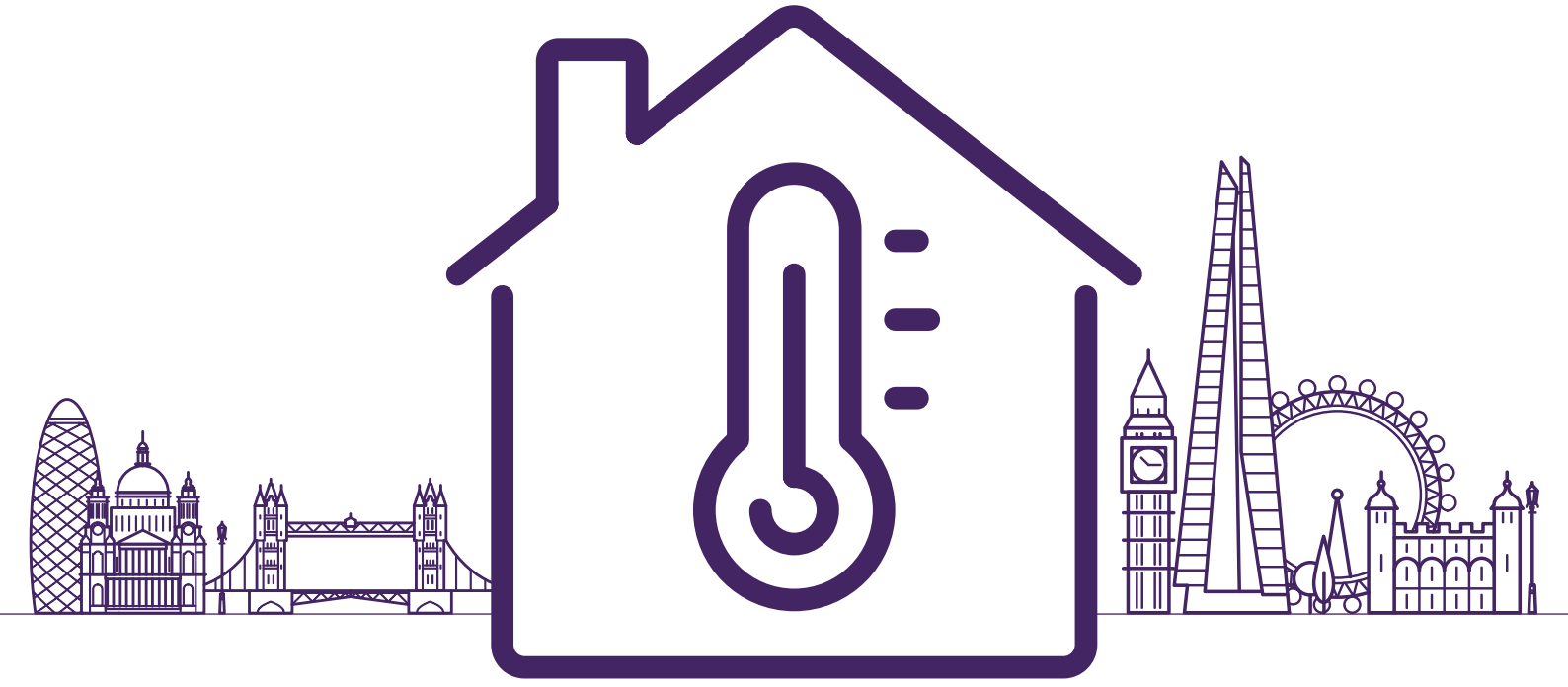
University of East London
Pioneering Futures since 1898

Chartered Institute of Housing

SRI
Sustainability Research Institute

A STRATEGY TO REDUCE THE RISK OF OVERHEATING IN LONDON'S HOMES



Mehri Khosravi[1] and Matthew Scott[2]

University of East London, Sustainability Research Institute, London, UK[1]

Chartered Institute of Housing, UK[2]

APRIL 2026

Executive summary

London is experiencing rapidly increasing indoor overheating, with over 85 per cent of residents reporting heat discomfort in 2025. Climate projections show that temperatures of up to 45°C may now be possible, indicating that overheating is shifting from an episodic event to a recurring seasonal risk. Evidence also suggests that in dense urban environments such as London, neither passive nor active cooling alone may be sufficient to prevent extreme overheating under future climate conditions.

Addressing this challenge requires systemic adaptation across three levels: urban-scale measures such as green infrastructure to reduce the urban heat island (UHI) effect; building-level adaptations including passive design and retrofit; and behavioural adaptation through effective heat risk communication and public preparedness.

While building retrofit and adaptation are essential for long-term resilience, it takes time to deliver significant improvements in heat resilience. In the near term, policies to strengthen heat risk communication and preparedness should also be used to reduce heat-related illness and mortality.

This brief therefore recommends a dual-track strategy: strengthening heat risk communication in the short term, while simultaneously taking steps to improve building standards and accelerate the retrofit of homes, to develop long-term heat resilience[3].

Why this matters for London policymakers

London faces a growing risk of indoor overheating as climate change intensifies heatwaves and the UHI effect. While long-term building adaptation is essential, many of the most vulnerable residents live in existing homes where improvements could take time. Strengthening heat risk communication, supporting passive cooling measures, and prioritising urban cooling strategies offer immediate opportunities for the mayor and London boroughs to reduce heat-related illness and mortality.

1. Overheating in London: The current situation and its implications

1.1. The current situation

Indoor overheating in the UK has increased substantially over the past decade. Survey evidence shows that the proportion of households reporting heat discomfort rose from 20 per cent in 2011 to around 80 per cent during the 2022 heatwave, when temperatures exceeded 40°C in London for the first time.[4]

Recent survey data suggests that this trend is continuing. In 2025, the hottest year on record, between 85 per cent and 87 per cent of residents reported experiencing indoor overheating, with 86 per cent reported specifically in London.[5] Overheating is also affecting key public buildings. For example, evidence indicates that 93 per cent of schools in London report overheating as a significant issue.[6]

These trends indicate that overheating is no longer an occasional extreme event but an emerging seasonal risk for London's built environment. Climate projections further reinforce this concern, with the Climate Change Committee noting that global warming of 4°C above preindustrial levels cannot be ruled out.[7] The Met Office has warned that temperatures of 45°C may now be possible in the current climate.[8] In dense urban areas such as London, the UHI effect is likely to intensify exposure to extreme heat.

1.2. Implications for London

1.2.1. Rising air conditioning adoptions and pressure on energy systems

Air conditioning (AC) adoption has increased substantially in recent years. Nationally, ownership has risen from three per cent in 2011 to around 23 per cent in 2023, reflecting a growing shift from passive to mechanical cooling in domestic settings.[9] If this trajectory continues, it is likely to significantly increase summer electricity demand and peak load pressures on the national grid. For example, in 2023, National Grid requested that the Ratcliffe-on-Soar coal plant be placed on standby after high temperatures increased electricity demand. These impacts can be exacerbated by users' choice of cheaper, lower-efficiency AC products.[10] Concerningly, these products could become the default solution to cooling homes, with other solutions overlooked.

This trend is particularly pronounced in London, where approximately 32 per cent of households report AC ownership, around three times higher than in several other UK regions.[11] Without proactive intervention, London risks becoming increasingly reliant on mechanical cooling, potentially locking the city into a high-carbon cooling pathway and placing additional strain on energy infrastructure during heat events.

The London Plan's Policy SI4: Managing Heat Risk already recognises this challenge through its 'cooling hierarchy', which requires developments to prioritise passive and low-energy cooling strategies before considering mechanical cooling, with AC used only as a last resort.[12] Strengthening the implementation of this hierarchy will therefore be critical to prevent unnecessary reliance on AC and to ensure that passive design measures are prioritised in both new developments and retrofit strategies.

Overall, this evidence highlights the importance of prioritising passive cooling, retrofit solutions, and behavioural adaptation to reduce long-term reliance on energy-intensive cooling technologies.

1.2.2. Heat mortality and NHS pressures

Heat-health risks are not evenly distributed. Mortality data shows that the most vulnerable individuals are people over the age of 65; this age group accounts for 95 per cent of all deaths. Care homes also experience the largest proportional increases in mortality during heatwaves.[13]

Evidence shows that a large proportion of heat-related deaths occur during 'yellow' Heat Health Alert periods.[14] This suggests that moderate heat events may be particularly dangerous, especially when protective behaviours are not widely adopted.

Current heat risk communication systems also show important gaps. Our research[15] indicates that:

- 30 per cent of the population is not exposed to Heat Health Alerts.
- In London, approximately one quarter of residents (around 2.2–2.3 million people) are not effectively reached by heat risk communication.
- Digitally excluded, older and low-income residents are disproportionately affected by these communication gaps.
- Yellow and amber alerts currently lack sufficient behavioural salience to trigger widespread protective action.

As a result, heat-related mortality is driven not only by temperature intensity but also by gaps in communication, preparedness and behavioural response, especially among those who are most vulnerable to the health impacts of extreme heat.

2. The policy challenge

Recent sector evidence reinforces the scale of the challenge. The 2025 Climate Resilience Roadmap by the UK Green Building Council highlights that in some high-density urban locations, including London, neither passive nor active cooling alone may be sufficient to prevent extreme overheating under future climate conditions.[16]

This finding underscores the need for systemic adaptation strategies that combine improvements in building design with behavioural responses to heat risk. However, these two adaptation pathways operate on very different timelines.

2.1. Building adaptation: Retrofit and regulation

Building-level or structural measures remain essential for long-term climate resilience, but they face several implementation barriers:

- Retrofitting buildings requires a mature supply chain and can be slow to reach scale. Integrating heat adaptation measures into current government retrofit programmes will therefore take time.
- Weaknesses and enforcement gaps remain within Part O of the Building Regulations. However, Building Regulation reform often requires multi-level governance coordination and transition periods, to avoid disruption.
- Current regulation has a limited short-term impact on existing homes, where most vulnerability exists.

As a result, while these changes are essential in the medium- and long-term and should be actioned now, their implementation is unlikely to be able to take place fast enough to deliver rapid reductions in heat-related health risks.

2.2. Behavioural adaptation: Heat risk communication

Behavioural adaptation, particularly through improved heat risk communication, offers faster opportunities to reduce risk. It can:

- Be implemented at the Greater London Authority (GLA) level.
- Have an immediate impact on public health outcomes across London.

However, current systems have several limitations,[18] especially:

- Yellow and amber Heat Health Alerts are not accompanied by strong enough advice on how people can stay safe in hot weather.
- Heat warnings do not effectively reach around a quarter of the population in London.

Strengthening behaviourally informed risk communication, therefore, represents one of the most immediate opportunities to reduce heat-related health impacts in London.

3. Policy recommendations

Our findings indicate that reducing the risk of overheating requires both building adaptation and behavioural change. Regulation alone will not be sufficient to address the scale of the challenge. This brief, therefore, proposes two priority areas for action at the London level.

3.1. Strengthen regional heat risk communication

While building adaptations are essential for long-term resilience to extreme heat, they cannot be implemented fast enough to immediately reduce heat-related mortality and morbidity. In contrast, heat risk communication can deliver more immediate reductions in heat-related harm and can be strengthened through regional leadership.

Policymakers in London should:

- Ensure yellow and amber Heat Health Alerts are accompanied with improved advice on the actions people should take to stay safe during periods of extremely hot weather.
- Expand communication channels to reach digitally excluded and vulnerable populations.
- Work with local authorities, health services and community organisations to deliver targeted heat preparedness messaging and support.
- Improve monitoring and evaluation of the reach and effectiveness of Heat Health Alerts.

Overall, these measures could significantly improve public awareness and protective behaviours during heat events.

3.2. Strengthen home adaptation and enforcement

Alongside communication measures, London should also prioritise improvements to retrofit and construction practices. Three areas require particular attention.

3.2.1. Continue to prioritise passive cooling measures

Passive cooling measures can substantially reduce indoor temperatures without increasing energy demand.[19] Evidence from the UK government's Warm Homes Plan shows that combining external shading with night-time ventilation can eliminate overheating risk in some homes, reducing indoor temperatures by 11–18°C.[20] Even relatively simple interventions, such as internal blinds, can reduce temperatures by 9–13°C, at a cost of approximately £300–£2,500, depending on the type and installation. Surfaces with reflective paint can also maintain average temperatures of 7°C and below, even during heatwaves.[21]

However, opportunities to implement effective passive measures are often missed when overheating is not considered at the early design and planning stage. In addition, renters and low-income residents often lack the agency or resources to undertake building improvements themselves.[22]

Policymakers in London could support wider adoption of passive cooling by:

- Reaffirming the strategic importance of climate adaptation and the cooling hierarchy in the London Plan and associated planning guidance, especially the importance of external shading and passive overheating mitigation.
- Developing funding schemes that support low-cost cooling interventions in homes across London. This could be achieved by working with the UK government to pilot the integration of cooling measures into pre-existing fuel poverty retrofit schemes in London, as announced in the Warm Homes Plan.
- Working with boroughs to prioritise passive cooling measures in local communities, including expanding green and blue spaces to reduce ambient temperatures.
- Advocating for the application of Part O of the Building Regulations to retrofits at the national level, similarly to how Part L was launched in 1995 and subsequently applied to most retrofits in 2005.[23]
- Exploring the use of air-to-air heat pumps as an alternative to air conditioning. Air-to-air heat pumps provide low-carbon heating and cooling, are particularly suitable for flats, and can contribute to grid rebalancing.[24]
- Learning from examples of heat resilience in hotter climates, especially from Spain and other southern European countries.[25]

3.2.2. Seek stronger regulatory powers for London to strengthen overheating standards

Part O of the Building Regulations, introduced in 2022 to address the risk of overheating in new homes, represents an important step forward. However, the approach taken in Part O is not sufficient to ensure that new homes in London are resilient to extreme heat. Its key drawbacks[26] include:

- The main modelling tool used to assess compliance with Part O, the Chartered Institute of Building Services Engineers' (CIBSE) TM59, allows homes to 'pass' using the mildest climate scenario, known as DSY1. It therefore fails to ensure homes are resilient to more significant warming scenarios (which are defined as DSY2 and DSY3).
- There is limited coordination between Part O and other parts of the Building Regulations, which leads to conflicting requirements and unhelpful trade-offs between standards.
- While Part O applies to some institutional residential facilities such as care homes, it is not sufficient to adequately protect people who live in them, who are often older or more vulnerable to higher temperatures.[27]

The latest draft of the National Planning Policy Framework (NPPF) specifically prohibits local planning authorities (LPAs) and strategic authorities from setting standards already covered in the Building Regulations, with two exceptions (accessibility and water efficiency). If this policy is taken forward, policymakers in London will not be able to set tighter overheating standards for new homes, despite evidence suggesting this is particularly necessary due to the UHI effect.[28]

Policymakers in London should advocate for the draft NPPF to be amended to allow strategic authorities to set tighter overheating standards. This would enable London to impose and enforce overheating regulations that are more suited to future temperature extremes in the capital, and which address the specific limitations highlighted above.

3.2.3. Improve the implementation of Part O of the Building Regulations and wider good practice

Lastly, as well as its inherent weaknesses, compliance and enforcement with Part O remains inconsistent.

Policymakers in London could strengthen compliance and enforcement by:

- Supporting the capacity of individual London boroughs to monitor and enforce the Building Regulations, including especially undertaking more consistent Post Occupancy Evaluations (POE) of new homes in London.
- Promoting good practice guidance for new developments that prioritises heat mitigation and resilience.
- Working with developers and housing providers to improve real world compliance with Part O requirements.

4. Conclusions

Addressing the overheating challenge requires a multi-level adaptation strategy, combining urban cooling through green infrastructure, building-level improvements through passive design and retrofit, and behavioural adaptation through strengthened heat risk communication.

In the short term, strengthening heat risk communication and preparedness can reduce mortality and support residents in taking protective actions during heat events. In the longer term, improving building standards, strengthening enforcement, and accelerating retrofit of existing homes will be essential to ensure that London's built environment is resilient to future climate conditions.

While some regulatory changes require national action, the Mayor of London and the Greater London Authority have important levers through regional coordination, planning policy, and public communication. By combining immediate behavioural interventions with longer-term measures to adapt London's homes, the risk of overheating and protect vulnerable residents as extreme heat becomes more frequent.

Strengthening heat risk communication now, while starting to accelerate passive cooling and retrofit measures, offers the most effective pathway to reduce heat-related harm in London's homes.

Contact the authors of this briefing directly at:

Dr Fatemeh Khosravi, University of East London, Sustainability Research Institute: m.khosravi@uel.ac.uk

Dr Matthew Scott, CIH: matthew.scott@cih.org

5. References

[1]See www.uel.ac.uk/our-research/sustainability-research-institute-sri

[2]See www.cih.org

[3]More details on the strategy outlined in this briefing are available in: CIH and SRI (2026) J joint response to the London Assembly Planning and Regeneration Committee call for evidence: are London's homes ready for a heatwave?

[4]Khosravi, M. et al. (2025) A nation unprepared: Extreme heat and the need for adaptation in the United Kingdom, Energy Research and Social Science.

[5]Khosravi, M. et al. (2026) The heat is on: Understanding public responses to heat-health alerts in England, Energy Research and Social Science.

[6]See Mayor of London (2023) Climate Adaptation Plans for Schools, p.31.

[7]Climate Change Committee (2025) Letter: CCC letter to Minister Hardy – advice on the UK's adaptation objectives.

[8]Met Office (2025) Met Office report details rising likelihood of UK hot days.

[9]Khosravi, M. et al. (2025) A nation unprepared: Extreme heat and the need for adaptation in the United Kingdom, Energy Research and Social Science.

[10]Hoggett, R. et al. (2024) Hot and cold: Policy perspectives on overheating and cooling in United Kingdom homes, Energy Research and Social Science.

[11]Khosravi, M. et al. (2025) A nation unprepared: Extreme heat and the need for adaptation in the United Kingdom, Energy Research and Social Science.

[12]Mayor of London (2021) London Plan.

[13]UKHSA (2025) Heat mortality monitoring report, England: 2024.

[14]UKHSA (2025) Heat mortality monitoring report, England: 2024.

[15]Khosravi, M. et al. (2026) The heat is on: Understanding public responses to heat-health alerts in England, Energy Research and Social Science.

[16]UK Green Building Council (2025) UK Climate Resilience Roadmap.

[17]Khosravi, M. et al. (2026) From Building Codes to Behaviour: Strengthening Extreme Heat Adaptation Policy in the United Kingdom, Energy Research and Social Science.

[18]Khosravi, M. et al. (2026) The heat is on: Understanding public responses to heat-health alerts in England, Energy Research and Social Science.

[19]See the evidence produced by the UNEP Cool Coalition.

[20]DESNZ (2026) Warm Homes Plan.

[21]Sen, S. and Khazanovich, L. (2021) Limited application of reflective surfaces can mitigate urban heat pollution, Nature Communications; Xiao, S. et al. (2023) Experiments on the Thermal Performance and Service Life of Three High-Albedo Roof Materials in Nanjing, China, Journal of Applied Meteorology and Climatology.

[22]Khosravi, M. et al. (2025) Heat adaptation in the UK: policy brief.

[23]Halai, S. et al. (2026) Delivering heat-resilient housing in England: Reflections on the role of overheating building regulations in a warming climate, Energy Policy.

[24]See Brookes, G. (2026) Energy efficient homes aren't a winter-only problem; Nesta (2026) Air-to-air heat pumps: a low-carbon solution for UK homes.

[25]See for example this overview of Getafe's approach to addressing energy poverty and heatwaves for more information, and this overview of the Renaissance project in Zaragoza.

[26]Khosravi, M. et al. (2026) From Building Codes to Behaviour: Strengthening Extreme Heat Adaptation Policy in the United Kingdom, Energy Research and Social Science.

[27]Khosravi, M. et al. (2026) From Building Codes to Behaviour: Strengthening Extreme Heat Adaptation Policy in the United Kingdom, Energy Research and Social Science.

[28]For further detail, see CIH (2026) CIH responds to the National Planning Policy Framework consultation (December 2025); Mayor of London (2026) Proposed reforms to the National Planning Policy Framework and other changes to the planning system: Response from the Mayor of London.