

How can action to tackle climate change improve people's health and save the NHS money?

Dr Neil Jennings and Dr Caterina Brandmayr



Introduction

Achieving Net Zero greenhouse gas emissions by 2050 and contributing to global efforts to avoid the worst consequences of climate change requires policies that reduce emissions across the whole of UK society including the transport, housing and agriculture sectors.

As well as helping to tackle climate change, many of these policies bring considerable short-term benefits to other aspects of society, particularly to improving public health and reducing NHS expenditure and health inequalities. Disadvantaged and vulnerable populations are not only already more likely to suffer from ill health (Institute of Health Equity, 2020), but they are also expected to be most impacted by climate change, for example, through higher exposure to extreme heat. Failing to effectively tackle climate change could therefore further increase health inequalities (UK Health Security Agency, 2023). On the contrary, if directed appropriately, climate action could not only avoid negative impacts from a warming climate, but also play an important role in helping to reduce existing health inequalities. For example, by improving the insulation of UK housing, those on lower incomes could benefit from lower bills to heat their homes and would be less likely to get ill from living in a cold or damp property or suffer physical and mental health consequences from having to choose whether to ‘heat or eat’.

The synergies between health and climate action were strongly emphasised at the COP28 Climate Summit in December 2023. The opportunity to address multiple challenges in a joined-up manner is particularly relevant to the UK, given the high level of pressure on NHS services ([NHS England](#), March 2024) and challenging economic outlook for the country ([Office for Budget Responsibility](#), March 2024) – both of which point to the need to make existing budgets go further and to identify preventative health interventions that help to reduce the strain on the NHS.

Below we outline opportunities to deliver climate and health benefits across key sectors and highlight relevant transport, housing, diet and green space-related recommendations from the recent Climate Change Committee’s 2023 and 2024 Progress Reports on mitigation and adaptationⁱ and the National Infrastructure Commission’s (NIC) Second National Infrastructure Assessment (2023). These represent areas where insufficient action has been taken so far but where appropriate interventions could deliver multiple benefits for climate change, public health and reducing NHS costs going forward.

ⁱ N.B. The 2024 CCC Progress Report on mitigation includes only ‘Priority’ recommendations compared to a wider set of recommendations (priority and non-priority) included in the 2023 report. In this briefing we therefore include 2024 priority recommendations alongside 2023 recommendations that we believe are yet to be adequately acted upon.

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Transport

Transport is the largest emitting sector in the UK, responsible for around 29% of the country's total greenhouse gas emissions in 2023 (Department for Energy Security and Net Zero, 2024a). While the CCC's assessment indicates that there has been good progress encouraging the uptake of electric vehicles, the shift towards more active travel (i.e. walking/cycling), alongside uptake of electric vans, has fallen short (CCC, 2023a).

Yet these kinds of measures could help deliver important health benefits (Chamberlain et al., 2023). The transport sector is the biggest contributor to local air pollution, particularly in urban areas, due to the burning of petrol and diesel in vehicles. Across the UK, air pollution contributes to between 28,000 and 36,000 deaths a year (Office for Health Improvement and Disparities, 2022) and increases the rate of anxiety, depression, psychosis, dementia and cognitive deficits (Committee on the Medical Effects of Air Pollutants, 2022; Newbury et al. 2021). Decarbonisation measures to encourage the shift from petrol and diesel to electric vehicles, and increasing the amount of walking/cycling and use of public transport all deliver improvements in air pollution by reducing the combustion of fossil fuels. Directed appropriately, the improvements in air quality brought about by these changes can disproportionately benefit those on lower incomes and ethnic minorities which are currently exposed to higher levels of air pollution (Fecht et al., 2015).

Crucially, active travel provides additional benefits by increasing rates of physical activity – which is particularly important given rising obesity rates in the UK and the impact of obesity on cancer and heart disease (Silveira et al., 2023). While often given less prominence, policies that encourage shifts from driving to walking can reduce mortality rates by 4 to 45 times more than shifting from diesel and petrol to electric vehicles, as the latter reduces air pollution but doesn't provide any benefits to levels of physical activity (de Nazelle et al., 2021). Mortality and cancer have been found to be lower among people who walk, cycle or use public transport to get to work compared to those who use a car (Patterson et al., 2020).

The Department for Transport (2014) estimate that the economic benefits of walking and cycling schemes in the UK are 5.62:1, which represents 'very high' value for money. There is also evidence that increasing physical activity in the UK can potentially reduce NHS expenditure by up to 0.75% a year (over a 20-year period) by reducing the prevalence of type-2 diabetes, dementia, heart disease and cancer (Jarrett et al., 2012).

**“
Making it easier
and safer for
people to walk
and cycle improves
public health by
increasing levels
of physical activity
and reducing levels
of air pollution that
damage every organ
of our bodies.”**

Dr Audrey de Nazelle,
Centre for Environmental
Policy, Imperial College London

The UK has the opportunity to strengthen action to reduce emissions and simultaneously deliver positive health benefits. Key actions that the CCC and NIC have recommended include:

- Restore the funding allocated for active travel (CCC, 2023)
- Prioritise the delivery of a new, transparent public transport fare structure that offers more affordable and reliable travel, ensuring fairness in relation to more carbon-intensive choices (CCC, 2023)
- Reinstate the phase-out of new fossil-fuel cars and vans by 2030 (CCC, 2024)
- Encourage modal shift and enable an increase in trips [by walking, cycling and public transport] in congested cities (NIC, 2023)

“

Our work shows that there are tangible health benefits from measures to reduce car use in cities such as low emission zones. This includes reductions in cardiovascular disease as well as road traffic injuries, and we would expect these to reduce as more places introduce these types of schemes.”

Dr Anthony Laverty,
School of Public Health,
Imperial College London





Housing

In 2023, residential buildings accounted for about 13% of carbon dioxide emissions in the UK, the majority of which came from burning gas for heating and cooking (Department for Energy Security and Net Zero, 2024a). The UK currently has the least energy efficient homes in Europe (tado°, 2021) which makes improving the insulation of buildings an important measure to decarbonise housing. Yet, in 2023 only 83,500 homes were upgraded with a total of 318,600 energy efficiency measures (Department for Energy Security and Net Zero, 2024b) – well below the CCC target for 2023 of deploying 600,000 energy efficiency measures (CCC, 2023a).

Ensuring better insulation of the UK's housing stock can also bring significant benefits for public health by reducing the incidence of cold-related illnesses such as pneumonia. It is estimated that 21.5% of excess winter deaths are directly attributable to cold homes in the UK (Lee et al., 2022) – this equates to around 5,000 deaths a year over the last 10 years (End Fuel Poverty Coalition, 2024). Tackling cold homes in England via improvements in energy efficiency would save the NHS an estimated £540 million a year, and adequately investing in repairs and upgrades would pay back within nine years (Garrett et al., 2023). The transition towards Net Zero is also likely to include a shift from gas to electricity as the main source of energy by which people heat their homes and cook their food. This will also bring health benefits by reducing indoor air pollution, for example from benzene which is produced when gas is burnt in cooking stoves (Kashtan et al, 2023; WHO, 2023).

Better insulated homes are perceived by the UK public as a highly important benefit from climate action (Jennings et al., 2023, 2024), thanks to the combined benefits they bring to people's comfort, mental and physical health and energy bills. Promoting building retrofits can also promote more equitable outcomes. Ethnic minorities and those on lower incomes are more likely to experience fuel poverty (Department for Business, Energy & Industrial Strategy, 2022) meaning that, if directed appropriately, action to improve energy efficiency in homes can help to reduce health inequalities by making it much easier for people to keep their homes warm and reducing the chance of them getting ill or experiencing mental distress due to living in a cold, damp property.

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The installation of energy efficiency measures in UK homes have fallen by over 75% since 2012 due to poor policy decisions. Addressing this decline, while equipping the sector to deliver quality work, will help more people to live in warm, healthy homes that they can afford to heat and which also produce less greenhouse gas emissions.”**

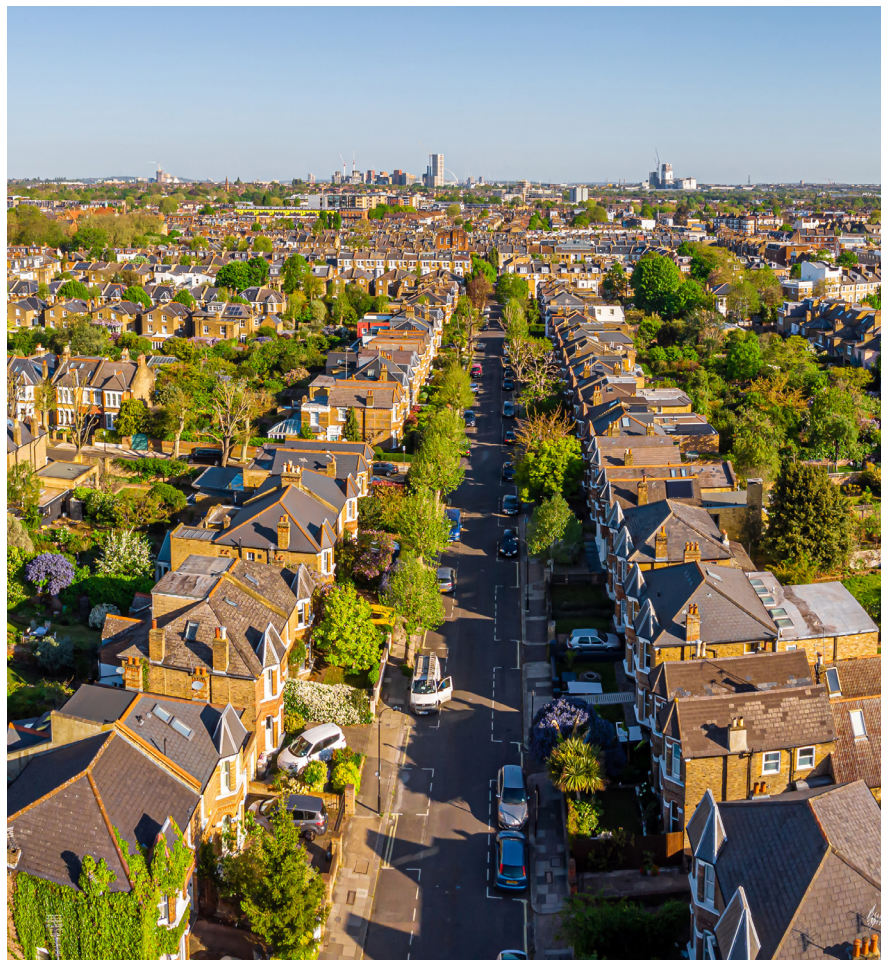
Dr Kate Simpson,
Environmental Research Group,
Imperial College London

**“
Over half the
homes in the UK
have no alternative
but to cook with
gas which is
polluting and
emits toxic gases
such as benzene
and nitrogen
dioxide, which
can contribute to
the ill health of
those in the house.
Cooking with
electricity is by far
the better option.”**

Professor Frank Kelly,
Humphrey Battcock Chair in
Community Health and Policy,
Environmental Research Group,
Imperial College London

To ensure effective building insulation, and help realise these opportunities, the CCC and NIC have pointed out the need for government to take the following actions:

- Ensure that the Government’s energy advice service and funding schemes (such as the Boiler Upgrade Scheme and Great British Insulation Scheme) are adequately publicised to ensure widespread take-up. Deliver strategies to target appropriate advice at hard-to-reach groups and for difficult-to-treat properties (CCC, 2023).
- Publish plans to improve the targeting of support for fuel poor households to retrofit their homes (CCC, 2023)
- Reinstate requirements on landlords to improve energy efficiency in rented properties (CCC, 2024)
- Set out by the end of 2025 a plan to tighten and enforce minimum standards in the private rented sector (NIC, 2023)
- Continue the obligation on energy companies to install energy efficiency improvements in households on lower incomes (NIC, 2023)
- Reduce energy demand from buildings by extending the Social Housing Decarbonisation Fund (NIC, 2023)
- Reinstate the new boiler phase-out to cover all homes (CCC, 2024)





Diet

“**Diets that contain too much red meat are bad for people’s health and the health of the planet. Shifting to a diet with more vegetables, fruit and grains can help people live longer, healthier lives, while reducing NHS expenditure and greenhouse gas emissions.”**

Professor Paolo Vineis,
School of Public Health,
Imperial College London

The 2021 UK National Food Strategy set a goal of reducing meat consumption by 30% by 2032 (compared to 2019 levels) to achieve the country’s longer-term carbon reduction targets. For context, UK meat consumption per person reduced by around 17% between 2008/09 and 2018/19 (Stewart et al., 2021). The reduction in meat consumption during the 2010s took place without any policy intervention to encourage the public to adopt more sustainable diets and the CCC have highlighted that there has been a missed opportunity to reduce dietary emissions further (CCC, 2023a).

As well as contributing to reductions in greenhouse gas emissions, the shift to a more plant-based diet can offer significant benefits to people’s health (Laine et al., 2021). Diets with relatively high amounts of beef, lamb and pork are associated with higher risks of cardiovascular disease, stroke and certain types of cancer (Pan et al., 2015) so a shift to diets with less meat and more cereals, fruit and vegetables (as recommended by the World Health Organisation (WHO)) can improve public health and reduce costs to the NHS. If the dietary intake of UK citizens complied with the WHO recommendations, life expectancy at birth would increase by over 8 months and save almost seven million years of life lost prematurely in the UK over 30 years (Milner et al., 2015), with associated benefits for reducing NHS expenditure.

It is important to note that healthier foods tend to cost more per calorie. Indeed, the National Food Strategy (2021) found that highly processed foods (those high in salt, carbohydrates, sugar and fats) were on average three times cheaper per calorie than healthier foods. This illustrates that interventions to encourage the shift to sustainable diets need to carefully consider the accessibility of those choices and put in place the right financial incentives to enable those on lower incomes to afford to adopt these changes.

To encourage further adoption of more plant-based diets amongst the public, the CCC have recommended that the government:

- Take low-cost, low-regret actions to encourage a 20% shift away from all meat by 2030, rising to 35% by 2050, and a 20% shift from dairy products by 2030, demonstrating leadership in the public sector whilst improving health (CCC, 2023)





Green space

“Increasing urban greenspaces provides a huge range of benefits for public health – from creating cooler spaces during heatwaves and reducing the risk of flooding, to the immediate benefit that access to nature provides for people’s cognitive function, mental health and wellbeing.”

Dr Emma Lawrance,
Institute of Global
Health Innovation,
Imperial College London

Climate change is making the UK warmer and wetter in winter, warmer and drier in summer and is also increasing the intensity and frequency of extreme weather events such as heavy rainfall that can lead to flooding (Met Office). Extremes of weather negatively affect physical and mental health and emphasise why the UK must do more to adapt to a warming climate alongside efforts to reduce greenhouse gas emissions (CCC, 2023b).

High temperatures increase the risk of respiratory deaths, heart attacks (Arbuthnott et al., 2017) and suicides (Thompson & Lawrance et al., 2022) but such extremes of heat can be reduced by the presence of greenspaces (e.g. trees, parks) which help to regulate temperature by providing more shade. The strategic placement of trees in a development at Zagreb University, for example, reduced indoor summer temperatures in adjoining buildings by 4°C, compared to a situation with no trees (Bozovic et al., 2017). The presence of greenspace improves mental wellbeing (Nutsford et al., 2013) and also regulates the flow of water which reduces the risk of local flooding with its associated negative impact on physical and mental health (Mulchandani et al., 2020, Lawrance et al., 2022).

There is currently inequity in access to greenspace across different groups of society (Public Health England, 2020). Those living in the most economically deprived areas have less access to good quality public greenspace such as parks (Schüle et al., 2019) and those who are at greatest risk of poor physical and mental health often have the least opportunity to benefit from access to greenspaces (Allen et al., 2014). The health and wellbeing of all social groups is improved by access to greenspace but some groups such as those who are more socio-economically deprived and disadvantaged seem to disproportionately benefit from greener living environments (Lovell et al., 2020).

Increasing the amount of greenspace, particularly in urban areas, can therefore play an important role in adapting to climate change while simultaneously improving public health (Environment, Food and Rural Affairs Committee, 2024), reducing health inequalities, absorbing greenhouse gas emissions and reducing energy costs for cooling buildings in summer and heating them in winter.

To increase the amount of green and blue space, the CCC have recommended that the government:

- Introduce a clear legal requirement to protect and enhance public green and blue space (CCC, 2023).
- Provide funding and delivery support for tree planting (CCC, 2024) [N.B. This relates primarily to rural areas but urban areas also have a role to play].



Increasing government join-up to ensure effective delivery

“There are indeed excellent examples of where local authorities have collaborated closely with health practitioners in order to deliver win-wins for both climate and health.”

Crucially, while some interventions recommended by the CCC and NIC fall squarely within the remit of individual departments, greater join-up across government departments and levels (national to local), as well as cross-sectoral collaboration that brings together decision makers with practitioners will be vital to maximise the health benefits of climate measures. This issue has also been highlighted by the Skidmore Review (2023) and Climate Change Committee (2023). There are indeed excellent examples of where local authorities have collaborated closely with health practitioners in order to deliver win-wins for both climate and health, such as collaborative initiatives between General Practitioners and the Housing team of Islington Council, known as SHINE (Seasonal Health Intervention Network), which delivered better insulation, warmer homes and improved health for vulnerable members of the community.

Conclusion

The examples above illustrate a range of areas where action to tackle climate change can simultaneously improve public health, reduce NHS expenditure and reduce health inequalities. While the relative importance of each synergy will vary on a local basis and the examples are not exhaustive, they point to a range of untapped opportunities which decision makers across the UK should look to realise as part of future measures to tackle climate change.

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