



Increasing temperatures, rising sea-levels and modified rainfall will change the climate-related risks to people and the built environment. There are also potential opportunities for health and wellbeing from warmer weather.

These risks interact across multiple levels – communities, buildings, health systems and individuals – as shown below.

Climate change hazards affecting people and the built environment				
	Communities and settlements	Buildings	Health and social care system	Population health
Heatwaves	Heatwaves, urban heat island, air pollution	Overheating	Overheating risks to patients, social care, occupational risks, energy use	Heatwave risks to population, mortality, injury etc.
Floods	Flooded communities, resilience, relocation, blight/economic effects	Flood damage, damp, mould	Flood risks to NHS assets, service disruption	Flood impact on mental health, deaths and injuries
Drought	Risk to water supply, drought	Subsidence	Service disruption	Water supply failure, risks to public health
Cold	Risks from extreme weather	Damp homes, cold homes	Service disruption	Cold risks to mortality and morbidity

**Flooding already poses a severe threat to people, communities and buildings. Climate change is expected to increase the frequency, severity and extent of flooding.**

At present an estimated 1.8 million people live in areas at a 1:75 or greater annual risk of river, surface water or coastal flooding across the UK. This number by the 2050s is projected to rise to between 2.6 million (2°C scenario) and 3.3 million (4°C scenario), assuming low population growth and a continuation of current levels of adaptation. Significant and increasing investment will be required over time to address the projected increase in flood risk associated with climate change.

**Between 0.5 to 1 metres of sea level rise could make some 200km of coastal flood defences in England highly vulnerable to failure in storm conditions.**

Significant additional investment is likely to be required to maintain or to retreat defence lines to more sustainable

locations. It is not known how much of the UK coastline is economically viable to protect in the future. Without further planning, affected communities are likely to be exposed to economic blight long before the physical risks manifest.

**Higher average and extreme temperatures are likely to have a range of impacts on the UK population.**

The number of heat-related deaths in the UK is projected to increase by around 250% by the 2050s (median estimate), due to climate change and the growing, ageing population, from a current baseline of around 2,000 heat-related deaths per year. There are no policies in place to reduce the risk of overheating in homes or other buildings.

There are some potential opportunities associated with higher temperatures. Outdoor activities may become more attractive, with perhaps an increase in active transport like cycling and walking. Very little quantitative evidence exists that considers these benefits.





### Climate change could reduce the number of cold-related deaths in the future, but this effect is likely to be small unless more is also done to adapt cold homes.

As temperatures warm, the number of cold-related deaths is projected to decline by around 2% by the 2050s from a baseline of 35,000 – 50,000 per year. Climate change will reduce the risk, but the ageing population means there will be more vulnerable people at risk.

Further measures need to be taken in the next five years to tackle the large numbers of cold homes and reduce the impacts of cold weather on health.

**There may also be risks to health services from an increase in the frequency and intensity of extreme weather events, but little is known about the capacity of the sector to cope. Climate change may also increase the capacity of existing UK mosquito species to transmit certain diseases that are harmful to human health.**

Urgency of additional action to support people and the built environment		
Risk/opportunity	Urgency score	Rationale for scoring
PB1: Risks to health and wellbeing from high temperatures	More action needed (research priority in Northern Ireland, Scotland & Wales)	The risk to health is likely to increase in the future as temperatures rise. There is some evidence that the risks of overheating in hospitals, care homes, schools and offices will increase in the future. There is more evidence for England than for the devolved administrations. Policies do not exist at present to adapt homes or other buildings to higher temperatures.
PB2: Risks to passengers from high temperatures on public transport	Research priority (sustain current action in England, watching brief in Northern Ireland & Scotland)	The action underway in London to assess and manage risks of overheating on public transport should continue, together with similar action as needed elsewhere in the UK.
PB3: Opportunities for increased outdoor activities from higher temperatures	Watching brief	Leisure and other activities are likely to be taken up autonomously by people as the climate warms.
PB4: Potential benefits to health and well-being from reduced cold	More action needed	Climate change alone is projected to reduce the health risks from cold, but the number of cold-related deaths is projected to decline only slightly due to the effects of an ageing population increasing the number of vulnerable people at risk. Further measures need to be taken in the next five years to tackle large numbers of cold homes and reduce cold effects on health, even with climate warming.
PB5: Risks to people, communities and buildings from flooding	More action needed (research priority in Northern Ireland, Scotland & Wales)	Under the most optimistic flood defence investment scenario for England, the level of risk declines but remains high by mid-century, and future spending plans for the devolved administrations are unclear. Increases in flood risk cannot be avoided under a 4°C climate scenario even in the most ambitious adaptation pathway considered.
PB6: Risks to the viability of coastal communities from sea level rise	Research priority	Research is needed to better characterise the impacts from sea level rise on coastal communities, thresholds for viability, and what steps should be taken to engage and support affected communities.
PB7: Risks to building fabric from moisture, wind and driving rain	Research priority	More research is needed to better determine the future level of risk and what further steps might be appropriate.
PB8: Risks to culturally valued structures and the wider historic environment	Research priority	Climate-related hazards damage historic structures and sites now, but there is a lack of information on the scale of current and future risks, including for historic urban green spaces and gardens as well as structures.
PB9: Risks to health and social care delivery from extreme weather	More action needed (research priority in Northern Ireland, Scotland & Wales)	There is some evidence of inconsistent planning for extreme weather across the UK. Surveys indicate that many Clinical Commissioning Groups, NHS providers, GPs and Local Authorities may not have appropriate plans in place.
PB10: Risks to health from changes in air quality	Research priority	More research is needed to understand the influence of climate change on ground level ozone and other outdoor air pollutants (especially particulates), and how climate and other factors (e.g. individual behaviour) affect indoor air quality.
PB11: Risks to health from vector-borne pathogens	Research priority	Further research is needed to improve the monitoring and surveillance of vector species and related infectious disease, and to assess the extent to which current efforts are focussed on those infections that pose the greatest long-term risks.
PB12: Risk of food borne disease cases and outbreaks	Watching brief	Regulations in place to monitor and control food-related hazards should be kept under review.
PB13: Risks to health from poor water quality	Sustain current action	Current policies and mechanisms to assess and manage risks to water quality in the public water supply should continue to be implemented.
PB14: Risk of household water supply interruptions	Sustain current action	Policies are in place to safeguard the continuity of public water supplies during droughts and from burst pipes in cold weather. These risks should be kept under review to make sure long-term risks continue to be managed appropriately.

**Note:** The urgency categories are defined as follows:

- More action needed:** New, stronger or different government policies or implementation activities – over and above those already planned – are needed to reduce long-term vulnerability to climate change.
- Research priority:** Research is needed to fill significant evidence gaps or reduce the uncertainty in the current level of understanding in order to assess the need for additional action.
- Sustain current action:** Current or planned levels of activity are appropriate, but continued implementation of these policies or plans is needed to ensure that the risk continues to be managed in the future. This includes any existing plans to increase or change the current level of activity.
- Watching brief:** The evidence in these areas should be kept under review, with long-term monitoring of risk levels and adaptation activity so that further action can be taken if necessary.