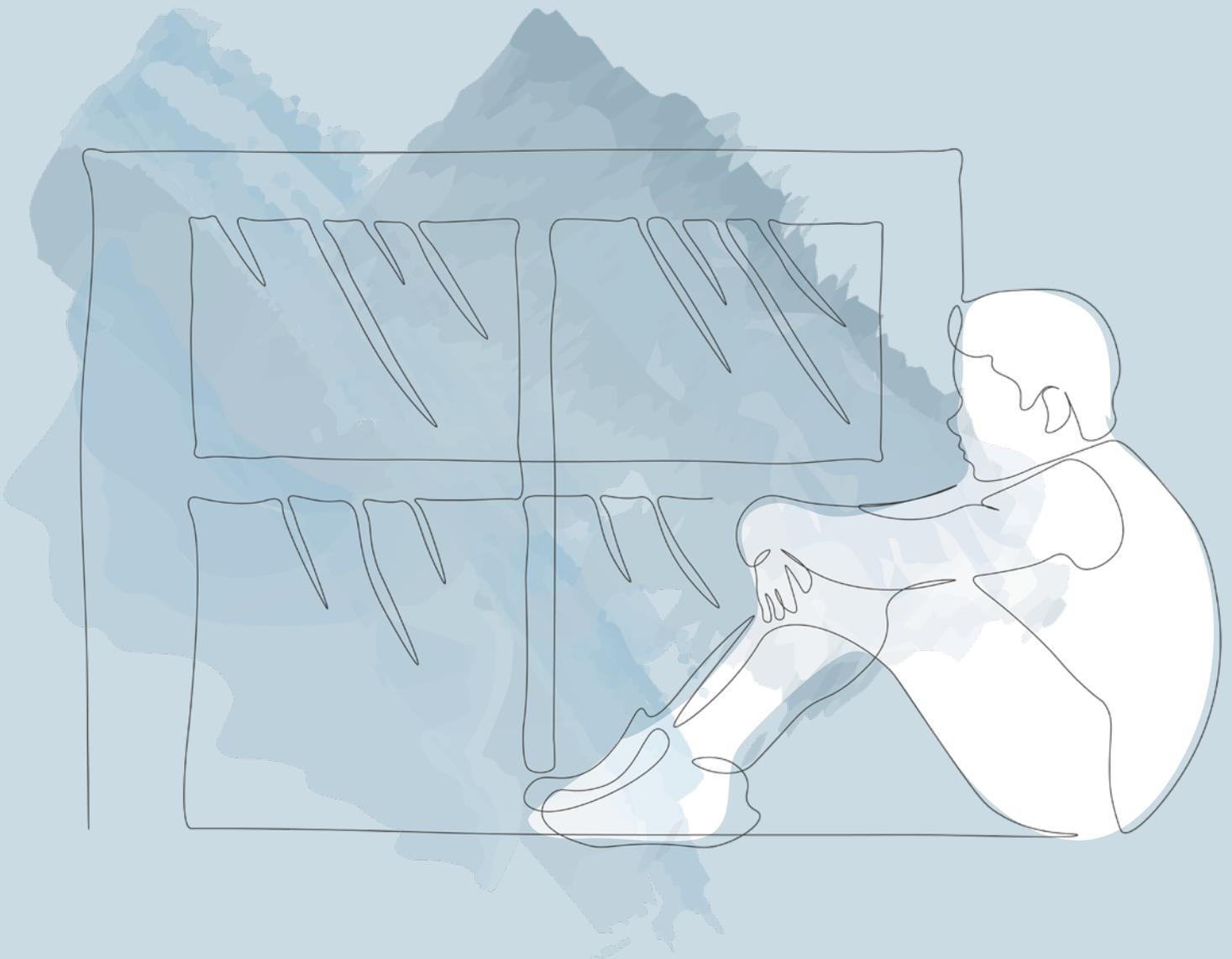


CLIMATE TRAUMA:

THE GROWING TOLL OF CLIMATE CHANGE ON THE MENTAL HEALTH OF AUSTRALIANS



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Authors: Dr Joëlle Gergis, Associate Professor Grant Blashki, Jane Gardner and Dr Simon Bradshaw.



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Cover image: Henry Lamshed.

The Climate Council acknowledges the Traditional Owners of the lands on which we live, meet and work. We wish to pay our respects to Elders past and present, and recognise the continuous connection of Aboriginal and Torres Strait Islander peoples to Country.

This report is printed on 100% recycled paper.



Dr Simon Bradshaw
Research Director (Projects)



Jane Gardner
Communications Director



Dr Joëlle Gergis
Climate Councillor



Associate Professor Grant Blashki
Beyond Blue

 facebook.com/climatecouncil

 info@climatecouncil.org.au

 twitter.com/climatecouncil

 climatecouncil.org.au

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Foreword

On the last day of summer 2022, an ominous mass of red and blue was on the radar, showing a massive, slow-moving low-pressure system headed straight for Lismore.

Like everyone else, I worked all day and into the night to prepare for the deluge. Our community went to sleep ready, everything was lifted and packed and we felt strong as we braced for a 'normal' flood. But the rain kept coming.

More than a metre of rain fell and the water poured down out of the hills. At 3am the flood warning was revised to a height we had never seen before and I knew that we were about to experience something unimaginable.

The flood inundated our city. Thousands of people were displaced and it left destruction so intense, even members of the Australian Defence Force described it as looking like a war zone.

The wounds this disaster has left on the Northern Rivers are a very long way from healed. our CBD is only at about 20% occupancy; hundreds of homes are still in ruins and houses in the hills have been totally swept away by landslides. We still don't have common community facilities like a cinema or an indoor kids play centre.

Our major civic buildings are still out of action: our library, our City Hall and our town pool are all still shut. We don't have many places where we can gather and be together as a community.

Twelve months on and we still cannot live ordinary lives.

As shocking as it is seeing the physical damage to our homes, our city, and our landscape - the level of trauma and suffering across our community is even more significant.

**The floods inundated our city,
displaced thousands, and left
destruction so intense it looked
like a war zone.**

The sheer number of people who have been impacted means that as a community, we now share a collective trauma. This translates into people not being able to navigate the day to day. Our community is, quite simply, exhausted.

We are now in the long hard slog of recovery. Twelve months in and there are still hundreds of homes that remain empty and significantly damaged. Many people are carrying the cost of rebuilding whilst also renting somewhere else and all the while the cost of everything is going up. Insurance has become totally out of the question for many. How can you even consider a \$17,000 a year insurance plan when you can't put food on the table?

Parents in particular are really struggling and so are their kids. Schools are operating out of temporary facilities. Kids are trying to navigate the loss of their toys, their homes, their pets, and their safe and familiar places. Teachers tell me that the classroom is a hard place for many kids and that it is playing out in their behaviour and their interactions with each other.

And while we continue to rebuild and may well achieve some type of 'normal', it is abundantly clear that the mental health repercussions will be with us for a very long time.

Our community needs opportunities to work through our collective experiences. But we also need time to do that. As we enter the second year of recovery, we have limited places and spaces to have healing conversations and to be together to process our experiences.

As a society we need to have serious, and action-focused conversations about the sting in the tail of climate disasters: about the mental health fall out - not just here in Lismore - but all around the country, as communities everywhere grapple with disaster upon disaster upon disaster.

This Climate Council report couldn't come at a more important time to spark this conversation. The mental health toll of worsening and more frequent climate disasters in Australia is an extremely urgent issue.

Mental health cannot be an afterthought. As a nation, we have to prepare, respond and resource ourselves so that no-one has to struggle through this new climate reality we are living in without the right care and support.



Councillor Elly Bird

Lismore City Councillor
Executive Director of Resilient Lismore

Key findings

1

Floods, bushfires and other extreme weather events – made worse by climate change – are taking a heavy toll on the mental health of Australians.

- › A national poll of over 2,000 people conducted by the Climate Council shows that the majority (80%) of Australians have experienced some form of extreme weather disaster since 2019.
- › More than half (51%) of Australians are “very worried” (25%) or “fairly worried” (26%) about climate change and extreme weather events in Australia.
- › More than half (51%) of Australians who experienced a climate change-fuelled disaster since 2019 feel their mental health has been somewhat impacted, of whom one in five (21%) claim that the disaster they went through has had a “major or moderate impact” on their mental health.
- › The Intergovernmental Panel on Climate Change (IPCC) has stated with *very high confidence* that climate change is expected to further threaten mental health.
- › Worries about climate change, particularly among young people, are amplified by inadequate government action to reduce emissions and move beyond fossil fuels.

2

Communities across Australia are reporting mental health challenges as a result of worsening extreme weather events. The situation is particularly tough for rural and regional Australians.

- › People living in rural and regional areas are significantly more likely to have been affected by flooding at least once since 2019 (61%) than people living in urban areas (38%), and significantly more likely to have been affected by bushfires (49%) than people in urban areas (36%).
- › People outside of metropolitan areas are also more likely to have difficulty accessing mental health support and more likely to feel that their state emergency services and state governments are poorly equipped to deal with climate disasters.
- › People in Queensland and New South Wales are the most likely to have experienced multiple disasters since 2019. Specifically, 38% of Queenslanders and 34% of people in New South Wales reported experiencing flooding more than once since 2019. (National average of 24%.)

3

Rising insurance premiums are increasing the burden and making it harder for Australians to protect themselves against worsening extreme weather disasters.

- › One in 12 (8%) of the nearly 500 Australians who shared their recent experiences of an extreme weather disaster said the event had severely impacted their home – leaving it destroyed or deemed uninhabitable.
- › Among the more than 2,000 respondents to our national poll, one in five (21%) reported having no insurance. Of those who did have insurance, nearly two thirds (64%) reported that their premiums had increased in the last two years. Most (81%) said “climate disasters” were part of the reason why.
- › One in 20 (6%) of those surveyed said they had cancelled their insurance coverage due to the increase in their premium.

4

Stronger action on climate change - both to reduce emissions and to support communities coping with the impacts that can no longer be avoided - is fundamental to protecting the mental wellbeing of Australians.

- › All levels of government should prioritise practical action to accelerate emissions reductions *this decade* and ensure Australia substantially exceeds its current 2030 emissions reduction target.
- › Australia continues to spend far more on disaster recovery than on resilience building efforts, despite evidence that every dollar spent on disaster preparedness saves many dollars through reducing future losses.
- › Communities suffering due to climate change should be at the heart of all adaptation and resilience building efforts, emergency response plans, and recovery arrangements. This should include support for community-led resilience building efforts, ensuring these receive adequate funding.
- › Ensuring mental health support services are available to those who wish to access them requires both an increase in capacity and, crucially, ensuring access to services is as simple as possible. Additional support measures should be in place for up to five years following a disaster. Special attention should be given to regional, rural and remote communities, where support is more difficult to access.

1. Introduction

There is no doubt that the consequences of climate change are now playing out in real time across Australia.

Every Australian is being impacted by climate change. Whether we've paid exorbitant prices for produce at the supermarket, choked our way through bushfire smoke blanketing our communities, faced evacuations during dangerous extreme weather events or lost our homes in a bushfire or flood, life as we know it is being disrupted in many ways.

While decades of rigorous research have taught us a tremendous amount about the physical risks of climate change, far less attention has been paid to the impact of climate change on our mental health and the fabric of our communities.

In December 2022, with support from Beyond Blue, the Climate Council set about building a clearer picture of the impact of climate change on the mental health of Australians. Over the years we have heard many stories of the profound mental health toll that events like the 2019-2020 Black Summer fires and 2022 east coast floods have taken on Australian communities.

We have also heard heartening stories of how communities have pulled together to support each and promote their mental wellbeing following traumatic events.

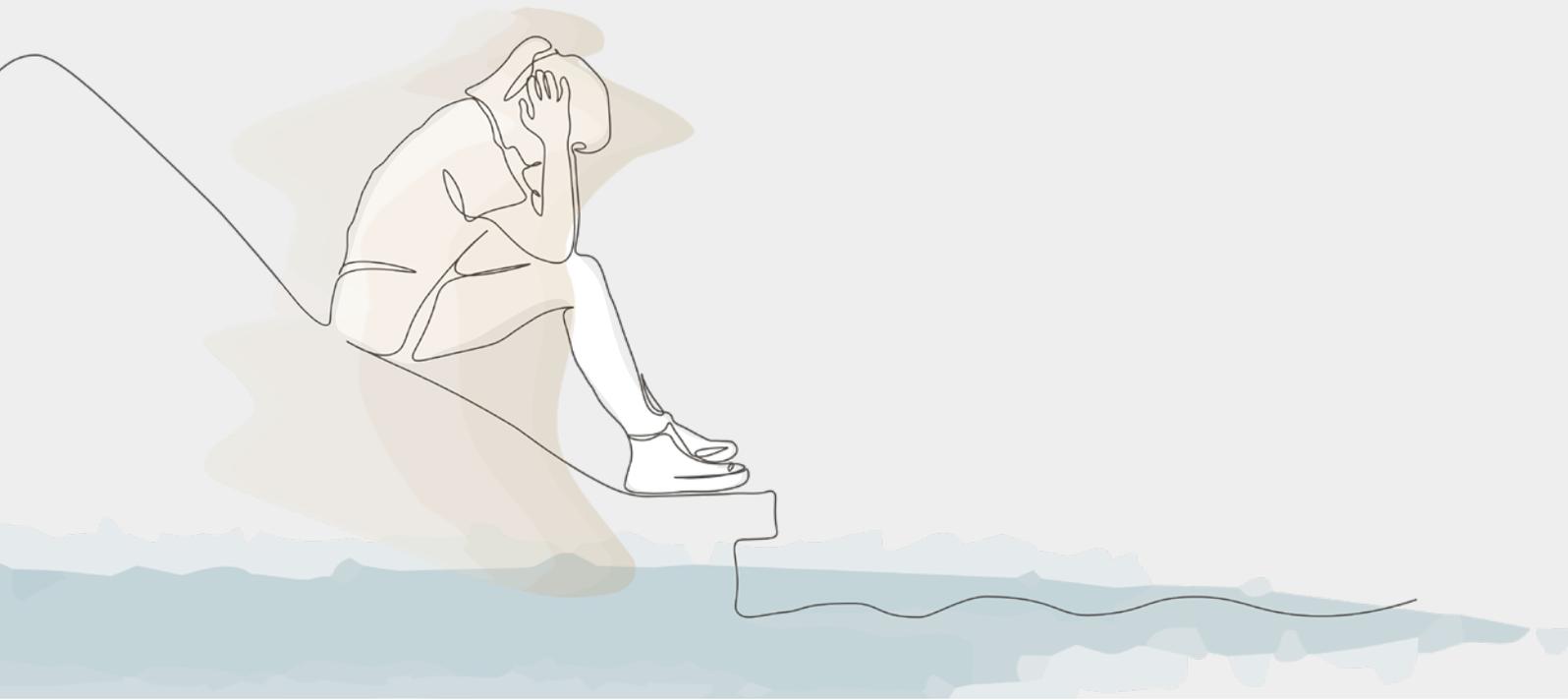
The new national study presented here, which we believe is the largest of its kind in Australia, provides valuable quantitative data and a rich trove of qualitative testimonies from people all over Australia who have lived through disasters. It has deepened our understanding of the impacts of climate change on mental health in Australia and provided an opportunity to hear from those on the front line of the climate crisis about how to better prepare for and respond to future disasters.

The landmark study was conducted in two parts: the first part was a national poll conducted by YouGov from 2-16 December 2022 with a representative national sample of 2,032 Australians. The sample covered Australian adults aged over 18 from all states and territories, representing a range of income levels, voting habits, education levels, geographic distribution, ages, genders, and other characteristics that make up the Australian community. Respondents were asked a series of multiple choice questions about their experience of extreme weather disasters, the ways in which they had been impacted, and – where relevant – their experience with mental health services following the disaster.¹

The second part of the study, which ran in parallel and is referred to in this report as the "community survey", sought to gain some deeper insights from those in disaster-

Stronger action on climate change is fundamental to our mental wellbeing.

¹ The methodology statement can be accessed here: <https://au.yougov.com/results/apc> The theoretical margin of error on a sample of 2,032 is $\pm 2.5\%$.



affected communities. This was conducted via an online survey, advertised through the Climate Council and Beyond Blue's networks, inviting Australians to share more detailed accounts of their experiences of extreme weather disasters.²

The response to the community survey was astonishing. Nearly 500 individuals volunteered accounts of their experiences, some in great detail. Many respondents shared very personal and confronting stories of mental anguish, as well as inspiring accounts of community resilience in the face of disaster. Climate Council wishes to express its immense gratitude to the participants for kindly and courageously contributing their stories, experiences and insights to this study.

Initial results from the national poll and the community survey were first published in January 2023.³ In this more comprehensive follow-up report, we take a deeper dive into the results, including sharing previously unreleased data about property damage and insurance (Section 2). We also provide an update on the latest science on climate

change-influenced extreme weather in Australia and the impacts of climate change on mental health (Section 3). Finally, we offer recommendations on the way forward. We cover the need to rapidly accelerate efforts to tackle the underlying causes of climate change; suggest improvements for adapting to the impacts of climate change that, owing to past inaction, can no longer be avoided; and offer specific suggestions for boosting mental health support to cope with the escalating impact of climate change on the mental health of Australians (Section 4).

The overall message from this study is simple: stronger action on climate change is fundamental to promoting the mental health and wellbeing of not only Australians but of communities all over the world.

² Unlike the YouGov poll, which involved a nationally representative sample of Australians, this second survey relied on people coming forward voluntarily to share their experiences. The results should therefore be taken as indicative only as they are a self-selected sample so may contain biases. The survey included both multiple choice questions and free text responses, asking about the types of disaster experienced, the kinds of impacts felt, experiences with mental health support, impacts on properties, and concerns about the current summer.

³ The initial results, published by the Climate Council and Beyond Blue on 23 January 2023, are available here: <https://www.climatecouncil.org.au/resources/survey-results-climate-disasters-mental-health/>

2. Results

2.1 Australians share their experiences of climate change-fuelled disasters

2.1.1 THE NATIONAL PICTURE

Climate change means more and more Australians are being exposed to extreme weather disasters.

A clear majority (80%) of respondents to our national poll reported experiencing some form of disaster at least once since 2019. Of those, 63% experienced heatwaves, 47% flooding, 42% bushfires, 36% drought, 29% destructive storms, and 8% landslides.

The results reflect respondents' subjective assessment of what constitutes a disaster. Heatwaves are a very common experience in Australia, and while heatwaves are responsible for more deaths than all other types of extreme weather combined (DIT 2013), not all heatwaves would be considered

disasters. Nonetheless, our results, and the high proportion of Australians who reported experiencing some form of extreme weather disaster, are consistent with some other recent studies. For example, analysis by the Australian Federal Treasury has shown that 68% of Australians live in a local government area that was affected by extreme weather disasters in 2022 (ABC 2023). Research has also shown that nearly 80% of Australians were directly or indirectly affected by the catastrophic 2019-2020 bushfires (Biddle et al. 2020).

A clear majority of Australians have experienced some form of extreme weather disaster at least once since 2019.

2.1.2 THE RURAL-URBAN DIVIDE

From the cities to the most remote parts of the continent, Australians everywhere are being affected by extreme weather disasters. The nearly 500 people who shared their experiences of extreme weather disasters through our community survey included people from every state and territory, from almost all our major cities, from many regional towns and from rural and remote Australia. Additionally, the representative national poll of over 2,000 Australians revealed that while no part of the country is immune, some areas are clearly being more heavily impacted than others.

In particular, people in regional, rural and remote areas are more likely than those in the cities to experience extreme weather disasters. In fact, they are far more likely to have been affected by flooding at least once since 2019 (61%) than people living in urban areas (38%), and significantly more likely to have been affected by bushfires (49%) than people in urban areas (36%).

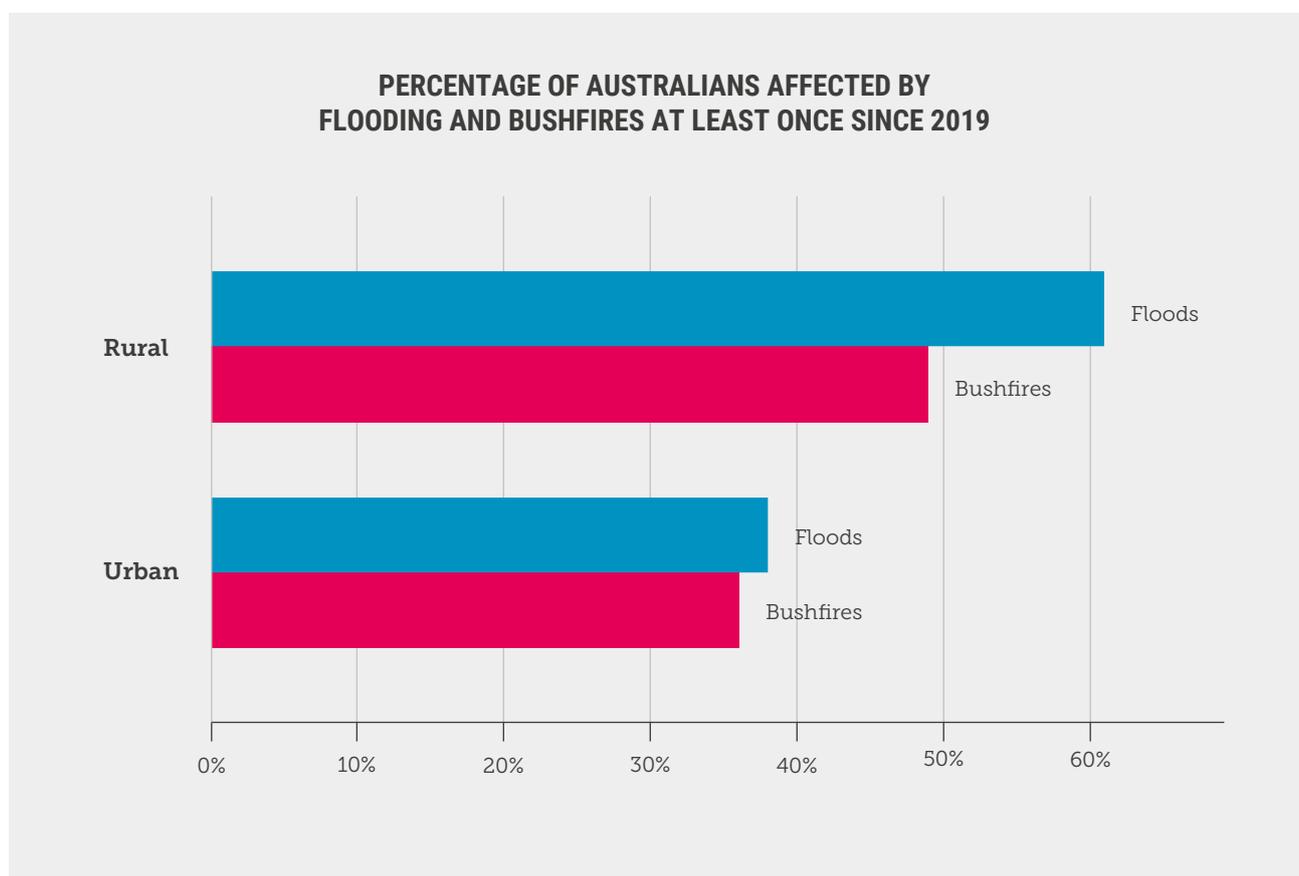


Figure 1: Percentage of Australians affected by flooding and bushfires at least once since 2019. Source: YouGov poll, 2022.

These results are not surprising as – with notable exceptions like the large number of people living on floodplains in our major cities – people living outside of metropolitan areas tend to be more exposed to natural hazards. Nonetheless, the results point to a clear rural-urban divide when it comes to the impact of extreme weather events.

People outside of metropolitan areas are also more likely to have difficulty accessing mental health support (see more on this in Section 2.5) and more likely to feel that their state emergency services and state governments are poorly equipped to deal with climate disasters (Sections 2.6.2 and 2.6.3).

While no part of the country is immune, there is a clear rural-urban divide when it comes to experiences of extreme weather and the impacts of climate change.

2.1.3 STATE BY STATE

Previous Climate Council research has shown that among states and territories, Queensland faces the greatest brunt from extreme weather disasters. In 2020 we found that, on a per person basis, Queensland's economic losses from extreme weather disasters were more than twice the national average (Steffen and Bradshaw 2020).

This polling offers further evidence of the disproportionate impact disasters are having on Queenslanders, as well as those residing in New South Wales. People living in Queensland and New South Wales are the most likely to have experienced multiple disasters since 2019. Specifically, 38% of Queenslanders and 34% of people in New South Wales reported experiencing flooding

People living in Queensland and New South Wales are the most likely to have experienced multiple disasters since 2019.

more than once since 2019 - compared to 13% in Victoria, 5% in Western Australia, 4% in South Australia, and a national average of 24%. As explored in Section 3.2.3, experiencing successive disasters - 'compound events' - can have a cumulative impact on mental health.

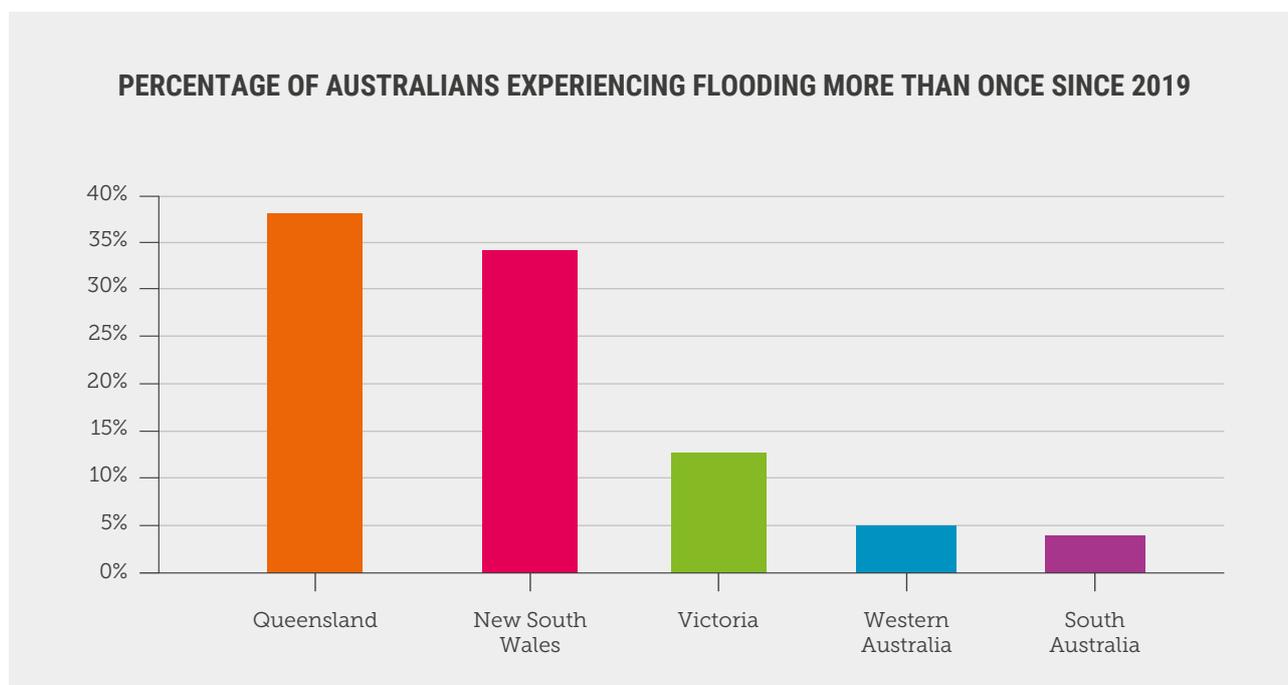


Figure 2: Percentage of Australians experiencing flooding more than once since 2019. **Source:** YouGov poll, 2022.

Note: The YouGov poll involved a nationally representative sample covering all states and territories. However, the number of respondents from Australian Capital Territory, Northern Territory and Tasmania – being scaled to the populations of those jurisdictions – was not enough to give a significant result. Therefore we only show results for Queensland, New South Wales, Victoria, South Australia and Western Australia.

2.2 Anxiety about climate change and extreme weather events in Australia

More than half (51%) of Australians surveyed in our national poll were “very worried” (25%) or “fairly worried” (26%) about climate change and extreme weather events in Australia.

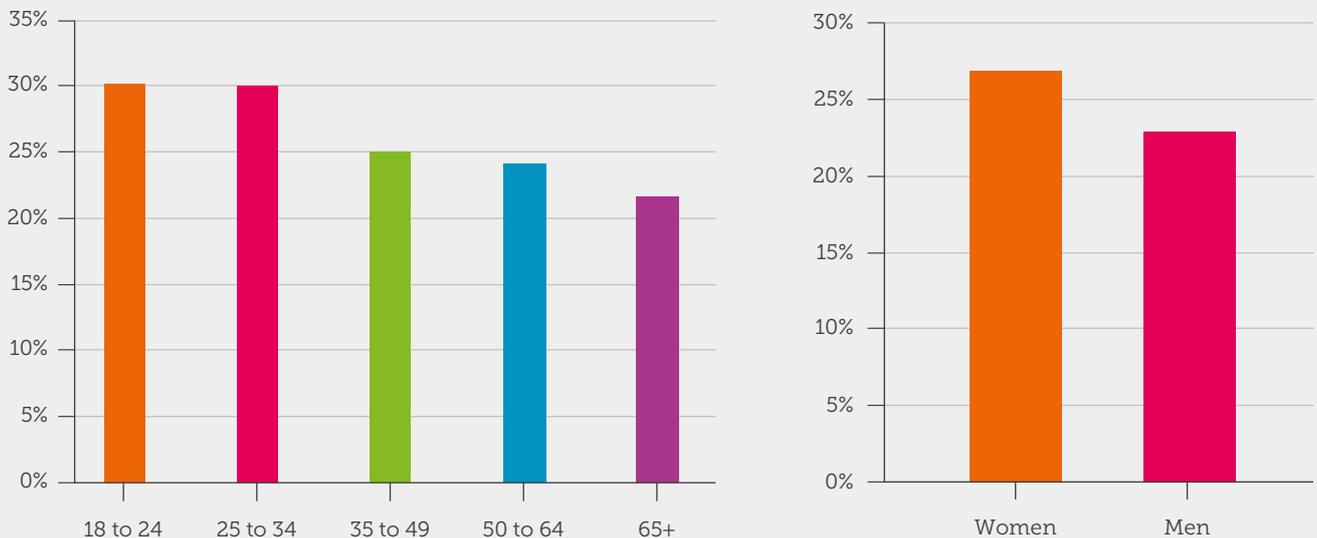
People who are “very worried” about climate change and extreme weather events in Australia are more likely to be women (27%, compared to 23% for men), and to be younger

(30% for those aged 18 – 34, compared to 22% for those aged 65+).

Around two in five (42%) of Australians surveyed in our national poll were “very or fairly worried” about their community facing further disasters during the 2022-2023 summer.

Figure 3: Percentage of Australians who are very worried about climate change and extreme weather events. Source: YouGov poll, 2022.

PERCENTAGE OF AUSTRALIANS WHO ARE VERY WORRIED ABOUT CLIMATE CHANGE AND EXTREME WEATHER EVENTS



Not surprisingly, worry about more extreme weather to come was even higher among the community survey group of nearly 500 Australians who said they had recently experienced an extreme weather disaster. More than half (57%) said they were either “very or extremely worried”. Only one in 20 (6%) said they were not worried.

“I literally dislocated my jaw with stress last year (clenching). With another dramatic summer upcoming, my body is in constant physical pain again.”
- Blackheath, New South Wales

“It honestly feels like you can’t relax. It’s hard to plan the garden around this strange weather. None of the normal seasonal things seem to apply. Everything is out of whack. Forever bracing for the next event.”
- Shepparton, Victoria

“I don’t know how we can do this again. We’ve learnt lessons from 2022, but I don’t know how we can move things early, or get access to extra resources. We still don’t know how to get livestock to safety and manage the herd. How do we support our high-needs child?”
- Ballina, New South Wales

“When there is a storm now and very heavy rain I feel anxious - panicky and stressed, hypervigilant, and also a sense of foreboding dread.”
- Brisbane, Queensland

“I am exhausted by rain and floods. I worry NSW has become unlivable and worry towns will need to be moved etc. I worry things will never be normal again.”
- Sydney, New South Wales

“We barely survived previous events. We’re still rebuilding now. I have no idea how we will survive worse, more frequent events. Our family farm is becoming untenable. It’s who we are. It’s been in our family for generations. Walking away from it will leave us without income, identity and a future for the next generation.”
- Melbourne, Victoria

“I am incredibly resilient ...have weathered drought, fires, pandemic, floods ...chin up and heart filled with courage, energy to support others as well as ourselves. But it’s wearing thin. The thought of flood impacting our rebuilding community is simply overwhelming at times ...a ticking clock. And while I am a great believer of ‘react to the facts’, it’s very hard to breathe through this time. I feel unfocussed and like I am slipping behind where I need to be to keep our recovery moving forward. I am aware that being still is sometimes the best answer but the idea of further flooding is so stressful.”
- Lismore, New South Wales

People who are very worried about climate change and extreme weather are more likely to be women and to be younger.

When the community survey group was asked more generally about climate change driving more severe and more frequent disasters, half (50%) said they were extremely worried about this. Almost all (96%) responded that they were either “a little”, “very”, or “extremely” worried, leaving only 4% “not worried at all” (Figure 4). In their comments, many stressed that their anxiety was being exacerbated by the knowledge that not enough is being done to address the climate crisis.

“I worry for the future of my child and for the environment and in fact the planet. The worry is exacerbated by the feeling that not enough is being done to mitigate climate change.”
- Townsville, Queensland

“Climate change puts people in an impossible situation. Their agency is reduced, no matter what they do, short of relocating, they will experience disaster. It puts impossible stress on everyone.”
- Canberra, Australian Capital Territory

“It is already difficult to deal with climate change now. Our governments don’t seem to realise how urgent the situation is. I know the future is going to be worse. How are we supposed to cope?”
- Wollombi, New South Wales

“I am worried, not because flooding is such a risk here, but because so many others are under threat and people who have already undergone huge trauma

LEVEL OF ANXIETY ABOUT CLIMATE CHANGE AMONG THOSE WHO HAVE EXPERIENCED A DISASTER

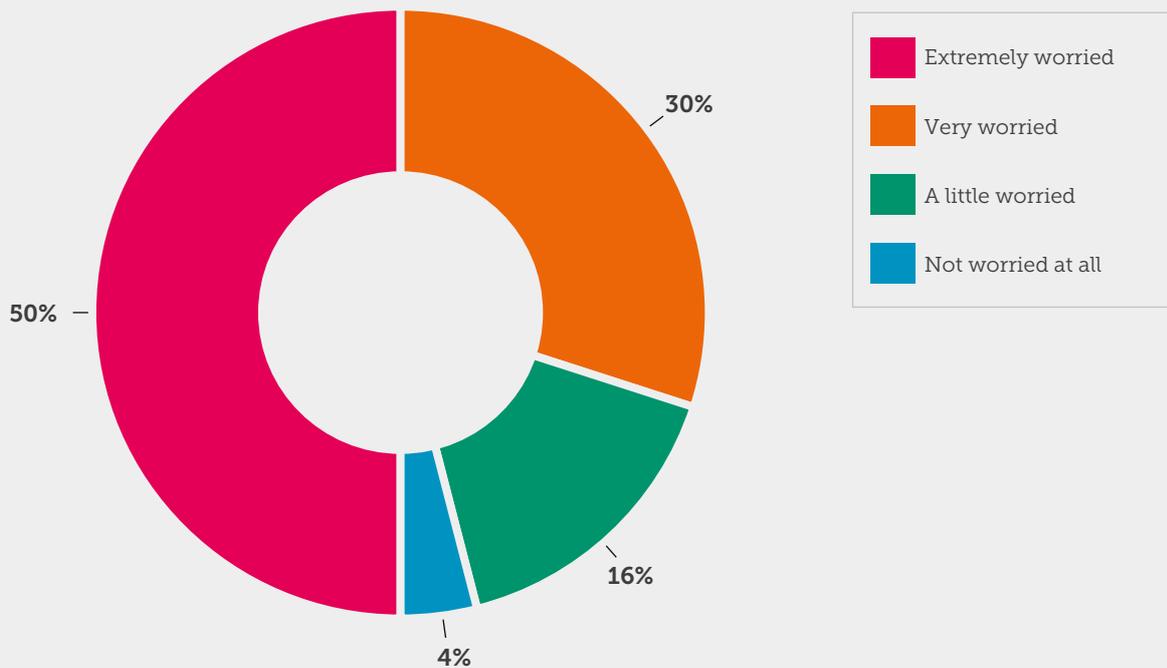


Figure 4: Level of anxiety about climate change driving more severe and more frequent disasters. Results taken from a community survey group of nearly 500 Australians who identified themselves as having recently experienced a climate extreme weather disaster.

from flooding cannot possibly maintain their mental and physical well-being. I am also very worried because the government response to this impending and continuing disaster that is climate change is just too lumberingly slow and ineffectual.

- Eurobodalla, New South Wales

"Property price drop, insurance costs, losing our home, losing our lives. Losing my sanity. Evacuated four times. Fire and flood. I've been poor and homeless in my youth. Fear of losing our home affects my mental health badly."

- Sussex Inlet, New South Wales

"My family are considering moving because of climate change impacts on our area. We are worried for the future our daughter will inherit."

- Brisbane, Queensland

"I am extremely worried about the lack of action on climate change here and internationally and I do all I can in this regard. Of course some progress has been made here, but we must stop our addiction to fossil fuels."

- Lismore, New South Wales



Lismore, New South Wales. On 28 February 2022, the Wilson River at Lismore peaked at more than two metres above the previous record, damaging thousands of homes and leaving many people homeless. A year on, the crisis is far from over.

2.3 How disasters are impacting communities

2.3.1 PROPERTY DAMAGE AND INSURABILITY

Among the nearly 500 people who shared their experience of extreme weather disasters with Climate Council through our community survey, one in 12 (8%) said the event had severely impacted their home – for example, leaving it destroyed or deemed uninhabitable.

Around a third (34%) said there had been some impact on their home, reporting that it had been damaged but remained liveable and could be repaired. One in nine (11%) said their belongings had been impacted but not their property. Less than half (47%) said they had experienced no damage to their home from the disaster. Asked if they had been able to return to their property, one in seven (15%) said no.

Our results indicate that adequate insurance coverage is a key factor in people's ability to recover from a disaster. Among the more than 2,000 respondents to our national poll, one in five (21%) reported having no insurance. Among those with insurance,

nearly two-thirds (64%) reported that their premiums had increased in the last two years. An overwhelming majority (81%) believed that this increase was due at least to some extent to "climate disasters", with nearly a third (31%) believing that such disasters were responsible to a large extent for rising premiums.

Concerningly, one in 20 (6%) of those polled said they had cancelled their insurance coverage due to the increase in their premium, while one in nine (11%) said they had reduced their coverage. Additionally, one in 20 (6%) had been told by their insurance provider that they cannot be insured, and a similar number (7%) had been refused a claim by their insurance provider.

Among respondents to the community survey, around a third (30%) of those who had insurance said they were struggling to afford the payments. Similar to what was revealed in our national poll, one in five (19%) had no insurance at all.

Nearly two thirds of people with insurance reported that their premiums had increased in the last two years, with the overwhelming majority believing this was at least in part due to "climate disasters".

While a handful of respondents shared positive experiences with their insurance providers, with helpful advice, affordable premiums and prompt payouts, many more reported challenges. Several respondents shared that their insurance premiums had risen sharply due to increased flood risk, with some reporting that they could no longer obtain flood insurance at all. One retired couple said that because they were on fixed incomes, insurance payments were now a much higher proportion of their expenditure each year. Some respondents, while still paying for insurance for now, were worried that it would become unaffordable for them in future.

"[Insurance premiums] have been rising in all areas. We are retired on fixed incomes and find paying insurance is a far bigger chunk of our income each year."

- Shepparton, Victoria

"God forbid we lose contents because at our age we cannot replace them. Insurance said we live in a flood plain and they won't insure us."

- Echuca, Victoria

"Our insurance increased by 150%. It will come down again if I can lift the property but have been waiting for months already for approval to do so."

- New Brighton, New South Wales

"The only way I can maintain insurance cover is to under insure because the true cost for insurance is beyond my budget."

- Budgerie, Victoria

"The clean up and the emotional toll is huge. Especially the months after - chasing up insurance claims, dealing with insurance companies constantly, coordinating trades to repair the house, stock taking losses. It's enormously draining and takes a toll on your mental health."

- Brisbane, Queensland



2.4 The mental health toll

The Climate Council's national poll found that more than half (51%) of Australians who experienced an extreme weather disaster since 2019 feel their mental health has been impacted. One in five (21%) said the disaster they went through had a "major or moderate impact" on their mental health.

Responses to the community survey gave us more detailed insights into people's experiences during and following an extreme weather disaster. Before looking more closely at the range of mental health impacts (Figure 6), we first asked more generally about what people experienced (Figure 5).

One of the most common experiences was feelings of helplessness and despair, shared by 57% of respondents.

"I felt a huge sense of aloneness, fear and despair that this is going to be our future."
- Murwillumbah, New South Wales

"Total despair and grief at the devastating 2019 fires. The country that I grew up in is gone in so many ways. The devastating destruction of the environment and loss to so many people is very hard to bear."
- Newcastle, New South Wales

The same number (57%) said they were worried about the safety of their family, while half (51%) were worried about personal safety.

"It was just horrific. Thought we could die. We had no power, water, supermarkets were empty. We were cut off in all directions. I see bush now and I think fire."
- Moruya, New South Wales

"Loss of home and family pets. Almost drowned. Water rose to 2m OVER the roof of my raised home in North Lismore. My life has completely changed, my son and I are still displaced with no hope in sight for what our future will become."
- Lismore, New South Wales

"During the Lismore and Northern Rivers floods of March 2022, I was initially in shock and horror. People were scrambling for their lives, or trapped in their homes and on roofs. They were relying on volunteers, people just like themselves to rescue them. The aftermath involved grief and sadness. Sadness for the people who had lost loved ones and had their lives turned upside down or just washed away."
- Alstonville, New South Wales

Looking specifically at mental health impacts (Figure 6), respondents most commonly experienced symptoms of anxiety - reported by nearly three quarters (73%) of those surveyed. Almost half (49%) reported symptoms of depression and more than half (56%) reported difficulty sleeping.

"Anxiety and despair at the state of the world - the orange tinged skies and smell of smoke over Black Summer for over nine weeks in the Canberra region was very stressful and has had an ongoing impact on my then 4yr old twins."
- Queanbeyan, New South Wales

More than half of Australians who experienced an extreme weather disaster since 2019 feel their mental health has been impacted.

THE VARIETY OF IMPACTS REPORTED BY THOSE WHO HAVE EXPERIENCED AN EXTREME WEATHER DISASTER



MENTAL HEALTH IMPACTS REPORTED BY THOSE WHO HAVE EXPERIENCED AN EXTREME WEATHER DISASTER

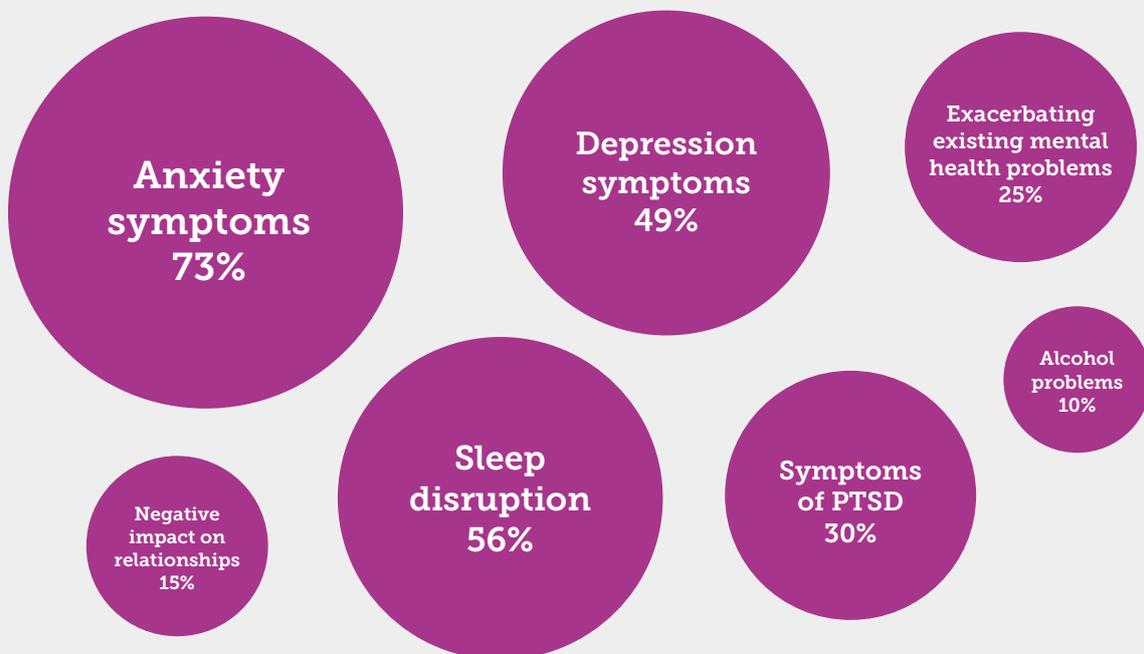


Figure 5 (Top): The variety of impacts reported by those who have experienced a extreme weather disaster.
Source: Community Survey, 2022.

Figure 6 (Bottom): The Mental health impacts reported by those who have experienced a an extreme weather disaster.⁴
Source: Community Survey, 2022.

⁴ Self-report of symptoms based on response to the question "Which of these (one or more) best describes how the disaster impacted your mental health?" with response options such as anxiety symptoms, depression symptoms, post-traumatic stress disorder symptoms. Note that they are not clinical diagnosis rates based on psychometric scale testing.



Many respondents also talked about feelings of sadness, grief, frustration and anger.

"I felt absolute fury that in the lives of my grandchildren these things will become normal. I felt hopeless because for the last twenty five years I have been talking, writing, reading, signing petitions and voting about this. I may as well have bashed my head against a brick wall. What does one do? I felt despair because we aren't even up to 1.5 degrees and these events, plus worse ones, are the best we can hope for."

- Canberra, Australian Capital Territory

"Anger that we're in this mess when we've known about the impact of climate change for so long, and have been led down a path of destruction by our leaders. Worry for my kids future."

- Melbourne, Victoria

"Just a loss of optimism about the future, a deep sadness for the death and loss of so much biodiversity."

- Eurobodalla, New South Wales

"I wish there was greater understanding of the looming climate crisis we are all facing - suspect we are so close to the tipping point and I'm grieving for the future our grandchildren face."

- Deagon, Queensland

"I live in a rainforest, which hasn't burnt in thousands of years but did three years ago. Floods are becoming routine, the planet is doomed and I am no longer able to cope."

- Terania Creek, New South Wales

"A lot of the fear is from seeing the future being worse because we're STILL using fossil fuels, and still getting them out of the ground in spite of community outcry."

- Darwin, Northern Territory

Some respondents talked about the compounding impact of multiple disasters.

"Compounding stress levels with what feels like little reprieve. It seems like one thing after another."

- Whitfield, Victoria

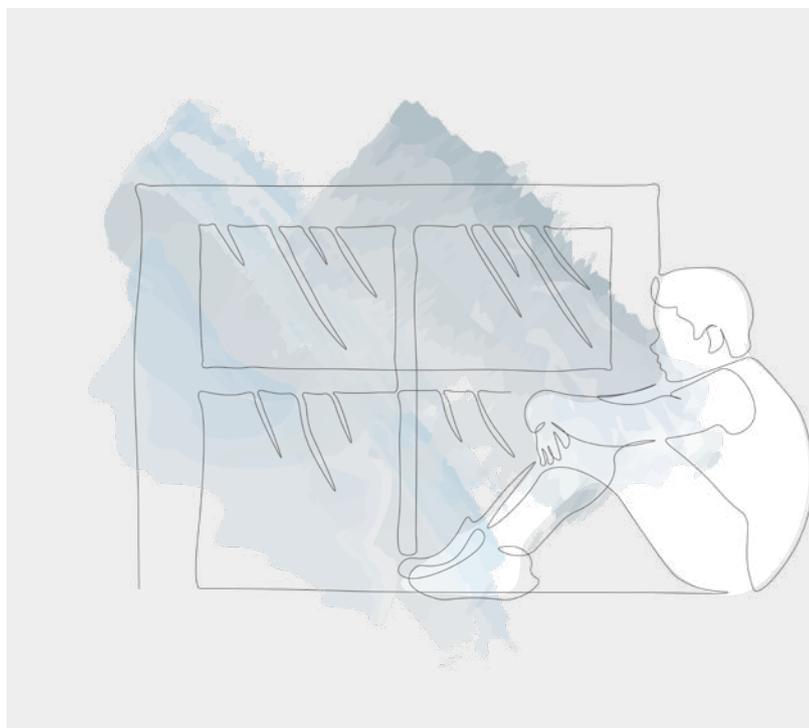
"Began to question what was normal anymore. Three years of drought, one early frost seriously affecting crop yield, then the following year a very late frost causing resowing and subsequent loss of yield, then flooding, then this year's wet conditions."

- Quirindi, New South Wales

Many respondents also shared details of the toll that the disaster(s) had taken on their children, with almost half of parents, carers or guardians (45%) saying that their child had experienced mental health concerns as a result.

"Our middle child has a diagnosis of ASD-Level 2 and Anxiety. The storm and its aftermath significantly heightened his anxiety to the point of meltdowns, sleep disruptions and a stress reaction to any rain events."

- Ballina, New South Wales



"[My children experienced] depression, hopelessness. Gave up on VCE and clubs for the older; exacerbated suicidality for the younger, right at the time that demand overwhelmed availability of help."

- Melbourne, Victoria

"One of my son's has developed a sleep disorder and is depressed."

- Gunning, New South Wales

"I have two young boys who spend most weekends up on my farm. Now there are places where they don't like going anymore as the destruction is too much for them to cope with. It is visible the distress they are experiencing and things are going to get worse not better. What sort of world have we handed to them and still the government backs the fossil fuel industry."

- Budgeree, Victoria

2.5 Provision of mental health support following disasters

This research also examined the ease of accessing appropriate mental health support following a disaster, both immediately after the disaster and over the longer-term.

Our national poll revealed that among those who have experienced at least one extreme weather event since 2019, more than a third (37%) said there was insufficient mental

health support available for people in the community following the disaster. A similar proportion (36%) said there was just enough support, while only 3% said there was too much support.

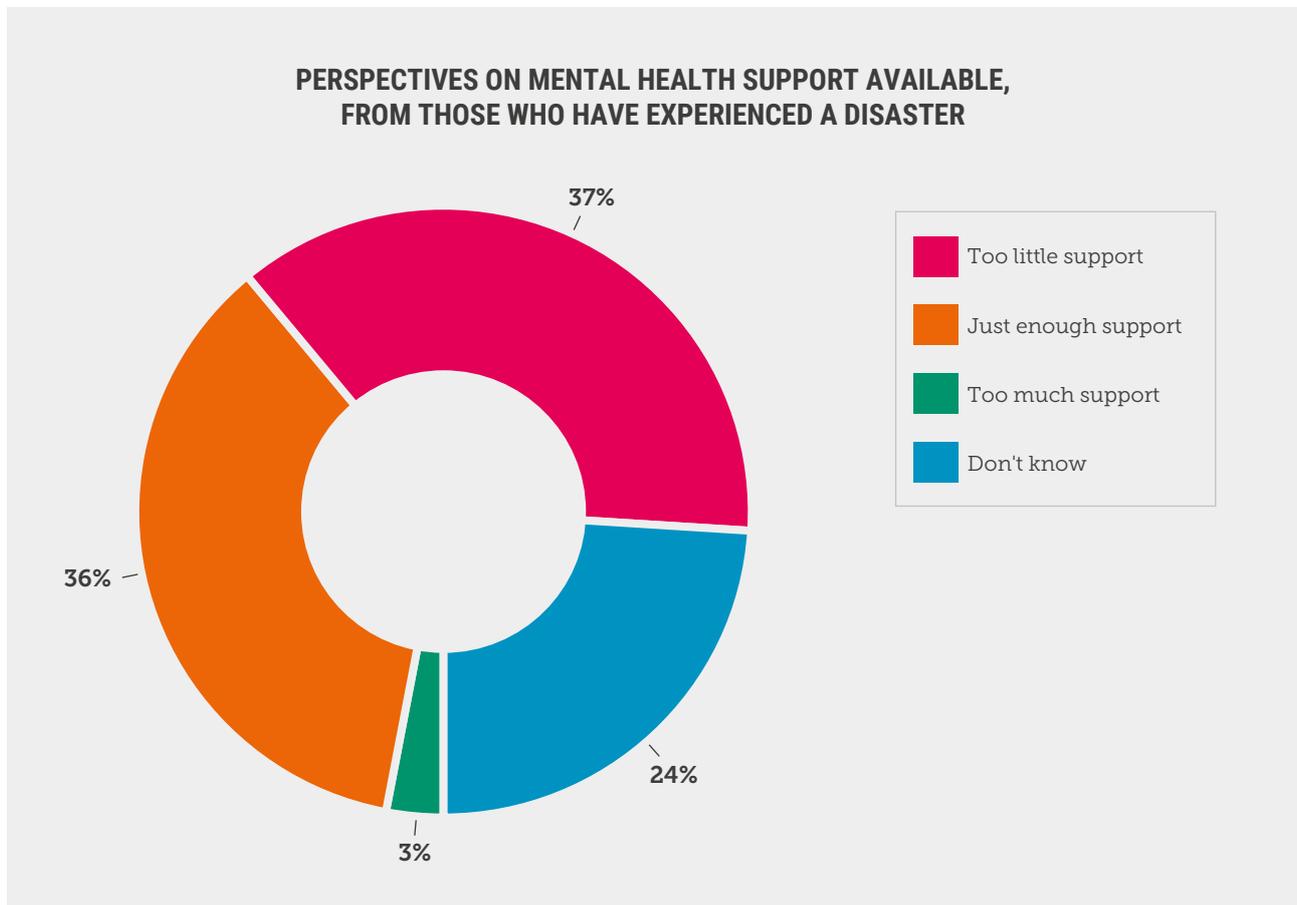


Figure 7: Thoughts, from those who had experienced at least one disaster since 2019, on the mental support available for people in their community. Source: YouGov poll, 2022.

People living in rural areas were more likely to say there is too little mental health support following a disaster (41%) compared to people in urban areas (33%), highlighting another dimension of the rural-urban divide when it comes to the impact of extreme weather in Australia.

Responses to the community survey gave us more detailed insights into people's experiences with mental health services following a disaster. When asked what mental health support they received, almost 30% said they turned to their GP for support. A further 13% received support from a counsellor and 23% spoke to a psychologist. Around 8% accessed online support, and around 8% accessed phone support.

Almost half (45%) said they didn't seek out formal mental health support, though many received informal support from friends and family. Indeed, a number of respondents talked about the support of family, friends and the local community, and how getting involved in community-led actions was an important part of their recovery.

"Family and friends and the local community have been amazing."

- Broulee, New South Wales

"Just talking openly and honestly to the people in our village helps so much. You know you are not alone."

- Bundanoon, New South Wales

"I'm actively involved in grassroots community action. Being surrounded by like minded positive people who want to make a difference is the best tonic."

- Melbourne, Victoria



South Golden Beach, New South Wales. The community had no power or phone connection following the February flood and was cut off from authorities. Residents established an impromptu community hub to help support each other and get assistance where it was needed.

More than a third of Australians who experienced an extreme weather disaster since 2019 said there was too little mental health support available in the community.

Only one in 10 (11%) of respondents to the community survey said that mental health services were widely available in their area following an extreme weather disaster. Almost half (45%) said mental health support was accessible “with some effort” and two in five (40%) said it was “quite or extremely difficult” to access. Only 3% said it was impossible to access.

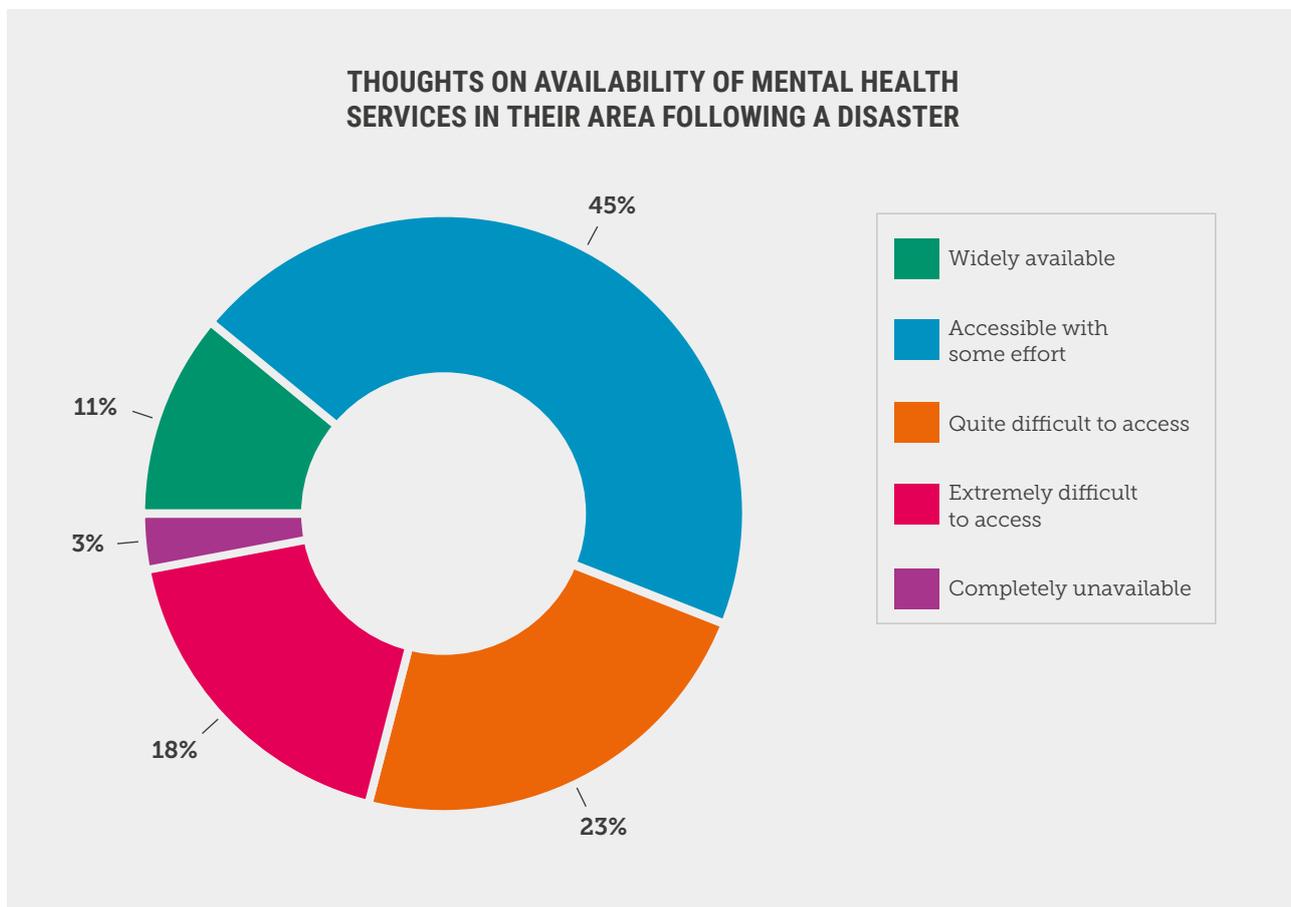


Figure 8: How respondents to the community survey described the availability of mental health services in their area following a disaster. Source: YouGov poll, 2022.

2.6 Preparedness for extreme weather

2.6.1 INDIVIDUAL PREPAREDNESS

Among the nearly 500 people who shared their experience of extreme weather disasters with Climate Council through our community survey, a quarter (25%) said they were either “unprepared” or “completely unprepared” for extreme weather events over the 2022-2023 summer. Encouragingly, almost two thirds (64%) said they were “somewhat prepared”, but only around one in nine (11%) considered themselves to be “prepared”.

“It’s like I am waiting for the next climate fuelled disaster, whether it’s another flood, or drought (which will have water security issues) or heatwave. People are very unprepared and governments are way behind with their response plans and resilience. People are going to keep getting heavily impacted and their lives disrupted by these events.”

- Brisbane, Queensland

“The thought of more flood-inducing weather makes me want to be sick. If any communities in the Northern Rivers are impacted by flooding yet again I think it will decimate community life and many residents will completely give up and leave the area forever.”

- Clunes, New South Wales

“If we have another period of severe drought there will doubtless be extreme bushfire risk following all of the regrowth triggered by flooding and periods of heavy rain. We live in an area with a lot of bushland and will once again be very vulnerable. We are considering moving to a more built up area because we have no confidence in our local authorities since little has changed since the fires and floods of 2019/20.”

- Moruya, New South Wales

“The fuel levels in the bush around our home are very high because of several years of increased rain. If not this year then certainly next we will be again facing huge fire risk. Our local environment has been very impacted by the intensity of storms and erosion. This has dramatically changed our beach and village. This is a constant reminder of the worsening effects of climate change.”

- Hyams Beach, New South Wales

2.6.2 EMERGENCY SERVICES

In our national poll, the Climate Council asked the more than 2,000 respondents around Australia about how well or poorly resourced they think the emergency services in their state are to respond to climate disasters. Overall, nearly half (44%) believe the services in their state or territory to be “adequately equipped”, with around one in seven (15%) believing them to be “well equipped”. Around a third (29%) said they were “poorly equipped”, with around one in seven (14%) saying they didn’t know.

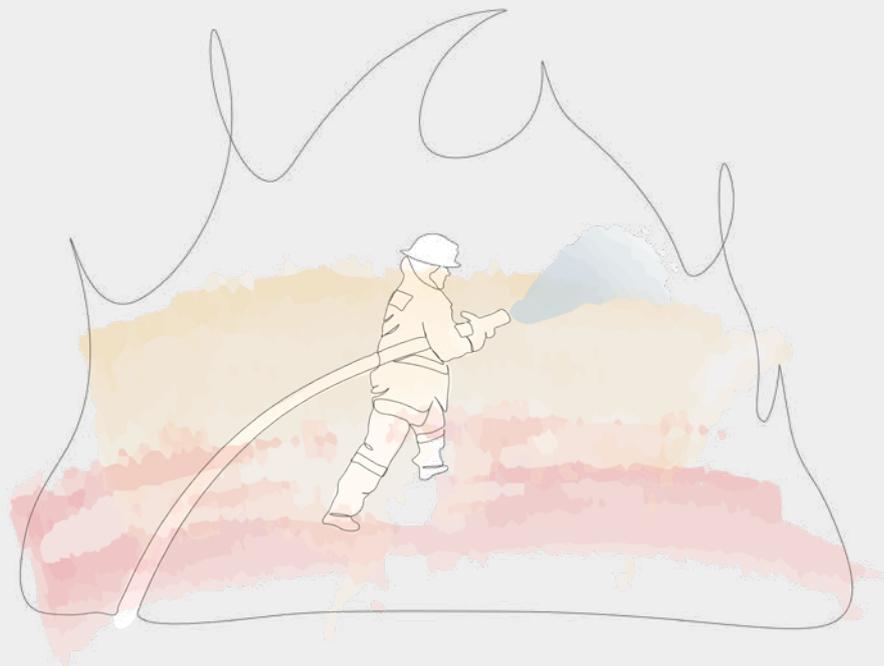
There was little difference in these perceptions between different age groups, genders, and income levels. People in rural Australia are more likely to regard the emergency services in their state or territory as poorly resourced to respond to extreme weather disasters, at just over a third (34%) compared to a quarter (25%) for inner and outer metropolitan areas.

It should be noted that these results are indicative only of individuals’ perceptions, and are not representative of an assessment made by emergency management professionals.

2.6.3 STATE AND TERRITORY GOVERNMENTS

Our national poll also asked respondents about how well or poorly equipped they thought their state or territory governments were to respond to climate disasters. The results closely mirrored those for how equipped people believed the emergency services in their state or territory to be.

People residing in rural Australia are more likely to regard their state or territory governments to be “poorly equipped” to respond to extreme weather disasters, with four in ten (40%) believing this to be the case, compared to three in ten (30%) in inner and outer metropolitan areas. There was some difference between the states, with people in the populous eastern states more likely to believe their emergency services are poorly equipped (New South Wales – 39%; Victoria 35%; Queensland 34%) compared to South Australia (25%) and Western Australia (19%).



2.7 Case studies

Lismore resident Susan's house was inundated in the 2022 Lismore flood. She is still grappling with repairs. Susan experienced anxiety and depression symptoms and sleep disruption as a result of the disaster. She has received long-term counselling in the months following the event and has relied on emotional and practical support from her community and family.

"I had three metres of water through my house, which is elevated above ground and has never flooded since it was built in the 1920s. The house is gutted to the picture rails. I lost many clothes, office equipment and my personal library of more than 1,000 books, including some from my parents dating back to the 19th century.

"I lost my art collection, my furniture, all of my household appliances, my car as well as the smart metre and solar panel inverter. It also destroyed the gardens.



Susan out on her street on 15 March 2022. This was taken between two of the multiple floods in the area in 2022.



The inside of Susan's house was gutted and she lost many personal belongings, including her library.

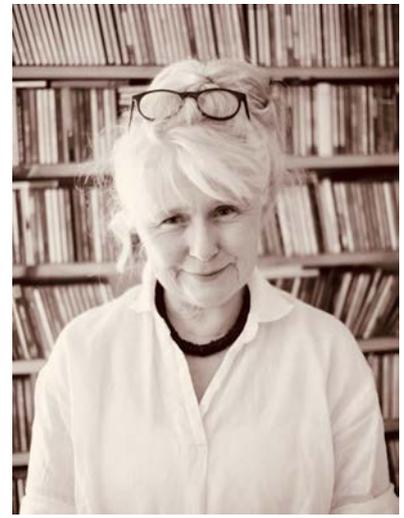


Susan's bedroom, the bed still covered by clothes and other items she had thrown onto it before leaving the house. The bed floated during the flood.

"I am extremely worried about climate change. At the micro and personal level, I worry about the disruption to life. I worry that my future will be living in a house that will flood again, with no option to be relocated above the flood level as unfortunately from what I can tell, I am not regarded as being in the red zone (by the Northern Rivers Reconstruction Corporation) and I can't afford to relocate. It is only a matter of time before the next flood and I am not sure that Lismore will recover.

"I don't know what my insurance future will look like but I expect it to be unaffordable. I am still going through the process of seeking to get my insurer to pay me to pay my builder to repair my home.

"I am triggered by heavy rains and become distressed when I see the pain of people elsewhere also going through flood disasters."



(Left) View of the flood from inside Ashley's house. (Above) Ashley Hay.

Ashley, a Brisbane resident, has lived through three major flooding events since 2011. She says the 2022 flood was made more harrowing due to lack of clear warning information. She lost some personal property in the flood and has experienced a worsening of her anxieties around climate and weather as a result.

"While we could see the water coming, we did not receive specific information about the imminent flood until two days after the waters had come and gone again. So there was a sense of cognitive dissonance in watching the water. We were fortunate to have family to stay with while we waited for the power to be reconnected and fortunate to be able to return home again after only four nights.

"I think my anxiety was increased by this flooding event. It has been hard seeing friends and neighbours sell up and move away. People have had to leave their family homes, and it's difficult to see the

extraordinary number of houses that are still empty, almost a year on.

"So many houses still stand empty and unrepaired. That changes the way the neighbourhood feels, the way it operates, and the sense of the size and scale and lack of closure in terms of this particular extreme weather event.

"I am living in a community where houses will become uninsurable, where homes will be rebranded as stranded assets. I am not sure that people are prepared for the mental load of the changes that are coming – to them, to their lives, to their places."

Verena, from Mullumbimby, New South Wales, survived the floods and lives with ongoing mental health challenges due to the flood trauma. Her home was gutted due to water, mud and sewage damage. Verena has ongoing issues with her insurance provider, has been unable to rebuild, and continues to pay a mortgage on her uninhabitable home.

"As a newly retired and recently joined member of the local community, I tried to prepare myself for flood as the torrential rain raised the river level beyond anything that neighbours had experienced. I was terrified as the water levels inside my house rose so fast that there were items floating in the rooms within 10 minutes. The ABC put out an online notice to evacuate to the local RSL shortly after 1.30am but by this stage both bridges were underwater and we were cut off.

I was rescued by a young neighbour who lives in the only 2 storey house in the nearby street. She saved 17 adults, 3 children, 5 dogs and 4 cats. We all stayed with her for 36 hours and witnessed 2 further flood surges. We had no electricity. The lower part of her house also flooded. I am now suffering from diagnosed PTSD and have panic attacks when the rain becomes heavier than a shower.

"My building insurer has been reluctant to act on my policy. My distress is mounting as my lease runs out soon. I have no finances left to pay the rent as well as pay my mortgage on the uninhabitable house. I am still paying for insurance, including flood cover, and I have almost no formal communication with my insurer. This has been adding to my stress. At the time I was a 71 year old single female living alone. I am now 72 and renting out of the area with assistance from Centrelink.

"I am terrified to reinhabit my property after reconstruction. I would like to have a buy-back from the Government so I can move to higher ground. I no longer feel safe."

"I am terrified to reinhabit my property after reconstruction. I would like to have a buy-back from the Government so I can move to higher ground. I no longer feel safe."

Judith and Paul lost their sustainable self-sufficient home in Buxton, New South Wales, in the Black Summer fires. They have experienced depression and PTSD symptoms. As long-time climate activists, they were devastated to lose everything to a ferocious fire and struggle with feelings of despair around lack of action on climate.

"We have lived a self-sufficient and sustainable lifestyle for fifty years. We lost all of our farm animals, edible landscape, water tank, sheds, tools and farm machinery in the fire. We also lost the house and all its contents. It totally wiped our lifestyle off the planet. Our insurance premium is now crippling our pension. We are anxious that we may not be able to afford insurance. In 1969 I attended a 'global warming'

meeting. From that moment, my husband and I adopted a sustainable lifestyle. For half a century now we have sought to educate the public, who for the most part, didn't want to listen. Now it's too late. Climate change worldwide has been destroying people's lives. Including ours. Our worry is based on fact."



(Left) Photo taken 13 January 2020. Judith and Paul clearing burnt debris from the concrete foundation of their former house so they could erect a shed, thanks to a \$5,000 donation from the Red Cross. They lived in the shed for 18 months. (Above) Judith and Paul Collins, pictured at their home in February 2023.

3. Science update

3.1 Climate-change fuelled disasters in Australia

Australian communities are facing more frequent and/or more intense extreme weather disasters that are being influenced by human-caused climate change, driven primarily by the burning of coal, oil and gas. While there are more dangers to come, our decisions today will strongly influence the severity of these challenges and our ability to adapt to climate change over the long term.

3.1.1 EVERY FRACTION OF A DEGREE OF GLOBAL WARMING MATTERS

The Intergovernmental Panel on Climate Change's Sixth Assessment Report concluded that it is now an 'established fact' that human-induced greenhouse gas emissions have led to an increased frequency and/or intensity of some weather and climate extremes since pre-industrial times, particularly heat extremes (IPCC 2021a). Although some changes in the climate system are now irreversible because of warming caused by historical greenhouse gas emissions, some impacts can be slowed or even avoided. Limiting warming will mean less severe and compounding extremes than we would see otherwise (e.g. IPCC 2021a; IPCC 2021b; IPCC 2021c).

With every fraction of a degree of avoided warming, we will be reducing the risk of extreme weather and climate events experienced in the future. For example, the Australian Academy of Science (2021) states that as greenhouse gas emissions continue to rise, Australia will become hotter and many regions will continue to become drier due to lower rainfall and higher rates of evapotranspiration caused by warmer conditions. More frequent, severe and longer heatwaves are projected for Australia at 3°C global warming relative to 1.5°C and 2°C, with evidence suggesting that global warming of 2°C may lead to days above 50°C in Sydney and Melbourne (Australian

Academy of Science 2021). Although still rare at 2°C global warming, these extreme temperatures are very likely to be a regular feature of a world warmed by 3°C, posing severe risks to human health and ecosystems (Australian Academy of Science 2021).

The IPCC (2022) assessment of impacts, adaptation and vulnerability emphasised that global warming of just over 1°C has already caused dangerous and widespread disruption to nature and human societies, affecting the lives of billions of people despite our efforts to adapt. The IPCC's Sixth Assessment Report clearly highlights that we are currently failing to outpace escalating and compounding risks in many parts of the world, particularly in Africa, South Asia, Central and South America, the Arctic and Small Island nations (IPCC 2022). The situation progressively worsens as we reach 1.5°C of global warming, when the adaptation limits of many ecosystems such as coral reefs, rainforests and wetlands are exceeded (IPCC 2022). Beyond 2°C, the IPCC (2022) states that adaptation is simply not possible in some low-lying coastal cities, small islands, deserts, mountains and polar regions. Limiting global warming to well below 2°C is our best way of reducing the severity and speed of climate change not only in Australia, but around the world (Australian Academy of Science 2021; IPCC 2021a).

With every fraction of a degree of avoided warming we will be reducing the risk of extreme weather in the future.

3.1.2 HEAT AND FIRES

Australian land areas have warmed by approximately 1.47°C since 1910, with ocean surface temperatures increasing by around 1.05°C since 1900 (Bureau of Meteorology and CSIRO 2022).⁵

Australia's warming trend has already led to an increase in the frequency of extreme heat events over land and sea areas, with these conditions projected to continue into the future (Grose et al. 2020; Evans et al. 2021; IPCC 2021b; Bureau of Meteorology and CSIRO 2022).

There has been an observed increase in extreme fire weather conditions and in the length of the fire season across large parts of Australia since the 1950s, leading to larger and more frequent fires, especially in southern Australia (Bureau of Meteorology and CSIRO 2022). This was graphically witnessed during the catastrophic Black Summer bushfires of 2019–2020 which arose out of Australia's hottest and driest year on record in 2019 (Bureau of Meteorology 2020; Bureau of Meteorology and CSIRO 2022).

The impact of Black Summer on the health and wellbeing of local communities and the resilience of natural ecosystems has been severe and ongoing (Zhang et al. 2020; Nolan et al. 2021; Australian Academy of Science 2021). Thirty three people died directly as a result of the fires, with a further 429 deaths from conditions worsened by toxic smoke inhalation. Over 3,000 homes were lost (Australian Academy of Science 2021) and an estimated three billion animals were either killed or displaced, while 80% of the Blue Mountains World Heritage Area and 50% of Gondwanan rainforests were burnt (Australian Academy of Science 2021).

Although eastern Australia's eucalyptus forests are among the most fire-prone in the world, typically only 2% burn during extreme fire seasons (Boer et al. 2020). However in 2019–2020, approximately 21% of Australia's temperate forests burned in a single event, setting a new global record for the sheer enormity of the blazes (Boer et al. 2020).

Australia is already experiencing longer and more dangerous fire seasons as a result of climate change.

⁵ Land areas are warming faster than the ocean surface, and will continue to do so in future. The increase in the average surface temperature across Australia is around 40% higher than the global combined land and ocean temperature rise. This means that limiting global warming to well below 2°C is only limiting warming across Australia to well below 3°C.

Under a scenario where greenhouse gas emissions continue to increase, temperatures experienced during the year 2019 are projected to be average by 2040 and exceptionally cool by 2060 (Sanderson and Fisher 2020). This may result in even more extreme fire weather conditions in future than experienced during Australia's Black Summer, in the future, threatening the livelihoods, safety and health of communities living in close proximity to bushland, particularly in southern and eastern parts of the country (Australian Academy of Science 2021). The expected escalation of bushfire risk means that more resources and strategic planning across all levels of government are needed to improve preparedness for disasters, bolster the capacity of emergency services, and strengthen community resilience to a future characterised by more severe bushfire conditions (Australian Academy of Science 2021).

Under a scenario where greenhouse gas emissions continue to increase, temperatures experienced during Australia's hottest year (2019) are projected to be average by 2040 and exceptionally cool by 2060.



3.1.3 EXTREME RAINFALL AND FLOOD RISK

Human-caused global warming is also altering the natural circulation of ocean patterns and atmospheric winds that influence rainfall extremes (IPCC 2021a).

As the planet warms, the water-holding capacity of the lower atmosphere increases by around 7% for every 1°C of warming, causing an increase in heavy rainfall events (IPCC 2021c). Similarly, warmer ocean-surface temperatures also increase evaporation rates and the transport of moisture into weather systems, making wet seasons and wet events even wetter than they would otherwise be (IPCC 2021c).

A clear human influence on average annual precipitation has already emerged in up to 40% of the globe (IPCC 2021c). In Australia, rainfall observations show an increase in the intensity of short-duration heavy rainfall events that occur on timescales of less than a day, particularly in hourly rainfall totals (Bureau of Meteorology and CSIRO 2022), with notable extremes in multi-day rainfall totals also being observed (Bureau of Meteorology 2022). Heavy rainfall events are becoming more intense particularly in the north of the country, with increases in the intensity of short-duration extreme rainfall events of up to

10% or more observed in some regions since the 1970s (Bureau of Meteorology and CSIRO 2022).

However, because Australia's natural rainfall patterns are highly variable from year-to-year due to conditions in the Pacific, Indian and Southern oceans (Bureau of Meteorology and CSIRO 2022), the influence of climate change on a single weather event can be difficult to isolate. Unlike temperature where the human fingerprint of global warming has been clearly detected in the region for long-term changes from the 1950s (e.g. Karoly and Braganza 2005; Gergis et al. 2016; IPCC 2021a), climate change's influence on Australian rainfall variability is more geographically and seasonally complex, and difficult to simulate in both global and regional climate models (see for example CSIRO and Bureau of Meteorology 2015; Alexander and Arblaster 2017; Grose et al. 2020; Evans et al. 2021; IPCC 2021c). Consequently, a clear human influence on rainfall in regions outside of southern Australia is unlikely to emerge statistically from background natural variability in the near future (CSIRO and Bureau of Meteorology, 2015). It is clear however

In Australia there has been an increase in the intensity of short-duration heavy rainfall events, which are often associated with flash flooding and major impacts.

that heavy daily rainfall has accounted for an increased proportion of total annual precipitation over an increasing area of the Australian continent since the 1970s (CSIRO and Bureau of Meteorology 2015; Bureau of Meteorology and CSIRO 2022).

Short-duration extreme rainfall events, typically caused by severe weather systems like thunderstorms, cyclones and east coast lows, are often associated with flash flooding and major impacts on societies. During the east coast floods of February–March 2022, more than 50 sites in south-eastern Queensland and north-east New South Wales recorded more than 1,000 mm of rain in the week ending 1 March (Bureau of Meteorology

2022). In terms of daily rainfall totals, the town of Dunoon in northern New South Wales, recorded 775 millimetres in 24 hours, contributing to the catastrophic flooding of the Wilsons River catchment which inundated the town of Lismore (Bureau of Meteorology 2022). Climate models indicate that extreme rainfall events, like the wettest day of the year, are projected to increase in intensity over much of the country under higher levels of global warming (CSIRO and Bureau of Meteorology 2015; IPCC 2021a). This means Australian societies must actively prepare for a future characterised by intensifying rainfall extremes and associated flooding (IPCC 2021a; Bureau of Meteorology and CSIRO 2022).

BOX 1: IMPACT OF COMPOUND EXTREMES

Many respondents to our community survey shared stories of experiencing multiple disasters, with little time to recover. The national poll found that one in four Australians have experienced flooding more than once since 2019, including one in three Queenslanders. Climate change is increasing the risk of damaging events occurring simultaneously or in rapid succession. These ‘compound events’ take a heavy toll on our communities and our mental wellbeing, and can push our fire and emergency services beyond their capacity.

A ‘compound event’ is a combination of multiple hazards such as droughts, heatwaves, bushfires, coastal extremes, and floods that result in societal or environmental risk (Zscheischler et al. 2018; IPCC 2021a). These conditions arise from the combination of two or more – not necessarily extreme – weather or climate events

that occur at the same time, in close succession, or simultaneously in different regions or parts of the world, leading to extreme impacts that are much greater than the impacts of individual extremes alone (IPCC 2021a). When multiple extreme events occur together or in sequence, their impacts are compounded, resulting in greater cumulative stress on communities and the environment and less time to recover between disasters.

For example, Australia’s fire and emergency services are increasingly finding themselves responding to multiple disasters unfolding simultaneously in different parts of the country. For example, summer 2022-2023 saw the north of Western Australia face the state’s worst ever flooding disaster, while communities in the southwest of Western Australia endured a severe bushfire season.

 **BOX 1: CONTINUED**

As individual extreme weather events become more severe as a result of climate change, the combined occurrence of these events will create unprecedented compound events in the future (IPCC 2021a). This has been clearly witnessed in Australia in recent years. Prolonged drought conditions during 2017–2020 led to extreme heat waves and catastrophic fire weather conditions that culminated in the Black Summer bushfires (Bureau of Meteorology 2020; Australian Academy of Science 2021; Bureau of Meteorology and CSIRO 2022). Then between 2020–2023, prolonged wet conditions in the Pacific and Indian oceans, influenced a number of severe weather systems that generated heavy rainfall, flooding, damaging winds, storm surges and landslides in much of eastern Australia (Bureau of Meteorology 2022).

The IPCC (2021a) reports that the probability of compound events has likely increased due to human-induced climate change and will likely continue to increase with further global warming.

Unprecedented extremes are projected to occur as temperatures increase, with greater intensity and frequency than experienced in the past, particularly at higher levels of global warming (IPCC 2021a). As the climate continues to change, extreme events may also appear in new locations, like tropical cyclones tracking further south along the east and west Australian coastlines, or appear at new times of the year resulting in greater impacts on communities that are inadequately-equipped to deal with new conditions (CSIRO and Bureau of Meteorology 2015; IPCC 2021a).

A study using state-of-the-art climate models to investigate the future of compound extremes in Australia indicates that there will be more frequent, co-occurring heatwaves and droughts particularly in southern Australia, with Northern Australia projected to become more at risk from concurrent wind and rainfall extremes (Ridder et al 2022). This emerging research clearly highlights the need to raise awareness of Australia's vulnerability to worsening extreme weather disasters, and the need to manage the risk of multiple disasters occurring on a national scale into the future.

3.2 Climate change, disasters and mental health

Many Australians are all too familiar with the mental health toll of extreme weather disasters. Severe floods, bushfires, and destructive storms can be extremely traumatic events. People may find themselves fearing for their lives, their loved ones and their community. They may face the sudden loss of their homes or livelihood and have their world turned upside down in a flash. For many, the initial intense reaction will fade and life, while forever altered, will return to some normality. For others, the impact will persist, manifesting as anxiety, depression or other mental health challenges that seriously affect their wellbeing and functioning over the long term (Beyond Blue 2022).

With climate change leading to worsening fire seasons, more dangerous heatwaves and extreme rainfall events, it stands to reason that this would be impacting on the mental health of communities in Australia and worldwide. While there is decades of research into the physical risks of climate change, the impact on our mental wellbeing is not as well understood. In this section we examine the current state of scientific knowledge on climate change and mental health, and the existing body of research on which we have been able to build.

3.2.1 THE GLOBAL PICTURE

In 2022, in the most comprehensive assessment yet of the mental health impacts of climate change, the Intergovernmental Panel on Climate Change (IPCC) stated with *very high confidence* that “climate change is expected to have adverse impacts on well-being and to further threaten mental health” (IPCC 2022). It concluded that mental health challenges increase with warming temperatures, the trauma associated with extreme weather, the loss of livelihoods, as well as loss of culture. The latter may include impacts on a community’s identity, cohesion and its sense of place. The IPCC further noted the limited capacity of health systems globally to respond to climate change, “with mental health support being particularly inadequate”.

3.2.2 DISPROPORTIONATE IMPACTS

While climate change affects us all, its impacts are not felt equally. Typically, it is those who have contributed the least to the problem – including those in developing nations, young people, Indigenous peoples, and people on lower incomes – who are hit first and hardest. These same patterns of inequity and injustice apply when it comes to the impacts upon mental wellbeing (Clayton et al. 2021). Farmers, emergency responders, women and members of minority groups experience greater impacts upon their mental health (IPCC 2022).

Children and young people

The Climate Council's research has shown that younger people are more likely to be worried about climate change, with the national poll revealing that nearly a third of people aged 18-34 are "very worried" compared to just over a fifth for those aged 65+ (Section 2.2). In our community survey, a number of parents came forward with stories of the acute impacts that the experience of an extreme weather disaster had on their children (see Section 2.4).

Climate Council's own findings are consistent with existing research. For example, the IPCC concluded with *high confidence* that children and adolescents – and particularly girls – are at particularly high risk of impacts upon their mental health (IPCC 2022).

Many individual studies have highlighted the impact of climate change on the mental wellbeing of children and young people. Alarming, one recent study even suggested in utero exposure to disasters may affect a child's development (Nomura 2022). The study revealed that children who were in the womb during Superstorm Sandy – an extremely destructive Atlantic hurricane that impacted communities from Canada to the Caribbean in 2012 – were more likely to develop behavioural disorders.

The mental health burden of climate change on young people appears strongly exacerbated by well-founded fears that their governments are taking insufficient action to protect their future. In 2021, a groundbreaking survey of 10,000 young people across ten countries revealed that high levels of climate anxiety in young people are linked to perceived inaction by their government and associated feelings of betrayal (Hickman et al. 2021). In this study, more than six in ten young Australians felt their government was not doing enough to avoid a climate catastrophe and was lying to them about the effectiveness of the actions it was taking.

The mental health burden on young people is made worse by the knowledge that governments are not taking sufficient action to protect their future.

Those who have contributed the least to the problem – including people in developing nations, young people, Indigenous peoples, and people on lower incomes – are being hit hardest by the impacts of climate change.

Indigenous peoples

“When Country is hurting, we are hurting, because we are so deeply connected to this land, to our islands.”

- Tishiko King, Kulkalaig woman from Masig, marine scientist, community organiser for Our Islands, Our Home.⁶

The mental health risks of climate change can be particularly severe among First Nations peoples (IPCC 2022). This is due in particular to the deep connection of Indigenous communities to place and culture but may also be driven by a greater exposure to the impacts of climate change and a heightened vulnerability owing to entrenched disadvantages and injustices. For example, remote communities may be more exposed to climate change risks such as extreme heat, with their situation exacerbated by poor quality housing and other disadvantages (Bowles 2015, Allam et al. 2019).

A growing number of people worldwide are at risk of forced displacement due to mounting extreme weather risks, sea-

level rise, or other impacts of climate change (IPCC 2022). While displacement is immensely disruptive and traumatic for any community, the impact can be particularly severe and profound for First Nations communities whose connections to Country may span hundreds or even thousands of generations (Richards and Bradshaw 2017).

Farmers

The degree to which our lives, livelihoods and communities are vulnerable to climate change influences its impact upon our mental health. All over the world, farmers – who are naturally among those most affected by more extreme and erratic weather patterns – are particularly vulnerable to the mental health impacts of our changing climate (Cianconi et al. 2020). A heartbreaking 2017 study found that climate conditions, and in particular damaging temperatures during the growing season, were a key factor behind a growing suicide epidemic in India. The study concluded that the increasing trend in temperatures over the last 30 years was linked to nearly 60,000 suicides (Carleton 2017).

⁶ Comments made during the First Nations Climate Justice Panel, organised by Emergency Leaders for Climate Action in June 2021. Summary available here: <https://emergencyleadersforclimateaction.org.au/wp-content/uploads/2021/07/First-Nations-Climate-Justice-panel-Climate-Council.pdf>

Emergency responders

Emergency service workers and other first responders experience a broad range of mental health consequences resulting from repeated exposure to disasters (Benedek et al. 2007; Australian Government 2019). In Australia, worsening conditions for bushfires mean volunteer and professional fire fighters are responding to increasingly severe and more frequent fires, increasing the strain on their mental wellbeing and creating a need for greater mental health support (Mullins et al. 2020). The long-term mental health impacts of bushfires have been shown to be particularly severe among firefighters (Zhang et al. 2022).

A 2019 Parliamentary inquiry made a number of recommendations for better understanding the occurrence of mental health injuries and suicide in first responders and for boosting support (Australian Government 2019). A 2018 study by Beyond Blue into the mental health of first responders involving some 20,000 participants found, among other things, that when workplaces for emergency services provide higher levels of support and effectively manage the emotional demands of staff, there are lower rates of probable post-traumatic stress disorder (PTSD) and psychological distress (Beyond Blue 2018).

3.2.3 IMPACT OF MULTIPLE DISASTERS

The risk of experiencing multiple disasters with little time to recover is increasing as the world continues to warm and the frequency and intensity of extreme weather events continues to climb (see Box 1).

There is a significant body of research exploring the cumulative mental health impact that comes from experiencing multiple disasters. While much of the existing literature on this topic covers disasters more generally, rather than weather-related disasters, parallel conclusions can be drawn. Perhaps unsurprisingly, the risks to mental health increase following the experience of more than one disaster (Leppold et al. 2022). A survey of nearly 9,000 Australians found that those who have endured multiple disasters over their lifetime are at a significantly greater risk of suicide than those who have experienced a single disaster (Reifels et al. 2018).

3.2.4 IMPACTS ON COGNITION AND THE BRAIN

In 2018, the deadliest bushfire in California's history killed 85 people. A study involving more than seven hundred people impacted by the disaster revealed a high prevalence of symptoms of anxiety, depression and post-traumatic stress disorder (PTSD) six months on from the event (Silveira et al. 2021). A further study found long-term impacts on the bushfire survivors' brains, in particular, on their cognitive functioning (Grennan et al. 2023). Researchers evaluated attention, the ability to not respond impulsively, the ability to retain information, and the ability to ignore distractions. Individuals who'd been exposed to the fire showed significant deficits in their cognitive abilities, particularly in the ability to deal with distractions (Grennan et al. 2023).

3.2.5 HOW CLIMATE SOLUTIONS BENEFIT MENTAL HEALTH

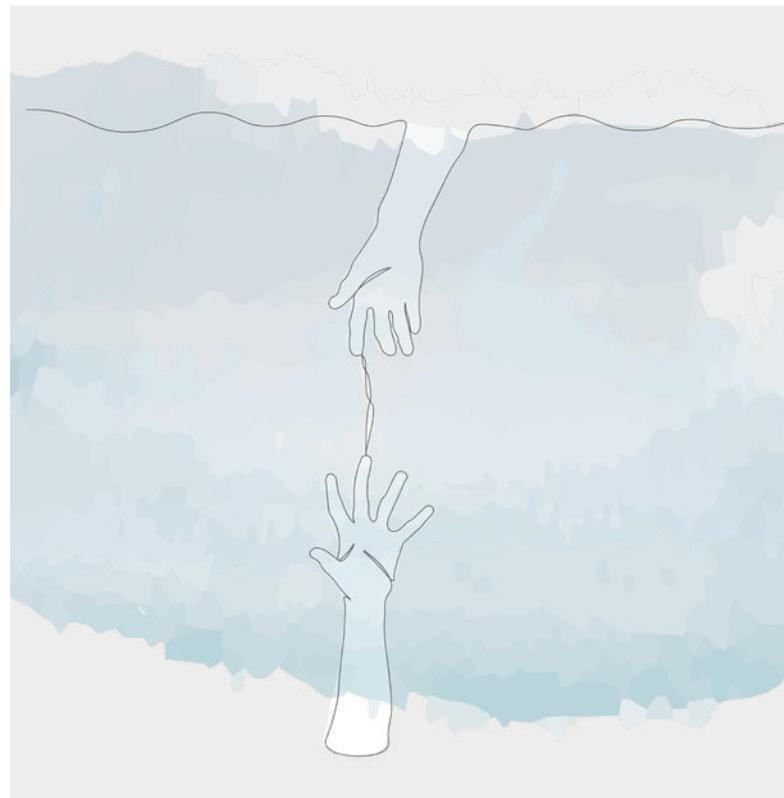
While this section has focussed predominantly on the negative impacts of climate change upon mental health, it is equally important to take stock of how action of climate change can promote mental health and wellbeing.

Moving beyond reliance on fossil fuels brings immediate health benefits through reduced particulate air pollution (IPCC 2021a). The current health toll from this pollution is staggering, with one study estimating that worldwide the air pollution from fossil fuel burning accounts for one in five premature deaths (Vohra et al. 2021). Air pollution harms not only physical health but has harmful impacts on mood and cognitive functioning (Lu 2020). Ending the burning of fossil fuels is not only fundamental to reducing greenhouse gas emissions and promoting physical health but may yield immediate benefits for mental health (Clayton et al. 2021).

Other climate solutions can benefit mental health, including embracing public transport and active transport like walking and riding as cleaner and healthier transport options (Younger et al. 2008).

Overall, greater hope for our future means better mental health. The impact of government inaction upon the mental wellbeing of young people mentioned in Section 3.2.2 implies that its opposite – a determined effort to ensure emissions plummet this decade – is fundamental to promoting mental wellbeing today (Hickman et al. 2022). Many climate scientists and writers on climate change have written of how working to support climate solutions, in particular through their local community, is critical to their mental wellbeing, and how it is possible to thrive and find purpose in this moment of crisis despite full knowledge of the dangers of the times we are living through (see, for example, Gergis 2022).

Lastly, much research has shown that community cohesion and strong social bonds are an important factor in disaster resilience, including promoting mental health following a disaster (for example Solnit 2009; Fan and Lyu 2021). A number of respondents to our community survey talked of how working together as a community was central to their recovery (see Section 2.5).



Moving beyond fossil fuels will bring immediate benefits for both our physical and mental health.

4. The way forward: recommendations

4.1 In their own words: What individuals and communities need

To help inform the recommendations for managing future disasters, we asked participants in the community survey to tell us what their communities and what they as individuals need most right now.

Many respondents spoke simply of wanting to see more action to address the causes of climate change by reducing emissions and moving beyond reliance on fossil fuels:

"...the support we need is the support we all need: urgent action to mitigate the extreme weather events and other disruptions we know we will all endure thanks to the levels of climate change already locked in, and decisive policy to stem any further levels of change, in terms of reducing emissions, now."
- Fairfield, Queensland

"I need to see my government and industries do everything they can to mitigate global warming."
- Brisbane, Queensland

"The Federal Government to get real on climate - especially not to approve any more fossil fuel projects, which science is screaming out is the main driver of the increasing extreme weather events occurring all over Australia and the world."
- Melbourne, Victoria

"Ongoing action on climate change. A wide-ranging prospective approach to adaptation across all jurisdictions, tightly coordinated and well communicated."
- Sydney, New South Wales

Many also spoke of their or their community's need for greater mental health support following disasters:

"Counselling to talk about the emotional impact of the bushfires and how to deal with residual anxiety."
- Moruya, New South Wales

"Significantly mental health support, and also relief support for the mental health workers in the area. Local residents still feel like they haven't been heard, they feel helpless."
- Clunes, New South Wales

"Community connectors and a select few people living in our communities to be trained in mental health to just be there in the community and be known as the person who you can just chat with, even once all the other emergency support has left."

- Orange, New South Wales

"Anxiety is epidemic, so skills to manage it would help."

- Bundanoon, New South Wales

"Access to free telehealth for mental health support."

- Dapto, New South Wales

Some detailed the kinds of practical assistance they need with rebuilding and recovering:

"Everyone needs an army of trades and services."

- Buxton, New South Wales

"Muscle, money, materials. Free road base for driveways and a person to spread it with machines."

- Northern Rivers, New South Wales

"A magic wand. Or two to three physically fit individuals for about one month to help rebuild fences, sheds, yards, operate big machinery, and pick up materials."

- Northern Rivers, New South Wales

A number mentioned financial assistance to adapt to a warmer climate or support with insurance coverage:

"Support to meet electricity costs associated with cooling."

- Kununurra, Western Australia

"Funding to improve disaster proof infrastructure for my community."

- Nimbin, New South Wales

"In our community the main concern is some form of insurance coverage in case of another flood. We would like to see some form of insurance cooperative which covers people like us, and not profit making insurance companies."

- Wingham, New South Wales

Some mentioned better access to information on climate risks, adaptation measures, and on what to do in emergencies:

"I need to live somewhere I feel safe and help understanding if the next house I live in is at risk of water or fire issues. I need more confidence in understanding at what point to evacuate and where to go with pets."

- Buderim, Queensland

"Direction on building safe housing. For example, updated engineering requirements to ensure houses are safe given increased likelihood of intense fire and cyclones."

- Townsville, Queensland

"Other support required is that there needs to be a far greater awareness of the impacts coming and the ways that these can be mitigated and adapted to."

- Canberra, Australian Capital Territory

"The truth about the future we face and how to build resilience among the community and environmentally."

- near Bowraville, New South Wales

4.2 Addressing climate change

Securing a liveable future depends on far stronger global action to reduce emissions throughout the 2020s (IPCC 2021a). Global emissions must be roughly halved by 2030, and to do its part, Australia should be aiming to reduce its emissions by 75% by 2030 (Steffen et al. 2021).

While some impacts can no longer be avoided, and we must prepare for worsening extremes; how bad things get over the long term will be strongly influenced by our decisions now and through this make-or-break decade (Section 3.1). Determined action today to move beyond fossil fuels may ensure a future which is possible to adapt to – albeit with determination and proper planning – so communities can thrive.

Australia can make a very significant positive contribution to the world's efforts to reduce greenhouse gas emissions, both by strongly reducing our domestic emissions and by transforming from a major fossil fuel exporter to a clean energy superpower (Garnaut 2019). Given we are still at the early stages of that journey, we need to get the foundational steps right.

Notably, many contributors to the community survey spoke of how their anxiety about climate change was exacerbated by concern that not enough is being done to tackle the problem at its source. Ensuring Australia's emissions plummet this decade is essential both to limiting future harms from climate change, and promoting the mental health of Australians today.

Recommendation: 1

All levels of government should prioritise practical action to accelerate emissions reductions *this decade* and ensure Australia substantially exceeds its current 2030 emissions reduction targets.

In [Power Up: Ten Climate Game Changers](#), the Climate Council has outlined ten things that governments at all levels can help implement straight away to ensure the rapid decarbonisation of our economy.

Recommendation: 2

Ensure swift, deep and genuine reductions in emissions from Australia's biggest polluters.

Through reform of the Safeguard Mechanism, the Australian Government has the opportunity right now to ensure Australia's biggest polluters begin serious efforts to curb their emissions. The rules must ensure *genuine* reductions by strictly limiting the extent which facilities can use 'offsets' to meet their targets, and avoid opening the door to new coal and gas developments.

4.3 Building community resilience

While recent years have seen greater acceptance of the need to adapt to the impacts of climate change, and a number of new policies and funding announcements from different levels of government, far more needs to be done to adequately prepare for the challenges ahead.

Australia should have a clear national framework for adaptation and resilience that puts communities first and ensures greater coordination among different agencies and levels of government. It should have action plans that are grounded in local needs, priorities and strengths while being adequately resourced by Federal and State Governments. It must be underpinned by the best available science and localised understanding of climate risks. Overall, it demands prioritising investment in resilience, recognising that at present far more is spent on disaster recovery than on building our resilience to disasters.

Recommendation: 3

A single national framework and strategy that ensures greater vision, coherence and coordination for climate change adaptation in Australia.

Currently Australia has multiple frameworks, strategies and action plans for addressing climate change and disaster risks, including the National Climate Resilience and Adaptation Strategy and the National Disaster Risk Framework.

The Climate Council proposes the development of a single integrated National Climate Change Adaptation and Disaster Resilience Strategy. This would ensure greater coordination and coherence of efforts and avoid duplication. It could form the basis for ambitious action plans to suit different contexts. A unified strategy should include deadlines for implementation and a five-yearly process of review and strengthening. As detailed in the recommendations below, it would require adequate resourcing and build on improved understanding of local climate risks.

Recommendation: 4

Improve our understanding of disaster risks in a changing climate.

Many hazard maps are based on historical data and experience, meaning planning decisions and building codes are being made without updated information on present and future climate risks. Risk assessment based on outdated science sets us up for future losses from a lack of preparedness.

The Climate Council urges the Federal Government to undertake a full National Climate Change Risk Assessment as a key input into a new integrated National Climate Change Adaptation and Disaster Resilience Strategy and as a guide to all climate change adaptation efforts.

Recommendation 5:

Prioritise investment in resilience-building programs.

Australia continues to spend far more on disaster recovery than on resilience building efforts, despite evidence that every dollar spent on disaster preparedness saves many dollars through reducing future losses.⁷

For example, between 2005 and 2022 the Federal Government spent \$23.99 billion⁸ on disaster recovery and relief, while only \$510 million was spent on disaster resilience (Lefebvre and Reinhard 2022). Investing in risk reduction and resilience provides a 'triple dividend' of avoided loss and suffering, reduced disaster costs and potential economic and social benefits even in the absence of hazards occurring.

There is a need to increase public investments in resilience and develop innovative financing pathways to ensure these efforts are adequately resourced. The process for allocating public funds towards resilience projects must be independent and data driven, ideally deploying an accepted needs-based funding model that ensures funding is focused on the most at-risk and vulnerable communities.

The Climate Council welcomes the work already being done under the Australian Federal Government's Disaster Ready Fund, which will make one billion dollars available for adaptation over the next five years.⁹

This is a positive first step to addressing the historical bias that has seen the vast majority of disaster-related funds going towards response and recovery. To build resilience to the escalating disasters expected with global warming, more funding for ambitious climate change adaptation strategies is needed.

Recommendation 6:

Put communities first.

Communities suffering due to climate change should be at the heart of all adaptation and resilience building efforts, emergency response plans, and recovery arrangements. This should include support for community-led resilience building programs, ensuring these receive adequate funding. Trauma-informed, needs-based assessments should also inform recovery programs. Funding for disaster response, recovery and resilience building should be integrated into budgets at all levels of government. Governance arrangements should incorporate diverse community perspectives.

The program in New South Wales to train spontaneous community responders, recommended by the 2022 NSW Flood Inquiry is a good example of how governments can support communities to build on their existing strengths (New South Wales Government 2022). Though with community key to preparedness, response, recovery and prevention, such initiatives need to be accompanied by investment in longer-term community development approaches to resilience building

⁷ For example, a 2018 study in the US concluded there was a \$6 benefit from every \$1 in federal grants for disaster mitigation (National Institute of Building Sciences 2018). A 2022 report from the Insurance Council of Australia suggests an even greater return on investment. It concluded that AUD\$2 billion in investment by state and federal governments over the next 5 years would save AUD\$19 billion in costs by 2050 (Insurance Council of Australia 2022)

⁸ Based on 2022 prices.

⁹ Details available here: <https://nema.gov.au/disaster-ready-fund>

Recommendation 7:

Support communities to 'build back better'.

Currently, when local governments rebuild infrastructure with federal funds they must build 'like for like' replacements. This fails to improve resilience and actively embeds existing vulnerabilities. Towns, cities and communities impacted by disasters must be rebuilt in ways that take into account the inevitable increase in risks due to climate change. In some high-risk locations this may mean avoiding rebuilding in the same location.

Managed relocations must be considered an option for some of the most exposed communities. The joint announcement between the New South Wales and Commonwealth governments on land buybacks and relocations in the aftermath of the 2022 east coast floods is an example of this. However, it is important that such assistance is available to particularly at-risk communities *before* disaster strikes. In other words, those who wish to proactively out of harm's way should be supported to do so.

Managed relocations are complex undertakings, requiring not only moving homes but also moving infrastructure. They can be highly disruptive for communities. The Climate Council's proposed National Climate Change Adaptation and Disaster Resilience Strategy should provide guidelines for managed relocation, developed in consultation with communities, and help ensure that those who are forced or chose to move are able to do so with dignity and the necessary support.¹⁰

Recommendation 8:

Take practical steps to increase the affordability and uptake of insurance.

Adequate insurance coverage is a key factor in people's ability to recover from a disaster. Our results show that rising insurance premiums are making it harder for people in disaster-prone areas to insure themselves. This lack of insurance is also placing an additional burden on people's mental health. Recent research by the Actuaries Institute (2022) affirms that households already struggling to pay insurance premiums will be the ones to suffer most from the impacts of climate change on insurance premiums.

Climate Council recognises existing initiatives being undertaken to help Australians with rising insurance premiums, such as the Hazard Insurance Partnership. We encourage further work to help ensure all Australians have access to affordable insurance. The Australian Bushfire and Climate Plan (2020), prepared by Emergency Leaders for Climate Action (ELCA) and the Climate Council included input from insurance experts (Mullins et al. 2020). Recommendations from that plan for improving the affordability and uptake of insurance included establishing an independent insurance price monitor, a national public information campaign, and conducting a comprehensive review of the impact of climate change on the provision of insurance.

¹⁰ Fiji and Vanuatu have both developed detailed policies on climate change and disaster-induced displacement. While developed in very different contexts, these lessons and approaches from the Pacific may be useful in informing approaches to managed relocation in Australia (Republic of Fiji 2018; Government of Vanuatu 2018).

4.4 Reforming our mental health system to cope with escalating extreme weather disasters

Our findings on the rising mental health toll of extreme weather disasters (Section 2.4) and challenges with accessing support (Section 2.5) show there is significant work to be done to ensure adequate mental health support is available during and following disasters.

The 2020 Royal Commission into National Natural Disaster Arrangements made specific recommendations for prioritising mental health during and after disasters. It stated that federal, state and territory governments should “refine arrangements to support localised planning and the delivery of appropriate mental health services following a natural disaster” (Australian Government 2020). A number of detailed recommendations also emerged from the National Bushfire and Climate Summit organised by the Climate Council in 2020 that involved a number of health professionals, emergency responders and bushfire survivors.

Practical steps can be taken to ensure support is more accessible to those who need it and that it is appropriate to their circumstances. These should be part of broader reform of our mental health system to ensure delivery of trauma-informed care; a comprehensive approach covering prevention, early intervention and recovery; flexible services to meet different circumstances and needs including things like peer support and online mental health programs; and services that are integrated and easy to access and navigate. Further recommendations on mental health system reform can be found at www.beyondblue.org.au

Recommendation 9:

Ensure accessible, adequate and appropriate mental health services for disaster-affected communities.

Ensuring support services are available to those who wish to access them requires both an increase in capacity and, crucially, ensuring access to services is made as simple as possible.

In recognition that extreme weather disasters can cause long-term mental health repercussions, support measures should be in place for up to five years following a disaster. Priority should be given to regional, rural and remote communities, where support is more difficult to access, and where the impacts of disasters are often the most severe.

Recommendation 10:

Upskill mental health workers to address the challenges associated with climate change.

The increase in frequency and/or severity of extreme weather disasters, coupled with anxiety about climate change, is placing new strains on mental health. Mental health professionals should be offered training in identifying the mental health challenges associated with climate change and providing appropriate support.

Recommendation 11:

Greater mental health support for firefighters and other emergency responders.

Firefighters and other emergency responders face particularly severe pressures on their mental wellbeing (see Section 3.2.2). Recognising that existing services are being overwhelmed, further investment in mental support available to emergency responders, including volunteers, should be a priority (Australian Government 2019; Mullins et al. 2020). Presumptive legislation should be introduced that ensures responders with post-traumatic stress disorder (PTSD) are able to access support without first having to prove that their condition is work-related.

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Need support for your mental health?

HERE ARE SOME ORGANISATIONS AND RESOURCES

General information



Psychology for a Safe Climate
www.psychologyforasafeclimate.org

For advice on looking after your mental health following a disaster



Natural Disasters and Your Mental Health (Beyond Blue)
www.beyondblue.org.au/mental-health/natural-disasters-and-your-mental-health

For children and young people



I'm Worried About the Environment (Kids Helpline)
kidshelpline.com.au/teens/issues/worried-about-environment



Understanding Anxiety About Climate Change (Headspace)
headspace.org.au/explore-topics/for-young-people/understanding-anxiety-about-climate-change

The Climate Council is an independent, crowd-funded organisation providing quality information on climate change to the Australian public.

The Climate Council acknowledges the Traditional Owners of the lands on which we live, meet and work. We wish to pay our respects to Elders past and present, and recognise the continuous connection of Aboriginal and Torres Strait Islander peoples to Country.

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