

A CLIMATE OF SUFFERING:

the real costs of living with inaction on climate change

Mental health and community wellbeing
in the wake of extreme weather

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Our vision is for an Australia leading the world in clean technology use and innovation, with clean and low-carbon solutions a part of everyday life throughout the community, government and business.

The Climate Institute is funded primarily by a donation from the Poola Foundation (Tom Kantor Fund).

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Recommended citation:

The Climate Institute, *A Climate of Suffering: the real cost of living with inaction on climate change* (Melbourne & Sydney: The Climate Institute, 2011).

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ACKNOWLEDGEMENTS

The Climate Institute is grateful to the following people for their assistance and advice: Prof. Tony McMichael and Dr Anthony Hogan at the Australian National University and ANU's National Centre for Epidemiology and Population Health for support and encouragement. Assoc. Prof. Helen Berry at the Centre for Research and Action in Public Health at the University of Canberra for reviewing the paper. Dr Susie Burke at the Australian Psychological Society for comments, advice and support. Liz Priestly and the Mental Health Association of NSW for their support. For their advice and support, and for sharing their stories of endurance, we are grateful to Daryl Taylor and fellow members of the Kinglake mountain community, Dr Allan Dale in Innisfail, and Dr Rob Grenfell in Natimuk. Professor David Karoly at the University of Melbourne provided physical scientific peer review. Graphic design work was done by the Net Balance Foundation

FOREWORD

This timely report addresses a big gap in the current public debate about climate change and how we should respond to it. There has been much legitimate concern about economic consequences and the risks to property, jobs and export earnings, but there has been a failure to discuss the consequences of climate change for human wellbeing and health. This is a serious blind spot; it restricts our vision of possible futures, and the need for urgent and effective action.

There is much research evidence, in Australia and elsewhere, that recent climate change has already caused diverse changes in animal and plant ranges, rhythms and reproduction. Some species are moving, some are struggling, and some are suffering from declining food supplies. The human species faces similar risks to wellbeing, health and survival.

Climate change will have many adverse impacts on Australians' health—physical risks, infectious diseases, heat-related ill effects, food safety and nutritional risks, mental health problems and premature deaths. The emerging burden of climate-related impacts on community morale and mental health—bereavement, depression, post-event stress disorders, and the tragedy of self-harm—is large, especially in vulnerable rural areas. Across all sectors of the Australian population, mental health (too often the Cinderella of our public health policy) is vulnerable to the stresses and disruptions caused by a changing climate and its environmental and social impacts. Many rural, regional and peri-urban communities are already beginning to suffer as longer-term environmental changes emerge.

This report will help us understand the 'human face' of climate change; that is, what it means for us, for our sense of security and that of our friends, our families and our neighbours. This great and complex human-induced disruption to the global environment is not just 'somewhere out there'. Increasingly, climate change will weaken the environmental and social conditions that underpin our physical and psychological health.

The symptoms we see now, in individuals and communities beleaguered by fire, storms, floods and drought, are the early warning signs. There is still time to avoid the human and other costs of global warming blowing out, time to realise the many health and social benefits of action, and so time to restore wellbeing and hope.

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SUMMARY

Climate change is here, now. While it is often difficult to draw a clear line between a particular weather event and long-term climate change, there is a strong relationship between the emerging global pattern of disasters and global warming—whether long and insidious, like drought, or short and violent, like bushfires.¹

Scientists warn that a failure to reverse rising carbon pollution levels will see Australia's inherently moody climate become even more volatile. With inaction or delay on pollution comes a sharp rise in the frequency, intensity and extent of heatwaves, bushfires and drought, as well as more torrential downpours, and tropical storms with increasing ferocity.²

The damage caused by a changing climate is not just physical. Recent experience shows extreme weather events also pose a serious risk to public health, including mental health and community wellbeing, with serious flow-on consequences for the economy and wider society.³

This paper's purpose is to raise awareness of the mental health consequences of extreme weather events and climate change. By reviewing the evidence and expert opinion, it is hoped that governments, businesses and communities will be prompted to act early, to avoid further unnecessary suffering and cost.

As recent disasters like Cyclone Yasi and the Eastern Australian floods have shown, many people prove remarkably resilient in the face of a disaster. But people's responses to disaster are complex. With the right support, many communities can pull together and pull through, and Australians rightly celebrate this apparent strength. However, for many, the dislocation and suffering caused by extreme events can linger for years, long into the 'recovery'.

The reality is that extremes of weather—long, like drought or brief, like a cyclone—are exacting an all too human toll:

- Following a severe weather event, a significant part of the community—as many as one in five⁴—will suffer the debilitating effects of extreme stress, emotional injury and despair. Unabated, a more hostile climate will spell a substantial rise in the incidence of post-traumatic stress, anxiety and depression—all at great personal suffering and, consequently, social and economic cost.
- The emotional and psychological toll of disasters can linger for months, even years, affecting whole families, the capacity for people to work and the wellbeing of the community. Higher rates of drug and alcohol misuse, violence, family dissolution, and suicide are more likely to follow more extreme weather events. Evidence is beginning to emerge that drought and heat waves lead to higher rates of self-harm and suicide, as much as 8 per cent⁵ higher.
- Mental illness is already the second largest contributor to the disease burden in Australia. In any given year, one in five Australians suffers from a mental disorder of some kind, potentially making millions of people more vulnerable to mental ill-health in an increasingly hostile climate.⁶
- The treatment and management of mental health problems already costs taxpayers over \$5 billion per year,⁷ while the cost in lost productivity is estimated at another \$2.7 billion⁸—costs set to rise in a changing climate. Mental health problems also tend to coalesce with economic and social ones, meaning that the overall toll is likely to be larger still.
- Employment and cost-of-living impacts usually precede a mental health toll: in the recent drought, for example, 2004 figures indicate that around one in four rural workers had lost their job—about 100,000 agricultural workers, contractors and those employed in allied businesses.⁹ By 2007, prolonged dry conditions had eroded Australians' quality of life, in dollar terms, to the tune of approximately \$5.4 billion.¹⁰ At the same time, the cost of the average grocery bill for all Australian households rose 12 per cent;¹¹ stark evidence of the affect on the cost of living by extreme weather events and a foretaste of worse to come without action on climate change.

- Rural, regional, remote and peri-urban communities are particularly exposed in a deteriorating climate. Climate change compounds the chronic difficulties and inequities that already face many communities—Indigenous as well as non-Indigenous. Already, many parts of the country find it hard to recruit dedicated health care and social service professionals. Climate change will almost certainly increase the demand for social support and mental health services and, at the same time, make it harder to sustain them in affected areas.
- Climate change will render already stressful resource-use conflicts—like those in the Murray-Darling Basin—even more volatile and damaging to the health and wellbeing of individuals and communities.
- In the long term, there is a heightened risk of stress and tension amongst both newcomers and their host communities as people are forced to move permanently and en masse in response to a rapidly shifting climate. The loss of a sense of place—particularly for Indigenous peoples—may magnify and complicate the mental and emotional pressures.
- Children, in particular, are vulnerable to pre-disaster anxiety and post-trauma illness. Adults' failure to act on climate change may, like the indecision that perpetuated the Cold War, lead to long-lived insecurity and anxiety in young people.
- Even for those not directly affected by an extreme weather event, news of loved ones lost or property damaged, together with the sheer enormity of disasters like the Queensland floods—often magnified by media coverage—can be distressing and debilitating.

Just how much Australians' mental health burden grows in the future depends significantly on how quickly and substantially we act on climate change now. Seeing action on climate change as an investment in preventative health care is an important first step. After all, prevention is always better—not to mention cheaper—than treatment.

The global climate is changing. Sadly, some further suffering is now unavoidable and a complementary focus on adaptation is essential. However, governments can choose to substantially minimise the suffering, and the social and economic costs by acting early to cut pollution and switch our economy to clean energy and production. By making a genuine effort at home, Australia will be much better placed to work with the rest of the world to avoid the worst scenarios painted by climate science.

The task is two-fold: we must manage the unavoidable changes already in the pipeline and, at the same time, avoid the unmanageable human tragedy of climate change unchecked.



INTRODUCTION

Australia has been known for more than a hundred years as a land of droughts and flooding rains, but what climate change means is Australia becomes a land of more droughts and worse flooding rains.

David Karoly,
Professor of Meteorology & ARC Federation Fellow,
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The University of Melbourne¹²

Every time we settle into the task [of recovery] we get a new task added to our plate.

Queensland Premier Anna Bligh¹³

For the past decade and a half, Australians have been given a preview of life under unrestrained global warming. Between the spring of 1996 and the winter of 2010, much of southern and eastern Australia experienced extremely dry and hot conditions.¹⁴ Indeed, the first decade of the twenty-first century was the hottest on record in Australia and globally.¹⁵ Drought and heat fuelled the fire risk in the southeastern parts of the country, and off-the-scale heat wave conditions produced bushfires so ferocious that ‘very extreme’ and ‘catastrophic’ categories have been added to the official fire weather index.¹⁶

Then, in late 2010, the El Niño-Southern Oscillation (ENSO) climate pattern switched abruptly, and a strong La Niña event brought torrential downpours and heavy, sometimes lethal, flooding up and down the eastern half of the continent.¹⁷ The combination of a wet winter and bursts of warm spring weather saw extraordinary locust plagues threaten crops in large parts of the southeast.¹⁸ That threat was only minimised by prompt and expensive action by farmers and authorities. Heavy rains in many eastern and northern parts made harvesting hard, and torrential floods literally swamped crops and drowned livestock.

The connection between an extreme weather event and long-term climate change is always complex. People sometimes confuse weather with climate: weather is the condition of the atmosphere in a particular place and time; climate is the weather conditions prevailing over an area in general or for an extended period of time. Weather is what happens day-to-day; climate change is measured over decades.

While the strength of the La Niña itself cannot be blamed on climate change, events like these give us a picture of life in a world of greater extremes. Consistent with global trends, sea surface temperatures off the northeast of Australia reached record highs and a category five tropical cyclone Yasi pounded north Queensland, penetrating inland as far as Alice Springs, and narrowly missing major population centres. The extensive damage to many smaller communities, local industries and the national economy registered \$9 billion in the 2011 Federal Budget papers.¹⁹ At that same time, the Bureau of Meteorology noted that significant parts of Western Australia were still beleaguered with below-average rainfall,²⁰ with the southwest experiencing record heatwaves in late February.²¹

While cyclones, drought, bushfires and floods are all a normal part of Australian life, there is no doubt our climate is changing. For instance, the intensity and frequency of bushfires is greater. This is a ‘new normal’, for which the past provides little guidance. While it is hard to point to one extreme weather event and say ‘this is climate change’, there is very little doubt that carbon pollution is the major driver of global warming today. Moreover, recent conditions are entirely consistent with the best scientific predictions: as the world warms so the weather becomes wilder, with big consequences for people’s health and wellbeing.

Climate change is not simply a matter of slowly rising temperatures and seas; it affects all aspects of our way of life: extreme weather costs billions of dollars in property damage, insurance premiums, health and welfare spending, and lost productivity. Climate-related disasters—be they short and sudden, like cyclones, or long term and chronic, like drought—can set in motion a cascade of problems: loss of lives and livelihoods,

environmental deterioration, strain on family relations and finances, emotional fallout, and the movement of large groups of people.

Increasingly recognised and reported is the mental health dimension of disaster. In recent years, a body of evidence has emerged showing just how insidious, pervasive, deep and—for some people and communities—profoundly dangerous the mental health impacts of climate change-related disasters can be.²²

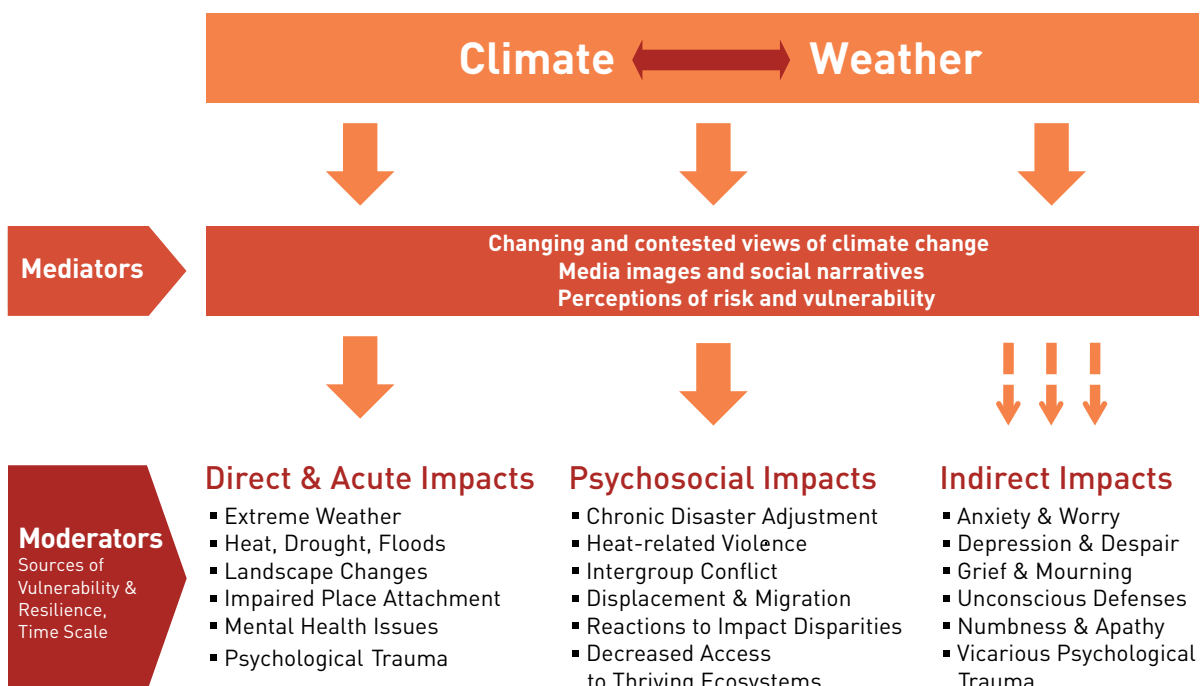
Mental health experts, practitioners and survivors of disasters, all attest to the emotional trauma and community damage from wilder weather, with a warning that worse will come without preventative climate action. Depression, anxiety, post-traumatic stress, substance abuse: these are some of the mental health costs of extreme weather events—the real costs of living without preventative action. The mental health costs of climate change manifest before, during and even long after extreme weather events (see Fig.1), and include:²³

- Direct and acute impacts, such as the trauma of bushfire, the anguish of losing loved ones to a severe weather event, or the despair that comes with prolonged drought.
- Indirect impacts, including the anxiety of watching reports of others being swept away in floods, being on constant bushfire alert or of a cyclone bearing down on a coastal community.
- Broader impacts on society, the economy and the environment, such as heat-related violence, conflict over deteriorating resources, tensions arising from displacement and migration, the loss of environmental quality, economic opportunity undermined, and the anxiety of an insecure future.

We have sketched a picture of how climate change is affecting mental health and the social fabric of communities, particularly rural and regional communities. Often marginalised, isolated and under-serviced, country and peri-urban dwellers’ capacity to adapt to abrupt climate change is hamstrung from the outset. In the absence of swift and concerted action to cut domestic and global pollution all Australians can expect to have to grapple—mentally and economically—with an increasingly treacherous environment.

Fig. 1

The psychological impacts of climate change and extreme weather



Source: Doherty and Clayton The psychological impacts of climate change AP 2011

LIVING THROUGH THE BIG DRY—DROUGHT AND DESPAIR

The world is warming at a rate unprecedented in history. Global air temperatures, humidity and rainfall patterns show a distinct 'fingerprint' that cannot be explained in the absence of the rise in emissions in carbon dioxide and other greenhouse gases caused by human activity. Unless trends are reversed, and soon, it is difficult to see how large parts of the country can avoid falling into more or less permanent drought by this century's end.²⁴ We don't have to wait for this worst-case scenario to get a sense of what climate change means for Australians' quality of life and mental health.



We don't have to wait until the worst-case scenario to get a sense of what climate change means for Australians' quality of life and mental health. Local trends are consistent with observations and models of a rise in average global temperatures.

Drought means different things to different people, but for nearly fourteen years, extraordinary rainfall deficiencies have plagued both city and country areas, pushing water storages to all-time lows, deeply eroding farm productivity, causing food prices to rise, and exacerbated environmental degradation. While it is difficult to say conclusively to what degree 'the Big Dry' was linked to carbon pollution, climate scientists see, in the higher temperatures and longer-term decline in rainfall, the signature of human activity.²⁵ Importantly, these local trends are consistent with observations and models of global warming (see Box 1).

At the same time, scientists are seeing an intensification of the Sub-Tropical Ridge: the world-encircling weather system that forms the frontier between the winter-dominant rainfall in southern Australia and summer-dominant rainfall in the north. Even as the rains returned in October 2010, scientists with the South East Australian Climate Initiative concluded that:

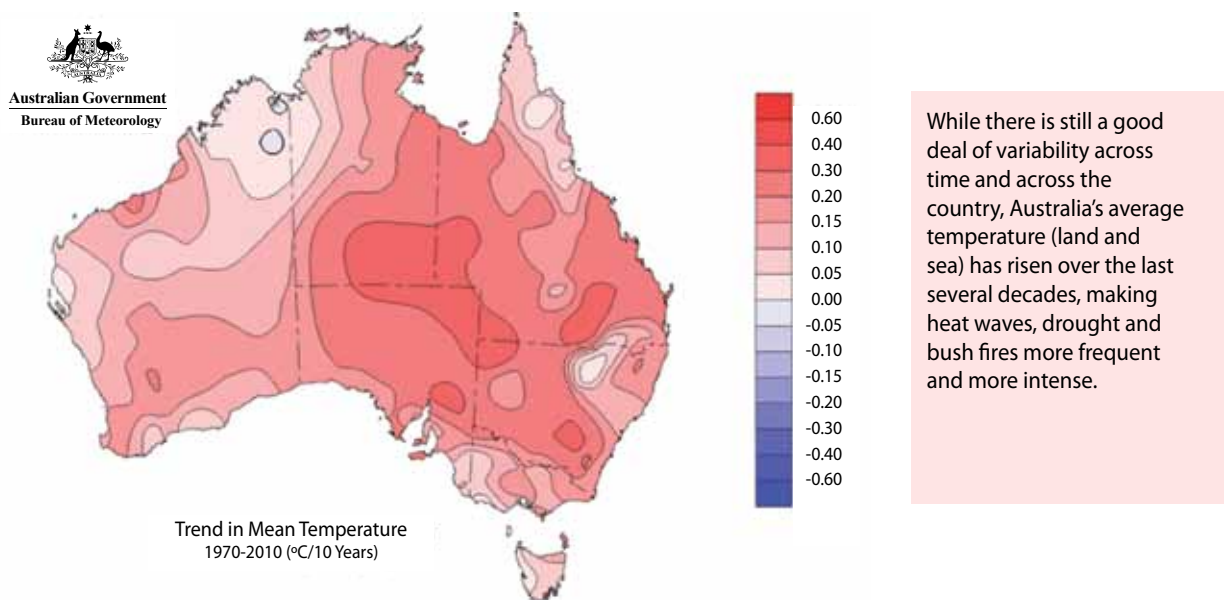
The observed intensification of the sub-tropical ridge can only be achieved when anthropogenic greenhouse gases are included in climate models. This provides evidence that observed changes in the large-scale circulation affecting south-eastern Australia are associated with global warming which is therefore likely to be contributing to the drought.²⁶

BOX 1. Drought and global warming.

Whilst Australia has always experienced spells of drought, this most recent dry period has generally been hotter, with higher maximum and minimum temperatures than earlier big droughts, such as those in the 1930s and 1940s.²⁷ Since 1960, the continent's mean temperature has increased by about 0.7°C, (see Fig.2) more or less in tandem with the average temperature of the globe.²⁸

Some areas have experienced a warming of as much as 1.5°C to 2°C over the past fifty years. The number of days with record hot temperatures has increased each decade and the decade 2000 to 2009 was Australia's warmest on record.²⁹ Globally, the rate of warming is also increasing and over the fifty years from 1956 to 2005 the world warmed at about 0.13°C every decade on average.³⁰

Fig. 2
A hotter country



This study confirmed earlier work by the CSIRO and the Bureau of Meteorology predicting that, over the next few decades, droughts or dry spells will grow in intensity and frequency, and will affect a substantially wider area of land than they do today.³¹

Recent modelling of the global climate system reinforces the prediction that much of the land surface of the planet—including much of Australia—will become increasingly arid during the course of the twenty-first century.³²

Since the middle 20th century, global aridity and drought areas have increased substantially mainly due to widespread drying since the 1970s over Africa, southern Europe, East and South Asia, eastern Australia, and many parts of the northern mid-high latitudes. Although natural variations... played a large role in the recent drying, the rapid warming since the 1970s has increased atmospheric demand for moisture and likely altered atmospheric circulation patterns... Since a large part of the recent warming is attributed to human-induced [greenhouse gas] increases, it can be concluded that human activities have contributed significantly to the recent drying trend.³³

DROUGHT'S TOLL ON MENTAL HEALTH

Drought isolates us through a slow strangulation, leaving our moods bad, our self-esteem low and our decision-making difficult.

Farmer, cited in the Kenny Report on drought³⁴

Without putting too fine a point on it, the much publicised mental health consequences of drought and family separation are a symptom of a much larger social crisis in our rural and remote areas.

Margaret Alston, Professor of Social Work, Head of Department of Medicine, Nursing and Health Sciences, Monash University.³⁵

There are still big gaps in science's understanding of the mental health impact of long-term dry conditions, but disasters that unfold over days, months and years can be associated with a deep and disturbing sense of failure, loss, powerlessness, heightened anxiety, stress and depression. A rise in global average temperatures above 2°C is likely to stretch even the most resilient communities and industries. Communities depend on the time between droughts to recover and prepare ahead of the next one; as water storages, production, soil moisture are topped up by fresh rains and floods. As the time between droughts becomes compressed, recovery is going to become more and more difficult.

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Australians who live on the land are an iconic part of our culture. They are admired for their hard work, strength and resilience in the face of adversity. Even at the best of times, however, farming is an inherently stressful if still satisfying job. Many farming families and communities have been placed under enormous and additional strain from long years of drought, followed recently by pest outbreaks, storms

and extensive flooding. As with any group of people, not all farmers are alike, and while some have proved highly adaptable in the face of harsher conditions, others have not (see Box 2).

Moreover, what at first glance appears to be individual resilience may in fact simply be persistence in the face of limited alternatives. Farmers may see their options and opportunities limited to what they know, i.e., the farm. Whilst farmers often demonstrate a higher sense of wellbeing than non-farmers, they tend to have less hope for the future.³⁶ There is no doubt that rural Australians often show great spirit in the midst of disaster, but resilience should not be confused with simple

BOX 2. Self harm, suicide and drought.

Sadly, six people take their own lives each day in Australia, and country communities are more than twice as likely to lose someone to suicide than metropolitan areas.³⁷ The reasons why people harm themselves or end their lives are highly complex, but there is growing evidence linking drought and suicide, with one study showing as much as an eight per cent rise in the suicide rate at a time when rainfall was 300 millimetres below average.³⁸

Financial strain, landscape degradation and a dwindling rural population are all factors that raise the risk of suicide amongst older, male farmers, and all are set to increase under global warming scenarios. These are likely to add to the already difficult circumstances many farmers labour under, with potentially tragic consequences for them, their families and communities.

doggedness or stoicism. The deep-seated culture of self-reliance that characterises rural communities can be both a virtue and a barrier to seeking help when it is really needed.

Current trends in rural and regional Australia suggest that many communities have static or declining populations, that these populations are ageing, and that, by contrast with their city cousins, rural Australians have less income, often poorer health (mental and physical), fewer job and social opportunities, and fewer services.³⁹ Drought, flood and other disasters can exacerbate the social and economic disparities between rural and urban dwellers, between Indigenous and non-Indigenous communities, and between agriculture and other sectors.

Climate change may also make large parts of the country less appealing to health professionals, making it harder to recruit and maintain doctors, counsellors and others, thus eroding people's access to good quality care. While many rural populations are shrinking, demand for professional care is likely to rise with a rapidly changing climate; putting both professional and voluntary health services—and service providers—under increasing strain.

No one is an island. Personal suffering doesn't just hit the individual, it taxes whole communities and economies, cutting productivity, straining relationships, and demanding health care resources and social services. The human and financial resources of the education and criminal justice systems are also placed under additional strain. When psychiatric disorders manifest as domestic violence and other crimes, the psychological and physical impacts on spouses, children and neighbours can be catastrophic.



As dry conditions hit farmers so the economic and social fabric of rural Australia is affected: in 2004, around 100,000 agricultural workers, contractors and those employed in allied businesses lost their jobs—about one in four—and the number of employers dropped by 15,000.⁴⁰ Almost a quarter of small businesses were drought-affected, and more than 40 per cent of those were operating in rural areas. In the New England town of Wee Waa, the number of permanent and casual staff fell by a third and a half respectively as extremely dry conditions drove cotton production down.

For consumers too, drought adds to the financial difficulties facing working families: Drought, together with storms like Cyclone Larry, pushed up the cost of living and played a big part in increasing the number of food stressed people, i.e. those who could not access fresh food on a daily basis.⁴¹ Australians' average food bill rose 12 per cent between September 2005 and September 2007—more than twice the rate of increase in the CPI.⁴² The price rise for many staple foods was much higher still: the cost of a loaf of bread rose by up to 40 cents, a dozen eggs by 50 cents, a litre of milk by 20 cents, and a kilogram of cheese by 12 dollars.⁴³

Add to these figures the billions of tax dollars spent on the repair of drought-degraded infrastructure, and the financial pressure of drought on Australian families—in the city and in the country—has been substantial.

Farmers are the ones most immediately struck, as chronic and extremely dry conditions mix with financial and other strains and daily stresses to inflict mental agony. A highly

Drought, flood and other disasters can exacerbate the disparities between rural and urban dwellers, between Indigenous and non-Indigenous communities, and between agriculture and other sectors.

variable climate is challenging enough, but prolonged drought makes it much harder to plan for stock, crops, succession, improvements, expansions, employment of staff, and natural resource management. Over time, the absence of the ability to adequately plan ahead may result in an erosion of hope and result in insecurity, with a profound impact on farming families' general outlook and mental health. Prolonged dry conditions strain families and intimate relationships; farming couples are forced to spend longer periods of time apart, working off-farm when income from grazing and cropping dries up. The extra workload means less time for family, friends, relaxation, recreation, and community-building activities—the very activities that help to build resilience to adversity.

The 'Big Dry' undoubtedly strained family relationships and wore away at the social fabric of communities (see Box 3).⁴⁴ During times of drought, the workload and isolation of many families rises as workers are laid off, wives or husbands must look for income off-farm, and families' disposable income drops. Community networks—so important in helping people deal with climatic and other disasters—start to disintegrate and access to social support becomes even harder.

In a report submitted to the Australian Government on the social impacts of drought, an expert panel chaired by former AgForce President Peter Kenny reported that increased stress, anxiety, and feelings of powerlessness and sadness was widespread amongst farmers.⁴⁵

Professional help is often harder to come by in rural communities, with access to counselling and support services

BOX 3. Climate change in a small country community.

Natimuk is a very small community that ekes its existence out on the fringes of the Little Desert; time has certainly never been that easy for farming since settlement in the late 1800s, with a sequence of droughts, floods and fires.

In January 2011, a once-in-200-year flood broke the longest dry spell in living memory—in all, thirteen years of drought. Over the dry period, we had devastating frosts that virtually lead to a total crop failure one year and wildfires that destroyed a substantial area of property. There was even a run of heatwaves reaching 47°C on one occasion—so hot the road surface melted causing a motorcycle pile-up. There is no doubting that we are experiencing extreme weather events in the Wimmera.

As a GP servicing the community over this time, I have seen the direct human cost of all these changes: marginal crop returns have lead to very severe reduction in income for farmers. This then means that the whole community suffers as the local economy takes a downturn.

Many businesses have gone broke and so many people have left the community. Financial stress also brings on psychological distress and, sadly, in some cases, suicide. Also, there are episodes of domestic violence, and alcohol and drug problems—with all of the resultant disharmony. Responses from State and Commonwealth Governments have been too little too late; there is an insatiable need for counselling services.

Other health effects have included injuries related to playing sport on 'rock-hard' footy fields, such as back injuries and shoulder tears. What has changed is the fabric of the community: we have a generation of children that missed out on a whole range of mostly water-based activities we used to take for granted, such as boating, fishing, swimming and other sports.

The floods provided relief from the dry, with all the lakes refilled. A good thing as sports and recreation have flourished and the whole community has resorted buoyancy. Unfortunately for Natimuk, the floods caused considerable damage to twenty properties, mine included. For some on low incomes, the repairs are prohibitive and out of reach, with no real grace from the insurance companies.

What has changed is the fabric of the community: we have a generation of children that missed out on a whole range of activities we took for granted.

Dr Rob Grenfell is a GP and public health physician based in Natimuk in Victoria's West Wimmera region.



typically well below that available in metropolitan Australia. In smaller, close-knit settlements, many people rely on traditions of voluntary, mutual aid. Neighbourliness, help and voluntarism are hallmarks of the ethos of life in the bush. Support services, formal and informal, are often interwoven with local sporting clubs, churches and groups such as the Country Women's Association and Landcare. Often it is the same few individuals involved in these charitable organisations and support networks. However, even without climate change, this traditional method of coping is becoming harder as many districts lose people, volunteers suffer burnout, and the threads that hold communities together fray or unravel—just at a time when they are needed more than ever.

Some individuals and communities may actually draw strength from adversity. For these people, the shocks and spasms of a rapidly warming world may present something of an opportunity. It is from such people that the stereotypical image of the hardy Australian (male, usually) is borne, but the reality for most is quite different. Farmers typically report that they are happier than the average person.⁴⁶ But while there are certainly resilient individuals and families, as in any community, it would be an unhelpful mistake to romanticise all people on the land.

Traditional methods of coping are becoming harder as many districts lose people, volunteers suffer burnout and the threads that hold communities together fray or unravel just at a time when they are needed more than ever.



THE EMOTIONAL AFTERMATH OF SUDDEN IMPACT EVENTS— FIRES, STORMS & FLOODS

In February 2009, Victorians were hit with the most lethal fires in Australia’s history. Those caught up in the violent conflagration and its aftermath, or anyone who lost loved ones, homes and businesses, may carry psychological scars with them for the rest of their lives. Climate and fire experts conclude that even if climate change did not light the fires, then it certainly stirred the cocktail of conditions necessary for the catastrophe, including prolonged drought⁴⁷ and extraordinarily high temperatures.

Modelling of near-future fire weather risk indicates that, on present trends, the incidence of catastrophic fire days would nearly double by 2020. By 2050 Melbournians’ risk a catastrophic fire day not once in every thirty-three years (as at present) but once every two and a half years.

A report produced for The Climate Institute in 2007 by leading fire, weather and climate authorities showed how fire weather in south-eastern Australia has risen since the 1970s.⁴⁸ Indeed, the majority of more intense fire seasons have occurred since the late 1990s, with seasons starting earlier and finishing later. Modelling of near-future fire weather risk indicates that, on present trends, the incidence of catastrophic fire days will nearly double by 2020. By 2050, for example, Melbournians risk a catastrophic fire day not once in every thirty-three years (as at present) but once every two and a half years. Rapid global warming will fuel more and more major wildfires as the twenty-first century rolls on.⁴⁹

The extent to which each person copes with this kind of trauma depends on many factors, including how well he or she has coped and come through disaster in the past, the extent of social support and networks available, and whether they have pre-existing mental health problems, such as clinical depression and anxiety.⁵⁰ The subject of intensive study for decades, post-traumatic stress disorder (PTSD) almost certainly manifests in a small but significant fraction of those affected by natural disasters, war and other traumatic events.⁵¹ As many as one in five people may be afflicted.⁵²

More than one in ten primary school children were suffering from post-traumatic stress disorder the three months following Cyclone Larry in March 2006. Common symptoms included flashbacks, nightmares and general state of distress, all of which may have had a deleterious effect on the children’s education and future life prospects.⁵³ In the aftermath of Hurricane Katrina which struck New Orleans in 2005, the incidence of post-traumatic Stress Disorder amongst survivors remained surprisingly high even two years after the deadly storm.⁵⁴

It is too early to truly understand the extent of post-traumatic Stress Disorder emerging from the January 2011 floods and cyclones in Queensland, New South Wales and Victoria, or the February 2011 bushfires in Perth, but mental health professionals are preparing for the likely mental fallout (see Box 4).⁵⁵

In addition to those who develop full-blown post-traumatic stress disorder, major depression and anxiety disorders are all-too-common following traumatic events. While most people do recover, grief—a natural and indeed healthy reaction to loss—can become complicated and continue to affect people for years after the loss of loved ones in a disaster (see Box 5).⁵⁶

As if psychic pain were not enough, post-traumatic stress



Source: FlickrCC - photographer Jamesmhw

disorder characteristically deals the sufferer a bad hand of bodily symptoms as well: gastrointestinal pain, skin rashes, and muscle and joint pain are common. post-traumatic stress disorder intrudes on almost every part of a person's life; sufferers typically have to cope with poor sleep as memories of the event haunt them in both waking life and dreams.⁵⁷ Disturbed sleep itself leads to lowered resistance to disease, and less tolerance to pain and stress.⁵⁸

Given time, and with appropriate support, post-traumatic stress disorder and other psychiatric problems diminish. Following the initial shock after a fire, storm or other sudden disaster, individuals and families need to cope, sometimes for years, with a host of factors that can compound their trauma: they may be forced to move, and to grapple with legal costs and loss of income. Chronic pain and injury, including disfigurement in the case of fires, can complicate recovery (see Box 5).

Of course, climate-related disasters indirectly affect many more people than those in their epicentre; rescuers, social workers, counsellors and others charged with administering psychological first aid and long-term care must cope with the strains and stresses of providing care to the mentally ill. The wider community has only recently begun to understand the challenges faced by carers—professionals, family members and volunteers.

Often, communities routinely affected by disaster, such as those in North Queensland that lie in the path of cyclones, develop ways of coping psychologically with the threat.⁵⁹ On the other hand, as the risk of more violent storms increases, and perhaps spread seasonally, with global warming,⁶⁰ we can expect these



normal coping mechanisms to be strained. Although strategies for dealing with storms are likely to emerge, the shift to a much more hostile climate might create a sense of siege. In a world where such extreme or severe events are becoming more frequent—and the very fact that the environment is changing rapidly—the sheer unpredictability of the climate and weather may create a chronic state of anxiety as people become hyper-vigilant of danger.⁶¹

Many survivors say that the recovery is as hard and as heart-breaking as the disaster itself. It may take years to overcome the tragedy and some communities never recover fully, lacking the necessary resources and energy. For some communities, a one-off major disaster can sound their death knell when basic social support breaks down in the chaotic aftermath of the disaster.

Many families have no back-up plans, no other way of accessing work and school, and meeting their fundamental needs. People who experience trauma are, however, often better able to recover if they are agents active in their own recovery and community reconstruction.

As if psychic pain were not enough, post-traumatic stress deals the sufferer a bad hand of bodily symptoms as well. Victims' enjoyment of life—including relationships, careers and study—is disrupted or devastated.

BOX 4. Living with Larry and Yasi.

Like any north Australian living on the coast, I'd been through several cyclones. Going through the eye of a Category 4, however, was entirely different. Larry was a relatively compact and fast moving cyclone with gusts of up to 294 kilometres per hour. There were numerous tornado-type features within the system's eye-wall and feeder bands that were linked to patches of catastrophic damage. They say the eye itself split up around Mt. Bartle Frere—the highest mountain peak in Queensland. It was still punching Category 3 winds as it munched its way across the Atherton Tablelands; a hinterland area traditionally free of massive cyclone damage.

For me, it made the camaraderie I'd always noticed among Cyclone Tracy Darwinites a lot more understandable. Larry brought out fantastic displays of local leadership both before and after the blow. For the first time, however, I also came to experience the effects of widespread and prolonged community-wide trauma. To then have a second whopper cyclone (Yasi) hit within five years has many of us in this part of the north thinking about what the future could look like if predictions about more intense cyclones come true.

What comes after the cyclones is perhaps more traumatic. Once proud businesses called it a day and many long-term relationships finally broke.

For most, there are almost two distinct traumas that arise from these events: the first comes from the deep sense of fear experienced during the cyclone itself. For me, I mostly remember how time seemed to appear endless while I was desperately hoping for the house not to disintegrate at the peak of those repeated, incredible gusts. For my wife, the fear was so intense, that we painfully decided the hedge our bets in Yasi; she evacuated west with one of the children while I stayed with the other to look after our property as best we could.

For communities like ours, what comes after is perhaps more traumatic. Living for years in a slowly recovering and devastated built and natural environment brings its own downers. Slowly, post-disaster trauma gathered its community toll. Once proud businesses called it a day and many long-term relationships finally broke. Some older people simply gave up on life, too worn out to rebuild their lifetime's work. Others decided they had had enough, packed up, and left the district altogether to avoid going through it again.

But, equally, with the misery came the pride many of us often feel about not just getting through, but coming out stronger. We can see the changes made across the community put us in a better position for the next event. We all share a common experience. The limited loss of life and the recovery effort made most north Queenslanders happy they lived in Australia and not in New Orleans post-Hurricane Katrina. Many feel two significant things made the difference:

First, since at least the 1970s and 1980s, Australia has lifted its building and planning standards. By and large, the real damage in both cyclones was in the old housing stock. Much needs to be said of the value of good land use planning and standards-based adaptation.

Second, a strong focus on social recovery is without doubt the key. Having ex-General Peter Cosgrove and other steady hands appointed immediately after Larry gave the community some faith that a real effort was being made to coordinate and expedite the response. Cosgrove in particular still keeps a strong relationship with the Innisfail community; recently reopening the rebuilt shire hall years after the event. State and Federal disaster recovery systems were instrumental in both supporting human and financial recovery; the flexibility of the programs allowing many to get back on their feet relatively quick.

Finally, it's worth noting that while the nation's generosity in donating 'stuff-based aid' is admirable, it can have the perverse outcome of distracting the recovery effort. Post-disaster, it tends to be human support and cold hard cash that helps empower people to recover.

Dr Allan Dale lives with his family near Innisfail and is Chair of Regional Development Australia—North Queensland and Torres Strait



BOX 5. Post-trauma stress.

While the causes and presentation of post-traumatic stress disorder are complex, long-term studies of people with and without the condition reveal that sufferers are six times more likely to attempt suicide. Abuse and addiction to alcohols and other drugs is commonplace, as is hospitalisation for mental illness, with nearly one in five at serious risk of suicide.⁶² Afflicted individuals' enjoyment of life—including relationships, careers and study—are disrupted or devastated as they deal with prolonged grief, depression, anxiety and panic attacks, substance abuse, and debilitating physical symptoms.

BOX 6. Bushfire and recovery at Kinglake

The firestorm came without warning. The ferocity of the fires and the scale of the disaster were unprecedented—completely outside anyone's experience, or imagination. Having to fight for your life and protect family and friends against such unanticipated fury stays with you; it lurks and lingers, returning to the fore when you least expect it. The loss of life and property across the Kinglake Ranges was staggering. We know some families have suffered such significant losses and been so traumatised that they may never fully recover.

Many of our young people were forced to face their own mortality at a time when they still needed to feel secure, safe and protected. They lost school friends, family members, neighbours, mentors and leaders. Our kids attended too many funerals and saw too many good friends leave the area. Youth workers are concerned about truancy, mental health, risk-taking, sexual promiscuity, and drug and alcohol use. These experiences won't be forgotten, aren't easily processed, and may have, as yet unforeseen, long-term consequences for a whole generation.

Our small community groups and informal social networks have endured substantial losses to their capacity, capability and functioning. So many people became homeless all at once that most had to look elsewhere for short or long-term 'temporary' accommodation. Family and community support networks were hollowed out; complex webs of relationships broken. Social isolation compounded post-disaster grief, loss and vulnerability. Too many marriages have not survived the recovery.

Community organisations and small businesses across the mountain have been severely impacted not just by the fires but also by the recovery. Small businesses that survived the firestorm had to add recovery support—individuals, families and communities—to their core business. Many local businesses that survived the disaster have not survived the recovery. Significant downturns in trade commensurate with population loss and the competition from government-funded contractors, service providers and volunteers, have all hit local business viability.

Our local community volunteers and community organisations were incredible in the aftermath of the disaster, tackling massive challenges head on. I have never before witnessed so many enduring selfless acts of profound leadership. But it is now apparent that many groups have lost momentum and are losing key leaders, as passionate people finally turn their hands and minds to the mammoth task of rebuilding, or withdraw completely from social commitments because of absolute exhaustion. Too often now, there is no one around to fill the void, leaving greater burdens on those who persevere.

Trauma, grief and loss have been enduring constants—especially for those who lost family and close friends. Loss of significant places and the precious memories they held continues to sear.

continued on next page

BOX 6 - continued

Isolation, insurance disputes, new bushfire rebuilding regulations, mountains of paperwork, bureaucracy charismatic evangelists, arrogant corporate bosses, loss of local employment, exclusion, frequent childhood illnesses, conflict with the community: such is the complexity and complicated nature of disaster recovery; no two people's experience is the same. Different problems push different people towards—and sometimes over—the edge. Trauma, grief and loss have been enduring constants—especially for those who lost family and close friends. Loss of significant places and the precious memories they held continues to sear.

We're making slow progress—in the face of often enormous resistance—by pushing through some seemingly insurmountable barriers. We dig deep, sometimes finding new reservoirs of strength. Every new effort, however, now seems to exact a considerable toll as we tire of this interminable process. We definitely need to be celebrating each other's wins, however small, more often.

With our tree canopy burnt out, we've literally had nowhere to hide from the prying eyes of the media. We've felt naked and vulnerable before such intense and occasionally perverted fascination.

Those of us still up here are now a lot closer as a result of our shared experience. We probably know way too much about each other now. We've seen remarkable acts of generosity, we've lived intensively inter-connected lives, experienced comforting human warmth, and red raw emotions.

It's pretty hard talking about this stuff to outsiders. Only locals really seem to understand. Yet it's vital that you better appreciate, and learn from our experiences. No one wants this to happen again.

Daryl Taylor is a survivor of the 2009 'Black Saturday' Fires, and a member of the Kinglake Ranges Community Recovery Committee. Cress Byrne and other members of the community also contributed to this story.



MENTAL SUFFERING FROM EXTREME HEAT —A FORGOTTEN TOLL

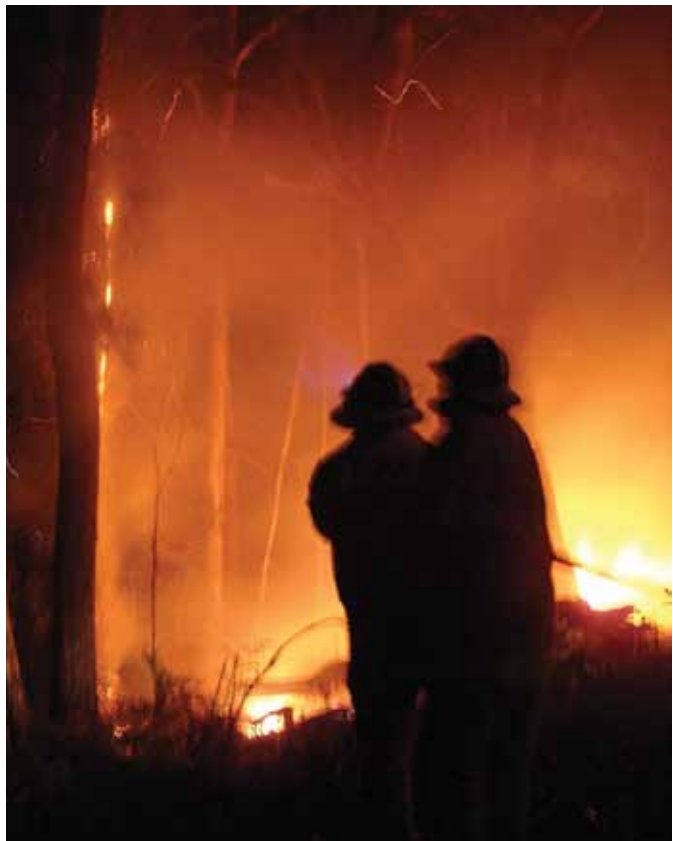
Heatwaves often prove lethal. Sometimes forgotten in mentions of the toll of the February 2009 'Black Saturday' bushfires is the number of people—more than 2,000—who were treated for heat-related illness in the pronounced heat wave leading up to and encompassing the fires.⁶³ In the fortnight leading up to the fires in February 2009, records were set for consecutive highest day and night-time temperatures in fifty discrete locations.⁶⁴ Mildura, for example, laboured through twelve days above 40°C. From Ceduna in South Australia to Wagga Wagga in New South Wales, the heat wave killed nearly 400 people.⁶⁵

People are better able to cope if the temperature is consistently and predictably hot than if temperatures suddenly soar. Those already suffering from mental and physical illness are particularly at risk. Even people successfully managing their illness may be vulnerable, with psychotropic medication a risk factor in heat-related death. Alcohol and other kinds of drug abuse also raise the chances of injury or death during a hot spell.⁶⁶

Several studies suggest that more aggressive and antisocial behaviour can come simultaneously with high temperatures.⁶⁷ There is international evidence to link extraordinarily hot weather with a higher risk of suicide, especially amongst men.⁶⁸ Heat waves are known to affect mood and mental wellbeing, impair concentration and make people feel more tired. The frequency and extent of extremely hot days and nights are now clearly on the rise in much of country.⁶⁹ Even putting aside the potential for lethal consequences, the injury, loss of productivity and impacts on daily life should give policy-makers pause for thought as they consider the effect frequent and extreme heat waves.

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Source: FlickrCC - photographer Thingo

LOSING OUR PLACE—ENVIRONMENTAL DETERIORATION & COMMUNITY DISLOCATION

For many Indigenous people, a connection with ‘country’—a place of ancestry, identity, language, livelihood and community—is a key determinant of health. If community-owned country becomes ‘sick’ through environmental degradation, climate impacts, or inability of the traditional owners to fulfil cultural obligations through ongoing management and habitation of their land, the people of that land will feel ‘sickness’ themselves.

Donna Green, Ursula King
and Joe Morrison (2009)⁷⁰

In 1989, the oil tanker Exxon Valdez ran aground, spilling hundreds of thousands of barrels of crude oil across thousands of kilometres of the near-pristine coastline of Alaska. Although the incident did not put anyone’s life in immediate danger and most witnesses felt little concern for their personal safety, the damage to the ecology of Prince William Sound was stark, the disruption to both Indigenous and non-Indigenous communities was profound, and the economic impact devastating. People exposed to the environmental spoilage, the media scrum, and loss of livelihood (particularly for those in the fishing industry) suffered much higher rates of anxiety and depression.⁷¹

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In Indigenous culture, the health of the country is tightly interwoven with the health of the community and the individual. The wholesale wrenching of people from their traditional lands has left and continues to leave a psychological and social legacy of dislocation and dismemberment. In 2001, one Indigenous community at Kiwirrkurra in the remote north of Western Australia was forced to evacuate their traditional lands because of major flooding. The move triggered ‘severe disruption to the social fabric of the community’, with some members pointing to their separation from their homelands as having compounded problems like drunken and violent behaviour.⁷² Realising that things could not change unless they returned to their homeland, the people decided to make their own way home.

More generally, a loss of sense of place—whether by moving or by the transformation of the place itself—can disturb our sense of belonging and significantly undermine the mental health of some individuals, Indigenous as well as other Australians.⁷³ The term solastalgia has been coined recently by Australian scholars to describe the unnerving feeling that results from the (perceived or actual) deterioration of the home environment.⁷⁴ Though the full psychological impact of the decline of the natural world is the subject of ongoing research, most people can relate to the angst and anguish that comes from a sense that something precious has been lost.



Moreover, we routinely rely on the restorative powers of the ‘natural’ world—be it a park, a productive farm, a beach, the sea or a forest—to remedy the mental wear and tear of urban life. The loss of environmental quality caused by global warming could contribute to despair and contribute to depression in vulnerable people. A decline in the services provided by healthy ecosystems—including disease prevention—could also raise anxiety levels.⁷⁵

MASS MIGRATIONS —COUNTRY TO CITY, COUNTRY TO COUNTRY

Although many rural areas are familiar with drought and have adapted previously, drought in the context of longer term climate change is different and new for some—with the potential to alter hopes and expectations of recovery. As we come to understand the long-term effects of drought, we will have to learn about people's needs when they re-locate and even consider the possibility of drought refugees.

Helen Berry, Associate Professor & Deputy Director, Centre for Action and Research in Public Health, Faculty of Health, The University of Canberra.⁷⁶

A more volatile, hostile climate will take an ever-bigger bite of rural populations, particularly in inland areas, as more frequent, more intense climate-related disasters wear down productivity, services, amenities and opportunities for young people in particular. The best available projections suggest that if climate change is left unchecked whole districts may be rendered inhospitable in the coming century.

The best available projections suggest that if climate change is left unchecked whole districts may be rendered inhospitable in the coming century.

Well before that point, however, depopulation and landscape deterioration will make it harder and more expensive to maintain infrastructure and essential services. The total number of farmers continues to fall steadily over time, and while drought and declining environmental quality are not the only forces at work, they are almost certainly significant in depopulating parts of inland Australia.

Farmers will be compelled to adapt to climate change and indeed many already are, in one way or another. While some areas may see a transient production benefit from varied conditions, it is difficult to see how agriculture will stay productive in a world warming several degrees above today's average.

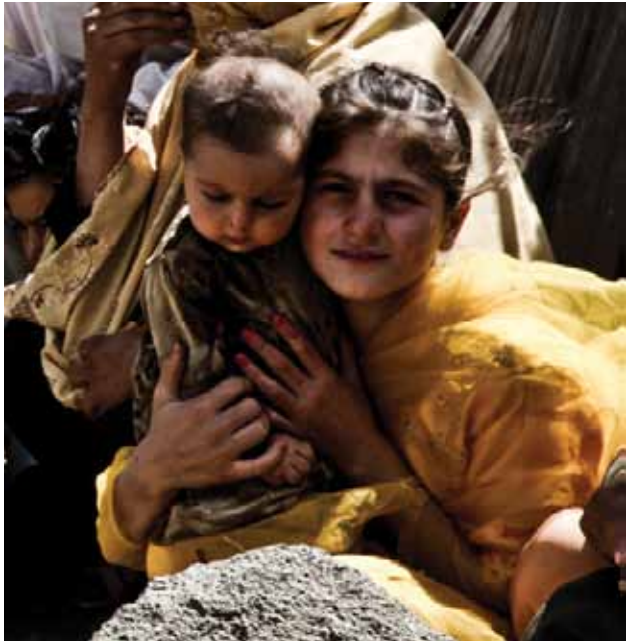
The future is, by definition, unknown, and the precise response of farming to unmitigated climate change will vary with time and place. Some may need to do little more than change their existing production mix, employ novel crop varieties or animal breeds, and diversify to spread the business risk. If climate change is allowed to unfold unchecked, however, global warming is likely to see more and more Australian farmers seeking income off-farm, placing families under extra strain. It may be possible to retain the current production system but relocate to a new area, the conditions of which have become better suited, though in a crowded landscape, with limited land and water, this option seems less likely. Finally, some farming families, facing ever-greater strains, not only from climate change but also from high costs and low returns, may give up farming altogether.⁷⁷

Internationally, predictions of the likely number of future 'environmental refugees' vary widely—from tens of millions to up to a billion by 2050—and will depend on a host of factors, including how quickly and forcefully the



world acts to prevent dangerous climate change. Whatever the final figure, unchecked climate change will almost certainly bring mass displacement of people worldwide. The poor in particular will struggle to cope with more and more extreme events, ongoing gradual environmental deterioration, all compounded by pre-existing problems, such as civil strife, war and endemic poverty.⁷⁸

By and large, Australians have welcomed migrants from around the world into their communities. Many rural and country communities clearly see the benefits of an



Source: FlickrCC - photographer DVIDSHUB

injection of talent, and crucial skills such as medical services and labour. Even so, the large-scale movement of people into an area can be an additional source of tension, for both the newcomers and the recipient community.

Migrants may themselves arrive with a burden of psychological trauma, borne of natural disasters, war, torture, persecution and other forces that displaced them in the first place. Far from being an argument against immigration, this only heightens recognition of climate change as a cause of people displacement, and the need to ensure appropriate measures are in place to help prevent and manage the tensions arising as different groups of people are suddenly placed together. Migration is inherently complex, and the displacement effects of rapid climate change are unprecedented in modern times. Research, resources and political will are needed to assist developing countries to adapt to climate-related impacts and to enable communities receiving environmental migrants to cope.

The displacement effects of rapid climate change are unprecedented in modern times.

RISING TEMPERATURES & RISING TENSIONS —LAND & WATER CONFLICT IN A WARMING WORLD

Rapid global warming adds a new and even more difficult dimension to the reforms of land and water use that have been underway in Australia for some years now. The Garnaut Climate Change Review honed in on agriculture as the sector likely to be hardest hit by rising temperatures and dwindling rainfall.⁷⁹ In a world of unmitigated climate change, irrigated food and fibre production in the Murray-Darling Basin, for instance, could all but cease by this century's end. A worst-case scenario like this would have severe consequences at home and around the world.

There are seldom easy solutions to natural resource conflicts, but the risk of worsening the situation would undoubtedly be reduced with effective action to cut global emissions.

Governments are already being compelled to make difficult resource reallocation decisions as they attempt to balance competing interests and stop the deterioration of natural resources. Additional stresses arise from the sheer uncertainty surrounding reform debates, especially where conflicts linger without resolution.

There seems to be little doubt that climate change will raise the strain on already stressed and hotly contested land and water resources, such as those along the Murray-Darling river systems, if it has not begun to do so already

There are seldom easy solutions to natural resource conflicts, but the risk of worsening the situation would undoubtedly be reduced with effective action to cut global emissions. The compounding effect of climate change on environmental conflict underscores the need for both pre-emptive action and for appropriate adjustment policies, including adequate counselling and other social services.



ACTING NOW TO AVOID ANOTHER FRIGHTENED GENERATION

We all need to feel that we are living in a safe world with a bright future. Children and young people are especially susceptible to a sense of impending and unavoidable doom: one 2007 survey of Australian children's fears and aspirations for the future revealed that as many as one in four believe that the world will end in their lifetimes.⁸⁰

By way of example, during the Cold War, despair and a loss of motivation were common children's reactions to the perceived threat of a nuclear attack, with many honestly believing that they would not survive to have children of their own. These feelings may be aggravated by the sense that adults are not responding to the risk appropriately; that, in effect, grown-ups are not protecting their future, or worse, are potentially abandoning their children.

On the other hand, psychologists and general practitioners suggest that the climate challenge lends itself to positively empowering individual actions in a way that the arms race did not.⁸¹ Moreover, the actions of the statesmen who pulled the world back from the brink of Armageddon and the spectacle of the Berlin Wall being torn down offered a generation of young people new hope and reason to be optimistic. Statesmanlike actions to cut carbon pollution may not only restore children's hope for their future, but could conceivably help to reduce the ill-effects of lifelong anxiety and despair.

Children can show great bravery but are easily frightened, in large part because they cannot yet fathom big issues like climate change. It is the responsibility of adults to help children understand that big, scary problems that rightfully belong in the adult, not the child's world, are being dealt with.

Children can show great bravery but are easily frightened. They cannot yet fathom big issues like climate change. It is the responsibility of adults to help them understand that grown-ups are dealing with the big, scary problems that rightfully belong in the adult, not the child's world.



ACTION, HOPE AND EMPOWERMENT —AN ALTERNATIVE FUTURE

We basically have three choices: mitigation, adaptation and suffering. We're going to do some of each. The question is what the mix is going to be. The more mitigation we do, the less adaptation will be required and the less suffering there will be.

John Holdren, Science and Technology Advisor to US President Barack Obama.⁸²

It seems clear that Australia's rural communities and industries have, on the whole, dealt with the last drought remarkably well. This is despite the financial and assorted other challenges arrayed against farmers who are now more exposed in a global marketplace where the rules of commerce are stacked against them.

Even so, many rural enterprises are operating at the margins, and many individuals, families and communities have been pushed to, and sometimes beyond their limits to cope with multiple pressures—social, environmental and financial. Sometimes there have been tragic consequences.

Scientists warn that inaction on climate change will see an already moody climate become much more volatile.

Scientists warn that inaction on climate change will see an already moody climate become much more volatile, with a sharp rise in the frequency, intensity and extent of heat waves, firestorms and drought. When it does rain, it is more likely to come in a torrent. While fewer tropical cyclones may make landfall, wind speeds are rising, raising the risk to coastal communities.

While the recent heavy rains have quickly buoyed the spirits of many, this very fact should impress upon policy-makers the psychological weight of the worst drought in Australian history. As the time between droughts is compressed—as the best climate modelling suggests it will be—and as temperatures rise, the opportunities for economic, social and psychological recovery will be squeezed dry.

The impacts of climate change will not be the same everywhere: some areas may actually experience improved conditions, at least for a time. In the long term, however, the picture is hardly a pretty one. One of the most comprehensive studies of agriculture's prospects in a changing climate suggests that above two degrees average global warming, productivity will decline sharply if not catastrophically just at the time the world is demanding more food.⁸³ For agricultural communities, whose fortunes and sense of belonging are tied to the health of the land, this could mean profound damage, distress and dislocation. Under the sort of climatic conditions predicted, even today's best farmers and most resilient communities will struggle.

A rising need for health and social services will add to the overall cost of living, further straining many families, financially and emotionally. Many parts of the country already find it difficult to recruit health and social service professionals, and climate change is likely to exacerbate this problem. The very awareness of a tragedy unfolding, coupled with a failure to act, may well be starting to affect the health of our children. Recent increases



in the federal mental health services budget are welcome, but delayed or lacklustre action on climate change raises questions about Australia's commitment to preventing mental ill-health, and thus preventing a spiralling of costs—human and financial.

On the other hand, there is still time to make a choice: with deep and lasting cuts in pollution levels the world stands a very good chance of averting a dangerous rise in temperatures above 2°C.⁸⁴ This means peaking emissions by around 2025. Here then is a window of opportunity—a chance to turn despair into hope and avoid a great deal of unnecessary suffering. The window will not remain open for much longer.

Action is needed across all sectors of society, but governments are clearly pivotal in driving that action:

- To begin with, there needs to be a realisation that one cost is hooked into many others; the social, psychological, medical, environmental, cultural and economic threads are woven together. The societal effect of a carbon price, by comparison, is both predictable and manageable. The consequences of climate change are unknown territory but the human and economic costs will almost certainly rise disastrously with every degree.
- Next, investment in research needs to be prioritised so that communities better understand and are better able to manage the relationship between the human mind, the social fabric and climate change. This should be accompanied by investment in and, crucially, a deeper appreciation of the psychological and social dimensions of disaster preparedness and recovery.
- Finally, in many regions, there are genuine and significant opportunities for new investment in clean energy and carbon sequestration in the landscape.⁸⁵ In the right policy environment, clean energy, carbon farming and adaptation initiatives might conceivably contribute to improved community wellbeing and good mental health as they represent a positive alternative future for regional areas. The longer we delay action, however, the more painful is the process of adjusting to new policies, not to mention a more hostile climate. Conversely, the chance to participate in positive action and a sense of renewed hope may prove as important as the new jobs and investment dollars.

Dealing with the psychological and social consequences of climate change is an enormous challenge that has been largely over-looked so far. Where fear, despair and a sense of powerlessness can overwhelm people and stymie or even paralyse action, however, given the right resources and support, communities can rise to the challenge and become active in the struggle against dangerous global warming. The task then is two-fold: we must manage the unavoidable changes already in the pipeline and, at the same time, we can still avoid the unmanageable human tragedy of climate change unchecked.



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<http://www.beyondblue.org.au>

Australian Psychological Society Ltd.
<http://www.psychology.org.au>

Mental Health Association of New South Wales
<http://www.mentalhealth.asn.au>

National Association for Loss & Grief
<http://www.nalag.org.au>

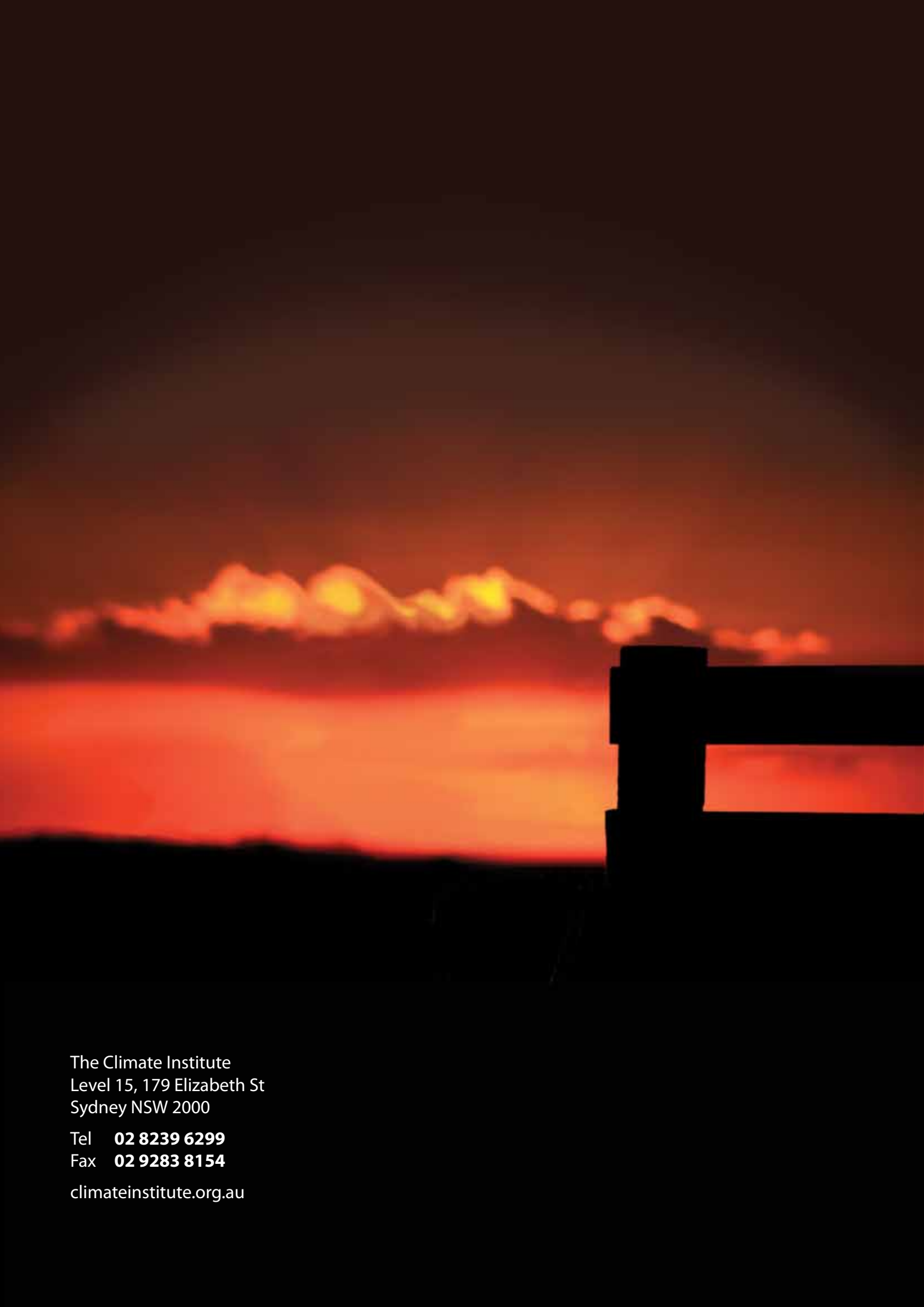
Australian Centre for Grief and Bereavement
<http://www.grief.org.au>

Queensland Centre for Rural & Remote Mental Health
<http://www.crrmhq.com.au>

NSW Centre for Rural & Remote Mental Health
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Queensland Government Community Support & Recovery
<http://www.communityservices.qld.gov.au/community/community-recovery/support-assistance/>

Bushfire Recovery, Victorian Government
<http://www.dhs.vic.gov.au/em/bushfire-recovery>



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