospects.

There are also a wider set of indirect effects that will occur internationally, which will affect the UK through complex pathways (e.g. supply chains) or affect migration or security. There are also additional non-market impacts, i.e. **economic welfare costs** from climate change. These do not directly affect household costs, but could have very large impacts, such as climate change impacts on people's health, biodiversity and ecosystem services.

The consideration of these additional direct, indirect and economic welfare impacts is critical in assessing the overall impacts of climate change in the UK – noting this goes beyond the focus on household budgets in this study.

Conclusion

This research suggests relatively modest impacts on the costs of living in the UK up to the middle of the century, though there will be much larger increases in household costs thereafter.

A key finding, however, is that low income households will face proportionately higher costs from these impacts, though they will also benefit the most in the cases where climate change reduces costs (primarily in relation to reduced winter heating and energy costs). However, for low income households, even these modest changes could have important impacts on budgets.

For some impacts, there are also very large costs for individual households, which disproportionately affect those on low-incomes, notably in the case of uninsured floods. These will have major, life-changing consequences and have the potential to increase the number of people in poverty.

The findings have important implications for public policy, particularly the need to consider the distributional impacts of climate change in national, regional and local risk assessments, and for these issues to be reflected when designing adaptation responses.

About the project

The research for *Climate change and the cost of living* was undertaken by Paul Watkiss*, Federica Cimato*, Alistair Hunt** and Bruce Morley**

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FOR FURTHER INFORMATION

The full report is available from www.paulwatkissassociates.co.uk