



**Submission to the Environment and  
Communications References Committee  
inquiry into current and future impacts of  
climate change on housing, buildings and  
infrastructure**

**July 2017**

[www.caha.org.au](http://www.caha.org.au)

## About the Climate and Health Alliance

The Climate and Health Alliance (CAHA) is a not-for-profit organisation that is a national alliance of organisations and people in the health sector working together to raise awareness about the health risks of climate change and the health benefits of emissions reductions.

CAHA's members recognise that health care stakeholders have a particular responsibility to the community in advocating for public policy that will promote and protect human health.

Membership of the Climate and Health Alliance includes a broad cross section of the health sector with 28 organisational members, representing hundreds of thousands of health care professionals from a range of disciplines, health care service providers, institutions, academics, researchers, and health consumers.

The Climate and Health Alliance, as its name suggests, is concerned with the health threats from climate change, and the organisation works to raise awareness of those risks and advocate for effective societal responses, including public policies, to reduce risks to health.

The Climate and Health Alliance has undertaken research and policy consultations and produced a number of reports and publications. It led the development of a [Framework for a National Strategy on Climate, Health and Well-Being](#), which was launched in Parliament House in Canberra in 2017; published a [report on the National Consultation](#) which informed the above Framework; produced the [Discussion Paper: Towards a National Strategy on Climate, Health and Well-being for Australia](#) in June 2016, produced the [Coal and Health in the Hunter: Lessons from One Valley for the World](#) report in 2015; led the development of the multi-stakeholder [Joint Position Statement and Background Paper on Health and Energy Choices](#) in 2014; produced the joint report '[Our Uncashed Dividend](#)' with The Climate Institute in 2012 on the health benefits of reducing greenhouse gas emissions.

CAHA conducted a Health Leaders Roundtable on Climate Change and Health in October 2016; led national [Roundtable on the Health Implications of Energy Policy](#); prepared a [Briefing Paper](#) on the same topic; produced a film on the risks to health and climate from coal and gas, [The Human Cost of Power](#); conducted a national [Forum on Climate and Health: Research, Policy and Advocacy in 2013](#); jointly hosted a [Public Seminar on Protecting Health from Climate Change](#) in 2014; organised the [Our Climate Our Health Seminar](#), featuring an innovative thought experiment: [Imagining 2030 as a healthy low carbon world](#); and contributes to conferences, community dialogues, and forums, both nationally and internationally on these issues.

For more information about the membership and governance of the Climate and Health Alliance, please see Appendix A. For further information see [www.caha.org.au](http://www.caha.org.au)

## Introduction

Rising global temperatures due to climate change have been linked with both direct and indirect harmful impacts on human health. In light of this, a high priority must be placed on addressing the impacts of climate change on human health to avoid placing Australian communities at further unnecessary and avoidable risk. This includes addressing impacts of climate change on housing, buildings and infrastructure, the quality and integrity of which are essential for health and well-being.

The Climate and Health Alliance welcomes the opportunity to provide a submission to the Environment and Communications References Committee's inquiry into *Current and future impacts of climate change on housing, buildings and infrastructure*, and would like to address the following terms of reference of the inquiry:

### Impact of climate change on water supply and sewage treatment systems

Water supply and sewage treatment infrastructure is essential to human health, and climate change can pose significant risks to this infrastructure, including through:

- power interruptions which have the potential to impact all water and sewage infrastructure, including drinking water treatment systems
- damage to drinking water infrastructure (including drinking water reservoirs, reticulation systems and storage tanks), which can result in the ingress of microbial pathogens and chemicals into drinking water and pose unacceptable risks to health
- damage to sewerage infrastructure which can lead to sewage overflows and human exposure to unsafe concentrations of microbial pathogens and chemicals
- damage to recycled water infrastructure which is used to supply recycled water for a range of uses including the irrigation of food crops, which can result in the ingress of pathogens and chemicals and pose risks to the food supply

### Impact of climate change on energy infrastructure, including generators and transmission and distribution lines

Climate change can pose significant risks to energy infrastructure, including the loss of power supply during extreme weather events, which are expected to occur with greater frequency and intensity in the future.

These types of events can pose serious risks to health. For example, if a power outage occurs during a heatwave, it substantially increases the risk of human

morbidity and mortality. Loss of power is also associated with an increase in accidents and it can also lead to the loss of vital telephone and communications equipment necessary for information sharing during extreme events (Broome & Smith, 2012).

### **Impact of climate change on health, education and social services infrastructure, including hospitals, schools and aged care**

Climate change poses significant risks to health, education and social services infrastructure, including hospitals, schools and aged care, through:

- the risk of damage to health, education and social services infrastructure which is expected to occur as a result of extreme weather events including heatwaves, bushfires, floods, cyclones and storm surges
- considerably increased demand for, and impacts on, health and social services. This will place burdens on already overstretched services and healthcare infrastructure.

In addition, extreme weather events, which are expected to increase in frequency and severity as a result of climate change, may also impact on the supply of power and essential goods, including food, and most importantly staff who may have difficulty getting to health and aged care facilities because of road and rail failures.

Health, education and social services infrastructure is essential in the provision of education and care to all Australians, including our most vulnerable populations. These populations will disproportionately suffer the adverse health impacts of climate change, and people with pre-existing medical conditions, older people, the young, disabled, socioeconomically disadvantaged and Indigenous Australians have been identified as being particularly vulnerable. Climate change places undue burden on those least responsible and least able to respond (Australian Academy of Science, 2015) (Bambrick, et al., 2008) (Harley, et al., 2011) (Bourque & Willox, 2014) (Hansen, et al., 2013) (Liu, et al., 2015).

### **Impact of climate change on private and public housing**

Policy action is needed to address the expected impacts of climate change on the social determinants of health, which are defined by the World Health Organization as ‘the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.’<sup>1</sup> The social determinants of health are mostly responsible for health inequities, or the avoidable differences in health status seen within and between countries, and include housing as a key factor.

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<sup>1</sup> World Health Organization 2017. Social determinants of health. Website accessed 26 June 2017. See: [http://www.who.int/social\\_determinants/sdh\\_definition/en/](http://www.who.int/social_determinants/sdh_definition/en/)

The many forms of extreme weather events, such as floods, heatwaves, bushfires, wind and hail storms can pose significant risks to private and public housing and associated risks to the health and well-being of residents.

Importantly, a 2013 report by the National Climate Change Adaptation Research Facility found that rental housing, which at that time comprised 27% of housing in Australia, is poorly adapted to climate change, incorporates the lowest quality housing which is over represented by low income earners, and is the most vulnerable to climate change (Instone, et al., 2013).

### **Adequacy of current state and Commonwealth policies to assess, plan and implement adaptation plans and improved resilience of infrastructure**

In assessing the adequacy of current state and Commonwealth policies to assess, plan and implement adaptation plans and improved resilience of infrastructure, consideration must be given to both existing infrastructure and new infrastructure, including building controls.

#### **Water supply and sewerage treatment systems**

To date in Australia, water supply and sewerage infrastructure (such as drinking and recycled water distribution systems) has been largely subject to voluntary standards specified in water industry codes of practice. The inquiry into *Current and future impacts of climate change on housing, buildings and infrastructure* provides an opportunity for Commonwealth, state and territory and local governments to:

- introduce strengthened national standards for water supply and sewerage system infrastructure
- ensure that Australia's water utilities undertake climate change scenario planning, including that they consider the implications of future climate scenarios and carry out vulnerability and risk assessments to identify climate change adaptation priority areas which require a response

Sound and up-to-date climate science is a critical input for undertaking vulnerability assessments (Water Services Association of Australia, 2016), and the Commonwealth government should ensure that there is significantly increased investment in climate science in Australia in the future. The Commonwealth government should also provide support for research into new climate-resilient water and sewerage construction materials and technologies.

#### **Health, education and social services infrastructure, and private and public housing**

The Climate and Health Alliance notes that in 2014, the Australian Building Codes Board published the paper *Resilience of buildings to extreme weather events*

(Australian Building Codes Board, 2014). This paper notes that while the National Construction Code includes design measures for buildings to withstand a range of climate related hazards including cyclones, bushfires, snow and floods, it does not cover hail, storm tide or heat stress. This gap was also previously highlighted in the Productivity Commission's report on *Barriers to Effective Climate Change Adaptation* (Productivity Commission, 2013). In addition, the paper highlights a previous study which identified that if the climate changes in accordance with high emissions scenarios, the current Building Code of Australia is likely to be deficient in some areas (Australian Building Codes Board, 2010).

Deficiencies in the Building Code of Australia with regards to extreme heat was highlighted in a recent study which modeled the performance of six Melbourne apartment types (including low and high-rise, old and new, minimum standards and best practice) based on the 2009 Victorian heatwave. The study found that all the Melbourne apartment types studied could not maintain safe internal environmental conditions when compared against international standards that address overheating (commonly referred to as thermal comfort or summer comfort standards) (University of Melbourne, 2017).

This is significant in light of the harmful impacts of heatwaves on human health. Rising global temperatures due to climate change have been linked with both direct and indirect harmful impacts on human health, and addressing these impacts is of vital importance to protecting the health of Australian communities. For example, climate change is contributing to record-breaking temperatures and has increased the likelihood that Australians will be exposed to extreme weather events, such as the severe heatwaves experienced across Australia in the summers of 2009/10, 2012/13, 2013/14, and 2016/17 (Black, et al., 2015) (Lewis & Karoly, 2014). The human health consequences of these events are significant. For example, heatwaves in 2009 and 2014 in Victoria contributed to 374 and 167 excess deaths, respectively (Department of Health and Human Services Victoria, 2009) (Department of Health Victoria, 2014).

Building standards can mitigate the likelihood of loss of life, as well as damage to and/or destruction of infrastructure, and the *National Strategy for Disaster Resilience* includes a priority outcome that 'building standards and their implementation are regularly reviewed to ensure they are appropriate for the risk environment' (Commonwealth of Australia, 2011).

The inquiry into *Current and future impacts of climate change on housing, buildings and infrastructure* provides an opportunity for the Commonwealth government to:

- recommend that the Australian Building Codes Board prioritise the review and amendment of existing building standards in the National Construction Code to ensure that they address the full range of climate-related hazards and to

ensure that they will adequately withstand climate impacts under high emissions scenarios

- recommend that all regulatory impact analyses for potential changes to building code standards include a mandatory assessment of climate change impacts
- establish government incentives to encourage low and zero carbon, climate resilient buildings and infrastructure (including in the health sector)

In addition to improving building standards for new buildings, the Commonwealth government as well state and territory governments should identify retrofit opportunities for existing buildings to address climate risks, including extreme heat. This should include a particular focus on public housing, schools and early childhood centres, as well as health and social services infrastructure.

With specific reference to health facility infrastructure, the Commonwealth government should work with state and territory governments to:

- expand and promote the Global Green and Healthy Hospitals initiative<sup>2</sup>
- integrate sustainable and resilient design solutions for health infrastructure that ensures continuity of health service delivery
- introduce mandatory standards and obligations for health facility design, construction and ongoing management of both new and existing facilities, which prioritise building resilience to direct and indirect climate risks
- invest in secure technological innovations and knowledge management systems for health services to withstand power interruption in the event of emergencies or disasters, including extreme weather events
- build resilience of interdependent agencies and critical infrastructure to avoid disruptions to health services

## **Emergency and disaster preparedness**

Emergency and disaster preparedness is an essential component of climate change adaptation. As such, the Commonwealth government should:

- expand investment in early warning systems to effectively identify potential climate-related threats to health (including through infrastructure impacts), such as extreme weather events, to enable rapid response to mitigate the impacts on Australian communities

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<sup>2</sup> Global Green and Healthy Hospitals is an international network of hospitals, health care facilities, health systems, and health organizations dedicated to reducing their environmental footprint and promoting public and environmental health.  
See: [www.greenhospitals.net](http://www.greenhospitals.net)

- expand investment in vulnerability mapping programs to identify and map vulnerable populations and infrastructure to inform climate adaptation strategies and emergency response plans

## **Conclusion**

Decisions made today will have lasting consequences for all Australians, and action to address the climate change impacts on infrastructure is essential to protect our health and prosperity. Effective action taken today will protect the health and well-being of our communities for generations to come, while also ensuring the continued economic prosperity of the nation.

## **Further information:**

The Climate and Health Alliance recently published a [\*Framework for a National Strategy on Climate, Health and Well-Being\*](#) (June 2017), which is attached to this submission and provides further information.



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## **APPENDIX A**

### **Climate and Health Alliance Committee of Management**

Dr Liz Hanna, President  
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Australian Health Promotion Association (AHPA)  
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Australian Nursing and Midwifery Federation (ANMF)  
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Psychology for a Safe Climate (PSC)  
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