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Adapting to a hotter UK: key risks and responses

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Key takeaways

- The UK needs a clearer and better connected national and local focus on heat to address increasing risks to health and productivity. Responding to heat must form a core pillar of climate adaptation plans.
- Building standards must be updated to improve the resilience of all housing to climate conditions. Patchwork regulations fail to protect vulnerable groups in existing properties and the national focus on energy efficiency retrofit may unintentionally increase overheating in homes.
- Greater attention should be given to vulnerable and low-income groups most exposed to the health risks of heat. Targeted investment in adapting social and private rented sector homes is vital to prevent overheating and excess deaths during heatwaves.
- Improved public information on the risks of heat is essential to encourage risk-reducing behaviours. Local vulnerability assessments, targeted information and practical advice are key to reducing heightened risks of extreme temperatures.

1. Introduction

Rising global temperatures are a major risk to human health and productivity (United Nations 2024). While the most extreme conditions are to be found in Asia, Africa and the Middle East, recent heatwaves in Europe have highlighted the vulnerability of populations and the limitations of housing and environments to cope with heat in more temperate locations (WHO Regional Office for Europe 2021), including the UK.

Global warming is already affecting the UK, with historically warmer summers and winters over the last decade (Met Office 2022). Forecasts suggest this pattern will continue and the UK will experience more frequent and prolonged heatwaves over the next 25 years (Committee on Climate Change 2021). The health impact of rising temperatures is significant, with the UK Health Security Agency (2025) reporting an estimate of 2,295 deaths associated with high summer temperatures in 2023. As average temperatures rise with global warming, it is vital to accelerate the UK's policy response to heat as a climate threat, through improved regulation, information and local adaptation plans to protect vulnerable populations.

2. Heat risks and the UK

Global warming exceeded the 2015 Paris Agreement target of 1.5°C above pre-industrial levels for the first time in 2024 (WMO 2025). Forecasts indicate this will happen again during the next five years. In the UK, long-term forecasts suggest rising average temperatures, with hot summers becoming more common and an increasing frequency of 'hot spells', where maximum daytime temperatures reach 30°C and above for two or more consecutive days. The UK Met Office project that by the 2070s temperatures on hot summer days could increase on current levels by between 3.8°C and 6.8°C, depending on reductions in global greenhouse gas emissions (Met Office 2022). Without a focused approach to adaptation, this scale of increase could have a major health impact on the UK, as there is an estimated two per cent rise in excess deaths for every additional 1°C above

the daily average temperature (British Red Cross 2021).

At a policy level, the UK has recognised the risks of rising temperatures (HM Government 2022 and UKHSA 2025), but there remains a major gap in adapting housing, environments and behaviours to the realities of high temperatures.

UK housing

A large portion of the housing stock in the UK is unsuited to hot conditions. Around one in five UK homes (circa 4.5 million) currently overheats outside of heatwave events (Committee on Climate Change 2019), with smaller homes and top floor flats in urban areas most at risk. When UK housing typology and climate forecasts are considered, over one third (36 per cent) of homes have attributes that put them at high risk of overheating in the future (Marshall 2023). Houses located in built-up areas, where there is dense development and also human activity, such as heavy traffic or industry, are at greatest risk as they are exposed to 'urban heat island effects', which can increase ambient temperatures by around 2 to 3°C compared to the surrounding countryside (IPCC 2023).

How we use our homes has also changed significantly since the COVID-19 pandemic. Currently, around 39 per cent of working adults in Great Britain work from home some of the time, 26 per cent are engaged in hybrid work and 13 per cent are working fully remotely (House of Lords 2025). With a large increase in the proportion of people working from home on a full time or hybrid basis, controlling heat comfort levels in domestic settings has become more important.

Building regulations were amended in 2021(HM Government 2021) to reduce risks of overheating in new homes, but these regulations do not apply to existing properties. There is a need to extend standards to improve the resilience of all dwellings to rising temperatures. This is particularly significant to avoid unintended increases in overheating due to energy saving improvements. With retrofit's primary focus on reducing emissions, through lower fuel use and improving the insulation of dwellings, there is a risk of increased overheating in the summer. It is important to integrate energy efficiency and cooling requirements into a single approach, supported by regulation, that improves the overall comfort of homes as climate conditions change.

Disproportionate impacts of heat on vulnerable groups

The effects of heat on health and wellbeing are not evenly distributed, with infants, older people and those with chronic illnesses or disabilities most at risk from rising temperatures (UK Health Security Agency 2023). Vulnerability to heat mirrors poverty levels, with social and private sector housing renters, ethnic minority and young families at risk, due to housing conditions and their limited resources to meet additional energy costs or adapt homes. Also, poorer families tend to live in more densely crowded areas, with less green space and tree cover to reduce heat island effects.

People in the poorest quintile are three times more likely to live in homes at high risk of overheating in the future (Marshall 2023), with studies suggesting that those with limited English language skills have less access to weather information to prepare for heatwaves (Wolf and McGregor 2013). High temperatures can be deadly, but also have a more pervasive impact on wellbeing, including disrupting sleep patterns, exacerbating existing health conditions such as high blood pressure and, when combined with high humidity, contributing to mould and respiratory illness (UK Health Security Agency 2023). Heat does not need

to be extreme to have an effect, with sustained exposure to temperatures above 26°C harmful to health for vulnerable groups (Tham et al 2020).

Research by the British Red Cross (2021) highlights that heat vulnerability intersects with a lack of knowledge or capacity to change environments or behaviours. Some 41 per cent of people nationally surveyed say their homes are not well set up to prevent overheating, with 58 per cent of people living in top floor flats struggling to keep their homes cool during heatwaves. Adaptive action is limited by a lack of knowledge, with 26 per cent not knowing how to prevent their homes from overheating. Also, while 56 per cent have considered adapting their homes to heat, they have faced barriers such as cost, competing financial priorities and an inability to make changes to rented homes.

Analysis undertaken by Friends of the Earth and the University of Manchester (2022) identifies neighbourhoods (defined as lower super output areas – LSOA) most likely to be impacted by rising temperatures. Looking at both forecast heat levels and environmental and social conditions, the research maps neighbourhoods that are most vulnerable to rising temperatures and should be prioritised for heat adaptation actions. Under a 1.5°C global warming scenario, around 10.8 million people live in neighbourhoods that are socially vulnerable to high heat. The local authority areas with the most at-risk neighbourhoods also have high levels of deprivation, with the number of at-risk neighbourhoods greatest in Birmingham, Newham, Tower Hamlets, Hackney and Nottingham.

While northern cities are less exposed to extreme temperatures than the south, the Friends of the Earth analysis indicates risk for residents of Liverpool City Region (LCR). As shown in Table 1, there are 186 deprived neighbourhoods (LSOAs) with a total of some 314,000 residents exposed to 'hot weather', with temperatures of 24.5°C or above for five days or more over the summer period, under a likely 1.5°C global warming scenario. The number of heat exposed residents increases by over two thirds (to nearly 526,000 people) if global warming rises by 3.0°C.

Table 1: Vulnerable neighbourhoods in Liverpool City Region

	Hot conditions (≥24.5°C) at 1.5 degrees global warming	
Local Authority	Deprived Neighbourhoods (LSOAs)	Population
Halton	14	23,199
Knowsley	35	54,382
Liverpool	112	196,650
Sefton	1	1,467
St Helens	22	35,598
Wirral	2	2,837
Liverpool City Region	**186**	**314,133**

Source: Author analysis of Friends of the Earth published data

3. Local area heat planning

Adapting to heat is a challenge for the UK as it relies on the coordination of national policy leadership and the engagement of local communities in climate planning. Local government has a key role in driving climate adaptation (Eckersley and Olazabal 2024) by influencing national policy, co-ordinating multi-agency engagement and involving communities in tracking, understanding and responding to rising heat levels in cities. With around 300 authorities across the UK declaring a climate emergency, there is a strong commitment to addressing climate change, but fragmented policy frameworks, alongside a lack of devolved power and dedicated resources, limit the scope for local action (LGA 2025).

Addressing the risks of overheating is identified in the National Planning Policy Framework (MHCLG 2024, 48) as part of the overall responsibility of planning authorities to "ensure the future health and resilience of communities and infrastructure to climate change impacts". More specific guidance on addressing overheating has been produced by the Royal Town Planning Institute (RTPI) and Town and Country Planning Association (TCPA) (2025) to assist local government to develop policy and resources, such as the Met Office Climate Data Portal (Met Office 2026), which provides local area information to assess climate threat.

With high temperatures creating disproportionate risks for particular groups, including elderly, low income and people with chronic health issues, it is vital that heat planning is targeted and includes vulnerability mapping to identify and prioritise those most exposed. Engagement of local communities and stakeholders can help reveal risks and hidden barriers to adaptation. Collaborative approaches can also define small-scale actions and behaviour changes, such as improving ventilation and closing curtains and blinds on hot days to reduce overheating. Where supported by policy that prioritises green space and tree shading as part of public realm works to tackle heat, these actions can significantly reduce risks for vulnerable groups. Examples of local government climate planning are shown in Box 1.

Box 1: Examples of local government action

The 'Keep Bristol Cool' mapping tool (Bristol City Council 2025) brings together climate, population, housing and environmental data in a heat vulnerability index to identify communities and sections of the population at greatest risk from high temperatures. Providing a picture of current and future risks from heat, the tool is intended to inform urban design and planning to build resilience to climate change.

Newcastle City Council used a collaborative approach to understand and prepare for risks of storm flooding (Eckersley et al 2018). Flooding is a climate risk where there is fragmented public sector responsibilities and limited awareness among households of either the threat or the actions they can take to reduce exposure to risks. The approach in Newcastle sought to develop a better understanding of risks and facilitate joint planning. This is a method that can be applied to heat risks.

Local understanding of the risks and potential impacts of heat can be enhanced through engaging vulnerable communities in data gathering and action planning, adopting participatory techniques including the following:

- **Awareness raising** – using scenario workshops with stakeholders to share climate information, identify knowledge gaps and highlight the potential impacts from heat.
- **Identifying the micro-effects of heat** – undertaking participatory surveys and focus group discussions to explore the impacts and hidden costs (i.e. on health, wellbeing, income, mobility etc.) and factors that limit adaptation to heat.
- **Recognising co-dependencies** – conducting institutional mapping of responsibilities and implications of heat risks among public and community sector actors to strengthen planning and delivery links.
- **Co-designing actions** – co-creating adaptation plans that connect dispersed sets of actions and investments around a common set of goals to reduce risks of heat.
- **Keeping the conversation going** – building in sharing learning and feedback systems to improve the effectiveness of resilience planning.

Within a fragmented national policy environment, local government has an opportunity to create an inclusive approach to understanding and addressing heat risks. While an absence of funding and discrete powers are limiting factors, tailoring available data and engaging vulnerable communities can help to close information gaps and to focus interventions on actions to reduce heat risks. On this issue, local leadership is vital to influence national policy approaches.

4. Policy implications

Heat is a threat that will get worse with global warming and will disproportionately affect vulnerable groups in society. Unlike other climate risks, i.e. increased rainfall and flooding, heat is risk that can be largely managed at a local level, through relatively low-cost adaptations to homes, by connecting public policy and stimulating changes in individual behaviour. However, heat adaptation must be led by better co-ordinated national and local policy and increased targeting and engagement of vulnerable groups.

- Nationally, climate adaptation preparations must be accelerated to head-off growing risks from climate change (Committee on Climate Change 2025). Despite its pervasive effects on vulnerable groups, heat risks are under-prioritised and need to have greater visibility in adaptation plans.
- Fragmented policy and national-local governance links are a barrier to effective adaptation planning. Closing gaps in building regulation on overheating, devolution of responsibilities to better integrate decarbonisation and adaptation efforts, alongside dedicated finance, are essential to enable effective local heat action.
- More effective targeting and investment is needed to reduce heatwave mortality among at-risk groups. Heat vulnerability indices underline the disproportionate risks faced by low income and inner-city groups to rising global temperatures. Locally defined priority setting and interventions are key to reducing risks.
- There is a need for better public awareness of how to manage high heat conditions. Information on heat risks and practical advice on coping with

heat are vital to encourage small-scale changes that reduce heat stress. A more proactive approach is needed to in health emergency plans to ensure messaging is reaching the most vulnerable groups.

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