



PUBLIC HEALTH 2040: HEALTH PROTECTION IN A WARMING WORLD

RSPH
ROYAL SOCIETY FOR PUBLIC HEALTH
VISION, VOICE AND PRACTICE

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INTRODUCTION

This will be the first of three briefings analysing the key challenges facing the wider public health workforce over the coming years, building on engagement with those working across public health which we set out in our report 'The Unusual Suspects'.

Throughout this engagement, several major external challenges were identified, each of which has the potential to significantly change how we deliver public health services in the future. This first briefing will examine the impact of climate change, while future publications will consider ageing demographics and the role of technological change, as well as considering the cross-cutting themes and changes which are needed to equip the wider public health workforce to face the future.

As well as looking at the public policy changes needed, we will be setting out how RSPH and the sector itself can meet these challenges, whether that is through new training on climate change as a public health issue, changing how we recruit staff, or working with industry to shape the future of technology.

The Wider Public Health Workforce (WPHW) faces several obstacles over the coming years. A lack of recognition, scarcity of resources and the consequent difficulties to recruit, train and upskill staff all threaten the public health of the UK. Alongside this, the coming decades are likely to see increased threats, including that of climate change, which risk further damage to public health. In recognition of this, the WPHW must have the support and guidance to continue to protect the public and prevent the impact of future threats.

THE WIDER PUBLIC HEALTH WORKFORCE MUST HAVE THE SUPPORT AND GUIDANCE TO CONTINUE TO PROTECT THE PUBLIC AND PREVENT THE IMPACT OF FUTURE THREATS.

Climate change has become a more prominent crisis over recent years, particularly because it has on various aspects of our society, including physical threats and more numerous and intense weather and climate events, including floods, famines, extreme heat and droughts. (1) This exacerbates health issues by increasing the rates of noncommunicable diseases, the emergence and spread of infectious diseases, and overwhelming health emergencies. While efforts are being made to reduce the extent of climate change through the reduction of carbon emissions, it is now clear that a large degree of change is effectively 'baked in'. Conversations on emissions now focus on how we can limit warming to 1.5°C - meaning that preparations for and mitigation against this level of warming must be prioritised.

Action is needed to prevent these health risks. Our ageing population will become more exposed to extreme heat which the UK is expected to face. (2) Frequently intense heatwaves could result in a rise in heat-related deaths. (3) By the 2070s, the UK could see over 21,000 additional heat-related deaths annually. (4) Extreme heat, drought, wildfires and flooding harms agriculture threatens our food security and may lead to supply shortages and price rises which affects those already facing health inequalities. (5) People most at risk of these health impacts often live with disabilities and in areas of high deprivation. (6)

Over recent months, we have engaged with representatives across public health including those working in pest control, environmental health, water treatment, housing, workplace health, planning and emergency preparedness to understand the challenges they face, including the support which they need to ensure that the impact of climate change on our health is minimised as far as possible.

Health threats from climate change have sharply risen in recent years, the workforce has understood that this will be seen as a core component of public health due to the far reaching, complex and volatile consequences that climate change has on a variety of sectors including agriculture, water, planning and pest control, and these health risks affect all core parts of society. The WPHW plays a crucial role in identifying these obstacles, as well as helping to formulate, implement and enforce effective solutions. The WPHW must have the resources, capacity and expertise to prevent these expected issues. If they are not given support, then we risk irreparably harming the nation's health as our public health services become overwhelmed.



THE IMPACT OF CLIMATE CHANGE

Air Quality

Changes to the climate are expected to lead to poorer air quality, driving a range of health problems. Air pollution contributes to between 28,000 and 36,000 deaths a year in the UK through the onset and exacerbation of chronic disorders, including cardiovascular and respiratory diseases. (7) (8) Those who are experiencing deprivation are more likely to live close to sources of air pollution, such as major roads or industrial sources - meaning that poor air quality is already driving health inequalities. (9) (10) Minimising and mitigating against the rise of air pollution will reduce ill health, lower the burden on the NHS and boosting productivity as fewer people are forced out of work by air pollution related health conditions. (11)

AIR POLLUTION CONTRIBUTES TO BETWEEN 28,000 AND 36,000 DEATHS A YEAR IN THE UK THROUGH THE ONSET AND EXACERBATION OF CHRONIC DISORDERS, INCLUDING CARDIOVASCULAR AND RESPIRATORY DISEASES

Limited resources available to public health in the UK contributes to a lack of mitigation efforts on climate change, especially as restricted local authority budgets hamper their ability to invest in anything but short-term reactive services. A lack of investment into developing the capacity and preventative plans from the public health sector will inevitably lead to higher costs. (12) The UK may not benefit from the wider socio-economic benefits of climate change mitigations which include improvements in public health, reduced NHS costs, greater energy security, growth in low-carbon jobs and a reduction in poverty and inequality. (13)

Pests and Communicable Diseases

A warmer climate will lead to the ranges of pests extending, introducing new diseases to the UK, and potentially leading to future pandemics. Rising temperatures and changing weather patterns may increase the risk of food-borne and water-borne bacterial infections like salmonella, while a warming climate could expand the scope and survival of disease-carrying ticks and mosquitoes in the UK. (14) (15) This raises the risk of Lyme disease, Dengue, and Zika if non-native mosquito species emerge within the UK. (16) The rise of mosquitos may become established in most of England by the 2040s. (17) Increased occurrence of pests potentially harms the food supply chain in the UK due to more frequent checks for diseases, and the rising use of pesticides. (18)

Warmer regions across the UK will contribute to the rise in pests and diseases which we must adapt for, to prevent the potential of another catastrophic pandemic. Increasing temperatures cause pests and pathogens to frequently spread to the UK. (19) As well as acting to prevent the spread of these through border inspections and domestic pest control, the WPHW will play a crucial role in preparing the population for the increased risk they are likely to face over the coming years. Due to the changing nature of this threat, the current approaches taken by the WPHW are likely to require updating – for example, we currently spend very little effort on mosquito control.



Extreme Weather Events

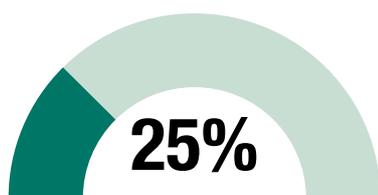
A clear challenge that climate change brings is the rise in intensity and frequency of extreme weather events, such as flooding and heatwaves. Increasing wildfires and extreme weather events in England fuels uncertainties that the small workforce within emergency preparedness has the capacity and resources to respond to the rising number of environmental disasters. (20) Low-income households are more likely to live in less optimum environments, which creates inequalities through exposure to extreme weather events, as air pollution concentrations are highest in the most disadvantaged areas. (21) People living in deprived urban areas have less access to greenspace, which heightens the severity of heatwaves or flood events. (22)

As a currently under-resourced field, emergency planning is unlikely to have the capacity to adapt to these changes – potentially increasing the harm done by climate driven extreme weather events. As well as increasing the frequency of rare extreme events, we are also likely to see the occurrence of events which have previously been confined to other regions of the globe such as heatwaves in South Asia and droughts in Southern Africa and wildfires in North America. (23) (24) (25) Emergency planners currently lack the relevant expertise to prepare for and prevent the effects of these events, while other systems are worryingly lacking in resilience. Without changes, it is likely that the rise in extreme events will have a substantial and avoidable impact on public health.

Infrastructure

Extreme weather events bring new difficulties for the UK's infrastructure, which is largely constructed to best manage a temperate climate with few extremes of temperature or precipitation. The need for changes can be seen whenever trains are cancelled due to snow on the tracks, or flood defences are shown to be inadequate in the face of what are now normal river levels. The UK's infrastructure is not prepared to cope with the full extent of climate change. (26) All areas of the UK are predicted to be warmer on average, with summers in the UK seeing the greatest rise in temperatures. (27) At the same time, instability in the Gulf Stream may mean we see colder winters on occasion. (28)

The built environment contributes to 25% of the UK's greenhouse gas emissions annually, and this infrastructure is not prepared to cope with these conditions. If the frequency of major flooding events continues then the number of homes at risk of flooding may rise to 2.6 million within the next 20 years. 20% of homes in England are already experiencing overheating and heat-related deaths are projected to triple by the 2050s. (29) Nearly 5.2 million properties are at risk of being flooded annually and by 2050, this could double. (30)



THE BUILT ENVIRONMENT CONTRIBUTES TO 25% OF THE UK'S GREENHOUSE GAS EMISSIONS ANNUALLY



20% OF HOMES IN ENGLAND ARE ALREADY EXPERIENCING OVERHEATING

1.9 million people across the UK are exposed to frequent flooding which will increase without suitable adaptations to the housing stock. (31) Planners in the UK face a shortage of staff and capacity, including reduced resources available to planning departments. (32) The planning workforce is requesting more training to develop their expertise on adaptation efforts to the effects of climate change through a more robust infrastructure, but restricted budgets mean this is not currently being delivered at scale.

We must ensure that the workforce can develop and build the necessary capacity, resources, training, expertise and skills to understand what is required to plan for the impact of climate change. Our housing infrastructure needs to adapt to protect our health, rather than risk contributing to declining health.

Food and Water Security

The wide-ranging impacts of climate change means that the population will experience new health concerns including new barriers to our food supply which leaves the UK susceptible to consuming and producing poorer quality food. Our dependence on climate-vulnerable countries is predicted to rise as more food is imported, resulting in potential shortfalls in supply. (33) The UK's reliance on imported food has increased over recent years and climate change means we are unlikely to be able to maintain domestic supplies – leading to increased reliance on poor quality food, adversely impacting the nation's health, leading to potentially more diet-related illnesses through the use of pesticides, increased exposure to parasites and livestock disease. (34) (35)

Climate change increases the risk to UK imports of foods from countries affected by escalating droughts and floods. (36) This negatively affects crop and livestock production through extreme weather events. Changes in soil quality, exposure to contaminants and increasing temperatures are expected to continue to reduce the quality and supply of food to the UK. (37) Climate change may reduce access to clean water. Our water systems must be resilient to the effects of climatic changes, especially wetter winters and drier summers, which are difficult to plan for as the current systems are not sufficiently adapted. Workforce capacity remains a concern due to recruitment challenges, including for those treating our water supply.



RECOMMENDATIONS

The impact of climate change on the public health of the UK is likely to be profound, even if efforts to reduce emissions are successful. In turn, this will create new challenges for the WPHW as they work to mitigate against this as far as possible. Increased training and upskilling, ensuring that the entire workforce has the expertise needed to address these specific challenges, will not prevent climate change from negatively impacting on our health, but it may help to reduce the worst impacts.

Investment is necessary to ensure that they can proactively plan and prevent the consequences of climate change at this juncture, rather than waiting until the impacts are overwhelming and all that can be done is react to an unfolding catastrophe – as happened during the Covid-19 pandemic. In recognition of the inevitable degree of change we now face, the Government must develop a comprehensive mitigation strategy – sitting alongside a strategy to minimise the level of change – which includes as a core plank how they will work with the WPHW to tackle the impact of climate change on public health. This strategy should work across sectors to ensure a holistic approach to health protection.

The Government cannot solve this problem alone. The WPHW wants to act now to improve their skills and expertise. Infrastructure bodies such as RSPH and FPH are taking a leadership role in extending and adapting the training available to the WPHW so that they are identifying risks and supporting sectors across the UK to appropriately adapt to these impending challenges. The entire public health sector must adopt this approach, including providing resource where needed to upskill the workforce.

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ENDNOTES

- 1 [World Health Organization: Climate change](#)
- 2 [Temperature-related mortality burden to worsen in Europe](#)
- 3 [UKHSA: Come rain or shine, adverse weather matters for our health](#)
- 4 [UKHSA: How does climate change threaten our health? From flooding to wildfires](#)
- 5 [Five unexpected consequences of climate change for the UK](#)
- 6 [ONS: Health state life expectancies by national deprivation deciles, England: 2018 to 2020](#)
- 7 [Air pollution: applying All Our Health](#)
- 8 [Effect of Net Zero policies and Climate Change on air quality](#)
- 9 [Air pollution, deprivation and health: understanding relationships to add value to local air quality management policy and practice in Wales, UK](#)
- 10 [Greater London Authority air quality exposure and inequalities study](#)
- 11 [Co-benefits of climate change mitigation in the UK: What issues are the UK public concerned about and how can action on climate change help to address them?](#)
- 12 [The politics of public health investments](#)
- 13 [Co-benefits of climate change mitigation in the UK: What issues are the UK public concerned about and how can action on climate change help to address them?](#)
- 14 [Salmonellosis](#)
- 15 [Health Effects of Climate Change \(HECC\) in the UK: 2023 report, Chapter 8. Direct and indirect effects of climate change on vectors and vector borne diseases in the UK](#)
- 16 [UKHSA: How does climate change threaten our health? From flooding to wildfires](#)
- 17 [Tropical Diseases 'Common in UK by 2040'](#)
- 18 [Health Effects of Climate Change \(HECC\) in the UK: 2023 report, Chapter 9. Climate change and food supply](#)
- 19 [Impact of climate change on pests and diseases](#)
- 20 [NFCC calls for further action to tackle extreme weather events](#)
- 21 [Child health inequalities and climate change in the UK - position statement](#)
- 22 [Neighbourhoods without much greenspace](#)
- 23 [Attributing extreme weather to climate change](#)
- 24 [Climate change: Deadly African heatwave 'impossible' without warming](#)
- 25 [How climate change worsens heatwaves, droughts, wildfires and floods](#)
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- 29 [Our homes are not ready for climate change](#)
- 30 [Climate Change – the Impact on Housing and Construction](#)
- 31 [UK Climate Risk: Housing](#)
- 32 [Why Is There a Shortage of Planners? | Spencer Clarke Group](#)
- 33 [Health Effects of Climate Change \(HECC\) in the UK: 2023 report, Chapter 9. Climate change and food supply](#)
- 34 [Climate Change and Emerging Food Safety Issues: A Review](#)
- 35 [Health Effects of Climate Change \(HECC\) in the UK: 2023 report, Chapter 9. Climate change and food supply](#)
- 36 [Five unexpected consequences of climate change for the UK](#)
- 37 [Food security under pressure from climate change](#)