Australia's Riskscape

A companion to the *Major Incidents Report 2023–24*

Australian Institute for
Disaster Resilience

Cover image: Urban systems are highly complex. Source: John Richardson

Attribution

Contact

Enquiries regarding the content, license and any use of this document are welcome at:

Australian Institute for Disaster Resilience
Level 1, 340 Albert St, East Melbourne VIC 3002
Telephone: +61 (0)3 9419 2388
Email: enquiries@aidr.org.au

Disclaimer

Contents

1. Introduction

The systemic nature of disaster risk shows us that the consequences of natural hazards are interconnected with complex processes happening within communities and society.[1] Systemic factors such as economic conditions, supply chain issues, health and wellbeing challenges, levels of social cohesion, technological shifts and the state of the environment all may influence an individual's, organisation's, or communities' capacity to prepare for, respond to and recover from disasters.

Many natural hazard events are becoming more intense with climate change. These hazards are combining with other threats such as conflict, epidemics or deteriorating economic conditions to create compound and complex disasters.[a] These disasters require a different approach to managing risk, moving away from managing a single harm to a single entity, to one that understands systems at risk, their interconnection, and the systemic drivers of risk.[2]

Each year, the Australian Institute for Disaster Resilience (AIDR) produces the Major Incidents Report (MIR). The report is a record of significant incidents and disasters in Australia. In 2023, AIDR produced the companion guide *Australia's Riskscape*, for the MIR. This companion piece detailed a number of systemic drivers that may have had an impact on individuals, organisations and communities' resilience. The report recognised processes at work that were impacting on communities in recovery from events such as the Black Summer bushfires, or the extensive flooding events. These included factors such as housing availability, supply chains and labour availability in construction, cost of living rises, and health issues overlaid upon the issues emerging from the disasters. These issues were identified as ones that compound the effects of hazard impacts and were sourced from several publicly available sources.

This year's report continues to highlight and compare factors identified in the 2023 *Australia's Riskscape*, and where possible, adds new, publicly available data. The drivers are not exhaustive, and in the absence of a nationally agreed framework for resilience or systemic risk, they are guided by the World Economic Forum's *Global Risk Report*.

This companion document is intended to act as a prompt for people planning risk reduction and resilience building activities, as well as response and recovery activities, to consider the diverse forces and factors at work in communities, and beyond, as they plan for complexity and uncertainty.

---

a. These crises are increasingly being referred to by some authors as polycrises or permacrises.

2. What are riskscapes?

A person's, organisation's or community's ability to manage their disaster risk is based on the resources or capacities they have at their disposal. Where these capacities are reduced or depleted, this will have an impact on the ability to prepare, respond to, or recover from disaster.

These capacities for individuals may include good health and wellbeing or access to economic resources, or strong social connection or accessible information and knowledge.[3] Capacities at a community level include a community that:

- knows its risks, is healthy, and can meet its basic needs in terms of shelter, food, and water and sanitation
- has economic opportunities
- has well maintained infrastructure and accessible services
- can manage its natural assets
- is socially cohesive
- is connected.[4]

People may be exposed to multiple risk factors at the same time, or in rapid succession, and not as neatly separate factors. Risk operates in time (temporal dimension) and space (spatial dimension).[b]

It also cannot be examined or assessed in isolation of social and cultural practices.

Riskscapes are ways of relating risk, spaces, and human behaviours in both time and space.[5] The term is a way of presenting complex, multiple, and overlapping risk settings.[6] Social practices and behaviours both produce, and are products of, riskscapes. Understanding riskscapes address the overlaps and amplification or mitigation of diverse risks like natural hazards, political insecurity, crime, contagious diseases, technological threats, or economic crises. Thinking in terms of riskscapes helps us understand how people live in places with multiple risk factors that are not limited to examining climate or geotechnical hazards.

---

b. The 2023 *Australia's Riskscape* provided an overview of the concepts relating to systems, resilience, the changing, understanding of risk, and systemic disaster risk. It is recommended to read the background chapter in the 2023 *Australia's Riskscape*, as well as AIDR's *Systemic Disaster Risk* and the Australian Government Department of Home Affairs' *Profiling Australia's Vulnerability* to help understand the context for this report.

3. Systemic risk context

This chapter outlines several of the global systemic risk challenges as seen by the United Nations, European Commission, and the private sector.

3.1 Global context

The World Economic Forum (WEF)'s *Global Risk Report* in 2023 inferred from their global risk perception survey that cost-of-living issues will dominate global risks for the following 2 years, whereas climate action failure will dominate the next decade. The top 10 global risks over the next 2 years are:

1. Cost of living crisis
2. Disasters and extreme weather events
3. Geoeconomic confrontation
4. Failure to mitigate climate change
5. Erosion of social cohesion and societal polarisation
6. Large scale environmental damage incident
7. Failure of climate change adaptation
8. Widespread cybercrime and cyber insecurity
9. Natural resource crises
10. Large scale involuntary migration[7]

The interconnected nature of these risks and their elements is depicted in Figure 1. The perception of the top risks this year shifted slightly from the previous year, where extreme weather was considered the top risk, followed by livelihood crises, climate action failure, social cohesion erosion and infectious diseases.[8]

The *Global Risk Report* identified that the economic after effects of COVID-19 and the ongoing wars in Ukraine and the Middle East have contributed to increased inflation globally. Governments have been using monetary policies such as interest rate rises to manage this challenge. The flow on effect is a low-growth, low-investment era. This puts pressure on public-sector funding and, with competing security concerns, the capacity of governments to support communities to absorb the next global shock is reducing. Over the next 10 years, fewer countries will have the budgetary capacity to make investments in that are focused on the future such as green technologies, education, care and health systems, as well as climate mitigation and adaptation efforts.[9]

The *Global Risk Report* also found that food, fuel and cost crises will exacerbate societal inequalities. The burden on natural ecosystems will increase. Geopolitical fragmentation is heightening the risk of multidomain conflicts. Emerging technologies will continue to rapidly evolve bringing with it many benefits; however, technology may also exacerbate inequality and increase cyberharm concerns.[10]
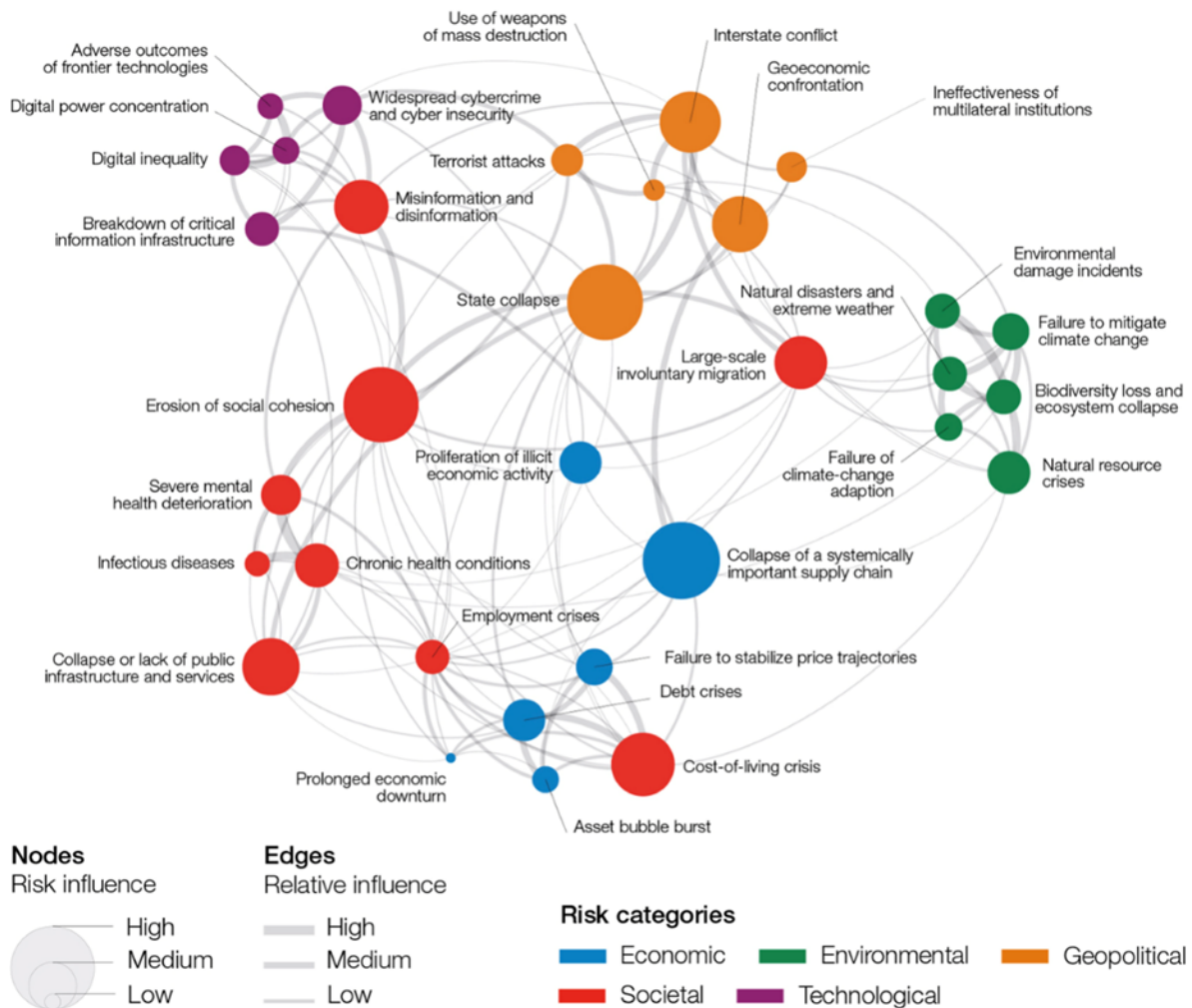
Figure 1. Global risks landscape: an interconnections map. Source: World Economic Forum

The United Nations University's *Interconnected Risks Report 2023* analysed 6 interconnected risk tipping points, selected for their representation of large global issues:

· Accelerating extinctions

· Groundwater depletion

· Mountain glaciers melting

· Space debris

· Unbearable heat

· Uninsurable future

These examples illustrate that risk tipping points extend beyond the single domains of climate, ecosystems, society or technology, and are interconnected across them. They share similar root causes and drivers which are embedded in our behaviours and actions that increasingly put pressure on our systems until they change and stop supporting human lives and livelihoods. The impacts of these risk tipping points are not isolated to the places where tipping points are crossed but, through their interconnections with other systems, cascade through to other places around the world, influencing those to tip as well. For example, unbearable heat threatens not only human lives and health, but also wildlife, which is increasing the risk of accelerating extinctions, putting the ecosystems humans depend on in peril.[11]

The Lloyds Register Foundation World Risk Poll is a global, nationally representative study of worry about, and harm from, risks to people's safety. It is a measure of how prepared people and communities worldwide are to handle adversity such as disasters based on their circumstances and perceptions of support systems. In 2023, 30% of people worldwide said they had personally experienced a disaster related to a natural hazard in the past five years, compared with 27% in 2021. This trend was primarily driven by increased experience of flooding.

The poll recognised:

- the importance of early warnings
- the widespread access to mobile telephony
- some demographic groupings had higher levels of resilience
- financial safety nets are important tools for resilience
- targeted interventions starting at individual and community level are important.

The INFORM Risk Index[c] uses 80 indicators to create a risk profile for each country. These indicators measure hazards, and people's exposure to them, vulnerability, and the resources available to help people cope. It integrates, among other things, natural and human derived hazards, development, inequality, and institutional and infrastructure measures. Each has a rating between 0-10 for risk and all its components. Nearly half of the countries globally rate very low or low on the INFORM Risk Index, with a further third rating medium.

3.2 Australian context

The Australian Government's first *Measuring What Matters Wellbeing Statement* draws on the Australian Disaster Resilience Index to demonstrate that 22% of the population live in areas of low resilience capacity, 52% in areas of moderate capacity, and 26% in areas of high capacity. This means around 4.4 million people live in places with lower capacity for disaster resilience.[12] The Lloyds Register Foundation World Risk Poll ranked Australia in the top 10 for individual resilience. Noting the importance of early warning systems for disaster resilience, they found 86% of people have received at least one warning before a disaster in Australia. Australia has seen a significant increase in the percentage of people experiencing disaster, up to 41% in 2023. No other region ranks higher for recent experience of disasters. Australia increased from 31% to 39% with many more people affected by flooding than in 2021. The INFORM Risk Index has found that Australia is rated with a low risk. This rating is derived from our moderate hazard risk (ranked 86 out 191 countries), and this being mediated by a low vulnerability and lack of coping capacity indices, ranking 166 and 164 respectively[13] with a rating of 2.2, is currently rated with a low risk, and this rating has been stable over the past three years.
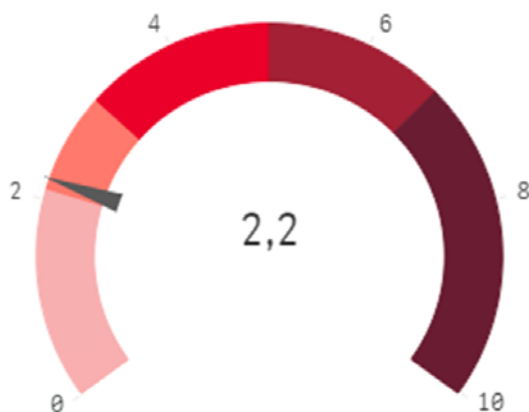

Figure 2. Australia's rating on the Inform Risk Index is low. Source: Inform Risk Index

The Australian Government's 2023 *Intergenerational Report* (IGR) focusses on the forces that shape Australia's economy over the next 40 years. The IGR recognises the risk to the economy of disasters as they reduce physical capital, decrease productivity, and disrupt economic activity and supply chains. They reduce the longevity of physical infrastructure, as well as incurring significant costs to the community including health, social and environmental impacts, and the indirect cost of volunteering as unpaid labour that supports affected communities. The report estimates that expenditure through the Disaster Recovery Funding Arrangements could increase 3 to 3.6-fold over the next 40 years, equating to a cumulative impact of $130 billion in today's terms.[14]

The first pass assessment of Australia's National Climate Risk Assessment was released in 2024 and identified 10 climate driven priority hazards:

- bushfires, grassfires and air pollution
- drought and changes in aridity
- changes in temperatures including extremes
- extratropical storms
- coastal and estuarine flooding
- ocean warming and acidification
- coastal erosion and shoreline change
- riverine and flash flooding
- convective storms including hail
- tropical cyclones.

These are assessed across 10 geographic regions, that are based upon the states and territories plus splitting the larger states of WA and Queensland into 2 regions. The assessment also details 10 priority systems at risk that have been prioritised for further assessment:

- defence and national security
- economy, trade and finance
- First Nations values and knowledges
- health and social support
- infrastructure and built environment
- natural environment
- primary industries and food
- regional and remote communities.

---

c. INFORM is a collaboration of the Inter-Agency Standing Committee and the European Commission. INFORM is a composite indicator that identifies countries at risk of humanitarian crisis and disaster that would overwhelm national response capacity.

d. The Australian Disaster Resilience Index measures disaster resilience as a set of coping and adaptive capacities. Coping capacity is the means by which available resources and abilities can be used to face adverse consequences that could lead to a disaster. Adaptive capacity is the arrangements and processes that enable adjustment through learning, adaptation and transformation.

4. Australia's riskscape

To help identify the riskscape for 2023–24, data were examined based on what research suggests could have an influence on people's ability to manage the disruptions caused by the impacts of disaster. To set the scene, the recovery context of the country is described first. Given the significant number of incidents that Australia has experienced over the last 5 years, and the knowledge that the recovery process is complex, it was important to understand the underlying recovery context in which many people across Australia are living. From there, data relating to economic conditions, physical and mental health, social cohesion, housing, supply chains, technology, and the environment were identified as factors that could reduce individuals' capacity and capability to deal with disruption. Climate drivers are considered separately in the *Major Incidents Report 2023-24*.

4.1 Recovery context

The recovery from disasters is long term and complex. The loss of life, property, animals, environment, business, short- and long-term displacement, and disruption to lives and communities, as well as their experience of the hazard event can have significant impacts on individuals that include:

- health and wellbeing[15]
- employment and income earning ability[16]
- educational outcomes[17]

- impacts on relationships and family dynamics
- social networks, make up and diversity of communities
- community and societal level impacts of economic development and social cohesion.

In addition, the recovery process itself is also considered to be a stressor for individuals.[18,19]

The prevalence of mental health issues, such as psychological distress, as well as impacts on quality of life in individuals affected by disaster, years after the impact, means they may have reduced coping capacity to deal with the recovery process as well as renewed hazard threats and impacts.[20,21]

Recovery can be a costly process for individuals, and can be exacerbated by their available financial resources, under or no insurance, availability and location of temporary housing, loss of employment or income, the cost of rebuilding and cost of living.

These impacts can have a systemic influence. This may include, among other things, changes in participation in society or communal life, changes in economic activities, productivity in workplaces, increased health and wellbeing costs, costs of relationship breakdown and interpersonal violence, and/or loss of species, habitat and biodiversity.

In 2023–24 many individuals and communities continue to experience ongoing recovery from the bushfires of 2019–20, COVID-19, and the major flooding events of 2021–22 across

Figure 3. Bushfire smoke from the 2019-20 bushfires had widespread impact. Source: NASA Earth Observatory

Queensland, NSW, Victoria, SA, and Tasmania, flooding in WA and NT, as well as smaller scale incidents across the country. It is estimated in 2022 alone, 70% of Australians live in LGAs that have been affected by extreme weather-related disasters.[22]

The number of people reported displaced by disasters during 2023, according to the Internal Displacement Monitoring Centre, was 4,700 people, down from 17,000 the previous year in 2022.[23]

The Insurance Council of Australia identified 4 catastrophic events in 2023-24 which incurred $2.19 billion of insurance losses, through 156,802 claims. These events included Ex-Tropical Cyclone Jasper and Far North Queensland flooding, Christmas and New Year's storms (Queensland, NSW and Victoria), Valentine's Day storms (Victoria), severe weather and storms (NSW and Queensland).[24]

Recognising the need for ongoing recovery support, the Australian and state and territory governments continued to provide funding in 2023–24 for disasters that occurred in previous years to enable assistance for longer term recovery programming. This included support for:

- mental health and social support
- youth mental health
- arts and cultural support
- infrastructure repair and betterment
- small and medium business support
- repair of community and sporting infrastructure
- support for NGOs, and prescribed body corporate to provide community engagement, advocacy, and cultural navigation
- supply chain support
- repair and replacement of critical community assets, improving the resilience of public infrastructure and legal aid assistance
- resilient housing and buyback programs
- environmental recovery programs, focussing on waterways and biodiversity
- Betterment programs for local governments, focussing on essential public assets like roads, bridges and footpaths damaged as a direct result of floods.

Australian Red Cross continued ongoing recovery efforts in Queensland, NSW, Victoria, Tasmania and SA following the 2019-20 bushfire season and 2022 NSW and Queensland floods. Disaster Relief Australia also continued significant recovery operations in response to storm activity from 2021 in Victoria, floods from 2022 in SA, floods from 2023 in Queensland, 2019-20 bushfires in Bega Valley, storm activity in Central Highlands Victoria in 2021 and flooding in and around Burketown in Queensland.[25]

4.2 Social and health considerations

The *Global Risk Report* considers mental health deterioration, infectious diseases, chronic health conditions as well as erosion of social cohesion as contributors towards societal based risks. Social cohesion is an important contributor to disaster resilience as it reflects an ability for communities to work together before, during and after disaster.[27] Strong social cohesion positively influences people's trust in institutions,[28] which is important as people rely upon trusted and authoritative information and guidance before, during and after disasters.[29] Good health and wellbeing, including mental health is an indicator of personal resilience.[30] It contributes to individuals being able to plan and prepare, respond well under stress, and recover from adversity.[31] Chronic health conditions, including mental health, can place people at risk due to their reduced physical capacity, mobility or decision-making ability. A growing population, many of whom may live in high hazard-risk areas, places more people at risk to the impacts of disaster.

Australia's population grew by 2.3%, or more than 615,000 people, to reach 27.1 million people by March 2023. WA and Victoria were the fastest growing states, with Tasmania the slowest growing state. A majority, 66% of people, live in the 8 capital cities, and 31,000 people moved from capital cities to regional areas, which is lower than levels experienced during the pandemic.[32]

The *2023 Mapping Social Cohesion Report* from the Scanlan Foundation notes that social cohesion has declined further from the high levels seen during the pandemic, dropping by 4 points on the Monash University Scanlan Social Cohesion Index.[33] There have been further declines in our sense of national pride and belonging, an increasing financial strain and a weakening sense of social inclusion and justice. These were considered by the Scanlon Foundation as warning signs of further weakening in our social fabric.[34]

The OECD Survey on Drivers of Trust in Public Institutions found that trust in Australia's public institutions, including the national government, increased between 2021 and 2023.[35] Trust in local government has also increased by 4% over the previous 2 years. Women in Australia tend to trust government less than men.[36] The 2024 Edelman Trust Barometer[e] found that between 2023 to 2024, trust in institutions in Australia improved from the distrust category to the neutral category.[37]

Chronic conditions are an ongoing cause of ill health, disability and premature death and are generally characterised by their long-lasting and persistent effects. The 2022 National Health Survey, from the Australian Bureau of Statistics, found that the top 5 chronic conditions in Australia are anxiety (18.9%), back problems (15.7%), depression (12.9%), asthma (10.8%) and hearing loss (9.6%). Chronic conditions tend to be more common among people living in more disadvantaged areas. In 2023, Australians lost an estimated 4.4 million years of healthy life due to chronic conditions.[38]

The mental health and wellbeing of the Australian population continues to be affected by a range of factors. Cost of living challenges, climate change and geopolitical uncertainty influence this situation. According to the Australian Unity Wellbeing Index, life satisfaction[f] has declined, with the index dropping last year to the lowest levels on record and this year remaining at a similar level.[39] Households with an income of $100,000 or less, and people aged 55 and under, had personal wellbeing scores below or at the bottom of the average range.[40]

---

e.   The Edelman Trust Barometer produces The Trust Index which is the average percent trust in NGOs, business, government and media. It is based upon the question *How much you trust that institution to do what is right?*

f.   Life satisfaction is a measure of subjective wellbeing at a point in time.

The average level of psychological distress[g] in adults aged 18 and over increased throughout and after the pandemic, peaking in August 2023 and then decreasing in January 2024 to just above pre-pandemic levels.[41]

New variations of COVID, combined with other viruses continue to disrupt workforces. Long COVID[h] is estimated to have a mean economic loss of up to $9.6 billion from hours of work lost. Modelling also suggests that the number of people having long COVID symptoms are between 170,000 and 870,000.[42]

A strain of highly pathogenic avian influenza is spreading globally. This has caused outbreaks internationally in poultry and wild birds, and spillover infections in mammals.[43] While there have been outbreaks in poultry farms in Victoria, NSW and ACT, these have not been the highly pathogenic strains.[44] The focus of animal disease outbreaks is often economic, with the loss of meat producing livestock. If the avian influenza were to get into wild bird populations, then the loss of totemic and iconic bird populations would have significant cultural and social impacts.

4.3 Economic considerations

The *Global Risk Report* considers, among other factors, inflation, debt, disruptions to critical supply chains and infrastructure, economic downturns, and labour shortages as economic based drivers of risk.[45] Economic factors can impact on people's and government's ability to finance or fund their disaster preparedness and recovery activities. People experiencing social disadvantage are more likely to live in higher risk areas,[46] and have less financial capacity to reduce risk,[47] such as through the purchase of insurance or to undertake building modifications, purchase disaster kits or have spare food and cash, as well as their capacity to fund their recovery should they be affected by disaster.[48] Housing supply factors are key considerations in post disaster recovery as are construction costs and building supply availability.[49]

The *Measuring What Matters Report* recognises that the level of the government gross debt has risen significantly over recent decades. This reflects the impacts of global shocks, the pandemic, and program spending budgetary pressures. It is also increasingly understood that the pressures of measures funded to manage the COVID19 pandemic, more disasters and climate change is placing pressure on sovereign risk and debt. Despite this, government gross debt in Australia remains well below debt levels in many other advanced economies.[50] The cost of disaster relief is expected to increase by $814.0 million in 2024–25 and $3.9 billion over five years from 2023–24 to 2027–28, largely due to higher than expected spending related to past disaster events including NSW flooding events between March 2021 and September 2022 and flooding associated with Tropical Cyclone Jasper in December 2023.[51]

High inflation and high interest rates have resulted in lower economic growth in 2023/24. Inflation remained high, although it dropped to less than half of its peak in 2022. These factors continue to put people under pressure, with household consumption flat over the past year,[52] as well as the impact on health and wellbeing noted above.[53] Foodbank's Hunger Report

2024 found in 2023 nearly 2 million Australian households (19%) experienced severe food insecurity. The food insecurity situation showed signs of improvement, with the proportion of households experiencing either severe or moderate food insecurity decreasing from 36% in 2023 to 32% in 2024. Low-income households (below $30,000), those in regional areas and single parent households (69% experiencing food insecurity, 41% severe) all displayed greater levels of food insecurity than the general population. High or increased living expenses were the main contributor to food insecurity, with 82% of households citing as a factor.[54]

The affordability of insurance continues to decline. The proportion of 'affordability-stressed' households[i] rose to 15% or 1.61 million households in the year to March 2024. This is up from 12% in 2023 and 10% in 2022. These households spend an average of 9.6 weeks of their gross income on home insurance, seven times more than non-stressed households. Home insurance premium increases are primarily a consequence of increased reinsurance costs during 2023, caused by rising costs of disasters.[55]

High interest rates and ongoing supply constraints have also affected housing availability. Housing affordability has continued to deteriorate, with the portion of income required to service a new mortgage reaching a high of 50.3%. Melbourne has seen a 4.9% decline in home values from the peak, coupled with modest income growth, making it one of the few markets where housing affordability is improving.[56]

It is estimated, conservatively, around 377,600 households are in housing need, comprising 331,000 households in rental stress and 46,500 households experiencing homelessness.[57] Rental supply has decreased, and housing prices increased faster than incomes over a decade.[58] Rental availability has fallen below 3% of the market, and in some capital cities it is closer to 0.5%, and rents have increased,[59] limiting people's capacity to find appropriate and secure housing.

Building approvals in 2023 declined by 15% from the previous year. Approvals fell to the lowest level since 2012 and were 11% below the 2000–2022 average.[60] Construction costs increases are beginning to ease after 2 years of significant increases. There are still labour shortages and volatility among timber, metal and petrol prices. Although the growth in construction costs is easing, it remains 2.8 times higher than the pre-COVID 5-year average of 3.6% per annum.[61]

A survey conducted by KPMG for its *Future of the Supply Chain* report found that 55% of respondents indicated that their supply chains were stable, and that 47% found they believed they were vulnerable to disruption.[62]

---

g. Psychological distress can be described as unpleasant feelings or emotions that affect a person's level of functioning and interfere with the activities of daily living.

h. Commentary on long COVID is included here given the emergency nature of the response to the COVID19 pandemic and as a reminder of the long tail of recovery.

i. Those facing insurance premiums of more than 4 weeks of gross household income.

Figure 3. Wellbeing in Australia has declined according to the Australian Unity Wellbeing Index. Source: Dazen Zigic via Envato
Figure 4. Nearly 2 million households experienced severe food insecurity. Source: Eduardo Soares via Unsplash
Figure 5. Building approvals continue to fall according to the Australian National University. Source: Troy Mortier via Unsplash

4.4 Environmental considerations

The *Global Risk Report* identifies biodiversity loss and ecosystem collapse, natural resource shortages (food and water), and pollution as environmental-based contributors to global risks.[63] A healthy and sustainable environment is critical to support human development and wellbeing into the future.[64] Protecting, repairing, and managing a healthy and sustainable natural environment is essential for a strong economy, thriving industries, a healthy population and quality of life.[65] All these in turn contribute to an individual's resilience, their capacity to deal with the impacts of disaster. Loss of biodiversity can have impacts on mental health.[66]

The ANU *Australia's Environment in 2023* report provides a comprehensive review of the environmental conditions across the country. With respect to bushfires, the area of land burnt was 44% higher than the previous year.[67] The Barkly Fire Complex contributed significantly to this, with 84 million hectares burnt.[68] There were notably fewer flood events in 2023 than in the previous 2 years. The area inundated during all or part of the year was 12% less than in 2022.[69]

 Storage in the various water reservoirs in the Murray Darling fell from 96% to 84% of capacity but remained above average. Reservoir storage in the Ord system in the Kimberley region increased for a second year, from 73% to 86% of capacity. Urban water supplies for Sydney, Melbourne and Canberra remained high for a second year, at 94-100% of capacity. Water supplies for Brisbane, Adelaide and Perth all declined by 10-17% of capacity, to 70%, 67% and 47%, respectively.

Vegetation conditions and tree cover declined from high levels the previous year but remained above average. Tree canopy cover declined most in northern NSW and southeast Queensland. Tree cover also declined in the remainder of NSW, central and eastern Victoria and southwestern WA. Tree cover increased in NT and northern WA. These changes can mostly be attributed to changes in water availability.[70]

A mass mortality event of millions of fish occurred on the Darling River at Menindee, NSW, in part due to receding floodwater and resulting algal and bacterial blooms. Hundreds of migrating seabirds washed up dead or dying on eastern beaches in November due to a marine heatwave. The sooty shearwater was listed as a vulnerable species in 2023, with climate change impacts on food supply cited as the main reason for their decline, along with drowning as bycatch in fisheries. An emergency collection of 25 critically endangered red handfish occurred in December to save them from a catastrophic marine heatwave in Tasmanian waters.[71]

A record 130 species were added to the list of threatened species under the Environment Protection Biodiversity Conservation Act, bringing the total number of threatened species to 2,098 – a 47% increase since 2000. Of the 130 newly listed species, nearly half (64) were directly impacted by the 2019-20 bushfires. Of these, 58% were plants, 20% were freshwater crayfish and 10% were freshwater fish. Another 33 species were moved up to a higher threat category and no species were moved down.[72]

Imported red fire ant infestations[j] continue in Queensland and were detected in northern NSW. The Australia Institute estimates that red fire ants could cause 6 deaths and household costs in the order of $188million in Queensland annually[73] and have an economic cost of $22billion nationally by 2040.[74]

4.5 Technological considerations

The *Global Risk Report* identifies cyber insecurity, misinformation and disinformation, and adverse outcomes of frontier technologies among the technologically based contributors to global risks.[75] Australian society is highly reliant upon digital systems and technologies to deliver timely and safe services.[76] Trust in digital systems is becoming more critical.[77] Access to information pre, during and post disaster is important to help decision-making.[78] Increasing rates of cyberharm cause financial losses, psychological harm and the loss of trust in systems,[79] which in turn can reduce their resilience to disruption in their lives such as disasters. Additionally, a loss of trust in digital systems and a rise in misinformation and disinformation may also influence people's access to emergency information, warnings, services and assistance.[80]

The Australian Digital Inclusion Index reports on people's access to digital services, their affordability, and their capability to use digital services. Digital inclusion continues to improve with an increase in the index[k] from 67.5 in 2020 to 73.2 in 2023. The gap in inclusion between First Nations and non-First Nations people is 7.5. There are differences between capital cities and rural areas. Digital inclusion remains linked to age, and the gap begins to grow in those people over 65, with those aged 65-74 record scores 12 points below the national average, and those over 75 24.6 below the average.[81]

The Australian Cyber Security Centre's *Annual Cyber Threat Report 2023-24* found that in 2023-24, the Australian Signals Directorate (ASD) received over 36,700 calls to its Australian Cyber Security Hotline, an increase of 12% from the previous financial year. ASD also responded to over 1,100 cyber security incidents. Top 3 cybercrime types for individuals were identity fraud (26%), online shopping fraud (15%), online banking fraud (12%). Top 3 cybercrime types for business were email compromise (20%), online banking fraud (13%), business email compromise fraud (13%). Critical infrastructure made up 11% of all cyber security incidents.[82]

The *Cybercrime in Australia 2023* report from the Australian Institute of Criminology identified in the 12 months prior to the survey that 27% of respondents had been a victim of online abuse and harassment, 22% had been a victim of malware,

---

j.   Red imported fire ant is one of the worst invasive species to reach Australia. They can impact the environment and many industries, including agriculture, restrict everyday activities such as barbeques, picnics, and sporting events, inflict painful stings on people, pets, and livestock and cause extensive damage to ecological and agricultural systems. Source Australian Government Outbreak Website https://www.outbreak.gov.au/current-outbreaks/red-imported-fire-ant

k.   The index uses survey data to measure digital inclusion across three dimensions of access, affordability and digital ability on a scale out of 100. It explores how these dimensions vary across the country and across different social groups.

Figure 9. Only one third of Australians say they trust AI Systems. Source: Envato

20% had been a victim of identity crime and misuse, and 8% had been a victim of fraud and scams. Overall, 47% of respondents experienced at least one cybercrime in the 12 months prior to the survey—and nearly half reported experiencing more than one type of cybercrime. The report also reported 34% of respondents had experienced a data breach.[83]

The *Commonwealth Cyber Security Posture in 2023* reports on government activities to improve cybersecurity across the Australian Government. The report indicates that many entities had planned for a cyber security incident and were ready to respond if needed.

a.   96% of entities had identified the systems and data most essential to their business, an increase from 94% in 2022.

b.   82% of entities had an incident response plan, an increase from 79% in 2022.

c.   83% of entities had a security information and event management (SIEM) program or similar, an increase from 60% in 2022.

Artificial Intelligence (AI) continues to grow as a tool to help organisations, and individuals, operate and make decisions. There are both significant opportunities associated with AI, but also risks and harms. AI-related risks and harms can come from 3 sources: AI system failures, the malicious or misleading use of AI systems, and the overuse or reckless use of AI systems.[84] As the use of AI systems accelerates, organisations are increasingly exposed to AI-driven commercial, regulatory, and reputational risks. Meanwhile, individuals and communities can and do suffer

irreversible harm. At a societal level, poorly governed AI systems can amplify inequality, undermine democracy, contribute to unemployment, threaten Australia's security and increase social isolation. Australians are increasingly concerned about AI-related risks. Only a third of Australians say that they trust AI systems, and less than half believe the benefits of AI outweigh the risk.[85]

Misinformation emerged in the Australian context in the 2019-20 bushfires and was significant during the COVID-19 pandemic. In the fires, false narratives about the source of the fires, arson, and the lack of fuel reduction burning emerged. Misinformation accelerated by bots and trolls was detected by social media researchers.[86] Research into the COVID-19 misinformation found that 4 out of 5 Australians reported seeing misinformation about COVID-19. Survey respondents who disagreed with official advice on COVID-19 prevention strategies and treatments were less likely than the general population to trust scientists, doctors and health professionals, and much more likely to trust news and information from health and lifestyle blogs and news found on social media. Most COVID-19 misinformation was experienced on larger platforms, like Facebook, YouTube and Instagram. A small number of celebrities, politicians and prominent influencers exert an outsized influence over COVID-19 misinformation narratives in Australia. Online misinformation narratives have resulted in a wide range of acute and chronic harms, including undermining public health efforts and eroding trust in democratic institutions over time.[87]

5. Conclusion

This second *Australia's Riskscape* report highlights that individuals and communities across the country remain under systemic stress. Many areas of the country remain in recovery from disasters. While some systemic factors have eased, e.g. inflation, labour and materials supplies, other stresses remain high, with cost of living still significant (and a significant contributor to poorer wellbeing measures), insurance affordability, and overall wellbeing measures. These stressors hamper individuals capacity to prepare for, respond to and recover from disaster.

Factors shaping Australia's riskscape identified throughout the report include:

- Large areas of the country remain in recovery from disasters.
- Slowly improving national and global economic conditions.
- The housing and rental market remains under significant pressure.
- Insurance costs continue to rise.

- Food insecurity is high, although is improving.
- Supply chains remain volatile, although there is an improvement in the availability of labour and building materials.
- Deteriorating mental health and wellbeing.
- Deteriorating social cohesion.

Each of these factors alone cause stress for individuals and organisations. When they intersect, they then increase the challenges that people face in dealing with the threat of climate related disasters, overlaid with a deteriorating global geopolitical situation.

Those with the responsibility for planning to prepare for, respond to and recover from disasters need to recognise the complexity these stressors pose and adopt a systemic risk approach to their planning.[88] By embracing uncertainty and imperfect knowledge about consequences, this will allow an approach that recognises the complex, dynamic, interactive, and interdependent impacts of risks, including trade-offs and unintended consequences.[89]

References

1. Australian Institute for Disaster Resilience (2021) *Systemic Risk Handbook. https://knowledge.aidr.org.au/resources/handbook-systemic-disaster-risk/*

2. Accelerator for Systemic Risk Assessment, 2024. *Facing Global Risks with Honest Hope: Transforming Multidimensional Challenges into Multidimensional Possibilities.*

3. Richardson, J.F. (2014). *Beyond Vulnerability: Developing Disaster Resilience Capacities.*

4. International Federation of Red Cross and Red Crescent Societies (2021) *Road Map to Community Resilience* version 2

5. Müller-Mahn, D., Everts, J., & Stephan, C. (2018). Riskscapes revisited- Exploring the relationship between risk, space and practice. *ERDKUNDE*, 72(3), 197–213.

6. ibid

7. World Economic Forum (2023) *Global Risk Report* 2023

8. World Economic Forum (2022) *Global Risk Report* 2022

9. World Economic Forum (2023) *Global Risk Report* 2023

10. ibid

11. United Nations University – Institute for Environment and Human Security (2023). *Interconnected Disaster Risks: Risk Tipping Points*. Eberle, Caitlyn; O'Connor, Jack; Narvaez, Liliana; Mena Benavides, Melisa; Sebesvari, Zita (authors). Bonn: DOI: 10.53324/WTWN2495

12. Parsons, M., Reeve, I., McGregor, J., Marshall, G., Stayner, R., McNeill, J., Hastings, P., Glavac, S. and Morley, P., 2020. *The Australian disaster resilience index volume i-state of disaster resilience report.*

13. Inter-Agency Standing Committee and the European Commission, (2024) I*NFORM Report 2024*

14. Australian Government (2023) *International Report 2023 Australia's Future to 2063*

15. Gibbs L, Molyneaux R, Harms L, Gallagher H C, Block K, Richardson J, Brandenburg V, O'Donnell M, Kellett C, Quinn P, Kosta L, Brady K, Ireton G, MacDougall C, Bryant R (2021) *10 Years Beyond Bushfires Report 2020.* University of Melbourne, Melbourne, Australia

16. Ulubasoglu M & Onder Y K (2018), D*isasters and economic resilience: the effects of Black Saturday bushfires on individual income,* Bushfire and Natural Hazards CRC, Melbourne.

17. Gibbs L, Nursey J, Cook J , Ireton G, Alkemade N, Roberts M, Gallagher HC, Bryant R, Block K, Molyneaux R and Forbes D. (2019) Delayed Disaster Impacts on Academic Performance of Primary School Children. *Child Development*. Volume 90 No. 4. Pp. 1402-1412

18. Lock S, Rubin GJ, Murray V, Rogers MB, Amlôt R, Williams R. *Secondary stressors and extreme events and disasters: a systematic review of primary research from 2010-2011.*

19. Forbes D, Alkemade N, Waters E, Gibbs L, Gallagher H C, Pattison P, Lusher D, MacDougall C, Harms L, Block K, Snowdon E, Kellett C, Sinnott V, Ireton G, Richardson J, & Bryant R (2015). Anger and major life stressors as predictors of psychological outcomes following the Victorian Black Saturday bushfires. *Australian and New Zealand Journal of Psychiatry.* 2015; 49(8); 706-713.

20. Leppold, C, Gibbs, L, Block, K, Reifels, L (2022) Public health implications of multiple disaster exposures *The Lancet* Vol 7 Issue 3

21. ibid

22. KPMG (2023) *70 percent of Australians impacted by natural disasters*

23. Internal Displacement Monitoring Centre (2024) *Global Report on Internal Displacement*

24. Insurance Council Australia (2024) *Insurance Catastrophe Resilience Report 2023-24*

25. Disaster Relief Australia website, accessed 17 September 2023

26. World Economic Forum (2023) *Global Risk Report 2024*

27. Jewett R L, Mah S M, Howell N, Larsen M M (2021) Social Cohesion and Community Resilience During COVID-19 and Pandemics: A Rapid Scoping Review to Inform the United Nations Research Roadmap for COVID-19 Recovery. *International Journal of Health Services*. Volume 51, No. 3. Pp. 325-336.

28. Scanlan Foundation Research Institute (2022) *Trust and Social Cohesion in Australia Social Cohesion Insight Series*

29. AIDR (2021) *Public Information and Warnings Handbooks*

30. Johns Hopkins University and the International Federation of Red Cross and Red Crescent Societies (2008) *Public health guide for emergencies*

31. Richardson, J.F. (2014). *Beyond Vulnerability: Developing Disaster Resilience Capacities.*

32. Centre for Population (2023) National, state and territory population, March 2024

33. Scanlan Foundation (2022) *2022 Mapping Social Cohesion Report*

34. Scanlan Foundation (2023) *2023 Mapping Social Cohesion Report*

35. OECD (2024), *OECD Survey on Drivers of Trust in Public Institutions – 2024 Results: Building Trust in a Complex Policy Environment,* OECD Publishing, Paris, https://doi.org/10.1787/9a20554b-en.

36. ibid

37. Edelman Trust Institute (2024) *Edelman Trust Barometer Global Report*

38. Australian Institute of Health and Wellbeing (2024) *Chronic Conditions Web Article*

39. Frykberg, G., Capic, T., Crowe, M., Khor, S., Cummins, R.A., Fuller-Tyszkiewicz, M., Olsson, C.A., Hutchinson, D., Lycett, K. (2023). *Australian Unity Wellbeing Index – Survey 40 Report. Australians' subjective wellbeing in 2023: age, income and carer inequities.* Geelong: Australian Centre on Quality of Life, School of Psychology, Deakin University.

40. ibid

41. Australian Institute of Health and Welfare (2024) *Australia's health 2024: in brief*, catalogue number AUS 249, AIHW, Australian Government

42. Woldegiorgis, M., Cadby, G., Ngeh, S., Korda, R.J., Armstrong, P.K., Maticevic, J., Knight, P., Jardine, A., Bloomfield, L.E. and Effler, P.V. (2024), Long COVID in a highly vaccinated but largely unexposed Australian population following the 2022 SARS-CoV-2 Omicron wave: a cross-sectional survey. *Med J Aust*, 220: 323-330.

43. Australian Centre for Disease Control (2024) Bird Flu *Bird flu | Australian Centre for Disease Control*

44. Australian Government (2024) Outbreak Website, H7 high pathogencity avian influenza

45. World Economic Forum (2023) *Global Risk Report 2024*

46. SAMSHA (2017) *Greater Impact: How Disasters Affect People of Low Socioeconomic Status*. Disaster Technical Assistance Center Supplemental Research Bulletin

47. Dominey-Howes, D, Bruce, E, Stephens, R E, Perkins-Kirkpatrick, S, Sewell, T (2016) *Natural disasters are affecting some of Australia's most disadvantaged communities.* The Conversation. 8 November.

48. Boon, H (2013) Preparedness and vulnerability: an issue of equity in Australian disaster situations. *Australian Journal of Emergency Management* Volume 28, No. 3, July 2013

49. van den Nouwelant, R. & Cibin, A. (2022) *"The impact of housing vulnerability on climate disaster recovery: The 2022 Northern Rivers Floods"* (Sydney: City Futures Research Centre)

50. Australian Government (2023) *Measuring what matters statement.*

51. Australian Government (2024) *Budget Statement 3 Fiscal Strategy and Outlook*

52. ibid

53. Frykberg, G., Capic, T., Crowe, M., Khor, S., Cummins, R.A., Fuller-Tyszkiewicz, M., Olsson, C.A., Hutchinson, D., Lycett, K. (2023). *Australian Unity Wellbeing Index – Survey 40 Report. Australians' subjective wellbeing in 2023: age, income and carer inequities.* Geelong: Australian Centre on Quality of Life, Deakin University.

54. IPSOS (2024) *Foodbank Hunger Report 2024*

55. Paddam, S, Liu, C, Philip, S, Smith, R, M=Nagarajan, S (2024) *Home Insurance Affordability and Home Loans at Risk | Actuaries Institute*

56. Frykberg, G., Capic, T., Crowe, M., Khor, S., Cummins, R.A., Fuller-Tyszkiewicz, M., Olsson, C.A., Hutchinson, D., Lycett, K. (2023). *Australian Unity Wellbeing Index – Survey 40 Report. Australians' subjective wellbeing in 2023: age, income and carer inequities.* Geelong: Australian Centre on Quality of Life, Deakin University.

57. National Housing Finance and Investment Corporation (2023) *State of the Nation's Housing 2022-23*

58. Department of Social Services (2023) *The National Housing and Homelessness Plan Issues Paper*

59. Australian Bureau of Statistics (2023) *New insights into the rental market.*

60. Australian National University (2023) *2023 Australia's Environment Report*

61. CoreLogic (2024) *Growth in Australian construction costs finally show signs of easing* Research News 18 Apr 2023

62. KPMG (2023) *The future of supply chains September 2023*

63. World Economic Forum (2023) *Global Risk Report 2024*

64. United Nations (2015) *Agenda for Sustainable Development 2030. https://sdgs.un.org/2030agenda*

65. Commonwealth of Australia (2023) *Measuring What Matters Statement: Australia's First Wellbeing Framework. https://treasury. gov.au/publication/p2023-mwm*

66. Cianconi P, Hirsch D, Chiappini S, Martinotti G, Janiri L. (2022) Climate change, biodiversity loss and mental health: a global perspective. *BJPsych International.* 19(4):83-86. doi:10.1192/bji.2022.20

67. Australian National University (2023) *2023 Australia's Environment Report*

68. Fisher, R (2024) *Vastly bigger than the Black Summer: 84 million hectares of northern Australia burned in 2023* The Conversation

69. Australian National University (2023) *2023 Australia's Environment Report*

70. ibid

71. ibid

72. ibid

73. Le, M N and Campbell, R (2024) *Red Imported Fire Ants and Queensland electorates* Australia Institute

74. Le, M N and Campbell, R (2024) *Red Imported Fire Ants the benefits of avoiding a national disaster* Australia Institute

75. World Economic Forum (2023) *Global Risk Report 2024*

76. National Resilience Taskforce (2017) *Profiling Australia's Vulnerability*

77. World Economic Forum (2024) *Why we must rebuild digital trust for a cyber-inclusive future*

78. AIDR (2021) *Public Information and Warnings Handbooks*

79. Agrafiotis I, Nurse, J.R.C, Goldsmith, M Creese, S, Upton, D (2018) A taxonomy of cyber-harms: Defining the impacts of cyber-attacks and understanding how they propagate, *Journal of Cybersecurity,* Volume 4, Issue 1,

80. Dallo, I., Elroy, O., Fallou, L. et al. Dynamics and characteristics of misinformation related to earthquake predictions on Twitter. *Sci Rep* 13, 13391 (2023).

81. Thomas, J., McCosker, A., Parkinson, S., Hegarty, K., Featherstone, D., Kennedy, J., Holcombe-James, I., Ormond-Parker, L., & Ganley, L. (2023). *Measuring Australia's Digital Divide: Australian Digital Inclusion Index: 2023.* Melbourne: ARC Centre of Excellence for Automated Decision-Making and Society, RMIT University, Swinburne University of Technology, and Telstra.

82. Commonwealth of Australia 2024, Australian Signals Directorate, 2023–24 *Annual Cyber Threat Report*

83. Voce I & Morgan A (2023). *Cybercrime in Australia 2023. Statistical Report no. 43*. Canberra: Australian Institute of Criminology.

84. Solomon, L., & Davis, N., (2023) *The State of AI Governance in Australia, Human Technology Institute*, The University of Technology Sydney

85. ibid

86. Weber, D., Falzon, L., Mitchell, L. et al. (2022). Promoting and countering misinformation during Australia's 2019–2020 bushfires: a case study of polarisation. *Soc. Netw. Anal. Min*. 12, 64

87. Australian Communications and Media Authority (2022) *Misinformation report: Fact sheet 1*

88. AIDR (2021) *Systemic Risk Handbook*

89. Accelerator for Systemic Risk Assessment (2024) *Principles for Systemic Risk Assessment and Response*