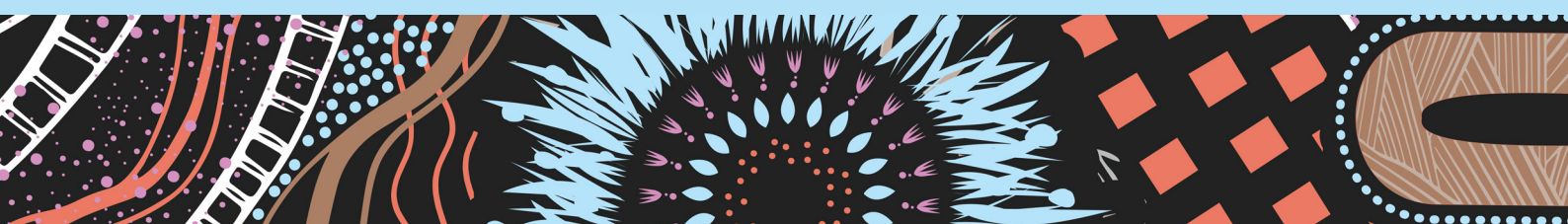




Climate change, social and emotional wellbeing and suicide prevention

Summary paper



This paper is a summary of the *Climate change, social and emotional wellbeing and suicide prevention* publication by Michael Wright, Jeffrey Ansloos, Stewart Sutherland, Roz Walker and Abigail Bray. This publication was commissioned by and published on the Australian Institute of Health and Welfare Indigenous Mental Health and Suicide Prevention Clearinghouse. It can be accessed online at www.indigenouasmhspc.gov.au.

Some people may find the content of this report confronting or distressing. If you are affected in this way, please contact **13YARN (13 92 76)**, **Lifeline (13 11 14)** or **Beyond Blue (1300 22 4636)**.

Key findings

- Climate change is a profound threat to health and wellbeing and a determinant of mental health, wellbeing and suicide.
- Heat waves and extreme temperatures are linked to increased suicide and suicide-related behaviours.
- Increased anxiety about climate change is affecting the mental health and wellbeing of First Nations people in Australia and of Indigenous peoples elsewhere.
- First Nations people recognise climate change as part of a continuum of colonisation which contributes to intergenerational trauma.
- Extreme weather events, loss of biodiversity, and destruction of Country and land adversely affect First Nations people's social and emotional wellbeing (SEWB).
- There is a strong domestic and international evidence base that supports the SEWB benefits of holistic collective First Nations cultural practices.
- The relationship between climate change, loss of biodiversity, and destruction of Country and land, and SEWB and suicide and suicide-related behaviours, is under-researched and poorly understood by Western health sciences.
- There are no culturally appropriate measures to quantify the extent of climate change related distress experienced by First Nation peoples.

What we know

There is strong evidence that climate change and global warming is a significant and growing determinant of mental health. There is also widespread concern that the effects of climate change may exacerbate existing population vulnerabilities and increase health inequities, including those experienced by First Nation populations (IPCC 2022, WHO 2021). Global warming and extreme weather events have a wide range of direct and indirect adverse impacts on health across all populations. These include lack of access to clean air, water and safe shelter energy poverty; food insecurity; the spread of infectious diseases; reduction in biodiversity; ecosystem disruption, damage, and pollution; the destruction and altering of sacred places; displacement, civil unrest and conflict; increase in zoonotic threats and insect-borne diseases; and increases in allergies and respiratory illness (IPCC 2021, IPCC 2022; Romanello et al. 2021; Standen et al. 2022).

Colonisation subjected Aboriginal and Torres Strait Islander (First Nations) men, women and children to numerous human rights abuses, not the least of which was genocide. This has resulted in cascading intergenerational mental health and wellbeing impacts; entrenched socioeconomic disadvantage; and ongoing systemic racism (Dudgeon et al. 2016; Calma et al. 2017; Dudgeon et al. 2023a). Despite efforts to improve First Nations people's health and wellbeing in Australia and to overcome entrenched disparities or gaps in health and other areas, the 2023 *Closing the Gap Annual Data Compilation Report* found that suicide has increased in *Remote* and *Very remote* areas (Productivity Commission 2023). Analysis of the available data has also found that First Nation suicide deaths are about 2.5 times higher than suicide deaths among non-Indigenous Australians (AIHW 2023).

This paper examines the impact of climate change on First Nations peoples' mental health, suicide, and social and emotional wellbeing (SEWB) to explore how climate change adaptation and mitigation practices and strategies can sustain SEWB. Holistic and collective First Nations cultural practices centre on caring for Country and respect First Nations knowledge systems and social networks. The paper reviews the evidence that SEWB is created and sustained by these practices.

At present, there is a substantial lack of suicide prevention strategies and no policy agenda or engagement on environmental issues as drivers of suicide. It is important that First Nations practices are used to develop suicide prevention strategies that recognise the threat to First Nations SEWB posed by climate change.

What is climate change?

In this paper, the term 'climate change' refers to changes in the climate that are caused, or exacerbated, by direct and indirect human activities that release greenhouse gases into the atmosphere. Extractive and related industries are the most well-recognised contributors to this, due to the burning of fossil fuels (coal, oil, natural gas). Other contributors include deforestation, animal agriculture and livestock farming. These activities cause a 'greenhouse effect' that results in global warming, rising sea levels and extreme weather events such as droughts and flooding. The Australian Bureau of Meteorology has found that climate change is linked to more frequent and more intense droughts, heat waves, floods and fires across Australia (Bureau of Meteorology 2022). There is now an international consensus that climate change is a determinant of global health (Atwoli et al. 2021, Charlson et al. 2022; Corvalan et al. 2022; Watts et al. 2018a, 2018b).

Climate change adaptation and mitigation are 2 interconnected ways of managing the adverse impact of climate change on people and the environment. 'Climate change adaptation' refers to efforts to adjust to the impacts of climate change now and in the future, for example, by building homes which protect inhabitants from extreme heat and improving access to health services during extreme weather events. 'Climate change mitigation' refers to efforts to reduce the emission of carbon dioxide and other greenhouse gasses by, for example, transitioning away from the burning of fossil fuels towards more environmentally sustainable sources of energy such as wind and solar power.

What is social and emotional wellbeing?

First Nations people have a holistic concept of health, generally referred to as social and emotional wellbeing (SEWB). This comprises 7 interconnected domains of wellbeing: mind and emotions; body; family; community; culture; Country; and spirituality (Gee et al. 2014). Harmonious connections between the 7 domains strengthen individual and collective SEWB. The 7 SEWB domains are also influenced by social, cultural, historical and political determinants which are specific to the diversity of First Nations communities across Australia (Dudgeon et al. 2017).

The social determinants of SEWB include employment, housing, income, education, access to services and occupation (Zubrick et al. 2014). The cultural determinants of SEWB include cultural continuity; connection to land and Country; family; kinship and community; language, knowledge and beliefs; and self-determination (Arabena 2020).

The impact of climate change on mental health, suicide and wellbeing across all populations

Climate change has been identified as a global priority for mental health research, services, practices and policy across all populations (Corvalan et al. 2022; Charlson et al. 2022; Massazza et al. 2022). It is recognised by the World Health Organization and other health organisations as the leading determinant of global mental health and of harm to new and future generations (Corvalan et al. 2022; Newnham et al. 2020).

Significantly, systematic reviews have found strong evidence that higher temperatures (Corvetto et al. 2023; Thompson et al. 2018) and increases in humidity (Florido et al. 2021) are correlated with higher suicide rates across all populations. Studies in Australia have found that droughts in rural areas are linked to increased suicide rates among men aged between 30 and 49 (Hanigan et al. 2012). Rising temperatures and escalating extreme weather events have also been linked to anxiety, depression, post-traumatic stress disorder, homicide, substance misuse, mortality, child and spousal abuse and somatic disorders (Corvetto et al. 2023; Doherty and Clayton 2011; Koder et al. 2023; Lai et al. 2021; Lawrance et al. 2022; Mason et al. 2022; Padhy et al. 2015; Thompson 2021).

First Nations knowledge systems and environmental wellbeing

‘Country’ is a term used by First Nations peoples to refer to their deep spiritual and cultural connections to the environment. First Nations peoples have developed complex holistic knowledge systems that are founded on a custodial kinship or stewardship relationship to the land, plants and animals: to Country. These knowledge systems – often referred to as Indigenous Knowledge Systems, Indigenous Knowledge, or Traditional Ecological Knowledge – encompass all aspects of life and the environment.

Changes to land and Country due to colonisation, climate change-related activities, and climate change itself threaten the continuation of Indigenous Knowledge Systems and Traditional Ecological Knowledge, which are place-based knowledge systems. From a First Nations standpoint, climate change threatens culture, knowledge systems and spirituality – all of which are embedded in, and expressed through, a connection to land and Country, and all of which support SEWB.

First Nations knowledges are central to land management practices and healing, which are described as ‘caring for Country’ (Dudgeon et al. 2023b). Traditional Ecological Knowledge is used in First Nations ranger and land management programs across the country, which promote harmonious and thriving relationships between people and the environment.

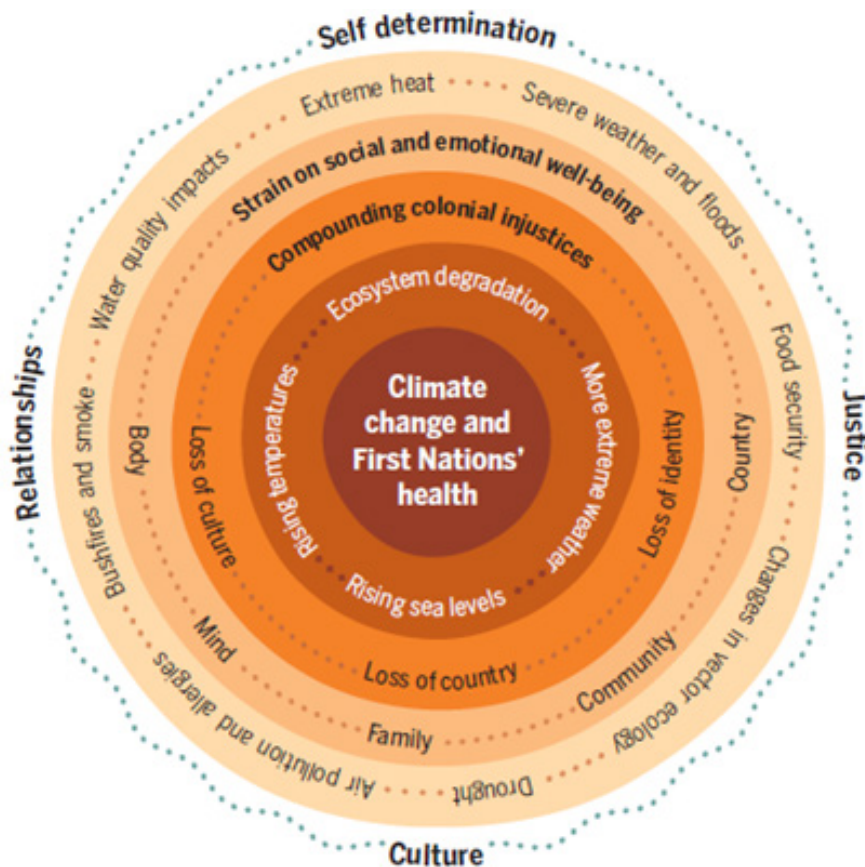
As well as contributing to climate change mitigation and adaptation by reducing carbon emissions and controlling fires, these ‘caring for Country’ practices have numerous SEWB co-benefits for First Nations peoples (Barber and Jackson 2017; da Veiga and Nikolakis 2022; Jarvis et al. 2021; Larson et al. 2019a).

Increasing SEWB is recognised as a protective factor across the literature on First Nations suicide prevention (Dudgeon et al. 2016).

Impact of climate change on social and emotional wellbeing

Climate change is increasingly recognised as a determinant of First Nations mental health and wellbeing across the world (see Figure 1). A recognition that Indigenous peoples experience climate change distress differently because of cultural and spiritual connections to Country, and because of the ongoing traumatic impact of the colonisation of their lands, is now starting to guide some of the international research (Gougsa et al. 2023).

Figure 1: Climate change and its connection to the health of First Nations people



Source: Matthews et al. 2023.

In the literature, the key adverse SEWB climate change-related stressors affecting First Nations people include:

- disrupted cultural continuity and loss of culture
- grief and distress from harms to Country
- loss of sacred cultural places
- loss of food security and clean water and air
- compounding distress and trauma from colonization
- loss of hunting grounds and cultural food gathering practices
- lack of access to medicinal plants
- increased anxiety and substance abuse
- family conflict and stress

- displacement from home and loss of livelihoods
- increased mortality
- reduced access to health services and employment (Breth-Petersen et al. 2023; Dwyer 2017; Green and Martin 2017; HEAL Network and CRE-STRIDE 2021; Janke et al. 2021; Matthews et al. 2023; Peden et al. 2023; Teo et al. 2023; Weeramanthri et al. 2020).

Although there is substantial international research into the adverse impact of climate change on First Nations peoples, the research in Australia is limited and has many gaps.

Policies, strategies and best practice

There appears to be a lack of inclusion of First Nations peoples across a range of policy related to climate change in Australia. A study of Australian energy policy found that First Nations people were rarely mentioned and, when they were, they were often listed as one of many vulnerable consumer groups (Baum et al. 2023).

The United Nations Permanent Forum on Indigenous Issues reaffirmed that the principle of Indigenous self-determination must be upheld across all climate change mitigation and adaptation activities impacting Indigenous peoples (Garcia-Alix 2008). However, almost 15 years later, little progress has been made.

Although there are few specific climate change adaption and mitigation programs for First Nations peoples in Australia that report health outcomes, there are a number that support a connection to, and caring for, Country (Matthews et al. 2023). These programs involve cultural land management practices. Indigenous land and sea management programs are expressions of caring for Country and have been found to improve holistic wellbeing and quality of life (Larson et al. 2019a, 2019b). Such activities are linked to a range of SEWB co-benefits and cultural revival and community revitalisation (HEAL Network and CRE-STRIDE 2021).

Other strategies, initiatives and approaches include:

- The Aboriginal and Torres Strait Islander Suicide Prevention Evaluation Project's *Solutions That Work* report found that connecting young people to Country through the guidance of Elders was suicide prevention best practice (Dudgeon et al. 2016).
- Closing the Gap, the Australian national strategy to improve the health outcomes of First Nations peoples, recognises the importance of adopting a strengths-based SEWB approach to the health benefits of connections to Country (CoATSIPO and Australian governments 2020).
- The National Aboriginal and Torres Strait Islander Health Plan 2021–2031 takes a strengths-based cultural determinant approach to health and wellbeing, recognising the protective benefits of connection to Country in enhancing resilience, identity, health and wellbeing (Department of Health 2021).
- The First Nations Clean Energy Network was launched in November 2021. In 2023, funding for solar infrastructure for communities under the First Nations Community Microgrids Stream was announced (Australian Government 2023). So far, these initiatives have not linked adaptation and mitigation strategies to mental health, SEWB and suicide prevention.
- The Arabena climate adaptation project was initiated in South Australia, in partnership with communities and university researchers. It involved interviews with 120 members of the Arabena community and the engagement of 25 members in community-based adaptation workshops (Nursey-Bray et al. 2020). While a direct focus on mitigating and adapting to the mental health or SEWB impacts of climate change is not highlighted in the project, from a First Nations standpoint, holistic collective healing through the strengthening of culture is highlighted as a co-benefit.

What works

There is strong domestic and international evidence that supports the SEWB benefits of holistic collective First Nations cultural practices. These centre on caring for Country (protection and stewardship) and implementing and developing First Nations knowledge systems, communities and networks.

Across the literature, the SEWB benefits of caring for Country and/or First Nations land and sea management programs or cultural and natural resource management include:

- increased access to employment in remote areas
- stronger local governance structures
- education, training and skills development
- cultural revival and empowerment
- improved physical health and food security
- reduction in substance misuse
- increased family and community cohesion
- improved schools, safer community, less violence and crime
- increased self-determination and cultural resilience.

The literature stresses the importance of First Nations leadership in strengthening the social and cultural determinants of SEWB to mitigate the impact of climate change (Chatwood et al. 2017; Rasmussen 2023).

Climate change adaptation and mitigation practices that support First Nations cultural continuity by implementing and developing First Nations knowledge systems, self-determination and stewardship of land work best.

Conclusions

Climate change is recognised as a determinant of First Nations mental health. There is evidence linking extreme heat to increased suicide and suicide-related behaviour, along with a range of other health challenges across all populations. Although research into the impact of climate change on mental health and wellbeing is growing, there is much that is not known (Charlson et al. 2022; Alford et al. 2023). For example, there is no rigorous longitudinal national study of the relationship between First Nations people's suicide and suicide-related behaviour, extreme weather events and rates of visits to emergency department. Such studies would provide data to guide policy interventions.

First Nations peoples are at increased risk from the adverse socioeconomic, health, mental health and SEWB effects of climate change (Weeramanthri et al. 2020). They are potentially more at risk from climate change-related suicide due to culturally and spiritually important connections to land and Country and existing psychosocial vulnerabilities due to colonisation. Caring for Country, however, is linked to numerous SEWB co-benefits, including cultural continuity and community connectedness, which have been found to reduce suicide (Lawrance et al. 2022).

Averting the detrimental impact of climate change on First Nations people requires strengthening self-determination over Country and land, empowering stewardship practices and cultures, and supporting First Nations ways of knowing, being and doing or place-based environmental knowledge systems. Place-based climate change adaptation and mitigation programs have limited use if they are not designed and implemented with (or by) First Nations peoples and do not deploy their knowledge systems. First Nations governance over climate change mental health policy is also vital.

References

- AIHW (Australian Institute of Health and Welfare) (2023) *Suicide and self-harm monitoring* [website].
- Alford J, Massazza A, Jennings NJ and Lawrance E (2023) 'Developing global recommendations for action on climate change and mental health across sectors: a Delphi-style study', *The Journal of Climate Change and Health* 12 (July-August):100252.
- Arabena K (2020) *'Country can't hear English': a guide supporting the implementation of cultural determinants of health and wellbeing with Aboriginal and Torres Strait Islander peoples*, Karabena Consulting, Melbourne.
- Atwoli L, Baqui AH, Benfield T, Bosurgi R, Godlee F, Hancocks S, Horton R, Laybourn-Langton L, Monteiro CA, Norman I, Patrick K, Praities N, Olde Rikkert MGM, Rubin EJ, Sahni P, Smith R, Talley NJ, Turale S and Vázquez D (2021) 'Call for emergency action to limit global temperature increases, restore biodiversity, and protect health', *BMJ* 374:n1734, doi:10.1136/bmj.n1734.
- Australian Government (2023) Regional Microgrids Program. Australian Renewable Energy Agency, Australian Government. <https://arena.gov.au/funding/RMP/>
- Barber M and Jackson S (2017) 'Identifying and categorizing cobenefits in state-supported Australian indigenous environmental management programs: international research implications', *Ecology and Society* 22(2):11, doi:10.5751/ES-09114-220211
- Baum F, McGreevy MP, MacDougall CM and Henley M (2023) 'Energy as a social and commercial determinant of health: a qualitative study of Australian policy', *International Journal of Health Policy and Management*, 12:7193.
- Breth-Petersen M, Garay J, Clancy K, Dickson M and Angelo C (2023) 'Homesickness at home: a scoping review of solastalgia experiences in Australia', *International Journal of Environmental Research and Public Health* 20(3):2541.
- Bureau of Meteorology (2022) *State of the climate 2022*, Bureau of Meteorology, Australian Government, accessed 21 November 2022. <http://www.bom.gov.au/state-of-the-climate/2022/documents/2022-state-of-the-climate-web.pdf>
- Calma T, Dudgeon P and Bray A (2017) 'Aboriginal and Torres Strait Islander social and emotional wellbeing and mental health', *Australian Psychologist* 52(4):255–260.
- Charlson F, Ali S, Augustinavicius J, Benmarhnia T, Birch S, Clayton S, Fielding K, Jones L, Juma D, Snider L, Ugo V, Zeitz L, Jayawardana D, La Nauze A and Massazza A (2022) 'Global priorities for climate change and mental health research', *Environment International*, 158 (January):106984.
- Chatwood S, Paulette F, Baker GR, Eriksen AMA, Hansen KL, Eriksen H, Hiratsuka V, Lavoie J, Lou W, Mauro I, Orbinski J, Pambrun N, Retallack H and Brown A (2017) 'Indigenous values and health systems stewardship in circumpolar countries', *International Journal of Environmental Research and Public Health* 14(12):1462, doi:10.3390/ijerph1412 1462.
- CoATSIPO (Coalition of Aboriginal and Torres Strait Islander Peak Organisations) and Australian governments (2020). *National agreement on closing the gap* CoATSIPO and Australian governments.
- Corvalan C, Gray B, Villalobos E, Sena A, Hanna F, and Campbell-Lendrum D (2022) *Mental health and climate change: policy brief*, World Health Organization, Geneva.
- Corvetto JF, Helou AY, Dambach P, Müller T, and Sauerborn R (2023) 'A systematic literature review of the impact of climate change on the global demand for psychiatric services', *International Journal of Environmental Research and Public Health*, 20(2):1190.
- da Veiga RM and Nikolakis W (2022) 'Fire management and carbon programs: a systematic literature review and case study analysis', *Society & Natural Resources* 35(8):896–913.

Department of Health (2021). *National Aboriginal and Torres Strait Islander health plan 2021–2031*. Department of Health, Australian Government.

Doherty TJ and Clayton S (2011) 'The psychological impacts of global climate change', *American Psychologist* 66(4):265–276.

Dudgeon P, Bray A, D'costa B and Walker R (2017) 'Decolonising psychology: validating social and emotional wellbeing', *Australian Psychologist* 52(4):316–325.

Dudgeon P, Bray A and Walker R (2023a) 'Mitigating the impacts of racism on Indigenous wellbeing through human rights, legislative and health policy reform', *Medical Journal of Australia*, 218(5):203–205.

Dudgeon P, Bray A, Walker R, Wright M and Sutherland S (2023b) 'Caring for Country: Indigenous wellbeing, law and environmental justice', *Climate Change and Mental Health Equity*, Springer (in press).

Dudgeon P, Milroy J, Calma T, Luxford Y, Ring I, Walker R, Cox A, Georgatos G and Holland C (2016) *Solutions that work: what the evidence and our people tell us: Aboriginal and Torres Strait Islander Suicide Prevention Evaluation Project report* (ATSISPEP), University of Western Australia.

Dwyer A (2017) *Climate change and adaptation on Karajarri Country and 'Pukarikarra' places*, Nulungu Research Papers 1, Nulungu Research Institute, University of Notre Dame Australia.

Garcia-Alix L (2008) 'The United Nations Permanent Forum on Indigenous Issues discusses climate change', *Indigenous Affairs* 2:1–23.

Gee G, Dudgeon P, Schultz C, Hart A and Kelly K (2014) 'Aboriginal and Torres Strait Islander social and emotional wellbeing' in Dudgeon P, Milroy, H and Walker R (eds), *Working together: Aboriginal and Torres Strait Islander mental health and wellbeing principles and practice*, 2nd edn, Department of the Prime Minister and Cabinet, Australian Government.

Gougsa S, Pratt V, George B, Vilela C, Kobei D, Kokunda S, Kelman I, Eaton B, Maina L, Luari S, Autti O, Keratar K, Laiti J, Baxendale C, Raj R, Deshpande R, Gokharu R, Singh NS, Ghelani S, Mendu N, Ahmed A (2023) 'Land Body Ecologies: a case study for global transdisciplinary collaboration at the intersections of environment and mental health', *The Journal of Climate Change and Health*, 10(March-April):100206.

Green D and Martin D (2017) 'Maintaining the healthy country–healthy people nexus through sociocultural and environmental transformations: challenges for the Wik aboriginal people of Aurukun, Australia', *Australian Geographer* 48(3):285–309.

Hanigan IC, Butler CD, Kokic PN and Hutchinson MF (2012) 'Suicide and drought in New South Wales, Australia, 1970–2007', *Proceedings of the National Academy of Sciences* 109(35):13950–13955.

HEAL Network and CRE-STRIDE (2021) *Climate change and Aboriginal and Torres Strait Islander health: discussion paper*, Lowitja Institute, Melbourne.

IPCC (Intergovernmental Panel on Climate Change) (2021) *Climate change 2021: the physical science basis. Working Group I contribution to the IPCC Sixth Assessment Report*, Cambridge University Press, Cambridge. <https://www.ipcc.ch/report/ar6/wg1>

IPCC (2022) *Climate change 2022: impacts, adaptation and vulnerability: Working Group II contribution to the IPCC Sixth Assessment Report*, Cambridge University Press, Cambridge. <https://www.ipcc.ch/report/ar6/wg2>

Janke T, Cumpston Z, Hill R, Woodward E, von Gavel S, Harkness P and Morrison J (2021) *Australia state of the environment 2021: Indigenous*, Department of Agriculture, Water and the Environment, Australian Government.

Jarvis D, Stoeckl N, Larson S, Grainger D, Addison J and Larson A (2021) 'The learning generated through Indigenous natural resources management programs increases quality of life for Indigenous people – improving numerous contributors to wellbeing', *Ecological Economics* 180:106899.

- Koder J, Dunk J and Rhodes P (2023) 'Climate distress: a review of current psychological research and practice', *Sustainability* 15(10):8115, doi:[10.3390/su15108115](https://doi.org/10.3390/su15108115)
- Lai BS, La Greca AM, Brincks A, Colgan CA, D'Amico MP, Lowe S and Kelley ML (2021) 'Trajectories of posttraumatic stress in youths after natural disasters', *JAMA Network Open* 4(2):e2036682.
- Larson S, Stoeckl N, Jarvis D, Addison J, Grainger D, Watkin Lui F, Walalakoo Aboriginal Corporation, Bunuba Dawangarri Aboriginal Corporation RNTBC, Ewamian Aboriginal Corporation RNTBC and Yanunijarra Aboriginal Corporation RNTBC (2019a) 'Indigenous land and sea management programs (ILSMPs) enhance the wellbeing of Indigenous Australians', *International Journal of Environmental Research and Public Health* 17(1):125.
- Larson S, Stoeckl N, Jarvis D, Addison J, Prior S and Esparon M (2019b) 'Using measures of wellbeing for impact evaluation: proof of concept developed with an Indigenous community undertaking land management programs in northern Australia', *Ambio* 48(1):89–98.
- Lawrance EL, Thompson R, Newberry Le Vay J, Page L and Jennings N (2022) 'The impact of climate change on mental health and emotional wellbeing: a narrative review of current evidence, and its implications', *International Review of Psychiatry* 34(5):443–498, doi:[10.1080/09540261.2022.2128725](https://doi.org/10.1080/09540261.2022.2128725).
- Mason H, King JC, Peden AE and Franklin RC (2022) 'Systematic review of the impact of heatwaves on health service demand in Australia' *BMC Health Services Research* 22(1): 1–13.
- Massazza A, Teyton A, Charlson F, Benmarhnia T and Augustinavicius JL (2022) 'Quantitative methods for climate change and mental health research: current trends and future directions' *The Lancet Planetary Health*, 6(7):e613–e627.
- Matthews V, Vine K, Atkinson A-R, Longman J, Lee, GW, Vardoulakis S and Mohamed J (2023) 'Justice, culture, and relationships: Australian Indigenous prescription for planetary health', *Science*, 381(6658):636–641.
- Newnham EA, Titov N and McEvoy P (2020) 'Preparing mental health systems for climate crisis', *Lancet Planetary Health* 4(3):E89–90.
- Nurse-Bray M, Palmer R, Stuart A, Arbon V and Rigney L-I (2020) 'Scale, colonisation and adapting to climate change: insights from the Arabana people, South Australia', *Geoforum* 114:138–150, doi.org/10.1016/j.geoforum.2020.05.021.
- Padhy S, Sarkar S, Panigrahi M and Paul S (2015) 'Mental health effects of climate change', *Indian Journal of Occupational and Environmental Medicine* 19(1):3–7.
- Peden AE, Heslop D and Franklin RC (2023) 'Weather-related fatalities in Australia between 2006 and 2019: applying an equity lens', *Sustainability* 15(1):813.
- Productivity Commission (2023) *Closing the Gap annual data compilation Report July 2023*, Productivity Commission, Australian Government. <https://www.pc.gov.au/closing-the-gap-data/annual-data-report/report>.
- Rasmussen JB (2023) 'Advancing environmental justice through the integration of traditional ecological knowledge into environmental policy', *Challenges* 14(1):6.
- Romanello M, McGushin A, Di Napoli C, Drummond P, Hughes N, Jamart L, Kennard H, Lampard P, Rodriguez BS, Arnell N and Ayeb-Karlsson S (2021) 'The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future', *The Lancet* 398(10311):1619–1662.
- Standen J, Spencer J, Lee GW, Van Buskirk J, Matthews V, Hanigan I, Boylan S, Jegasothy E, Breth-Petersen M and Morgan GG (2022) 'Aboriginal population and climate change in Australia: implications for health and adaptation planning', *International Journal of Environmental Research and Public Health* 19(12):7502, doi:[10.3390/ijerph19127502](https://doi.org/10.3390/ijerph19127502).
- Teo SM, Gao CX, Brennan N, Fava N, Simmons MB, Baker D, Zbukvic I, Rickwood DJ, Brown E, Smith CL, Watson AE and Filia KM (2023) 'Climate change concerns impact on young Australians' psychological distress and outlook for the future', *PsyArXiv*. <https://psyarxiv.com/vjafd/>

Thompson HE (2021) 'Climate "psychopathology": the intersection of mental and physical health in the climate emergency', *European Psychologist* 26(3):195–203.

Thompson R, Hornigold R, Page L and Waite T (2018) 'Associations between high ambient temperatures and heat waves with mental health outcomes: a systematic review', *Public Health* 161:171–191, doi.org/10.1016/j.puhe.2018.06.008.

Watts N, Amann M, Arnell N, Ayeb-Karlsson S, Belesova K, Berry H, Bouley T, Boykoff M, Byass P, Cai W and Campbell-Lendrum D et al. (2018a) 'The 2018 report of the Lancet Countdown on health and climate change: shaping the health of nations for centuries to come', *The Lancet* 392 (10163):2479–2514.

Watts N, Amann M, Ayeb-Karlsson S, Belesova K, Bouley T, Boykoff M, Byass P, Cai W, Campbell-Lendrum D, Chambers J and Cox PM (2018b) 'The Lancet Countdown on health and climate change: from 25 years of inaction to a global transformation for public health', *The Lancet* 391(10120):581–630.

Weeramanthri TS, Joyce S, Bowman F, Bangor-Jones R and Law C (2020) *Climate Health WA Inquiry: final report*, Department of Health, Government of Western Australia.

WHO (World Health Organization) (2021) *Checklists to Assess Vulnerabilities in Health Care Facilities in the Context of Climate Change*, World Health Organization, Geneva. <https://www.who.int/publications/item/9789240022904>.

Zubrick SR, Shepherd CCJ, Dudgeon P, Gee G, Paradies Y, Scrine C and Walker R (2014) 'Social determinants of social and emotional wellbeing' in Dudgeon P, Milroy H and Walker R (eds) *Working together: Aboriginal and Torres Strait Islander health and wellbeing principles and practice*, 2nd edn, Department of the Prime Minister and Cabinet, Australian Government.



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