Australian Institute for
Disaster Resilience

Australia's Riskscape:

a companion to the
Major Incidents Report 2022–23 and
the *Systemic Disaster Risk Handbook*

AIDR is the National Institute for disaster risk reduction and resilience. We collaborate across sectors to strengthen the resilience of Australian communities to disasters.

AIDR creates, grows and supports a range of networks; provides opportunities for learning, development, and innovation; shares knowledge and resources to enable informed decision making and action; and facilitates thought leadership through national conversations.

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The Australian Institute for Disaster Resilience acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to land, waters, and culture.
We pay our respects to Elders past and present.

Aboriginal and Torres Strait Islander people are advised that this report may contain images of people who may have since passed away.

Flooding at the Blanchetown Caravan Park at Paisley, (ABC News - Brant Cumming). Reproduced by permission of the Australian Broadcasting Corporation © 2023 ABC

Contents

Acronyms

AIDR	Australian Institute for Disaster Resilience
COVID-19	Coronavirus Disease
CSIRO	Commonwealth Scientific Industrial Research Organisation
IOD	Indian Ocean Dipole
JEV	Japanese Encephalitis Virus
LGA	Local Government Area
NAB	National Australia Bank
NEMA	National Emergency Management Agency
SAM	Southern Annular Mode
SOI	Southern Oscillation Index
WEF	World Economic Forum

1. Introduction

Each year Australia is affected by severe natural hazards that can trigger disasters. Disasters can be complex in nature, can cascade from one to the next, can compound on top of each other and can run consecutively,[1] leaving little time for communities or those that support them to recover. These incidents disrupt how people go about their lives and often have long term consequences, beyond cleaning up, rebuilding and replacing property. Recovery time frames for many of those affected by disasters can be measured in years to decades.[2]

Disasters can affect people's health and wellbeing, their livelihoods, their educational outcomes, their cultural practices, and their community's cohesion. Disasters are becoming more costly due to increases in the value of assets at risk and the costs of reconstruction, as well as a greater recognition of the long term and often intangible social costs of disaster. Compounding disasters also impact significantly on people's capacity to prepare for subsequent disasters.[3]

The systemic nature of disaster risk also shows us that the consequences of natural hazards are interconnected to complex processes happening within communities and society[4] from the local to the global scales. Economic conditions, supply chain issues, health and wellbeing challenges, levels of social cohesion, technological shifts and the state of the environment are among a range of factors that may influence an individual's, organisations, or communities' resilience.

Since 2017, the Australian Institute for Disaster Resilience (AIDR) has produced the *Major Incidents Report*. The report is a compendium of nationally significant incidents that have posed unique challenges for the emergency management sector, identifying climate and weather as major drivers of risk and consequence.

During the development of this year's *Major Incidents Report 2022–23* report the team applied a systemic risk lens to framing the 27 incidents that were identified as significant. While outside the scope of the *Major Incidents Report*, this approach has helped reveal some of the broader antecedent conditions, in addition to climate and weather drivers, that are influencing how people and communities experienced these major incidents.

This report is a companion piece to the *Major Incidents Report 2022–23*, drawing upon some of these findings. Using the World Economic Forum's (WEF) societal, economic, environmental, geopolitical, technological risk categories, and their global risk projections for 2022, a range of factors were identified as potentially having an influence on an individual's, organisation's or community's resilience or their capacity to take action and manage disruption to their lives or functions.

The report begins by outlining the importance of a systemic risk lens and presents some of the key national and global trends identified as contributing to natural hazard risks. It then provides examples of the ways that social, health, economic, environmental, technological and climate drivers may have influenced the risks and impacts of the 2022–23 hazards. It draws upon available research findings to demonstrate how these factors may have had this influence.

This report is not a full systematic analysis of systemic disaster risks across Australia in 2022–23. Rather it is a snapshot of factors and considerations. It should be recognised that due to the current limitations and availability of data the impacts of these factors cannot be directly attributed to people's resilience to disaster or their experiences in the disasters that unfolded in 2022–23. Rather, the purpose of the report is to present these systemic considerations to prompt thinking about complexity and its relationship to disaster risk, resilience and consequence. The broad range of considerations identified in this report demonstrates the interconnectedness and compounding nature of risks and disasters, signifying the importance of adopting an all-hazards approach to disasters and adapting all our systems and approaches to manage future complex disasters.

2. Background: understanding resilience, systemic risks and riskscapes

It is increasingly understood there are a broad and diverse set of factors that contribute to individual and societal wellbeing and resilience.[5] Society is dependent on interconnected systems for the delivery of timely, essential services to function and prosper.[6] These systems are complex, and have three things in common:

1. They need a constant supply of energy to maintain their functioning.
2. They are interconnected across a range of scales, from the personal and local to the global and beyond.
3. They are fragile when they have no 'redundancy' or plan B.[7]

Natural hazards threaten these systems and turn into disasters when these systems are severely impacted. Disasters occur at the interconnection of environmental conditions and societal processes. Societal conditions and drivers (e.g. demographics, social inequities, economics, politics and cultural practices) determine the exposure of diverse people, assets, livelihoods and nature to risks, as well as shape their capacity to cope with hazards. These drivers can therefore help to reduce risk, or to create risk, depending on how they are managed.[8] Every disaster takes place in complex contexts, and these drivers have the power to shape future risk and resilience, together with changing environmental conditions.

2.1 Resilience

Understanding what shapes the resilience of individuals, communities and systems helps us to understand the capacities and capabilities that are available to mitigate and manage the disruptions posed by hazard events. While we often focus on vulnerability in emergency management, it is critical we also draw attention to the many capacities of individuals and communities for resilience. While there are many definitions of resilience, the International Federation of Red Cross and Red Crescent societies uses a definition that frames resilience within a development context, i.e. the life people aspire to:

> 'Resilience is the ability of individuals, communities, organisations, or countries to anticipate, prepare for, reduce the impact of, cope with, and recover from the effects of shocks and stresses without compromising their long-term prospects.'[9]

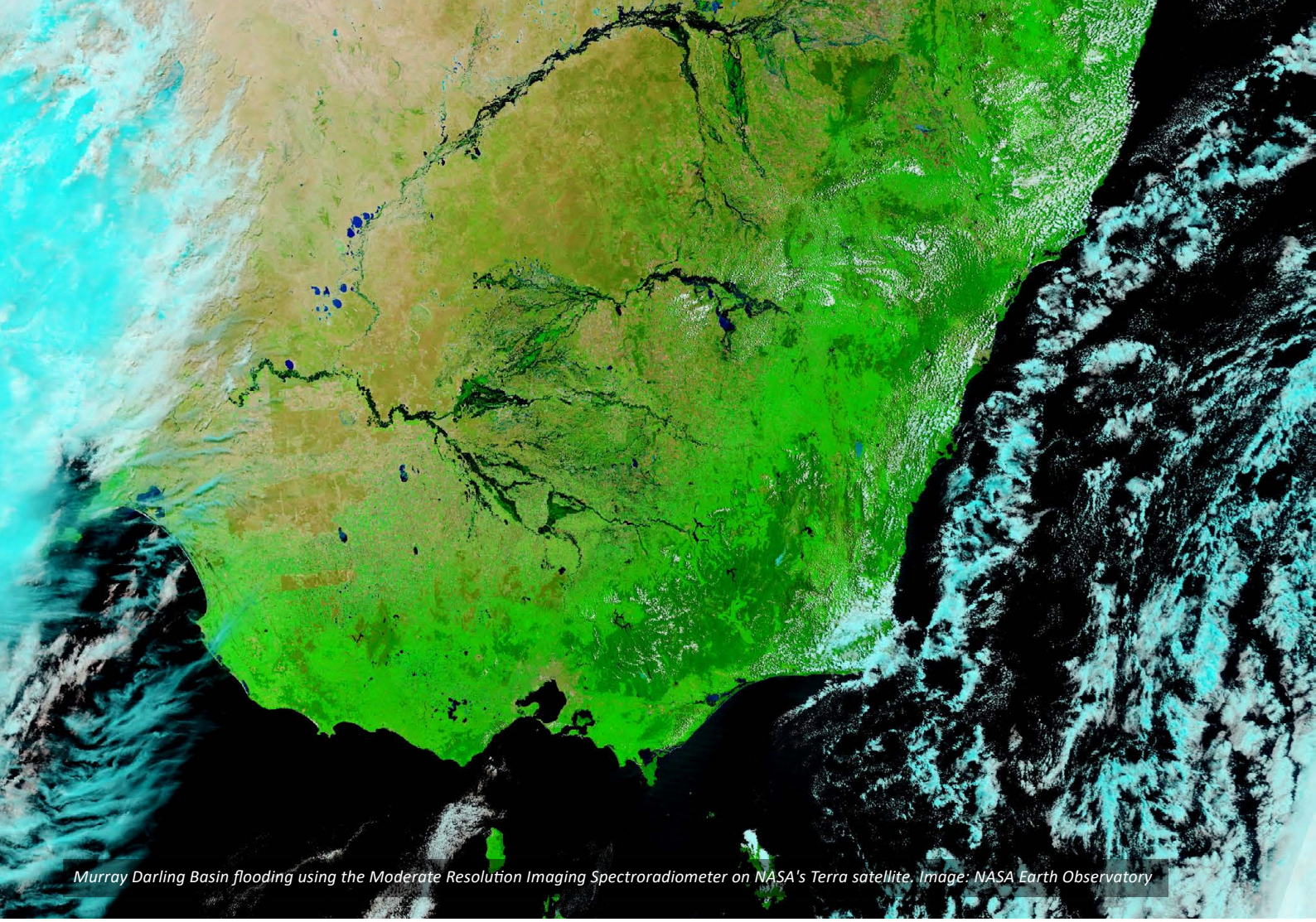
Individual resilience is influenced by four capacities: wellbeing, connection, security, and knowledge.[10] *The Australian Disaster Resilience Index (ADRI)* highlights the complexity of community disaster resilience by identifying coping capacities made up of the domains of social character, economic capital, emergency services, planning and the built environment, community capital and adaptive capacities of social and community engagement and governance and leadership with a total of 77 indices to support their measurement.[11] The ADRI has been identified in the Measuring What Matters (2023) national wellbeing framework as a key way to understand resilience to climate change and acknowledge the impacts of disasters on wellbeing. More recently Monash University's Fire to Flourish initiative introduced the concept of transformative capacity, which are the measures that build capacities for coping and adapting to disaster in ways that improve outcomes in the next disaster event and facilitate larger scale shifts that serve to improve community wellbeing more broadly.[12] Understanding resilience, and what contributes to it, helps us understand what people and communities bring into the disaster, and what they take out of it.

2.2 A changing understanding of risk

Until recently the focus on disaster risk management has generally been on single hazards producing relatively linear consequences. The Sendai Framework for Disaster Risk Reduction (2015–30) and the subsequent Global Assessment Report in 2019 heralded a shift towards all-hazards systemic disaster risk thinking in policy and practice. This approach highlights the interconnected nature of the systems that support our way of life, while still recognising the largely place based nature of impacts and consequences.[13] Furthermore, there is an increasing recognition that climate change adaptation and disaster risk reduction strategies and activities must be integrated,[14] and within the context of sustainable development.[15]

In Australia, the work undertaken to profile the nation's vulnerability culminating in the *National Disaster Risk Reduction Framework* and *Profiling Australia's Vulnerability: The Interconnected causes and cascading effects of systemic disaster risk* in 2019. It was a first step towards a systemic approach to disaster risk reduction. The *Systemic Disaster Risk Handbook* (2021) in the Australian Disaster Resilience Handbook Collection provided the first nationally consistent set of guidance on adopting a systemic rather than linear risk approach. In addition, a recommendation of the review of the National Emergency Risk Assessment Guidelines was that a systems approach should be applied to risk assessment to enable deeper awareness and understanding by decision makers of the complex and dynamic interconnections and interdependencies between systems and the autochthonous processes driving unexpected and unpredictable outcomes.[16]

A systemic risk lens and the concept of riskscapes are two important ways of identifying and understanding complex systems and risks that influence people's capacity to manage the disruptions that disasters pose the wellbeing, goals, and aspirations of people and communities.



Murray Darling Basin flooding using the Moderate Resolution Imaging Spectroradiometer on NASA's Terra satellite. Image: NASA Earth Observatory

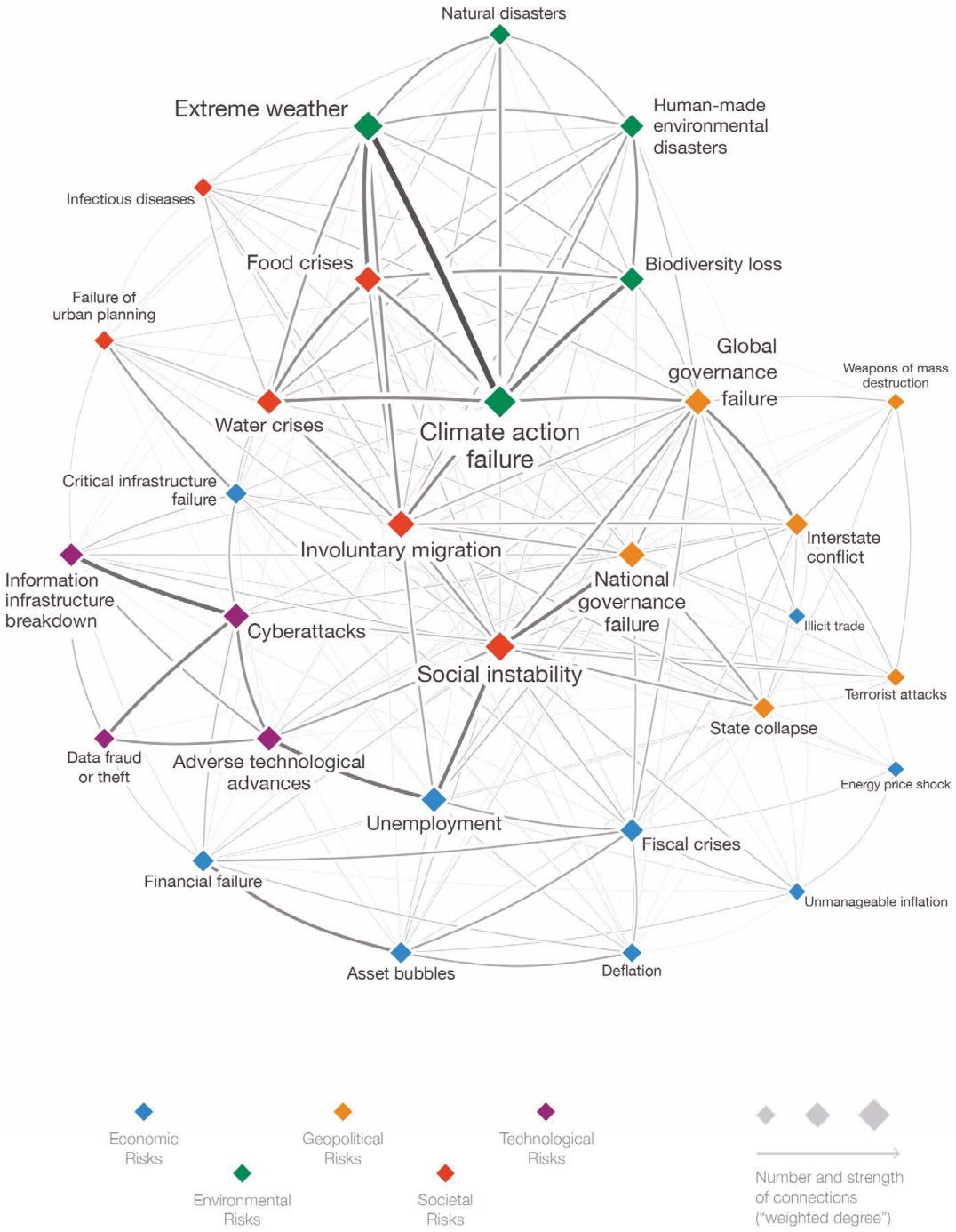
2.3 Systemic disaster risk

'Systemic disaster risks emerge from the interactions between climate change and natural, biological, and technological hazards, and the complex, interdependent and interconnected networks of social, cultural, technical, environmental, and economic systems (Figure 1). Ultimately how these systems are organised and operate determines their resilience, and their exposure and vulnerability at all scales'.[17] These connections are not new, however the degree to which they depend on each other, how closely they are linked and how quickly and often they interact have created new opportunities and risks. These risks are often hidden and embedded in these systems. A systemic risk is one that could throw whole systems or multiple systems off balance and not just one part of a single system. Health care, transportation, energy, food and water supplies, information and communications are all examples of important systems that can be severely damaged by a single disaster or a chain of them.[18]

Approaching disaster risk systemically also recognises a whole of society approach is critical to building resilience and reducing loss, disruption and harm caused by disasters. Inclusive, broad-based governance that represents the whole system is critical to embed risk ownership and management. Developing and embedding risk cultures framed around place-based, systemic resilience and sustainable outcomes is key to reducing disaster risk.[19] To achieve these outcomes, people and communities need tools, ability, and knowledge beyond traditional emergency management to resist, absorb, accommodate, recover, transform and thrive in response to the effects of shocks and stresses.[20]

Risks cannot be viewed in isolation of social practices and behaviours, places or time. One way of describing this relationship is in terms of a riskscape, which gives it a spatial, temporal (time) and social quality.[21] Riskscapes represent a visualisation of complex, multiple, and overlapping risk settings.[22] Social practices and behaviours both produce, and are products of, riskscapes. This helps us understand how people live in places with multiple risk factors that are not limited to examining climate or geotechnical hazards. People may encounter and deal with these multiple risk factors at the same time, or in rapid succession, and not as neatly separate factors. 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.

As an example, in the disaster context, cost-of-living rises, which may include insurance costs, may impact upon people's decisions about how they allocate their diminishing disposable income. Research indicates that financial capacity limits the kinds of preparedness actions people can take, which may affect their ability to protect their assets with insurance.[23]



Note: Survey respondents were asked to select up to six pairs of global risks they believe to be most interconnected. See Appendix B, The Global Risks Report 2020 for more details. To ensure legibility, the names of global risks are abbreviated, see Appendix A, The Global Risks Report 2020 for the full name and description.

Figure 1: The World Economic Forum's Global Risk Interconnections Map 2020 [1]

1 Source: World Economic Forum Global Risks Perception Survey 2019–2020. The Global Risks Report 2020: www.weforum.org/reports/the-global-risks-report-2020

3. Medium- and long-term risk trends

Adopting a systemic approach to disaster risk helps understand the bigger factors at play or those that would fall outside the domain of a narrow hazard-based risk assessment approach. While most hazards have an immediate local impact, the interconnected nature of risk means there are often regional, state, national and even international drivers and consequences of risks. Megatrends are trajectories of change that typically unfold over years or decades and have the potential for substantial and transformative impact. It is helpful to understand them in a broader risk context, as we need to embrace uncertainty, and plan into the short-, medium-, and long-term future.

In the second half of 2022, CSIRO released *Our Future Worlds*,[24] its second megatrends report which explored the geopolitical, economic, social, technological and environmental forces unfolding around the world, and predicting their likely impact on Australia's people, businesses and governments. The seven megatrends identified by CSIRO were:

1. Adapting to climate change: with disasters expected to cost the Australian economy almost three times more in 2050 than in 2017, we can expect to be living in a more volatile climate, characterised by unprecedented weather events.
2. Leaner, cleaner and greener: an increased focus on potential solutions to our resource constraints through synthetic biology, alternative proteins, advanced recycling, and the net-zero energy transition. By 2025, renewables are expected to surpass coal as the primary energy source.
3. The escalating health imperative: the post-pandemic world has exacerbated existing health challenges posed by an ageing population and growing burden of chronic disease. One in five Australians report high or very high levels of psychological distress and there is heightened risk of infectious diseases and pathogens resistant to modern antibiotics.
4. Geopolitical shifts: an uncertain future, characterised by disrupted patterns of global trade, geopolitical tensions, and growing investment in defence. While the global economy shrunk by 3.2 per cent in 2020, global military spend reached an all-time high of $2.9 trillion and Australia saw a 13 per cent increase in cybercrime reported relative to the previous year.
5. Diving into digital: the pandemic-fuelled a boom in digitisation, with teleworking, telehealth, online shopping, and digital currencies becoming mainstream. Forty percent of Australians now work remotely on a regular basis and the future demand for digital workers is expected to increase by 79 per cent from 2020–25.
6. Increasingly autonomous: there has been an explosion in artificial intelligence (AI) discoveries and applications across practically all industry sectors over the past several years.
7. A strong consumer and citizen push for decision makers to consider trust, transparency, fairness and environmental and social governance. While Australia saw a record level increase in public trust in institutions during the pandemic, this 'trust bubble' has since burst, with societal trust in business dropping by 7.9 per cent and trust in government declining by 14.8 per cent from 2020–21.

In addition, the CSIRO and NAB's *Australia's National Outlook 2019 report*[25] explored a range of nationally significant issues, risks and opportunities to also identifies the six challenges over the period to 2060. In addition to the megatrends identified above of climate change, technological change and eroding social cohesion, the following challenges were identified:

- The rise of Asia is shifting the geopolitical and economic landscape, with the Asia–Pacific region being home to 65 per cent of the world's middle class.
- Australia's population is growing and ageing, putting pressure on cities, infrastructure, and public services, with Sydney and Melbourne each house 8–9 million people by 2060, and workforce participation rates will drop from 66 per cent to 60 per cent.
- Trust in governments, businesses, non-governmental organisations, and the media has declined.

Furthermore, the *International Report 2023* Australia's Future to 2063 also recognises the impact of climate related disasters on the country's economic outlook, with a decrease of labour productivity, reduction in physical capital, disruption of economic activity and supply chains, including travel disruption and reputational harm for the tourism industry, impacts on agricultural output, as well as fiscal pressures across all levels of government through financial assistance. 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.

Finally, the World Economic Forum (WEF) undertakes a Global Risks Perception Survey of over 1,000 experts and leaders and produces the *Global Risk Report* annually. In 2022, the WEF identified the broad themes of; a divergent economic recovery from COVID-19 threatening collaboration on global challenges, a disorderly climate transition exacerbating inequalities, growing digital dependency intensifying cyberthreats and barriers to mobility risk compounding global insecurity.

The survey also identified the following ten global threats that were possible to emerge or continue to influence over the following two years:

- extreme weather
- livelihood crises
- climate action failure
- social cohesion erosion
- infectious diseases
- mental health deterioration
- cybersecurity failure
- debt crises
- digital inequity
- asset bubble burst.

Many of these risks have been exacerbated by the COVID-19 pandemic. Surveys of Australian executives by the WEF also identified as the top five risks for Australia as: failure of cybersecurity measures, extreme weather events, climate action failure, infectious diseases and debt crises in large economies. Elements of these global threats can be seen in the Australian context in 2022–23. These trends and challenges shape the systemic disaster risk context, both for 2022–23 and beyond.

Flooding at the Blanchetown Caravan Park at Paisley, where caravans and cabins have been submerged (ABC News Brant Cumming)

4. The riskscape

To help identify the riskscape for 2022–23, data was examined based on what current research suggested could have an influence on people's ability to prepare for, respond to or recover from disaster. To set the scene, the recovery environment is described first. Given the significant number of incidents that Australia has experienced over the last 3-5 years, and the knowledge that disaster impacts and hence the recovery process can take 5-10 years,[26] it was important to understand the underlying recovery context in which many people across Australia are living. Building from there, data relating to economic conditions, physical and mental health, housing, supply chains and the environment were identified as factors that could reduce individuals' capacity and capability to deal with disruption. Finally, the hazard risk from climate and weather drivers are outlined as the agent that had the potential to cause harm.

In 2022–23 many individuals and communities experienced (and continue to experience) ongoing recovery from the bushfires of 2019–20, COVID-19, and the major flooding events of 2021–22, Cyclone Seroja, as well as smaller scale incidents across the country. It is estimated that since 2019 over 80 per cent of Australians have been affected by extreme weather disasters.[27]

Factors shaping the riskscape identified throughout the following sections include:

- Deteriorating national and global economic conditions, including worsening inequalities and cost of living rises.
- The housing and rental market under significant pressure.
- Rising insurance costs.
- Supply chain issues, particularly supplies of food, goods, and services, as well as transport and the availability of labour and building materials.
- COVID-19 continuing to contribute to increased hospitalisations, increasing mental health issues and long COVID cases, as well as having impacts upon supply chains and labour shortages in all sectors.
- Mental health continuing to be a challenge from a range of emerging factors including post COVID, climate change and geopolitical anxiety.
- While social cohesion that emerged from the pandemic was largely retained at a local level, trust in institutions has fallen.
- The state of Australia's environment improved with recent flooding events and increased water availability, but it is also recognised that increasing extreme events are having negative impacts on the natural environment.

Superimposed onto these conditions, a third consecutive La Niña climate pattern, and the negative Indian Ocean Dipole (IOD) and the Southern Annular Mode (SAM), being mostly positive from mid-August 2022 to February 2023, contributed to the development and maintenance of wetter than average conditions. These climate drivers are being influenced by global warming.

4.1 Recovery environment

Recovery from disaster involves individuals, families, organisations and communities managing the disruption to their lives from losses incurred from the hazard impact and any major life decisions that emerge as a result. The recovery process itself, being complex,[28] is also considered a stressor.[29] Disasters have long term impacts on the health and wellbeing,[30] employment and income earning ability,[31] educational outcomes,[32] social networks, make up and diversity of communities, as well as community and societal level impacts of economic development and social cohesion. Multiple disasters have an impact on people's capacity to prepare for new hazards.[33] As a result, an individual's capacity to deal with new disruptions maybe reduced.

In 2022–23, individuals and communities' recovery continued from incidents including the Queensland and New South Wales flood events of 2021–22 and the Black Summer fires from 2019–20, as well as COVID-19 pandemic, Cyclone Seroja in WA, as well as many other smaller but locally impactful events. Those people recovering from the Queensland and New South Wales flood events of 2021–22, have had a range of issues associated with housing and reconstruction, mental health and leading community recovery. Delays with insurance settlements, assessments, shortages of building supplies and trades, waiting for decisions about voluntary buybacks have caused frustration, anxiety and additional financial pressures. Some residents were struggling with the load of project managing their rebuilds without feeling sufficiently skilled or supported. People were also juggling being back at work, had issues related to temporary housing and were managing mental health issues and the general stresses of post-flood disruption. It was also reported that a disproportionate burden in recovery is falling to communities and volunteers who are running community hubs and similar local support. Although there is goodwill and assistance in the early stages and community-led approaches are the desired option, as the weeks and months pass volunteer numbers dwindle as people need to return to work and other activities, and the burden shifts to an ever-smaller group of people.[34]

The Shepparton floods destroyed homes and their contents. (ABC News: Gavin Coote)

The issue of voluntary house and land buyback schemes to move people from areas of high risk has received significant media and policy attention[35] across 2022–23, emerging from the Queensland and New South Wales flooding events of early 2022. Uncertainty around eligibility for the schemes has caused stress for people in flood affected areas.[36] Certainty provided by programs has added relief for some people.[37]

Timeline of major incidents 2021-22

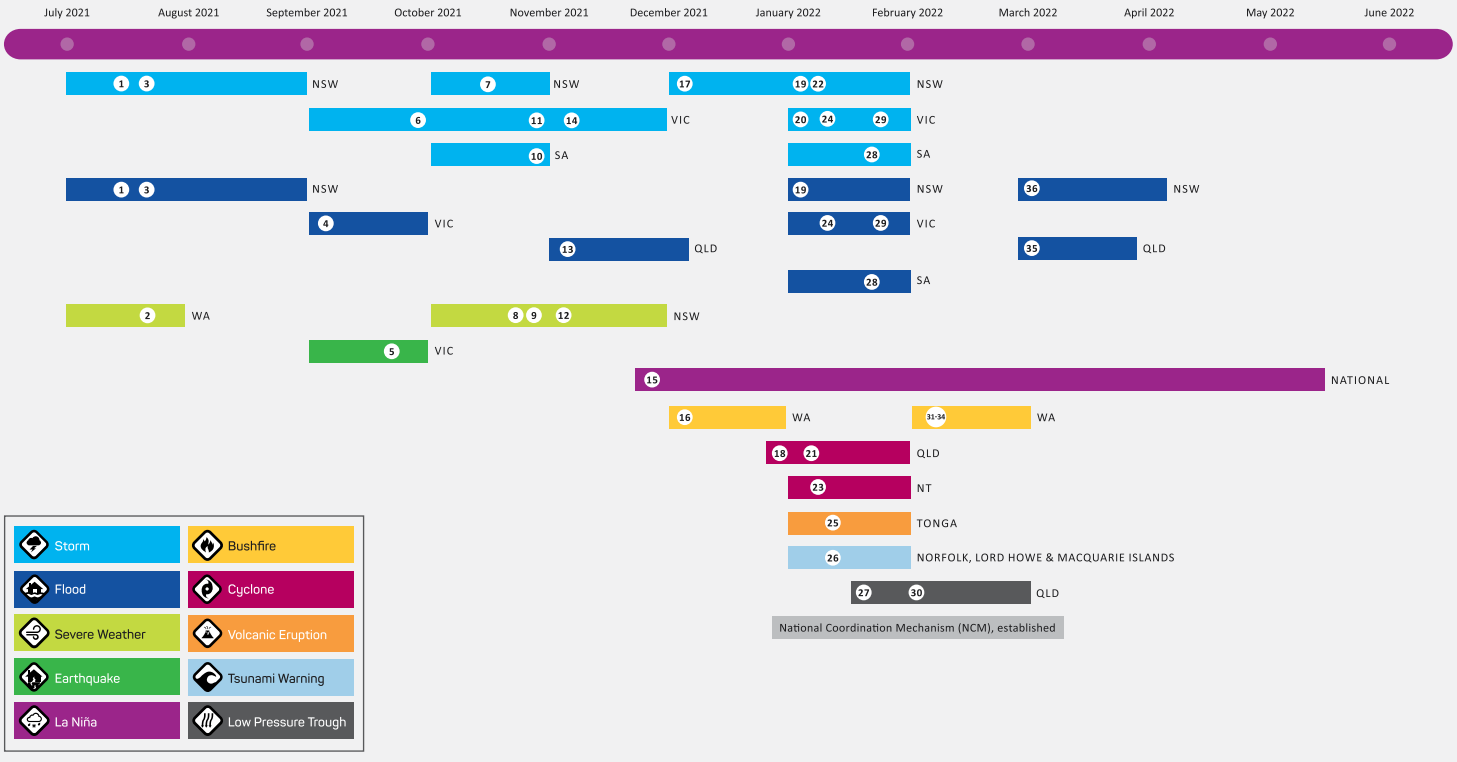


Figure 2: Major incidents in 2021–22

The scope of the COVID-19 pandemic inquiry is yet to be announced. (ABC News: Billy Cooper)

In addition to ongoing local government, business and non-government recovery support and programming activities, the Australian and State and Territory Governments provided funding in 2022–23 for events that occurred in previous years to enable assistance for longer term recovery programming. This included support for mental health, community led recovery projects, assistance for business and farmers, economic recovery, repair of First Nations assets, economic recovery, home buy back schemes, tourism support primary industries supply chains, heritage repair, rebuilding social and cultural infrastructure, and repair and reconstruction of road assets, infrastructure rebuilding and support for 539 local councils.[2]

Australian Red Cross continued ongoing recovery efforts in Queensland, New South Wales, Victoria and South Australia following the 2019–20 Australian Bushfires and 2021 NSW floods. Red Cross also had two recovery operations underway in Western Australia following the 2021 Wooroloo and Gidgegannup Bushfires and Tropical Cyclone Seroja.[38] Disaster Relief Australia also continued significant recovery operations in response to cyclonic winds in Tasmania, floods in NSW, Victoria, South Australia, Black Summer Bushfires in Bega Valley, storm activity in Central highlands Victoria in 2021 and flooding in Burketown and environs, in Queensland.[39]

The range of the factors detailed below may impact upon people's recovery processes, as they add to the stressors they experience. It may influence decisions to rebuild or relocate, which in themselves are not easy when considering people's place attachment, and their mental health and wellbeing.[40] It is well known that the cost of rebuilding post disaster increases through demand surges.[41] Incomes for many also drop post disaster.[42] Combined with cost-of-living increases, the amount of available financial resources for people to address recovery needs diminishes.

4.2 Social and health considerations

Social cohesion[3] is an important contributor to disaster resilience as it reflects an ability for communities to work together before, during and after disaster.[43] Social cohesion in Australia increased during the pandemic but is now declining. The degree to which people feel a sense of belonging and connectedness in their neighbourhoods has been high and growing since the start of the pandemic. This creates a positive environment for community-based risk reduction activities. However, the sense of pride, belonging and social justice in Australia are declining and are now at their lowest levels since 2007.[44] This may impact upon people's trust in institutions, which is important as people rely upon trusted and authoritative information and guidance, before, during and after disasters.[45]

The health implications of multiple, compounding events have an impact on people's ability to prepare for future disasters.[46] The prevalence of serious mental health conditions, as well as impacts on quality of life in individuals affected by disaster,[47] years after the impact, means they may have reduced coping capacity to deal with renewed hazard threats and impacts.

The COVID-19 global health emergency was declared over on 5 May 2023 by the World Health Organisation.[48] However, the COVID-19 virus was still a Communicable Disease of National Significance, and the spread of the virus continues to cause deaths and hospitalisations. There were 7,085 COVID related deaths nationally in 2022–23.[49] COVID-19 related illnesses continued to have impacts upon supply chains and contributed to labour shortages in all sectors of the economy. The impacts of long COVID are just beginning to be understood,[50] as are the mental health impacts of the event.[51] In addition, in 2022–23 Australia was managing two other national communicable diseases incidents of national significance, Japanese Encephalitis (JEV) and mpox.

2 Appendix 1 has details of the funding announcements.

3 The Scanlon Foundation defined social cohesion is where a society works towards the well-being of all its members, fights exclusion and marginalisation, creates a sense of belonging, promotes trust, and offers its members the opportunity of upward mobility.

The mental health and well-being of the population continues to be affected by the COVID-19 pandemic, an increasing recognition of climate anxiety,[52] cost of living pressures,[53] as well as an increasingly unstable geopolitical situation with the war in Ukraine and increasing tensions within the Asia Pacific Region.[54]

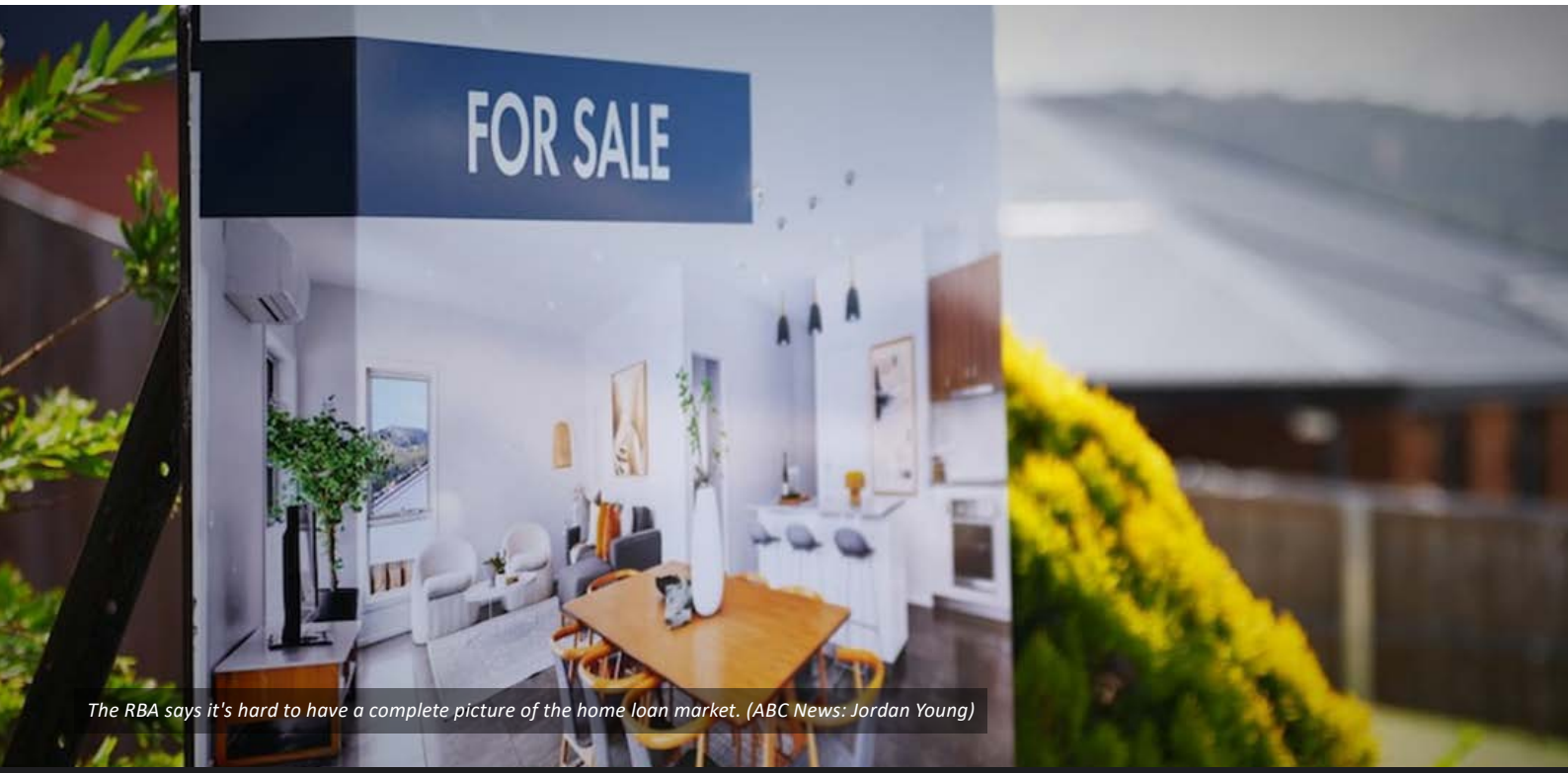
Locals in Quaama have been brainstorming activities that could help with ongoing recovery, including mental trauma. (ABC South East NSW: Adriane Reardon)

The social, cultural and health impacts of the Queensland and New South Wales flood events of 2022 continues to be felt, with a range of programs supporting mental health and community led recovery projects, as well as local and not for profit programming. Psychosocial support programming for Cyclone Seroja in Western Australia, and Black Summer are among the major recovery programs that have continued to support communities' health and wellbeing over a longer period.

4.3 Economic considerations

Economic factors can impact on people'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,[55] and have less financial capacity to reduce risk,[56] 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 finance their recovery should they be affected by disaster.[57]

Deteriorating national and global economic conditions, and the impacts of the October 2022 floods have seen a 7 per cent increase in health, housing, food, non-alcoholic beverage, insurance and financial services costs.[58] This directly affects household and organisational budgets, reducing household disposable income, forcing people to focus upon basics such as food, utilities and transportation.



The RBA says it's hard to have a complete picture of the home loan market. (ABC News: Jordan Young)

Pied cormorants can be spotted in Riverland wetlands. (ABC Riverland: Sophie Landau)

The housing market in Australia continues to be under significant pressure. On Census night in 2021, 122,494 people were estimated to be homeless. These rates are relatively stable, however rental supply has decreased and housing prices increased faster than incomes over a decade.[59] Supply disruptions and capacity constraints, driven by floods and COVID-19 absenteeism rapidly escalated building costs.[60] [61] Rental availability has fallen, and rents have increased,[62] limiting people's capacity to find appropriate and secure housing. This issue has been compounded significantly in flood affected areas from early 2022.[63] Disasters are also a contributor to people experiencing homelessness.[64]

The affordability of insurance has become a significant issue. There are now 12 per cent of households experiencing home insurance affordability stress (up from 10 per cent in March 2022) where affordability stress is defined as paying more than four weeks of household gross income towards home insurance premiums. Overall, it is estimated that 1.24 million Australian households face home insurance affordability stress compared to 1 million a year ago.[65] In 2022, the net earned premiums of the insurance industry rose by 10 per cent.[66] The cost of reconstruction, an element of recovery, has been worsened by the impacts of inflation. Residential construction costs rose 12 per cent in 2022, higher than inflation over the same period. The impact of extreme weather in Australia is increasing the global cost of reinsurance to 20-year highs this year. Australian insurers are facing cost increases of up to 20 to 30 per cent. Global events also have cost impacts in Australia. The impact of Hurricane Ian in Florida, USA made last year the third-costliest hurricane season on record, contributing to global pressures in the reinsurance market.[67] In terms of macro-economic impact, the floods of 2022–23 were predicted to have a $5 billion negative impact on economic activity representing a reduction of 0.25 per cent in economic growth, although this may be offset by positive effects of rebuilding and other recovery measures.[68]

4.4 Environmental considerations

The *Agenda for Sustainable Development 2030* recognises the importance of a healthy and sustainable environment to support human development and wellbeing.[69] First Nations wisdom also recognises the fundamental importance of Caring for Country, how by 'looking after country and country will look after you'.[70] Care for Country is based in the laws, customs and ways of life that First Nations people have inherited from their ancestors and ancestral beings. At one level it is 'Indigenous people's land and sea management' but at a greater, systemic level, Caring for Country also has benefits for the social-political, cultural, economic and physical and emotional wellbeing of First Nations people. For First Nations people, it is increasingly documented that Caring for Country is intricately linked to maintaining cultural life, identity, autonomy and health.[71]

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.[72] All these in turn contribute to an individual's resilience, their capacity to deal with the impacts of disaster. Increasingly disaster mitigation and prevention has been turning to green or nature-based solutions to reduce disaster impacts.[73]

Noting the importance of environment to health and wellbeing, and prosperity, *Australia's 2022 State of the Environment Report,* identifies that the impacts of all extreme events are getting worse as they become more frequent and severe due to climate change.[74] However, the report also indicates that 2022 was the best year for water availability and plant growth since measurements began 23 years ago. Rainfall, river flows and the extent of floodplain inundation scores were the highest since before 2000 in many parts of eastern Australia. Wetland area and waterbird breeding were well above the long-term average. Vegetation density, growth rates and tree cover in NSW and Queensland were the best since before 2000.[75] The water supplies of all eastern capital cities rose, and several reached their capacity. Average national growth rates in dryland cropping were 49 per cent better than average conditions. The many full

or filling reservoirs are also good news for irrigators.[76] Traditional knowledge from Brewarrina area suggests that the environment benefits from moderate levels of flooding.[77]

However, the floods also had negative impacts on the environment. Notable environmental impacts during the incidents of 2022–23 have been the Menindee Lakes Fish kill, where it is estimated that millions of fish, predominantly Bony Herring (Bony Bream) have been affected, as well as smaller numbers of species such as Murray Cod, Golden Perch, Silver Perch and Carp.[78] The Dugong and Turtle population along the Fraser Coast has been devastated from flood waters silting up seagrass food sources.[79]

4.5 Technological considerations

Digital technologies have advanced more rapidly than any innovation in human history. By enhancing connectivity, financial inclusion, access to trade and public services, technology can be a great equaliser.[80] Equally, an increasing dependence on hyperconnected systems reliant upon a range of computing options from personal to institutional, leaves them largely exposed to disruption.[81] Anxiety and feelings of powerlessness about digital systems is on the rise with concerns about misinformation, privacy, 5G networks and artificial intelligence (AI) at a time when people and systems have rapidly shifted to online learning, telemedicine, remote work and e-commerce.[82] This transition sped up during the COVID-19 pandemic.

As noted above, wellbeing and prosperity are supported by largely hidden systems.[83] These systems are heavily dependent upon technology and human capital. Supply chains across the country continue to be challenged through COVID-19, as well as global impacts of the war in Ukraine and a changing geopolitical situation in the Asia Pacific region. These events have impacts on both the export and the supply of food, goods and services, as well as transport and the supply of labour and building materials,[84] the last being critical for recovery efforts after the floods of 2022.[85]

Cyber harm continues to increase, with an increase in the number of scams, hacks and the release of personal data from major institutions. In the 12 months to October 2022, one third of Australians reported they have been exposed to a data breach.[86] Ransomware is the most destructive cybercrime, and worldwide critical infrastructure networks are increasingly being targeted. In addition, of note for this sector, Fire Rescue Victoria was the subject of a cyber-attack, causing a widespread IT outage. However, community safety was not compromised as there was a shift to dispatch crews and appliances through mobile phones and pagers.[87]

The impacts of this increase in cyber harm are tangible in the financial losses incurred by individuals and organisations impact upon their financial capacity, which in turn can reduce their resilience to disruption in their lives such as disasters. Additionally, a loss of trust in digital systems may also influence people's access to emergency information, warnings, services and assistance.

4.6 Climate considerations

Several climate drivers influenced weather patterns over the 2022–23 period. The second half of 2022 was influenced by a negative Indian Ocean Dipole (IOD), La Niña emerged in September 2022 and lasted until late summer 2023, and the Southern Annular Mode (SAM) was mostly positive from mid-August 2022 to February 2023. All three of these climate drivers contributed to the development and maintenance of wetter than average conditions. The *Major Incidents Report 2022-23* provides further detail on the climate drivers of risk in 2022–23.

While clearly these drivers all point towards heightened rainfall and flood risks, for communities affected by floods in 2022 they also heightened their anxiety about having to go through flooding events again. Natural Hazards Research Australia's study of community experiences of the flooding events found that many communities feeling vulnerable following multiple floods, the threat of climate change and for others the potential for re-exposure to flooding.[88]

Supermarket shelves were nearly empty in Kununurra on Sunday night. (ABC Kimberley: Ted O'Connor)

5. Conclusion

Each of the factors outlined above can cause stress on the systems in which they are influential. Placing these factors into a context with communities in recovery, from not just single events, but sometimes multiple, and heightened risk from flooding, increases the complexity of the riskscape in which people must make decisions about how to allocate their resources and efforts, as well as their capacity to deal with threats and disruptions.

The *Systemic Risk Handbook* outlines thirteen principles to help policy makers and practitioners with the adoption of systemic risk approaches.

1. Embrace uncertainty
2. Think globally, act locally
3. Place based systemic resilience and sustainable outcomes
4. Establish long term sustainability goals
5. Reposition current and emerging leadership
6. Fit governance to the characteristics of the decision context
7. Foster networked systemic risk cultures
8. Decision-making transparency
9. Decision making as an active learning process
10. Reevaluate purpose and priorities
11. Take a systems approach
12. Recognise values, social justice, and vulnerability
13. Provide equitable access to risk knowledge.[89]

Using these principles goes beyond hazard-by-hazard approaches to assessing risk. They guide leaders and decision makers from all sectors to adopt a mindset focused on systemic risks, to know why that is important to disaster risk reduction and resilience, and how to apply that thinking to their work. Moving to a systemic approach will help anticipate these underlying factors and help people navigate through an increasingly uncertain and complex world, so they can, as the *Agenda for Sustainable Development* outlines, enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.[90]

Appendix: Recovery media releases

The following are a range of media releases from the Minister for Emergency Management, Senator the Hon Murray Watt, with relevant state or territory Ministers that demonstrate the nature of recovery:

- 17 September 2022 New funding helps tourism build back better
- 9 December 2022 $22 million for flood-affected primary industries supply chain
- 3 January 2023 Funding to repair Queensland's disaster-impacted heritage-listed places.
- 10 February 2023 Local economic recovery powers ahead in bushfire-affected Victoria
- 18 January 2023 $70 million for flood-damaged community assets in NSW
- 2 March 2023 Over $7 million to rebuild flood damaged arts and cultural infrastructure
- 2 March 2023 $44 million to repair flood-affected First Nations community assets in NSW
- 9 March 2023 $5.5 million for flood impacted supply chains
- 3 May 2023 Flood funding grants to boost community-led recovery and resilience projects (homeaffairs.gov.au)
- 18 May 2023 Funding boost for flood-affected business groups
- 31 May 2023 New crossing coming for Far North Queensland's Mitchell River
- 17 June 2023 Mental health and wellness support for flood-affected Queensland small business (homeaffairs.gov.au)
- 18 June 2023 More homes to be purchased under Voluntary Home Buy-Back scheme (homeaffairs.gov.au) More time for extraordinary disaster assistance grants (homeaffairs.gov.au)
- 30 June 2023 Nearly $1.8 billion relief for disaster-impacted councils

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