

## Health Policy Implications of Climate Change

Date and Location: 13th July 2022 at The Royal Society

Chair: Professor The Lord Trees FRCVS FMedSci HonFRSE  
Council Member, The Foundation for Science and Technology

Speakers: Professor Sir Chris Whitty KCB FMedSci  
Chief Medical Officer for England  
Professor Mike Tipton MBE PhD MSc FTSP  
Trustee, The Physiological Society, and Professor of Human and  
Applied Physiology, University of Portsmouth  
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**PROFESSOR SIR CHRIS WHITTY** started by noting that the health effects of climate change were substantial, and climate change effects, once they have happened, would not be reversed in short order. The effects were also not evenly distributed, and Professor Whitty showed maps of global storms and areas of where droughts were most likely today, both with significant geographical variation, and climate change would make both of these phenomena worse and most likely in these locations. Add to that large socio-economic variations, and the vulnerability of people to climate change varied significantly – but there would be negative effects everywhere. In the UK and Europe, some of these effects would include increases in heat stress, flooding and vector-borne diseases. Effects on agriculture, including animal and plant health, would lead to great food insecurity. There would be global impacts on socio-economic development, which would be long term.

There were four key policy responses. Firstly, healthcare as an activity must be brought as close to net zero as possible. Healthcare was a significant contributor to greenhouse gas emissions. Construction was one area, and heating was another – with vulnerable patients not being able to have an

environment that was too cold (or too hot), combined with a need for good ventilation. There were huge numbers of disposables in healthcare with a significant carbon footprint, and transportation and drugs also contributed. All these needed to be tackled.

The second policy response was to promote actions that have co-benefits between mitigation and health. These included active transport (walking and cycling), loft insulation and switching to electric cars. But the earlier encouragement of switching from petrol to diesel vehicles was one which was good for reducing CO2 but bad for air pollution and therefore health.

The third requirement was to find medical countermeasures for diseases and conditions which would increase with climate change. Science was hugely important, for example on producing vaccines for vector-borne diseases or flood- and drought-resistant crops.

The fourth requirement was to be honest about policy tensions and trade-offs. Science had a major role in both identifying and minimising trade-offs, but pretending that they weren't there leads to poor policy outcomes. Heating versus good ventilation was an example of such an issue, and experts from all sides needed to come together to work on mitigating the issues.

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**PROFESSOR MIKE TIPTON** began by noting that there was still an impression that climate change effects were something for the future rather than already occurring, but noted that 10 extreme weather events driven by climate change in 2021 each caused US\$1.5B damage. The direct damage costs to health would be US\$ 2-4B per year by 2030.

Professor Tipton noted recent work by The Physiological Society in this area. Examples included the thermoregulatory responses of flood rescuers, with predictions of people getting to heatstroke in about 45 minutes trying to do flood rescues in the warm conditions in which they can occur. Higher temperatures lead to deteriorating air quality, and to an increase in drownings as more people chose to leap into cold water to cool off. Food safety, biodiversity and mental health were other examples of things in the report from The Physiological Society.

People in some middle and low income countries did better in the heat than UK residents. One reason for this was behavioural adaptation, with people adapting their lifestyle to the weather, and secondly, they were much more thermally resilient. In the UK we had become thermostatic. Heatwaves produced excess deaths, especially amongst the elderly and children. Reasons included heat stroke, dehydration and cardiovascular stress.

Through science, we understood thermoregulatory responses and sensations of thermal comfort, and how they related to the environment in terms of the radiant heat load and movement, absolute temperature, and humidity. We could use this to develop systems and behaviours to minimise energy costs and still retain comfort. For example, if you increased the air velocity across the skin, you increased the thermal comfort threshold by about three or four degrees depending on speed of the airflow. Systems to increase this airflow would reduce the need for air-conditioning. Research had also shown that changing settings in thermostats and airflows could reduce energy usage considerably. This knowledge could feed through into the design of the urban environment to include cooler urban spaces – with the provision of more shade and water, for example. Urban environments don't completely cool down at night due to the thermal heat island effect, affecting sleep and with knock on effects for health, and more deaths during heat waves.

Food production was 20 to 30% of UK greenhouse gas emissions. This could be reduced hugely by moving away from meat, and we needed to ensure that plant-based substitutes provided the same essential acids,

amino acids and leucine, to help people maintain their health.

Understanding physiology was therefore essential in developing policy options which would be effective in mitigating the health effects of climate change. A multidisciplinary approach was needed. One immediate policy action could be to name and rank heat waves (as with storms) which could improve both public awareness and policy responses.

**DR MODI MWATSAMA** began by noting that climate and health was one of the three pillars of the Wellcome Trust's strategy (alongside infectious diseases and mental health). All the pledges from countries made so far to tackle climate change were not enough to meet the Paris climate goals, and we were on a trajectory to continue with global warming and increasing climate change. Wellcome was investing in mitigating against this, and investing in solutions to help protect people from the global warming that was already baked into the system.

The Wellcome Climate and Health strategy had 4 goals. The first to advance the availability, access and use of evidence on the direct impacts and the effects that climate change was going to have on people's health in different regions of the world. The second goal was to advance the generation and use of evidence to identify effective mitigation actions. The third goal was to advance the use of evidence to identify the effective adaptation solutions to help protect vulnerable groups and communities from the adverse effects of health. The fourth goal was to catalyse the development of a global community of policymakers, members of the general public, and communities who were able to use the evidence that was generated and understand it in order to drive health status centred action. This required greater use of data and metrics, building capability of researchers and policymakers, and tracking progress and learning.

Examples of Wellcome Trust investments included a call to evaluate interventions to help protect people from excess heat exposure in low and middle income countries, and another on biological vulnerability to extreme heat in maternal and child health. A third call was looking at advancing evidence-informed mitigation policy solutions with health co-benefits in G7 countries.

One example of an investment in field building was funding work to improve the ability to track the health impacts of climate change through developing the capability of National Statistics agencies, and

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convening the international community around reporting methods and standards. In another example, the Wellcome Trust supported IISD, the global environmental advocacy group, to look at opportunities to integrate health in the global environment agenda, effectively developing a toolkit. A third example was the Lancet Countdown, a global project that tracked progress towards the Paris goals by tracking progress across 44 global indicators.

**IN THE DISCUSSION**, the panel were asked about actions that the NHS could take. They noted the need to make reductions to emissions from transport, and the need to find the right balance between ventilation and heating/cooling of buildings. The NHS also needed to focus on tackling disposable waste. They would be less under pressure if behavioural change in the public could be achieved, for example during heat waves.

Answering a question about whether we could and should encourage cycling when the environment got very hot, it was noted that in many countries that were hotter than the UK, a lot more people cycled. Some people whose physiology meant they were less able to adapt might struggle, but the greater problem was motivating behavioural change at all. We needed to change to a more Mediterranean lifestyle, where physical activities were done at times of the day when it was cool enough, but also we needed to have less sedentary lifestyles as these led to great burdens on the health service.

The panel were asked about mental health, both of suffering extreme weather events (such as storms) and of more extensive warnings and concerns. They noted that it was important to give people straight news – studies showed that people were remarkably resilient, provided they felt in control of their lives. People were homeostatic animals, but it could be beneficial for that homeostasis to be perturbed to help develop resilience. There was considerable research literature on the effects of emergencies on mental health, and it varied significantly by type of emergency and type of person. Rescue services have systems in place to deal with mental health issues amongst rescuers. Evidence had shown that there were net benefits to mental health of warning people of dangers and helping them prepare.

In response to a question, it was noted that the Wellcome Trust was developing tools to help researchers better quantify the environmental impact of their research. Another question focused on whether medical practitioners could explain the

health benefits of net zero to patients. In response, it was noted that whilst this might be appropriate in some circumstances, others had a role in this, and science teachers were particularly well placed. Another example was the British Association for Sustainability and Sport, who have written reports on the implications of climate change on sports that people loved, as a way to get people to focus on the issue.

There was a question on whether the NHS should do more to drive through decarbonisation in its supply chain. The panel agreed.

The panel were asked how to ensure that climate change was maintained as a political and public priority in the face of short term urgent problems. The panel noted that there were no easy answers, although sometimes a short term problem (such as the energy crisis) could be used to drive forward net zero goals as well. Ultimately, politicians followed the general population, and somehow we needed to personalise people's perception of the issue.

The panel were asked about biodiversity, and noted that the challenges of climate change and biodiversity loss were linked. However, tackling those issues could also be linked, such as reforestation.

There was a question about climate justice, because, it was the high income countries who created the climate problem but the lower income countries who would suffer the most. The panel agreed that justice and equity were crucial – and one contribution from the scientific community was getting evidence to advocates; another was supporting countries polluting more to find solutions to decarbonisation challenges.

The panel were asked if they were optimistic that the NHS would meet its decarbonisation targets. They noted that real efforts were being made, and that research could help to get there faster. The straightforward things would be done first, but at some point, there would be tough choices to make, real trade-offs. Getting the public more aware of and accepting that tough choices needed to be made would also help maintain the political will of world leaders, who respond to public drivers.

There was a question about the benefits of tree planting, and the fact that Defra's targets in this area were not being met. The panel agreed there were benefits to both health and environment to further tree planting.

Gavin Costigan