

# CHAPTER FOUR

# CLIMATE CHANGE

# AND HEALTH

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Climate change is the most significant global threat to human health.

The planet is getting hotter and is experiencing more extreme weather events such as flooding and bushfire. This is being seen in South Australia, Australia and internationally, and we need to respond to this threat today, not tomorrow or in the distant future. The changes to the climate are caused by humans and human-made greenhouse gas emissions<sup>150</sup>. Along with climate change, humans are also responsible for other negative changes to the environment including pollution, biodiversity loss and increasing disease spread from animals to humans<sup>151, 152</sup>.

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## THE CLIMATE HAS ALREADY CHANGED

South Australia is already hotter and drier. The average annual temperature across the state has increased by 1.6°C since 1910<sup>153</sup>.

If global emissions continue to increase at the current rate, it is predicted South Australia can expect<sup>154</sup>:

- > Higher maximum, minimum and average temperatures
- > An increase in the number of very hot days and heat waves
- > Decrease in annual rainfall, especially in spring, but more frequent intense heavy rains that can cause flooding
- > Increase in droughts
- > Increase in frequency and severity of bushfires
- > Rising sea levels
- > Warming sea temperatures and increasing acidity of ocean waters.

However, if there are immediate, rapid, and sustained emission reductions, global warming can be considerably slowed with measurable reductions in the variable impacts of climate change<sup>155</sup>.

## HOW DOES CLIMATE CHANGE IMPACT HUMAN HEALTH?

Climate change affects health in many different ways<sup>156</sup>, and in Australia, heat causes more deaths per year than all other natural disasters combined.

An increase in hot days, hot nights and heat waves can cause:

- > Exacerbation of chronic diseases such as heart, lung and kidney disease which can lead to hospital admissions and death
- > Reduced ability to exercise
- > Reduced food availability due to damaged food crops
- > Increased risk of food poisoning and water contamination.

Severe weather events and disasters can cause:

- > Injuries from flooding and bushfires
- > Increase in snake bites after floods

- > Reduced food availability due to damaged food crops and difficulty transporting goods
- > Increase in bacteria and parasites in water
- > Damage to health facilities and reduced access to care
- > Increase in asthma and lung disease during bushfires.

Other health impacts from climate change include poor air quality due to increased dust and pollens and the emergence of serious new communicable diseases in South Australia, such as Japanese encephalitis virus.

Climate change is having serious effects on mental health and wellbeing, which can be temporary or may persist long after an acute event. We are already seeing impacts of climate change on the mental wellbeing of children and young people<sup>157, 158</sup>.

## COMPOUNDING ISSUES FROM CLIMATE CHANGE

With the changing climate, there are more disasters and events occurring simultaneously and back-to-back. This means there is less time for recovery and a greater impact on physical and mental health and resilience compared to a single event. The term 'Permacrisis' (the Collins Dictionary's word of the year for 2022) reflects the possibility that our communities could remain in a state of climate crisis due to the rapidity, frequency and number of these events<sup>159</sup>.

Over the past two years, while simultaneously managing COVID-19 outbreaks across the state, including in remote communities, South Australia has experienced several climate-related events also impacting health. Examples of these events and the public health response include:

- > An outbreak of *Vibrio parahaemolyticus* in oysters from the warming of waters along the Eyre Peninsula
- > The ongoing threat of Japanese encephalitis, a virus newly spread to South Australia from nomadic water birds following flood waters
- > Floods in the far north of the state
- > Bushfire recovery action from the devastating fires in the 'Black Summer' of 2019-20.

# CASE STUDY

## EXTREME WEATHER

### Deluge rain with flash flooding across central and northern parts of South Australia during January and February 2022

In January 2022, northern South Australia was inundated with torrential rain that flooded the Stuart Highway. With this road unpassable, supply of food, medicines and COVID-19 support during the state's first Omicron wave were challenging.

As the flood waters receded, the threat of mosquito-borne infections such as Japanese encephalitis virus, Ross River virus and others emerged, as pools of stagnant water provide perfect breeding grounds for mosquitoes.

The communities in northern South Australia were simultaneously living with COVID-19 outbreaks, flooding and potential for mosquito-borne diseases, and the Department for Health and Wellbeing coordinated the much-needed food, medicine, mental health and mosquito management support.

With so many climate change events occurring consecutively, public health services are more essential than ever at the frontline responding to these crises.





## CLIMATE CHANGE AND DETERMINANTS OF HEALTH

Climate change does not affect people equally, and those who are most disadvantaged will be the most affected by climate change.

Health is affected by the social determinants – the conditions in which we live, work, grow and age. These determinants include access to housing, transport, education, healthcare services, employment and social and cultural connection. People with limited access to these basic needs are already at higher risk of having chronic diseases such as diabetes and heart, lung and kidney disease, and therefore at higher risk of being impacted by climate change.

Communities that are already having difficulty accessing water, food, reliable power and cooling, and key services (including health services) are at risk of worsening disadvantage.

Climate change may have specific impacts for Aboriginal people given the centrality of caring for Country<sup>160</sup>. Climate projections indicate that much of northern South Australia will have an extra 40 to 80 days over 40°C per year by 2090, implying very significant impacts for remote Aboriginal communities that may be difficult to mitigate. Caring for Country in these scenarios could well prove challenging<sup>161</sup>. The crises evolving from the environmental impacts of climate change, including bushfires, floods and other disasters, may disproportionately disrupt Aboriginal Australians' way of life<sup>162</sup>. The impacts degrade or destroy cultural heritage and natural resources central for practicing culture, meaning much is at stake for Aboriginal communities in a changing environment.

Reducing climate change inequities is an important part of adapting to South Australia's warming climate and protecting the health of all. By understanding how climate change affects the determinants of health, health protection, disease prevention and health promotion strategies can be improved to enable adaptation to the changing environment.

# CLIMATE CHANGE IS EVERYONE'S BUSINESS

## What can the health sector do about climate change?

Mitigation and adaptation are key strategies for tackling climate change<sup>163</sup>.

Mitigation includes measures to reduce greenhouse gas emissions or to capture and store the emissions. Examples include renewable energy, more sustainable food production, sustainable transport, waste reduction, and soil, forest and ocean ecosystem restoration. Mitigation can deliver important public and environmental health co-benefits.

Adaptation is the process of adjusting to climate change to minimise adverse impacts, reduce harm, and to optimise beneficial opportunities<sup>164</sup>. Examples include individual behavioural change, emergency preparedness, detecting and managing climate-sensitive disease outbreaks and environmental and public health tracking systems such as heat early warning systems. Determinants that increase how well communities can adapt to climate change include access to health services, access to cool places (such as public places with air-conditioning and cool shaded areas) and social connectedness (reminding people to check on more vulnerable loved ones or neighbours). Focusing on primary care and preventing disease can reduce demand in emergency departments and hospitals, particularly during climate events such as heatwaves.

The international consensus is that to hold global warming to under two degrees, the planet must achieve net zero emissions by 2050, and that every fraction of a degree matters.

The health sector needs to be ready for current impacts of climate change, and must also plan for longer term risks.

## How the health sector is adapting to climate change

Public health takes a population approach to adaptation and has yearly campaigns to keep Healthy in the Heat and to Fight the Bite to protect from mosquitoes. With longer and hotter summers, and more mosquito-borne diseases, these campaigns will need to increase, requiring greater engagement with more vulnerable communities and consolidating partnerships with other parts of the health system, such as general practice.

The *South Australian Public Health Act 2011* requires local councils prepare and maintain regional public health plans for their local areas. Many councils have identified local action addressing climate-related risks and to build environmental and community resilience. Regions across South Australia, comprising multiple councils and their strategic partners, have developed Regional Climate Change Adaptation Plans to strengthen readiness and resilience in their communities. The Department for Health and Wellbeing will continue to partner with local councils and communities to reduce the risk of climate change on health and to support the South Australian population to adapt to the changing climate.

The Department for Health and Wellbeing also assists public hospitals and health networks prepare for disasters. This preparation includes warning communities of potential health threats such as fires and floods, preparing health services to manage the disaster, such as moving patients to alternative facilities, and helping communities manage the aftermath of disasters, which often have ongoing and devastating impacts. As more climate-related disasters occur, there will need to be a focus on building community resilience and preparing healthcare services. Disaster events can impact health service infrastructure, as floods and fires can directly damage buildings, and staff may be personally affected by the disaster, meaning they are unable to work. There is also an emerging mental health burden of climate-related trauma for these key workforces.

Disasters are not the only climate change impacts for health infrastructure and workforce. For example, increases in hot days and heatwaves are a risk to people with chronic diseases and are already causing an increase in presentations to emergency departments, hospital admissions and ambulance callouts<sup>165</sup>.

Climate change health data have not been routinely collected, and health data systems need to be modernised to identify climate-related health issues, monitor trends and support health planning across the state.

Climate change adaptation will require the broader public and private health and emergency services sectors to undertake systematic risk assessments and put in place climate change mitigation strategies.

Many local health networks have already commenced work in this area. The Women's and Children's Health

Network Environmental Stewardship Committee convened in October 2021 with a remit to promote sustainability and environmental health. This includes reviewing opportunities to improve environmental performance and effectively respond to the impact of climate change to deliver environmentally sustainable health services that reduce overall resource use and adapts to a changing environment.

In 2020, the Barossa Hills Fleurieu Local Health Network utilised the department's In-House Green Rating Tool to assess climate risk for the Mount Barker Emergency

Department Adaptation Plan, informing the department's construction of the site which was completed in May 2023.

In 2021, the In-House Green Rating Tool incorporated requirements for building electrification, Electric Vehicle charging infrastructure, and increasing the emphasis on reducing embodied emissions in new building construction.

This work will be further reported on in future Chief Public Health Officer Reports.



## Reducing the health sector's emissions and improving the environmental footprint

The health sector also needs to reduce emissions and improve its environmental, social and economic sustainability.

Australia-wide, health systems contribute to about 7% of all greenhouse gas emissions<sup>166</sup>. As a government agency, SA Health will commit to the goals set by the South Australian Government to reduce greenhouse gas emissions by more than 50% below 2005 levels by 2030 and to achieving net zero emissions by 2050<sup>167</sup>. Hospitals make up the largest share of emissions from healthcare in Australia, with public hospitals responsible for 34% and private hospitals 10% of emissions<sup>168</sup>.

South Australia is a world-leader in renewable energy, and in 2021 used 100% renewable resources on 180 days<sup>169</sup>. SA Health is already reducing greenhouse gas emissions by electrifying hospitals and exiting from non-renewable energy sources such as gas. The new Women's and Children's Hospital will be the first in Australia to be 100% electrified. As private hospitals make up about 10% of Australia's healthcare emissions<sup>170</sup>, they will play a critical role in reducing the South Australian and national health sector's emissions.

Not all health greenhouse gas emissions come from energy. The UK National Health Service estimates that approximately 62% of greenhouse gas emissions come from items such as medical equipment, pharmaceuticals and other supply chains<sup>171</sup>. Public and private health services can significantly reduce emissions by 'greening' the procurement and supply chain and by shifting to more sustainable models of clinical care such as by choosing more sustainable medicines<sup>172</sup>. Additionally, reducing provision of unnecessary investigations and low value healthcare services has significant scope to minimise emissions, along with continuing to optimise technologies such as tele or video consultations.

### How mitigating climate change can be better for health

Reducing emissions and improving the environment also benefits health, for example:

- > Increasing well-planned green space and tree canopies takes carbon out of the atmosphere, reducing emissions and providing cool places on hot days.

- > Electrifying vehicles reduces emissions and improves air quality, which can reduce irritation to lungs, skin, and eyes and reduce rates of asthma and cancer.
- > Increasing active and public transport reduces emissions from vehicles on the road, while increasing time spent walking to improve physical and mental health<sup>173</sup>.

These are examples of action that require supportive government policy from all departments and a commitment by state and local governments, businesses, non-government organisations, community groups and individuals to reducing emissions and adapting to a changing climate.

Some of this work is already well underway. In 2022, the Metropolitan Urban Heat and Tree Canopy mapping project commenced in partnership between South Australian Government departments, the 14 metropolitan councils and Wellbeing SA. This mapping shows areas of sufficient tree canopy, and areas lacking trees leading to excessive heat, which assists with improving street design and prioritising greening across metropolitan Adelaide.

### Looking to the future

Climate change presents an enormous challenge for public health as it has a great impact on health outcomes across the population. Investment in prevention and early intervention is needed as a key element of climate health action, and the urgency with which the health sector must prepare for climate events and longer-term adaptation<sup>174</sup>.

South Australia will need to be prepared for a diverse range of consecutive and concurrent climate events and disasters, at an ever-increasing frequency. Adapting to the changes already being experienced, including preparing communities for disaster events and cooling neighbourhoods to adapt to the increasing temperatures, is essential. SA Health must also take greater action to reduce its emissions, both as a government agency and as part of the community.

The world is getting hotter and every fraction of a degree of warming matters. South Australia can continue to lead in this space to help prevent the world warming further along with supporting communities to adapt and build resilience to the changing climate.