



# National Climate Change Adaptation Research Plan: Human Health

## Summary

A National Climate Change Adaptation Research Plan for Human Health has been developed to identify the information that decision makers within government, industry and communities need in order to effectively respond and adapt to the health risks and impacts of climate change.

Climate change poses direct and indirect risks to human health. Direct risks include physical injury and deaths arising from extreme events such as bushfires, floods and heat waves. Indirect risks include geographic shifts in the range of infectious diseases transmitted by mosquitoes, and mental and physical health consequences from social and economic disruption and dislocation due to prolonged drought.

## Developing the Plan

The writing team for the National Climate Change Adaptation Research Plan was led by Professor Tony McMichael from the Australian National University, and brought together a group of Australia's leading specialists working in the field of health and climate change adaptation, including Haylee J Weaver, Helen Berry, Paul J Beggs, Bart Currie, John Higgins, Brian Kelly, Jan McDonald and Shilu Tong.

NCCARF coordinated the development of the Research Plan. In the development of this Plan, the writing team consulted broadly with stakeholders ranging from government departments to industry groups and service providers. A formal period of review of the draft Research Plan ensured that all interested parties were able to contribute comments.

## Criteria for prioritising research questions

The research questions were evaluated using the following criteria:

- Severity of impact/degree of benefit;
- Immediacy of required intervention/response;
- Need to change current intervention/practicality of intervention;
- Potential for co-benefit;
- Potential to address multiple, including cross-sectoral, issues; and
- The distribution and equity of the perceived benefit of any adaptation strategy.

## A coordinated national approach to climate change and human health research in Australia

The implementation of the National Climate Change Adaptation Research Plan for Human Health will be supported by the Adaptation Research Network for Human Health, which is funded by the Australian Government via the National Climate Change Adaptation Research Facility.

The aim of both the Research Plan and the Network is to facilitate a coordinated research effort to address the needs of decision makers with respect to adaptation to climate change in the area of human health. This effort will include the identification of sources of research funding, and the communication of research outcomes to inform decision making by government, industry and communities.

The Australian Government Department of Climate Change and the National Health and Medical Research Council have made an initial investment of \$6 million towards the implementation of this Research Plan, with further investment anticipated from government, industry and research institutions.

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**Disclaimer: The views expressed herein are not necessarily the views of the Commonwealth, and the Commonwealth does not accept responsibility for any information or advice contained within.**

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### How to get involved: key contacts

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Australian Government  
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# The diversity of health risks from climate change presents a direct challenge to the health sector, including acute health care and the public health system. In addition, many health-protecting activities will need to be undertaken by other sectors of government and industry, as well as by individuals and communities.

The Research Plan outlines critical risks to human health in Australia due to climate change, it identifies gaps in existing health research and in information available to decision makers. It identifies key research priorities aimed at filling these gaps and informing effective adaptive interventions.

The Research Plan aims to assist policy-makers, funding bodies, service providers and researchers to better support, coordinate and undertake climate change adaptation research activities for human health nationwide. In doing so, it aims to guide investment in climate change adaptation research on a national scale over the next five to seven years.

This document provides a summary of the Research Plan; the full plan is available online at [www.nccarf.edu.au](http://www.nccarf.edu.au)

## Climate change impacts in Australia: key risks to human health

The impacts of climate change on human health in Australia will vary geographically and across socioeconomic and cultural groups. At a national scale, this Plan identified the following critical risks to human health resulting from climate change:

- Increased frequency and severity of heat waves and other extreme weather events: floods, cyclones, storms and bushfires
- Changing incidence of vector-borne infectious disease
- Deteriorations in water and air quality
- Food availability and prices
- Impacts on mental health (adults and children)
- Impacts on community and Indigenous health
- Health care system capacity, infrastructure and service issues.

The following table lists the priority research questions that have been identified in relation to these key risks.



## Priority research questions for Climate Change Adaptation and Human Health:

### Heat

- Which categories of persons are most vulnerable to short-term extremes of heat?
- Do levels of understanding of the nature of the risks, and personal/household-level ways to ameliorate them, vary between these population sub-groups?
- Are changes needed to mainstream public health policy?
- Do early warning systems (EWSs) for heat waves and other extreme weather events reduce adverse health impacts?
- Which types of EWS are most effective?

### Extreme weather events

- Does public education about the risks of extreme events, and their avoidability, alter people's knowledge and behaviour?

### Vector-borne disease

- What are the future risks of arbovirus diseases arising from climate change? This question should focus on population movements and changes in Northern Australia, and monitoring of potential vectors.
  - Does climate-driven predictive modelling of any particular vector-borne infectious disease outbreak reduce the occurrence of such outbreaks?
  - How would existing public health systems cope with increased levels of vector-borne disease (VBD) infections?
- Can meteorological forecasts of impending seasonal weather conditions provide useful advance warning of altered risks of vector-borne infectious disease outbreaks? Does such usefulness differ between human-only and zoonotic VBDs?
  - Are such forecasts enhanced by inclusion of information about changes in environmental indicators (e.g., surface water conditions, vegetation levels, etc.)?
  - Will the implementation of such EWSs result in reductions in outbreaks or infection rates?

### Food, air and water quality

- Where will the likely climate change impacts on food safety and quality be observed and what measures/practices can be implemented to reduce the risk of food-borne disease outbreaks?
- What is the role of water authorities responsible for treating water in the management of climate change impacts?

### Mental health

- What interventions are required to minimise the potential adverse mental health effects of natural disasters (such as drought, windstorm and floods)? Initiatives to address this question should build on the established models and frameworks in disaster mental health planning.

### Community and indigenous health

- How might climate change and changes in occurrence of extreme events affect aspects of indigenous culture and living conditions that affect health?
- Which types of intervention most effectively increase the level of community resilience?
  - What key characteristics of indigenous, rural and urban communities determine their level of resilience to the stress of long-term changes in climatic and environmental conditions?

### Health services and infrastructure

- What models of integrating the entire health sector's adaptive responses best support coordination of adaptive activities?
- What models of linkage and knowledge exchange between climate change researchers and policy-makers best provide relevant decision support in planning health sector responses?
- What role should the primary health care sector play as part of a broader public health adaptive response to climate change?
- Is the health care system adequately structured and staffed to handle increased demands from (a) extreme weather events, and (b) outbreaks of infectious diseases?
  - What improvements are needed, feasible and effective?
- What forms of in-career training of health care professionals best prepare them to identify and respond to climate-related health impacts?