How climate change is making Australians sick, and how government policy is failing

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Climate change presents a major public health concern in Australia, marked by unprecedented wildfires, heat waves, floods, droughts, and the spread of climate-sensitive infectious diseases.

A paper published in *The Lancet Regional Health: Western Pacific* details the rise in these events over the past two decades as well as the mitigation measures taken by national, state/territory and local

governments—with a call for greater inclusion of Indigenous Australians in developing these mitigation measures.

The paper, led by Monash University's Professor Yuming Guo, argues that Australia's response to the climate crisis has been inadequate and subject to change by politics, public sentiment, and global developments.

"Our findings reveal significant impacts of climate-related environmental extremes on the health and well-being of Australians," Professor Guo said.

"While governments have implemented various adaptation strategies, these plans must be further developed to yield concrete actions. Moreover, Indigenous Australians should not be left out in these adaptation efforts."

Australia has experienced some of the world's most extreme weather events in the last decade including the world's largest, most catastrophic epidemic thunderstorm asthma event in 2016, the extensive and devastating bushfires and extreme heat in the "Black Summer" of 2019/2020, and the record rainfalls and widespread and repeated flooding in 2021/2022.

According to Professor Guo, from the Monash University School of Public Health and Preventive Medicine, "these events overwhelmed emergency management and health systems, and led to considerable acute and chronic health impacts and deaths," he said.

"Australia has already warmed by 1.47°C on average since 1910, accompanied by more frequent and intense extreme heat events. The country has also experienced one of the greatest increases in bushfire risk globally, prolonged droughts in the southern parts of the country, and an anticipated increase in extreme floods in the wetter northern

parts. These risks are likely to escalate with devastating consequences for Australia's population, economy and environment."

The paper warns that climate change may also worsen the health inequity that already exists between Indigenous and non-Indigenous populations, low and high socio-economic groups, and rural versus urban populations, with Australian agriculture and food security impacted by increased frequency of climate-related disasters.

Over 2 million Australian households (21%) had experienced severe food insecurity in the previous 12 months, and disasters such as floods, bushfires and drought contributed to 19% of the severe food insecurity.

The paper—commissioned by *The Lancet*—is highly critical of the way all Australian governments have dealt with the climate crisis.

"Australia's national responses to the climate crisis have been inadequate. Policy engagement by the former Federal Government was inadequate and limited, and climate change and health issues have been addressed in a siloed and disconnected way at the national level," the paper said. "The Australian National Climate Resilience and Adaptation Strategy released in October 2021 did not put health at the center of the policies."

The paper points to a small selection of exceptions: the Western Australian Government's Climate Health Inquiry in 2020, which was the first statutory inquiry anywhere in the world focused on the health impacts of climate change; the Australian Medical Association (AMA) declaration of climate change as a health emergency in 2019, followed by other national health and medical associations, e.g., The Royal Australasian College of Physicians (RACP); and a 2022 Australian Academy of Health and Medical Sciences (AAHMS) report that highlighted climate change as an urgent health priority.

Key climate change issues and health impacts:

- Heat waves have been identified as a major threat to human health. From 2000 to 2019, 2296 deaths were associated with heat-related temperatures per year in Australia.
- Several studies in Australia have shown that people who are more socioeconomically disadvantaged and remotely located are more vulnerable to the health impacts of heat waves.
- Over the period of 2000–2022, most Australian communities experienced at least 10 days of heat wave per year, and the number of heat wave days was often higher than 15 days per year in Queensland and Northern Territory communities.
- In the 2018–2019 summer season, Australia encountered a prolonged and severe heat wave episode that persisted for more than two months, affecting multiple regions across the country and resulting in several unprecedented high-temperature records.
- In January 2019, the Australian Bureau of Meteorology documented the country's highest-ever recorded average temperature, e.g., the temperature soared to a record breaking 46.6°C in Adelaide. Moreover, the heat wave had a compounding effect on the intensity of bushfires that inflicted severe damage to several parts of the country, causing significant loss of life and property.
- The pronounced heat waves have significantly increased the mortality burden in Australia. Between July 2010 and January 2019, heat waves in Queensland were associated with a 5% increase in all-cause mortality compared to non-heat wave days.
- Bushfires have a direct effect on human health from exposure to flames and heat or involvement in bushfire events, such as burns, injuries, mental health and death, as well as a wide range of health risks from exposure to bushfire smoke, such as eye irritation and corneal abrasions, cardiorespiratory mortality and morbidity, and adverse birth outcomes.

- Among various air pollutants emitted by bushfires, particulate matter (PM) with a diameter of 2.5 μm or less (PM2.5) is the most important because it can travel hundreds of kilometers and affect a vastly larger population than the source fires and has long term health implications such as cardiovascular and respiratory diseases and cancer.
- The 2019-20 Black Summer bushfire smoke affected air quality both at the lower and higher reaches of the atmosphere. In eastern Australia, population exposure to bushfire PM2.5 during the "Black Summer" was estimated to be responsible for 417 excess deaths, 1124 cardiovascular and 2027 respiratory hospital admissions, and 1305 asthma-related emergency department presentations. The total smoke-related physical health costs during the 2019–2020 bushfire period have been estimated at AUD $1.95 billion.
- Floods are an increasing risk as heavy rainfall events become more common. Queensland is the state most impacted by floods, with New South Wales (NSW) being the second most impacted. In addition to infrastructure and property damage, floods can have direct and indirect effects on human health through the contamination of water and food supply systems, as well as increasing the risk of infectious diseases and impact on mental health.
- Drought is associated with increased risk of bushfires, dust storms and heat waves, which can induce increased mortality and cardiorespiratory problems. Limited access to clean water can lead to increased risks of infectious illnesses and can cause food insecurity. Drought may also induce mental health problems.

More information: Rongbin Xu et al, Climate change, environmental extremes, and human health in Australia: challenges, adaptation strategies, and policy gaps, *The Lancet Regional Health—Western Pacific* (2023). DOI: 10.1016/j.lanwpc.2023.100936

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