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A NATIONAL STRATEGY FOR JUST ADAPTATION

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ACKNOWLEDGEMENT OF COUNTRY

FUTURE EARTH AUSTRALIA ACKNOWLEDGES AND PAYS RESPECTS TO ALL ABORIGINAL AND TORRES STRAIT ISLANDER FIRST NATIONS, TRADITIONAL OWNERS OF THE COUNTRY ON WHICH WE ALL RESIDE, AND WHO HOLD ENDURING CONNECTIONS TO LAND, WATERS, SEAS, AND CULTURE. WE ALSO ACKNOWLEDGE AND PAY OUR RESPECTS TO ELDERS PAST AND PRESENT THROUGHOUT AUSTRALIA, WHO HOLD THE MEMORIES, TRADITIONS, CULTURES, AND HOPES OF THE INDIGENOUS PEOPLES OF AUSTRALIA. WE CELEBRATE THE WORLD'S OLDEST CONTINUOUS CULTURE AND THE ONGOING CONTRIBUTIONS TO AUSTRALIAN LIFE, IDENTITY, AND CULTURE.

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FOREWORD FROM THE CO-CHAIRS

SCOPE AND PURPOSE

Future Earth Australia, based at the Australian Academy of Science, and its members have undertaken a Reimagining Climate Adaptation initiative – a state-by-state consultation in October 2020, followed by convening *the Reimagining Climate Adaptation Summit* in April 2021. *A National Strategy for Just Adaptation* is the natural next step in contributing to the policy discussion by bringing Indigenous and other relevant knowledges, adaptation science, the social sciences, and the humanities together to reshape the national adaptation and resilience agenda.

This *National Strategy for Just Adaptation* (the Strategy) aims to broaden and rescope the way adaptation policy, planning, and action are framed. It purposely poses itself as a counter-narrative to previously developed strategies; moving from a focus on strictly technical elements to encompassing social, political, and behavioural strategies and systems change. It then means using these to address multiple and intersecting injustices and enhance adaptive capacities of people, places, and ecosystems in all their diversities while learning from and integrating the ancestral and ongoing adaptive practices and knowledges of Indigenous Peoples.

The Strategy builds on existing work in Australia and internationally and provides pathways and future directions. We distinguish this Strategy from others by foregrounding the roles of everyday inequities, uneven capacities, and unequal representation in climate change adaptation. This Strategy understands adaptation as not merely as an adjustment to climatic hazards and climate-related policies but as an urgent effort to address and overcome inequities that are all too often couched in the seemingly benevolent language of 'vulnerable peoples'. It is precisely this discourse or labelling of 'the vulnerable' that obscures the structural inequities that produce vulnerabilities and maintain the uneven distribution of adaptive capacities in society. Importantly, we identify how structural and intersecting inequalities affect various individuals and groups who experience disadvantage and marginalisation in Australia while paying particular attention to the place of Indigenous Peoples as distinct groups who possess unique social, cultural, economic, political, and legal rights.

The Strategy aims to create a blueprint for how decision makers, local, state, and federal governments, community leaders, Indigenous community and cultural organisations, non-government organisations, advocacy groups, and political leaders from across the spectrum can embed a justice framework in their climate change work. Doing so will enable them to better develop adaptation strategies that prepare, benefit, and build the adaptive capacities of all Australians. We argue that this will enable Australia to improve the ability to adapt to current and forthcoming change, to the benefit of all. We seek to embed Indigenous notions of connection, kinship, and love of Country. We position adaptation as an everyday undertaking that encompasses care and respect for those often excluded and silenced, emboldening them to be active agents. Together, we generate a collective commitment for more just and equitable living.

A National Strategy for Just Adaptation has been developed by a team of experts in climate adaptation, with wide-ranging skills, cultural knowledge, and qualifications, drawing on over 35 experts, from 13 university, government, and private partners in a truly transdisciplinary collaboration. Everyone has learned immensely in the process, through sharing knowledge and by practising what true just adaptation means. We thank our Expert Working Group (EWG), and everyone who has contributed thought, time, words, and effort along the way.

Although the Strategy speaks to an international imperative to adapt to the intensifying impacts of climate change and to address structural inequalities, there is a unique opportunity to develop a distinctly *Australian* adaptation strategy, grounded in the geographies and histories of these ancient lands. In our deliberations we have partially lived some of the uncovering of invisible pasts and privileges that the Strategy argues for. At the same time, we acknowledge that the process has not engaged sufficiently with other stakeholders who have lived experiences of systemic inequities that a truly just approach should address. We hope it represents at least a major step in the right direction in these regards.

We are proud to deliver this Strategy as part of the Future Earth Australia's Reimagining Climate Adaptation initiative. We offer it as a strategic tool that can be called upon by all those who seek to foster adaptation and create a more just and sustainable future.

Bhiamie Williamson, **Dr. Petra Tschakert,** **Dr. Mark Stafford-Smith**

TJORITJA, NORTHERN TERRITORY
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

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EXECUTIVE SUMMARY

Following the 2021 *Reimagining Climate Adaptation Summit*, Future Earth Australia convened an Expert Working Group (EWG) to identify the achievements and shortcomings in conventional approaches to climate change adaptation. This EWG recognises that conventional approaches have often failed to identify and address underlying factors that continue to marginalise groups such as Indigenous Peoples, non-white and non-english speaking communities, the elderly or youth, people with disabilities, people experiencing homelessness, women, as well as many others.

These groups, often framed through the lens of 'vulnerability', experience multiple and intersecting inequalities which undermines their capacities to adapt and secure their livelihoods and futures. *A National Strategy for Just Adaptation* has been developed to respond to these concerns and to offer pathways forward to usher in a new wave of adaptation thinking and practice. A central component in this new approach is recognising and including the voices, experiences, and ambitions of the many people who make up Australia's society today, with special emphasis on Indigenous Peoples. Ignoring the diversity of our country's residents, including their needs, aspirations, and capabilities, weakens Australia's collective ability to adapt.

Indigenous Peoples have extensive histories of climate change adaptation on the Australian continent. While these knowledges of climate change and human adaptation are several thousand years old, they are also contemporary and new. Colonisation has fundamentally reconfigured Indigenous societies, with groups continuing to adapt in response. These two features – ancient knowledges and modern practices of adaptation – are strategic assets for a nation seeking solutions to the complex and interconnected challenges presented by climate change. Yet, calls to include Indigenous knowledges to improve adaptive capacities must be met with an equal, if not greater desire, to address extensive injustices experienced by Indigenous Peoples. We have attempted to identify and elevate these calls in this Strategy while recognising that much more needs to be done to empower Indigenous leadership and create spaces for deep listening to Indigenous knowledges by non-Indigenous Australians.

In addition, Australia is home to an array of diverse communities and stakeholders who experience marginalisation, discrimination, neglect, and other structural disadvantages that can worsen climate change impacts and obstruct successful climate change adaptation. Often "othered" by prevailing colonial and normative lenses, these groups include, but are not limited to, people of colour, distinct cultural or linguistic groups, newly arrived migrants and refugees, low-income citizens, rural and remote communities, people experiencing homelessness, children and elderly Peoples, people with a pre-existing health condition or a disability, and gendered roles and experiences among them. Although it is often presumed that the next generation will have a greater ability to adapt to future challenges, children born in 2020 will likely experience two - to sevenfold more extreme events than previous generations, potentially exceeding what adaptation can manage.

Climate change adaptation must be a process that nurtures the inclusion of diverse groups, particularly those who are disadvantaged or without political power in major political, legal, and economic institutions. By ensuring that many more people become active participants in adaptation planning and processes, the voices, experiences, and desires of marginalised groups — those with structurally less capacity to adapt — are embedded more visibly and

meaningfully in adaptation responses. In this way, adaptation policies and practices are likely to be more successful as they recognise the diverse types of knowledge, needs, capabilities, aspirations, as well as obstacles and thereby begin to rectify systems of injustice and marginalisation.

To usher in this new wave of thinking and doing in climate change adaptation, we identify five Building Blocks that together support transformational change and address injustices:

- Practicing recognition of all Peoples and their Knowledge
- Fostering Inclusion of Communities Experiencing Marginalisation
- Addressing Ongoing Injustices
- Overcoming Barriers and Acknowledging Limits
- Transforming for Just Adaptation

This approach offers all of us – Indigenous and non-Indigenous persons, civic society, communities across Australia communities, private sector interests, and from national to state and territory to local government – a framework to embed justice thinking into adaptation planning.

Based on an in-depth exploration of the insights under each of the Building Blocks, the EWG has identified five Priority Reform Areas:

- Empowering Indigenous leadership
- Embedding a just adaptation framework across governments and sectors
- Including the voices and experiences of diverse stakeholders across areas of marginalisation into just adaptation processes
- Supporting communities and community groups to drive transformation
- Advancing research agendas that promote just adaptation

Each of these Priority Reform Areas includes recommendations that offer practical directions for achieving transformational change in Australia's climate adaptation planning and practice.

The EWG recognises that achieving action on these issues of injustice necessarily runs counter to power dynamics, business-as-usual ways of doing things, and vested interests in society today. However, there is good evidence that achieving more just outcomes in the long run reduces the costs of adaptation to government and delivers many co-benefits relating to a happier and healthier society. Hence, whilst some of the recommendations are aspirational, others are practical steps that will help to create an Australian society that is better equipped to strive for greater justice and equity in climate change adaptation and beyond.

A National Strategy for Just Adaptation provides a foundation for action to transform our thinking and practice and to strive for a more sustainable and more equitable future for all.

PRIORITY REFORM AREAS AND RECOMMENDATIONS

These Priority Reform Areas consolidate the key messages from the five Building Blocks and provide recommendations to embed justice into climate adaptation. Actions range from principles to the practical, and all are required to create the transformational change that is needed. Myriad co-benefits for people, communities, society, and the planet would undoubtedly flow from implementation of these recommendations.

1. EMPOWERING INDIGENOUS LEADERSHIP

A foundational need and opportunity for just adaptation in Australia is to recognise, support, and learn from the unique experiences and knowledges of Indigenous Peoples. This requires:

- **1.1** Deep listening to and embedding of Indigenous Peoples' knowledges.
- **1.2** Promotion of Indigenous Peoples' rights to Country, including resources, livelihoods, and lifeways.
- **1.3** Promotion of Indigenous voices in all levels of government.
- **1.4** Development of a national Indigenous-led climate change mitigation and adaptation strategy.
- **1.5** Support for Indigenous Caring for Country programs, including for strengthened capabilities of Indigenous rangers to include specific adaptation actions and projects in their work.
- **1.6** Development of Indigenous-led and inter-cultural collaborative approaches to adaptation that deliver more just outcomes.

PRIORITY REFORM AREA 2

2. EMBEDDING A JUST ADAPTATION FRAMEWORK ACROSS GOVERNMENTS AND SECTORS

Changes to conventional approaches to adaptation are needed at all levels in government, sectoral bodies, industry, community organisations, and in research. This entails disposing of unhelpful understandings of 'vulnerability' and recognising instead that adaptation challenges are driven and perpetuated by structures in society that produce disadvantage. This requires:

2.1 Formal and widespread recognition that vulnerability to climate change arises from social, political, legal, and economic systems and processes, which create intersecting disadvantages that systematically prevent people from adapting or drive people toward maladaptation.

2.2 Purposeful review, reform, and coordination of policies, regulations and practices relevant to adaptation at all levels of government, to address structural injustices and to invest in the cultural capabilities to support the self-determined adaptation priorities of all Peoples.

2.3 Mobilisation of significant resources, including knowledge, guidance, practices, and funding, for local governments to support adaptation to climate change by their communities and regions, with a focus on justice for all people who experience disadvantage in our society, and including Indigenous organisations that have local government responsibilities.

2.4 Integration of justice into infrastructure and urban design processes, project option development, assessment, and implementation.

2.5 Assessments of sectoral and place-based barriers and limits across diverse social actors, within, between, and across bottom-up community engagements to national and global sectoral interactions, with attention to hidden linkages and distributional inequities.

3. INCLUDING THE VOICES AND EXPERIENCES OF DIVERSE STAKEHOLDERS ACROSS AREAS OF MARGINALISATION IN JUST ADAPTATION PROCESSES

Recognition and inclusion must lie at the core of just adaptation to effectively counter injustices. Yet, existing power structures and vested interests will constrain such inclusion unless diverse groups, supported by public, private, and community resources, grow their capabilities to become actively involved in decision-making. This requires:

3.1 Concerted efforts to invite and embolden diverse and often excluded stakeholders to contribute their place-based knowledges, lived experiences, and leadership to participate as equals in just adaptation processes and shape decision-making about adaptive responses and pathways that they consider worthwhile, just, and liveable.

3.2 Support for enablers of just adaptation, to overcome known barriers, ethically manage losses and limits to adaptation, ensure forward-looking and dynamic decision making, and creatively address differential climate risk.

3.3 Development of accessible communication of tools and processes for more inclusive and empowered engagement of diverse stakeholders in adaptive decision-making at all levels.

3.4 Mandatory inclusion of diverse stakeholders in policy debates and decision-making across all levels of government and non-government bodies to ensure the potential for more just processes, rules, and outcomes.

3.5 Development of appropriate people or place-based approaches and guidelines to assist policy makers and local community leaders to embed a just adaptation framework in their work and assist their communities.

PRIORITY REFORM AREA 4

4. SUPPORTING COMMUNITIES AND COMMUNITY GROUPS TO DRIVE TRANSFORMATION

Local communities and community groups must be given agency and trust to create their own relevant pathways in just adaptation. This requires:

4.1 An inventory of empowered practices that diverse communities already use and wish to expand, with particular attention to inclusive, deliberative, and just methods, tools, and methodologies that value recognition, equity, solidarity, responsibility, repair, regeneration, and an ethics of care.

4.2 Monitoring criteria or indicators of effective and just adaptation toward transformation, co-designed and implemented with affected communities, including identifying the conditions needed to achieve transformative goals and a close tracking of the capabilities that need to be strengthened along adaptation trajectories.

4.3 Support for collaborative networks, approaches, and actions for community leaders, policy makers, and practitioners to share progress toward just adaptation, supported by legislation that treats equity and ethics in tandem with efficiency.

4.4 Equitable financing and flexible, innovative longer-term funding mechanisms to sustain the longevity of capability-building programs that amplify the voices of communities and community groups.

4.5 Strengthening community leadership, connections, and political capabilities to contribute toward enabling a substantial and deep transformation of current modes of adaptation planning and implementation to redress persistent marginalisation while fostering imagination, deliberation, and care towards current and future generations of human and non-human populations in Australia.

PRIORITY REFORM AREA 5

5. ADVANCE RESEARCH AGENDAS THAT PROMOTE JUST ADAPTATION

Decision-makers need support from the research community and other sources of knowledge to foster cross- and trans-disciplinary innovative methods. Such methods will create necessary data to demonstrate the benefits of more just approaches; provide tools and approaches to identify drivers of disadvantage, and support just and transformative outcomes for future generations and our planet. This requires:

5.1 Design of collaborative research agendas that support just adaptation across disciplines, identifying barriers that prevent just adaptation, structural factors that perpetuate disadvantage, leverage points for effective intervention, metrics of successful just adaptation, and policy-relevant evidence for the value of just interventions in different contexts.

5.2 Indigenous-led research, including methodologies, and collaborative inter-cultural programs and projects that facilitate co-learning and an equitable co-production of knowledge for transforming adaptation practices.

5.3 Supporting co-designed nature-based adaptation studies to both restore degraded landscapes and promote positive health outcomes while building a greater public understanding of the interconnectedness and co-dependence of humans and nature.

5.4 Creation of participatory, experimental, and experiential adaptation pathways that align with diverse values across generations, address uncertainty, and enable many more Australians to envision and shape their own adaptation trajectories, particularly those populations hitherto largely excluded in decision-making processes.

5.5 Establishment of a national clearing house for sharing knowledge, practices, and lessons learned, including information on vulnerability (who is vulnerable, why, where, when, and how) and guidance on how to overcome barriers and undertake effective and just action and with whom, potentially following the model of the National Climate Change Adaptation Research Facility (NCCARF).

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DARK SKIES FESTIVAL, ALICE SPRINGS
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1. INTRODUCTION TO JUST ADAPTATION

No one is invulnerable to the impacts of climate change.

Climate change must first and foremost be slowed through rapid decarbonisation, but many impacts remain that must be adapted to now and in the future. Impacts from climate change and climate-driven disasters, together with exposure and systemic vulnerabilities, increase risk for all Australians, including their economic, health, and livelihood security. More intense and frequent bushfires, more severe heat waves and prolonged droughts, rising sea levels that threaten coastal and island communities, more intense cyclones throughout northern Australia, and increased and more devastating storms and flooding further heighten risk (Lawrence et al. 2022). While all Australians face the risk of harm, the risk is higher for groups who experience structural disadvantages and marginalisation due to oppressive systems such as colonialism, racism, sexism, classism, ageism, ableism, and homophobia. Hierarchies of privilege exist in our society that dictate who has access to basic services, home ownership, employment opportunities, adaptation planning, and climate services, to name a few. People who experience intersecting inequalities typically do so along the lines of age, gender, class, (dis)ability, race, ethnicity, location, and sexuality. They coincide with experiences of exclusion and misrecognition.

Groups of people most affected by climate change in Australia include (but are not limited to) Indigenous Peoples, women, LGBTQIA+ Peoples, people of colour and non-english speaking groups, newly-arrived migrants and refugees, low income Peoples, rural and remote communities, people experiencing homelessness, children and elderly Peoples, incarcerated Peoples, people with a pre-existing health condition or a disability, and frontline workers and emergency responders (see, for example, Weeramanthri et al. 2020).

Within these contexts of power, privilege, and opportunity, Indigenous Peoples experience distinct challenges. In Australia, as in other colonised nations, Indigenous Peoples continue to occupy a unique place in society and possess unique rights. Indigenous People's jurisdictions pre-date European arrival and continue to exist in tension with the nation-state. Courts and parliaments are finding ways to navigate these co-located jurisdictions, for instance, the creation of laws and policies to protect Indigenous Peoples' cultural, legal, and heritage rights to land, culture, language, resources, and political organisation. These laws and policies compel substantial engagement with Indigenous Peoples in adaptation processes, and so too does interest in Indigenous Peoples' ancient and contemporary adaptation practices.

Indigenous Peoples continue to possess an astounding database of climate change events and ongoing traditions of adaptive responses that are land- and community-centred. Recognising and engaging with these histories and their expression in the present reveals that Australia has a deep tradition of human adaptation where groups of people have responded to meet the challenges of climate change in ways that have enriched their societies and safeguarded their futures.

The world is seeking to limit global warming to 1.5°C above pre-industrial levels to mitigate the most extreme impacts of climate change. Yet, temperatures continue to increase, and impacts from climate change are already widespread, triggering irreversible losses in landscapes and endemic species. Even if all parties to the United Nations Framework Convention on Climate Change (UNFCCC) meet a net zero emission target by 2050, the current negative impacts of climate change around the world will continue to amplify (IPCC AR6 WGI; UNEP Emissions Gap Report).

Ultimately, climate change and the disasters that occur due to governmental failures to protect people, ecosystems, and places, represent a grave threat to human health and wellbeing, and all life on the planet.

1.1 A RENEWED IMPERATIVE

Following Australia's catastrophic bushfires in 2019-20 and the severe floods in 2021 and 2022, there has been a shift both internationally and in Australia in language around the need for preparation, adaptation, and resilience. Until then, much of the understanding and usage of 'adaptation' had come from risk management and disaster preparedness. It focused largely on the need to "build back better", particularly in certain sectors of the economy, such as physical infrastructure, and technical and planning responses, such as retrofitting buildings with more heat-resistant material and developing drought-resistant crops. However, these conventional models of adaptation, which are built mainly around protecting sectors, driving investment, and improving communication, are insufficient to meet the civilizational change that needs to occur to respond and adapt to growing and urgent challenges posed by a changing climate (Mortreux & Barnett 2017).

We now know that such approaches are partial, leave gaps, and exacerbate inequities. The recent COVID-19 crisis has made many of these social inequities visible, leading to calls to deliver more just and fair responses across the various sectors and levels of society that shape our daily lives. Thus, in the face of successive, simultaneous, and cascading hazards that climate change is already producing, the first adaptation that is needed is in how we understand adaptation itself.

Traditionally, adaptation to climate change has been understood as "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities" (IPCC 2018, AR5 glossary). Yet, adaptation must be more than simply an incremental adjustment to external climatic drivers and climate-related policies. Links that exist between human development, climate change, and biodiversity loss, for example, are critical. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) remains one of the only internationally coordinated platforms to highlight these interconnections and elevate the need for multi-disciplinary teams working across landscapes, countries, and cultures (IPBES, 2019).

This Strategy continues the work of organisations such as the IPBES and other progressive adaptation scholarship to offer a different way to think about adaptation, highlighting everyday practices that produce inequities, uneven capacities, unequal representation, and misrecognition in terms of whose adaptive knowledge and experiences count. Such a shift in thinking is needed because business-as-usual adaptation continues to fail those with the least capacity and decision-making power. For instance, rather than being sector-driven or relating to physical infrastructure, more than 80% of adaptation responses undertaken worldwide occur at the individual and household level, and the large majority (75%) are behavioural in nature (Berrang-Ford et al. 2021). Seen from the perspective of the thousands of urban and rural Australians who are already experiencing adverse impacts and harm from climate change, adaptation is first and foremost an effort to protect what matters most to us.

A novel approach to adaptation, as adopted in this Strategy, requires that more attention is paid to what people do when dealing with climate change, when and why they fail, and how they learn, experiment, make trade-offs, and anticipate what is yet to come. This Strategy shows the many activities already under way, as well as the very real barriers and limits encountered. The various case studies throughout this Strategy shine light on achievements and obstacles.

1.2 CHALLENGING DISCOURSES

Throughout this Strategy, we seek to both engage with and challenge the language of 'vulnerable Peoples'. We do so by drawing attention to uneven capacities, power dynamics, and persistent inequalities and inequities that may allow privileged members of society to adapt more successfully than those who have been historically disadvantaged (see *Urban inequities*). Vulnerabilities — predispositions or propensities to experience harm (IPCC 2014, AR5) — need to be acknowledged and responded to with care. Vulnerable groups do exist in society, most notably in marginalised social groups who often struggle to secure housing, food, energy, and other daily needs and who do not have sufficient capacities to protect themselves against extreme climatic events. But these characteristics are created and upheld by systems of oppression and marginalisation – which have produced and continue to sustain inequality. In other words, people are not born vulnerable. Some systems of oppression and marginalisation include neoliberal capitalism, ongoing colonialism, and patriarchy. Importantly, vulnerability is dynamic, although often assessed at a snapshot in time; it can shift from season to season or tip over quickly from adaptability and resilience into states of severe harm after a series of cumulative events (Ford et al. 2018).

BEACHES EROSION
PHOTO CREDIT: JAMES GOURLEY

URBAN INEQUITIES

Urban settlements are a focal point for processes that drive spatial disadvantages (Pawson et al., 2015; Wiesel et al., 2018; Pineda-Pinto et al., 2021), which are increasingly made visible by climate impacts. Existing intersecting inequities in urban places are exacerbated by the directs impacts of extreme events on communities, particularly heatwaves and intense rainfall events leading to flooding, and by indirect effects such as rising food prices when agricultural supply zones are damaged (Carey et al. 2022). The existing intersecting disadvantages undermine adaptive capacities and actions. For example, people with disabilities and carers are less likely than others to be systematically included in community-level disaster preparedness although they are more likely to have their home flooded, be evacuated, and experience lengthy displacement (Matthews et al. 2019). Low-cost housing is typically built where land prices are low, commonly on flood plains; and low-income households may not be insured as insurance premiums rise and may lack the financial resources to recover if their houses are flooded. Economic tensions around housing and climate change adaptation can be particularly difficult for low-income and single-parent households (often headed by women) (Sevoyan et al. 2013) and people with disabilities and their carers (Walker & Mason 2015). Current market responses by insurers do, in fact, reflect underlying structural risks that are not being managed, such as the failure of successive governments to invest in public housing in Australia. The resulting substantial shortfall forces low-income households into poor quality housing, often in overcrowded private rentals that are in poor condition, which further exacerbates risk from climate extremes.

Disadvantage is complex and shaped by intersecting conditions and crises. People who are made disadvantaged in one area often encounter disadvantage in others, so that disadvantage becomes corrosive (Lukasiewicz & O'Donnell 2022). The converging crises of climate change, inequality, public health, and housing, along with ongoing political exclusions, illustrate this complexity and corrosion. Despite disadvantage, there is evidence of considerable strength and resilience in many minority or disenfranchised communities such as refugees, survivors of family and domestic violence, as well as Indigenous Peoples' unique experiences with colonisation. Hence, the call for

Just adaptation compels us to both recognise and correct the many layers of entrenched disadvantage while building upon the strengths intrinsic to these same communities.

This approach is informed by decades of experience and work in environmental and climate justice (Lukasiewicz & Baldwin 2020; Lukasiewicz et al. 2017).

The approach developed in this Strategy acknowledges that people do not exist in isolation of the environments they inhabit. The voices of Indigenous Peoples who have long called for a reckoning in the way that people exist on, and situate themselves within, Country are elevated. This small Indigenisation of how all people can orient themselves in the world is long overdue, obliging us to reconsider our individual and collective relationships with and responsibilities towards the natural world and all its living beings.

With this, much more can be learned when engaging with Indigenous philosophies of interconnection and existence, and the histories of diverse Indigenous Peoples who have observed, adapted, and thrived through climate change. Although we underscore the ancient knowledges of adaptation held by Indigenous Peoples who had lived through major ecological change at the end of the last ice age, we simultaneously bear witness to the modern realities of Indigenous Peoples who have endured catastrophic change because of colonisation and ongoing settler-colonialism. The impacts of colonisation and the unique injustices it produces presents Indigenous communities with a permanent state of unfolding or cascading disasters (Howitt et al., 2011). This has consequences for successful climate adaptation and modern adaptive practices in our wider society.

At the same time, the permanent state of unfolding disaster has cultivated highly resilient Indigenous communities; resilient through shared close social bonds, strong community governance institutions, and deep attachments to the land and each other. Close attention to and learning from Indigenous Peoples allows us to situate this Strategy within a contemporary political, legal, and cultural landscape, drawing on diverse political, legal, and cultural traditions. Yet, such collective work must be built on respect. The EWG are careful not to position Indigenous Peoples and their knowledges as a resource to be mined to support systems that continue to disempower Indigenous Peoples, or to continue damaging Country. Rather, the Strategy is placed within a larger call to safeguard the rights of Indigenous Peoples, promote Indigenous Peoples' self-determination, and create more just terms between Indigenous communities and all other Australians.

This unique opportunity allows us to build on efforts by the growing number of Indigenous and non-Indigenous scholars who critically examine structures and institutions that discriminate and how to work otherwise. Such work has commonalities with supporting minority groups and disadvantaged members of society, whilst also being distinctly different. Considered engagement and care is required, which is why people, in all their diversities, need greater prioritisation in adaptation work.

1.3 SEIZING OPPORTUNITIES

Just adaptation in the context of a multicultural Australia with a plurality of Indigenous and non-Indigenous groups, requires surmounting structural barriers (*See: Agricultural and rural communities*). It also requires identifying inclusive ways to overcome, not avoid, unfair processes that continue to harm

millions and that make many adaptation actions and policies unjust. Explicitly, this Strategy positions adaptation as requiring a committed focus on justice and the sustained energies of individuals and institutions. Just adaptation is an everyday practice, not only just policies. It is operationalised through daily choices and enacted at multiple, interconnected levels, from individual, family, community, to society as a whole. The 'decolonisation' of colonial and other oppressive structures and institutions also seeks to address injustices, for instance those present in the management of Australia's land-, water-, and sea-scapes. They also offer approaches to making the interests of non-human life visible and valued.

This shift in perspective echoes international developments such as the connections drawn between people, climate, and biodiversity highlighted through IPBES (2019) and those between Indigenous Peoples and the Sustainable Development Goals (UN, Department of Economic and Social Affairs, 2021). The recently-released IPCC AR6 Working Group II report recognises a growing focus on justice, institutionalised disadvantage, and the need to transform the values and structures that underlie these issues in the research literature.

FARMER TENDING TO HIS CROPS ON THE FARM
PHOTO CREDIT: ISTOCKPHOTO

AGRICULTURAL AND RURAL COMMUNITIES

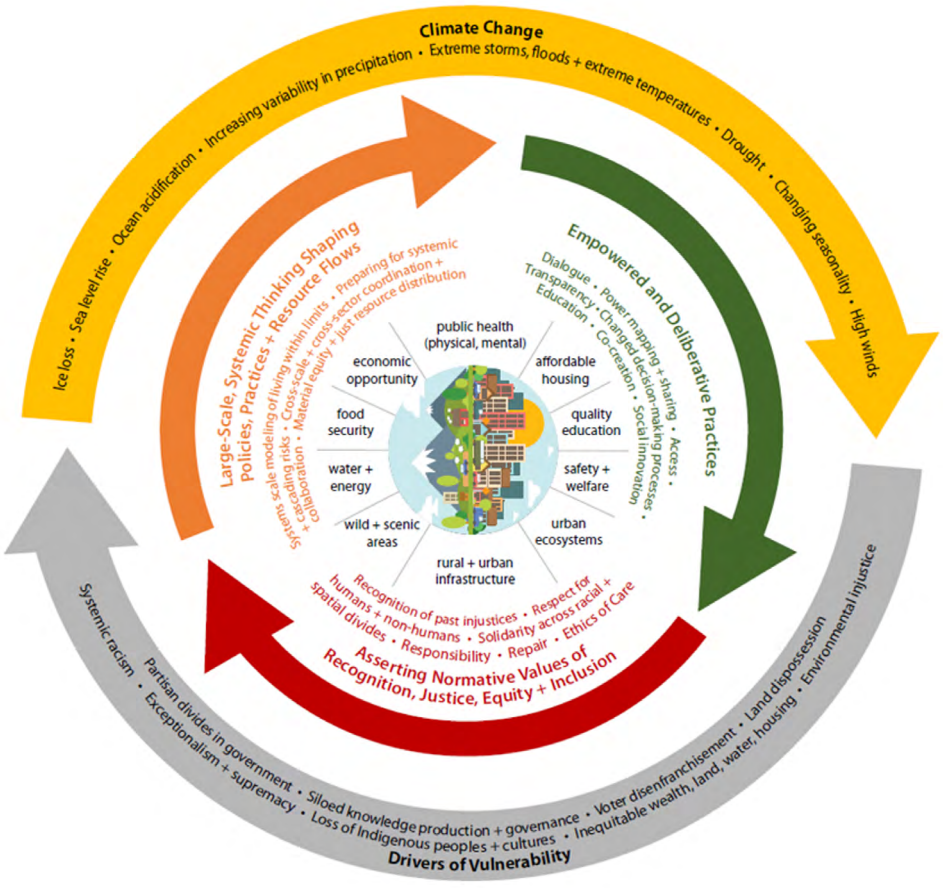
Farm incomes are projected to decline by as much as 50% by 2050 under a high emissions scenario, with considerable differences between regions and commodities (Hughes and Gooday, 2021). Adaptation in agriculture conventionally calls for new technologies and markets. Yet, it also needs to consider governance aspects (Vermeulen et al., 2018) and a social licence to operate, to avoid practices that are seen to be unjust, provide fair and safe conditions for its workforce, and find equitable solutions to competition over resources such as water that do not aggravate injustices among land managers. Achieving just adaptation will require overcoming diverse but interconnected barriers in rural communities such as declining institutional and community capacity, unavailability or prohibitively high costs of insurance, and policy approaches that perpetuate or even worsen exposure to climate hazards.

Just adaptation involves identifying and redressing gendered, racial, and economic injustices (and others) in agricultural and rural communities that are exacerbated by climate change. For example, droughts in Australia have exposed and worsened mental health issues, with evidence of increased substance use, depression, anxiety, and suicide for male farmers, and stress, anxiety, depression, post-natal depression, and grief for female farmers (Alston 2011). Simultaneously, rural communities are experiencing a decline in social services, including mental health support. Agricultural policies must recognise and address the varied experiences of ecological grief in rural contexts (Cunsolo & Ellis 2018).

No-one would knowingly argue for an unjust approach to adaptation, and many national and state-based adaptation strategies infer outcomes that are equally shared between populations. However, these approaches often fail to identify how to generate meaningful adaptation practices. Australia's National Climate Resilience and Adaptation Strategy, for example, articulates an underlying principle of assisting the vulnerable; at the same time, it describes vulnerability in terms of the characteristics of people or as impacts of climate change. As such, it overlooks structural causes of injustices in our society, such as colonialism, patriarchy, and economic rationalism, that cause and sustain vulnerabilities.

The goal of this Strategy is to offer recommendations, propose pathways, and provide helpful tools that assist all those working in the space of climate change adaptation to embed their thinking and actions more explicitly within a justice frame. Once we understand just adaptation as an iterative and cyclical process that actively engages people in all their diversities rather than a once-off action, or linear and incremental adjustments in sectors, we are better equipped to adopt a much more reflexive mode of going about it. This reframing of adaptation allows us to move toward just and transformative adaptation as envisioned in most recent scientific debates (see Figure 1).

In this Strategy, Indigenous and non-Indigenous expertise is brought together from across the academy, scholars and practitioners who collectively try to imagine a future reality beyond our experiences in which change is inevitable. Many of the authors of this Strategy are non-Indigenous people, working in non-Indigenous institutions, and this group is only at the beginning of appreciating the consequential reach of Indigenous Peoples' ways of knowing, care, love, respect, and responsibility for Country and all the beings connected within, including non-Indigenous Australians.



Transformative adaptation needs to respond to the magnitude of climate risks (yellow arrow) by addressing root drivers of vulnerability (gray arrow). Large-scale, systemic thinking is necessary to coordinate adaptation across scales, sectors, and hazards (orange arrow). Such societal mobilization requires both deep deliberation across silos (green arrow) and an assertion of normative values of justice and equity (red arrow) so that large-scale actions do not repeat racist, inequitable, and unsustainable outcomes. Transformative thinking at all three levels (material, relational, and mindset) is needed in all areas that shape societal well-being and across urban-rural landscapes. [Original graphic by the authors]

Figure 1: A framework for just and transformative adaptation (Source: By the authors,after Shi & Moser 2021).

QUEEN VICTORIA MARKET ORGANICS IN THE CITY OF MELBOURNE
PHOTO CREDIT: ISTOCKPHOTO

FOOD IN AUSTRALIA

Although Australia produces more than enough food to meet its domestic needs, our country is far from food secure. Access to enough food of sufficient nutritional quality remains a significant challenge for many Australians such as people who are homeless, the elderly, single parents, or parents on low incomes (Bowden, 2020). It is estimated that between 4-13% of the general population, and 22-32% of the Indigenous population, are food insecure. Primary barriers to food security include material hardship, inadequate financial resources, access issues, and limited food literacy. For example, during and after extreme climate events, pregnant women are known to have reduced access to nutritious food (Parkinson et al. 2015) while environmental and climatic changes have been affecting Indigenous Peoples' access to traditional food harvesting and networks (Leonard et al. 2013). Furthermore, low-income households may go without food to pay for high energy bills to cope with extreme heat or cold (Chester 2013). As climate impacts alter agricultural productivity both domestically and globally, food prices are likely to rise, as has been seen with recent extreme weather events. If productivity decreases substantially or in the long-term, none of these barriers can be overcome by simple or individual adaptation responses.

These and additional issues have been considered in the development of the *National Strategy for Just Adaptation*, yet much more needs to be done. Whilst Indigenous leadership was sought to be embedded within the Expert Working Group responsible for developing this Strategy, it is acknowledged that a much more complete and comprehensive process of supporting Indigenous leadership in climate change adaptation is required. Only a united voice of Indigenous leaders can speak with the necessary authority and offer a new wave of conceptualising and governing adaptation in Australia.

Several of the issues highlighted in this Strategy, such as addressing structural inequalities, may seem superficially controversial to some readers. Nonetheless addressing these issues can be deeply uncomfortable as people's perspectives, practices, and behaviours are challenged. This was experienced first-hand as a diverse group of academics and advocates while preparing this Strategy. Despite our diversity of experiences and disciplinary backgrounds, the urgency of the task was recognised by all. This Strategy is an invitation to journey with us as we seek an adaptive response from all levels of society in a way that fosters equity and intergenerational justice.

SOME APPROACHES TO JUSTICE IN EXISTING ADAPTATION STRATEGIES

Australia's National Climate Resilience and Adaptation Strategy 2021-2025 articulates an underlying principle of assisting vulnerable Peoples (p.13) and asserts (p.43) the intent "to improve equality and fairness for vulnerable communities". However, it employs vulnerability only to classify groups by geography, culture, age, gender, diversity, disability and other socioeconomic status (p.43) and understands vulnerabilities only in reference to climate impacts (p.21). The Strategy misses an important opportunity to identify and surmount structural drivers of vulnerability and oppression that are the cause of injustice and uneven adaptive capacities in our society.

The NSW Adaptation Strategy released in 2022 specifically mentions integration of Aboriginal knowledge systems into decision-making, dedication to discovery of Aboriginal priorities and risks, and enabling Aboriginal adaptation. It infers intergenerational principles of equity and emphasises the needs of "disadvantaged, vulnerable or sensitive groups and ecosystems.

Queensland's Climate Adaptation Strategy 2017-2030 does not include equity or justice explicitly in its four objectives (p.12) but includes equitable and inclusive responses among its principles (p.16) and building local capacity in vulnerable communities among its actions (p.18).

The Greater Melbourne Regional Climate Change Adaptation Strategy 2021 actively seeks to "empower all Melbourne's diverse communities to participate, innovate and work together to create a more equitable and sustainable city" (p.4) and to "overlay increasing weather extremes onto this complex socio-ecological system" (p.5). It also emphasises "creating a more equitable and sustainable society though climate adaptation" as "'the moral conviction of the Strategy" (p.13).

GULL ON THE LAKE
PHOTO CREDIT: ISTOCKPHOTO

2. BUILDING BLOCKS OF A JUST APPROACH TO ADAPTATION

Just adaptation is an iterative process, not a one-off intervention, that requires careful and committed engagement with everyday inequities and systemic discrimination to support all Australians to move toward just transformations. We offer the following approach (Figure 2) to guide all of us, Indigenous and non-Indigenous, diverse practitioners, and decision makers, from the community to the local, state, and national government levels, to better incorporate justice thinking into our adaptation planning and practice. It entails five core Building Blocks. These ingredients or components, just like the complex world in which we live, are interconnected, with one depending on the other. They are an invitation to relationship building, for us individually and in the daily practice of just adaptation. We present each of these Building Blocks in the five sections below, enriched with case studies from across different ways of knowing, sectors, scales, and meaning.

Figure 2: the five Building Blocks for Just Adaptation

BLACK LIVES MATTER MARCH, SYDNEY TOWN HALL
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

2.1 PRACTICING RECOGNITION OF ALL PEOPLES AND THEIR KNOWLEDGE

Climate mitigation and adaptation policy have historically excluded different minority groups such as Indigenous Peoples, non-white and non-english speaking groups, people with a disability and more, despite climate change affecting these same Peoples in ways that are vastly different and more profound than dominant social groups. The IPCC Sixth Assessment Report: Impacts, Adaptation and Vulnerability (Pörtner et al. 2022) recognises, more clearly than ever, how climate change further increases the many risks and injustices that millions of the most vulnerable people face. Active recognition of these different groups by governments and social, political, and legal institutions such as private sector corporations, courts, and non-government groups, has long been considered core to the definition of environmental and climate justice (Schlosberg 2007; Lukasiewicz & Baldwin 2020; Lukasiewicz et al. 2017). We echo and elevate these calls to ensure that different stakeholders are heard and clearly understood.

A framework for just adaptation requires a shared understanding of several foundational elements. It begins with enhanced strong and actively practiced recognition of Indigenous and local knowledge systems, and simultaneous priorities of understanding the diverse impacts of climate change and the development of just climate adaptation policies.

In Australia, as throughout other parts of the settler-colonial world, Indigenous Peoples' sovereignty has been strained by the increasing effects of global environmental change within their territories, including climate change and pollution, and by threats and impositions against their land and water rights (Redvers et al. 2022). As evidenced by a rising body of literature examining the resilience, vulnerability, risk, and adaptation of Indigenous Peoples to climate change (Norton-Smith et al. 2016), there is a particular urgency for climate adaptation work in Indigenous communities and for this work to be led by Indigenous Peoples and Indigenous experts. This also entails reckoning with colonialism in contemporary adaptation and conservation work,

where governments continue to advance policies that intensify ongoing dispossession of Indigenous Peoples of their lands, waters, skies, and rights. Engagement with both historical and current experiences is key to recognition and thus also just adaptation.

This section proposes *Country, Colonialism, and Communities* as three foundational elements that provide a justice frame to identifying the knowledge bases from which fair and equitable adaptive policies and practices can be enhanced. Here we place climate change within a colonial system that has produced the problem. Concurrently, we offer Indigenous conceptions of Country, together with place-based knowledges of other local communities, as an intellectual basis and practical blueprint to address climate change and foster justice through adaptation.

A. COUNTRY

There is a deep and immediate imperative to embed this Strategy within a cultural, physical, and intellectual framework of Indigenous Peoples – also known as Country.

Indigenous Peoples understand themselves in relation to their Country and have inherited time-deep practices based on communal experiences of Peoples and places forming together. For Indigenous Peoples, Country is not simply a place in the Western sense, but a living entity that possesses memory, emotions, and a will toward life, and is foundational to all and everything (Graham 2008; Rose, 1997). Knowing Country is also more than a knowledge system, as it entails ethics and laws that are also identifiable as societies and territories: Indigenous Peoples and their Indigenous lands (Ali et al. 2021; Kwaymullina 2016.). These are relational understandings of creation (cosmologies) that inform ways of knowing (epistemology), being (ontology), doing (methodology), and ethics/accounting (axiology) (Latulippe and Klenk 2020).

Whilst land has been systematically commodified by Western-colonial cultures, Country is so much more. Country exists as entire systems of lands, waters, soils, plants, animals, and people, all existing and depending on each other in various ways. These are energy and food webs bound together with law, lore, culture, and knowledge. It is from these roots that Indigenous Peoples find themselves in relationship with, looking after, and caring for, Country. This includes caring for the many non-Indigenous people who now live on Country. The distinct difference to much traditional research and higher education work in Australia is that the analytical focus here is on embedded nature-society relationships – whether weak, strong, important, minor, beneficial, toxic and so on — rather than separating what is nature and what is society as distinctly different categories.

DAVID FOSTER
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

Country has two key principles to offer all people to recognise when striving for just adaptation:

- Respect for co-dependent futures with Country, including all other living beings and landscape features such as freshwater sources; and,
- Humility about the role of humans in relation to the extraordinary power and importance of natural forces, without forging the responsibilities humans have with Country as part of life-sustaining reciprocal relationality.

Caring for Country principles are related to the Māori notion of *kaitiakitanga*, or the notions used by Indigenous Peoples in Bolivia and Ecuador of *sumak kawsay*/buen vivir (good living) and *suma qamaña*/ vivir bien (living well). There are many Indigenous cultures across the world, people who are responsible for and to the ecosystems of which they are part. This is global knowledge with global value.

As Australian law and policy recognise Indigenous Peoples' jurisdictions across Australia (see Figure 3), many of us are beginning to understand where we are. This is also expressed in Welcome to and Acknowledgement of Country ceremonies.

Country is now part of the national identity of what it means to be Australian (Bamblett, Myers and Rowse 2019).

The extraordinary changes in land tenure are also having a profound shift on not just how the term 'environment' is understood, but how it is regulated. This includes the need to re-work all the lands acts by asking who the land holders are, their priorities, organisational forms, resources, worldviews, and legal rights and interests (Weir and Duff 2017).

Many Indigenous people describe their tested and testable knowledge systems as Indigenous science (Whyte 2013). This is a use of 'science' in its broad sense: systemic knowledge based on observations of the natural world, steeped in methodologies, as adjudicated by communities of knowledge holders. Indigenous science is valid, true, and an incredibly valuable resource to understanding climate change.

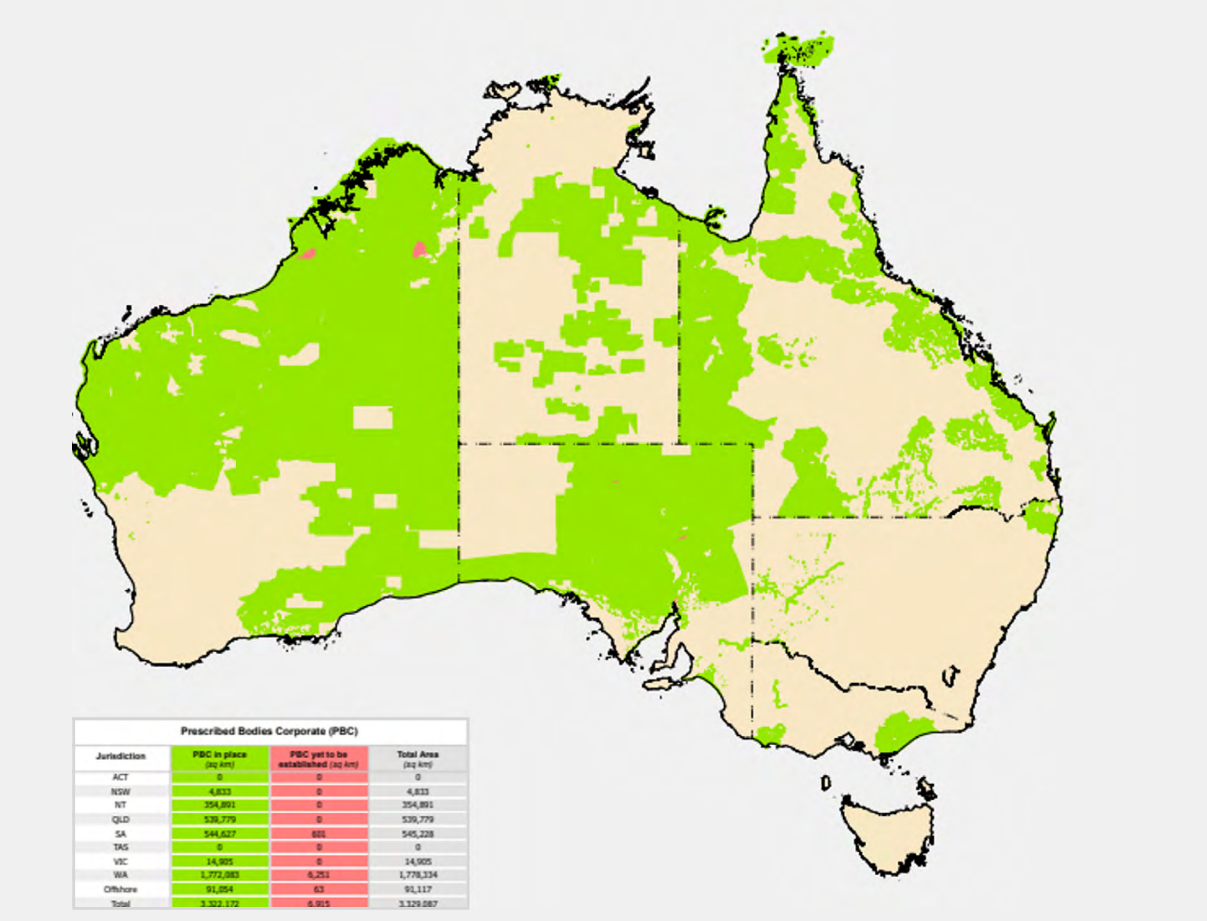


Figure 3: Prescribed Bodies Corporate (Source: National Native Title Tribunal as at 1 April 2022)

B. COLONIALISM

Indigenous people have long argued that climate change is inseparable from colonisation. Now, for the first time, the IPCC Sixth Assessment Report (AR6), Working Group II (2022) recognises that colonialism is a historical and ongoing pattern of inequity that intersects with uneven socio-economic development, unsustainable ocean and land use, marginalization, and colonial governance (IPCC 2022).[1]

Colonialism is both an event and a process, understood as a systemic domination of one social group over others and the land (Veracini 2011). Colonialism can be observed through the many legal, social, economic, and political institutions established throughout the 'new world', including Australia, when imperial powers spread out from European centres. These systems and institutions displaced and continue to oppress Indigenous Peoples and exploit the land, waterways, oceans, and their resources.

Climate change is deeply rooted in colonial systems of extraction, exploitation and degradation of nature, Peoples, and cultures. These systems continue to provide major barriers for climate adaptation today, including working against Indigenous leadership (Whyte 2013; Bordner et al. 2020). Dominant notions of human (particularly white and male) superiority to nature, and the backgrounding of nature as resources for human consumption and management, constrain current understandings of both the challenges and solutions to climate change. This includes climate denialism and the acceptability of small-scale management interventions, such as building sea walls, rather than acknowledging what is happening and taking powerful action. In comparison, Indigenous Peoples speak articulately and forcefully about co-relation with Country, not just for themselves, but for all people, drawing on their own knowledge systems.

There is a growing academic evidence base about Indigenous Peoples' expertise in understanding relationships with nature. For example, a recent Indigenous-led review about climate change and the health and well-being of Indigenous Peoples documents diverse Indigenous leadership practices; it also identifies Indigenous-led initiatives in maintaining the care of Country for climate change adaptation and emissions reduction whilst simultaneously strengthening well-being among Indigenous Peoples (Lowitja Institute, 2021; Moggridge et al 2022). This documentation also corresponds with findings from another study of Indigenous Peoples' understandings and responses to climate change impacts on traditional land and seas in Australia (Nursey-Bray et al. 2019).

A further example is the co-production of Indigenous and scientific knowledges. Such co-production increasingly seeks Indigenous adaptation pathways, to enhance climate change understandings, identify adaptation options with Indigenous Peoples, and empower local decision-making (Hill et al. 2020). Most such 'partnership' approaches are constrained by lingering denial of the logics and presence of Country and hence requires the backing of Indigenous people themselves (e.g. Dhillon 2020). Without Indigenous leadership for action, locally, nationally, and globally about our embedded futures with nature, maladaptations will persist.

The recent IPCC recognition of colonialism's influence is a significant positive step. Further, the IPBES Global Assessment recognises that Indigenous and local knowledges are not only vital for inclusive assessments of nature and nature's linkages with people, but that First Nations concepts about what constitutes the terms being used – for instance, sustainability, wilderness, conservation, and adaptation – differ markedly from dominant scientific and policy discourses (Hill et al. 2020). This moves away from notions of humans 'managing' the environment to living within co-dependent and interrelated webs of life (Weir 2021).

1. Full Quote: "Vulnerability at different spatial levels is exacerbated by inequity and marginalization linked to gender, ethnicity, low income or combinations thereof (high confidence), especially for many Indigenous Peoples and local communities (high confidence). Present development challenges causing high vulnerability are influenced by historical and ongoing patterns of inequity such as colonialism, especially for many Indigenous Peoples and local communities" (IPCC, 2022: 35)

C. COMMUNITIES

This Just Adaptation Strategy must be embedded in the diverse communities who are living with climate change. This means in the realities of recent migrants, rural communities, coastal communities, and many more, centred on their landscapes, priorities, and futures. In this way, local, national, and international work more meaningfully reflects the lived experiences of all Peoples.

Just adaptation is inclusive of, and responsive to, diverse communities of place, communities of identity, and communities of interest.

All Peoples are situated in multiple and intersecting communities (i.e. there is no one homogeneous Indigenous community or one uniform homeless community), with different genders, age ranges, incomes, abilities and hence with various climate adaptation knowledges, needs, and experiences. These place-based understandings are enriched by deep listening to, and learning from, Indigenous leadership which foregrounds Country, deepening these place-based understandings to better articulate and generate just and inclusive adaptation action. This focus on place does not release our national decision makers from climate change responsibility but brings to their attention what is at stake – here, now, together.

Indigenous Peoples have jurisdictional bodies, such as traditional owner groups, native title groups, and regional organisations, that overlap with and are distinct to Indigenous communities. Indigenous communities are across urban, regional, and remote contexts, including as formed under specific community legislation, and diverse Indigenous and non-Indigenous people live within them as residents (Norman 2017; Behrendt 2012). These communities are all on Country, and thus all falling within the jurisdiction of the people for that Country. Indigenous people are also part of Australian society as Australian citizens; again, on Country. This intra-Indigenous complexity is often not appreciated in forums dominated by non-Indigenous people, but it is important, as the High Court recognised in the 1992 Mabo decision, and as now protected under the Racial Discrimination Act 1975 (Cth). These challenges require careful navigation especially around the term 'inclusion'.

This placed-based thinking, quite prominent for instance in human-environment geography, helps with overcoming outdated narratives that divide humans from the environment, and the social sciences from the natural sciences. This overdue relational way of thinking also has consequences for the formal teaching of knowledge in the academy, the organisation of public sector activity, and for what is considered climate change evidence and authority (Rigg and Mason 2021; Overland and Sovacool 2021; Weir et al. 2021). Across Australia, there are many communities of place, identity, and interest that actively seek to transform dominant, divisive narratives. Some examples are people of colour promoting racial and economic justice in climate policy; young people of diverse backgrounds demanding climate action that is just for people and the planet; and Transition Towns that promote localised sustainability solutions. These examples mirror Indigenous Peoples' knowledge systems that integrate nature and society and understand facts within a relationality of values with the living world.

This place-based thinking also brings another source of authority and action into dialogue with local, state, territory, and federal government jurisdictions. For Indigenous communities, the return of land is critical, as this is an opportunity to return Indigenous stewardship, revitalize Indigenous science, systems of knowledge, and practices (Martinez and Irfan 2021). These Indigenous lands are also a critical component of Australia's conservation estate, with Indigenous lands making up more than 44% of Australia's conservation (DAWE, 2022). These opportunities must be properly funded through sustained and autonomous financing programs that respect Indigenous decision-making and are grounded on Indigenous science.

RED SAND DUNES LANDSCAPE IN CENTRAL AUSTRALIA
PHOTO CREDIT: ISTOCKPHOTO

ENMORE PARK, ENMORE NSW
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

2.2 FOSTERING INCLUSION OF COMMUNITIES EXPERIENCING MARGINALISATION

Recognition must be followed by inclusive engagement and equal participation (Fraser 1998). There needs to be a shift in focus in climate change adaptation from simplistic inclusion to empowerment and agency (Malloy & Ashcraft 2020). Disenfranchised members of society, including non-white Australian groups, new migrant communities, and people experiencing homelessness and poverty, who are typically excluded due to persistent inequalities, must not only have a voice and a seat at the decision-making table, but they must also be heard and have decision-making powers.

Just adaptation should nurture the inclusion of populations experiencing pervasive disadvantage as active participants in adaptation planning, implementation, and monitoring. It should also support their political capabilities and agency to acknowledge and help rectify systemic injustices (Mallow & Ashcraft 2020) from the understanding they bring of their own situations. This requires fairness in processes (Schlosberg 2012) – being clear on the various entities to which justice is owed and who ought to be recognised and included. This encompasses not only current generations, but also responsibilities to ancestors and to future generations (See: *Intergenerational inequities*), along with the ecological communities and systems on which we all depend.

There are principles, participatory methodologies, and instruments to foster inclusive spaces. These entail traditional principles for claiming justice, such as classic notions of supporting Peoples' capabilities and dignity, and a range of instruments for institutionalising justice and just adaptation (e.g. voluntary standards, regulatory frameworks, reference to rights conventions, and a variety of inclusive democratic processes). Practically, inclusive engagements in democratic and open ways require a willingness to listen and deliberate, negotiate, contest, and disagree. They require paying explicit attention to who is doing the including, who is included or not invited, whose agency, capacities, and resources are enhanced, and ultimately who benefits. Examples here are deliberative climate assemblies and citizen juries (Willis et al. 2022) where policies and approaches are thoroughly

engaged by those affected, and recent work in Indigenous ecological governance where 'traditional knowledge' is genuinely valued and encompassed in policy and governance development (Whyte 2018).

Cultivating inclusion works best when bottom-up empowerment is a key priority so that communities can chart their own futures in their local places and spaces. At the same time, connecting across scales and levels of decision making is vital, especially those of local and state governments.

Just adaptation engagement demands coalition building, based on an ethics of care that can identify and accommodate differing priorities and transform uneven power dynamics while also addressing cascading climate risks and emergencies.

Such an inclusive approach differs substantially from business-as-usual adaptation efforts to 'climate-proof' our infrastructures and institutions in which superficial and often post hoc consultation with those affected is common.

PHOTO CREDIT: JUAN FRANCISCO SALAZAR

A. INCLUSION OF INDIGENOUS PEOPLES AND THE RIGHTS OF SELF-DETERMINATION

An Australian response to adaptation must include the web of relations, voices, perspectives, and unique rights of Indigenous Peoples. Including these creates immense opportunities both to progress the self-determination of Indigenous Peoples and to greatly enhance the adaptive capacities of all Australians.

Learning from Indigenous knowledges of climate change

Indigenous Peoples continue to possess an astounding database of climate change events and adaptive responses, with stories, songs, and ceremony that recall observations of how the environment has changed with and through climate change historically (e.g. Nunn & Reid 2016; Benjamin et al., 2020; Nursey-Bray et al., 2020). These Indigenous databases are carried within systems of knowing that understand that knowledge, land, and people are one. As already stated, people and the land are always understood in relation with each other (Graham 2007). The focus is on relationships rather than upholding nature and society as largely distinct categories for diagnosis and analysis. We also acknowledge that Indigenous Peoples, like all other groups in society, hold additional knowledges based on their lived experiences of factors such as gender, age, sexuality, class, and (dis)ability.

Whilst the knowledges and adaptive capacities of Indigenous Peoples are deep and ancient, they are also contemporary and new, and have always been so, as each new generation makes their own way. Systems of colonisation have resulted in the rapid reconfiguration of Indigenous societies, as experienced in both historical times and today. Because of the enduring trauma of colonisation, it has been suggested that Indigenous communities now exist in a permanent state of unfolding or cascading disasters (Howitt et al., 2011). These twin features – ancient ongoing adaptive capacities and cascading disasters – have fashioned a distinctly Indigenous resilience. Indigenous Peoples continue to draw upon this resilience, and their continuity with kin and Country, to step forward with confidence. Adaptation practitioners need to ask what rights, visions, and aspirations do Indigenous Peoples want to see embedded in adaptation to turn this wealth of knowledge into practice.

Inclusion of Caring for Country

Caring for Country is a distinctly Indigenous philosophy embedded in the relationality Indigenous Peoples share with Country, or the land and sea. Modern manifestations of Caring for Country, such as Indigenous ranger groups, have arisen through decades of advocacy and community action. Caring for Country reflects twin Indigenous priorities of conservation and

community development (see Country Needs People; Kerins 2012). The practice of Caring for Country simultaneously protects and restores damaged landscapes, mitigates against increasing threats of natural hazards such as bushfires, and strengthens and transmits culture between and across generations (Lee 2016). It is a philosophy shared by Indigenous Peoples throughout Australia and shaped at the local level through local histories, knowledges, practices, and capacities. The term 'Caring for Country' is not used by all Indigenous Peoples around the world, but the philosophy of ethical-relationality with the land and water is.

Caring for Country programs are recognised as world leading, which other nations learn from (Smyth 2015). Research and evaluation have demonstrated the significant benefits of these programs, including the enhancement of land and seascapes, fostering community development, increasing household incomes, and positive impacts on health and wellbeing of communities. Strengthening the whole biocultural landscape as one entity is just adaptation in action. The model of Indigenous-led environmental conservation will increasingly be at the forefront of Australia's response to climate change, with regards to land and sea management, given the increasing land tenure nationwide (Weir and Duff 2017).

Inclusion of rights

The rights and responsibilities of Indigenous Peoples, as recognised in both Western legislation and ancestral Law, compels the inclusion of Indigenous Peoples in climate adaptation discussions, national and state plans, and responses. Indigenous Peoples possess a suite of unique rights that differentiates them from all others in Australia, which is recognised by the common law, expressed in Australian legislation, as well as international rights frameworks, including those supported in Australia such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

For generations, Indigenous Peoples have raised their rights with colonial authorities and then the Federation of Australia, locally and nationally through collective action, and still the rights of Indigenous Peoples can hardly be considered a settled matter. Rather, the rights of Indigenous Peoples are constantly being tested. Incremental developments, not always linear, expand the suite of rights that Indigenous Peoples possess, to provide a foundation upon which groups are able to create self-determining futures. For example, the recent Uluru Statement from the Heart sets out a rights agenda of Voice, Treaty, Truth, and seeks recognition in sovereign documents such as the constitution (Davis 2017, Lee et al., 2020).

Many of the unique rights possessed by Indigenous Peoples relate specifically to their lands and waters, including seas, with some recognised in many Australian legal and policy contexts. For example, the Federal Government *Native Title Act 1993*, as partnered in State and Territory legislation, has resulted in the return of large tracts of lands and waters to Indigenous Peoples. Together with lands subject to land rights and collaborative conservation agreements, this 'Indigenous estate' is now more than 20% of Australia's land mass including some of the most high-value biodiverse regions in the country (Altman 2018). Formal recognition of the rights of Indigenous Peoples to Country such as native title and land rights encompasses much more than this (Altman, 2018), now up to 45% of the landmass (see Figure 3).

B. INCLUDING DIVERSE COMMUNITIES

One key level at which the interaction between injustices and adaptation plays out is the local. For example, urban flooding tends to affect low-income housing on floodplains, and people who are already likely to experience exclusion and marginalisation, such as LGBTI Peoples, may have 'double marginalisation' with fears of lack of safety, accessibility and inclusivity in community level disaster preparedness and responses (Gorman-Murray et al. 2017) (see also: *Urban inequities*). To achieve just adaptation the voices of all community members need to be heard, and their experiences – including knowledges of human/non-human relationships in place – need to drive context-sensitive decision-making about responses at this local level.

A community cannot participate equitably without recognising interacting disadvantages. This means paying attention to individuals who are affected by systemic discrimination in its many forms. In this flooding example, engagement in preparedness may be even lower for those who also do not speak English. It is important to create safe spaces for difficult conversations amongst the various actors within a society to understand individual and collective concerns, limitations, and trade-offs along the adaptation pathway. There are numerous examples of community participation methods for just adaptation planning, including participatory mapping, values-based approaches, community workshops, scenario planning, arts-based approaches, and yarning. The foundations of these various methods are the recognition and inclusion of a range of experiences, disadvantages, and knowledges, resulting in better adaptation outcomes (see: *Heat waves in Cities*).

Developing frameworks that show how adaptation processes and actions relate to community priorities will assist the community to hold relevant actors to account for implementing just adaptation (Samadarr et al. 2021). Additional framings similar to that of 'collaborative governance', where the engagement with the community is Indigenous-led, could assist in shifting power imbalances around decision making. This requires community members to become active participants and processes to move beyond consultation in relation to decisions that have a community impact (Ansell & Gash, 2008; Brink & Wamsler, 2017).

Influence beyond the community level

There is no doubt that community-based actions are vital for inclusion. Yet, vested interests and power imbalances can de-rail their value, by ignoring or not resourcing the outcomes of local decision-making processes. Hence, it is essential to consider how to manage power asymmetries beyond the local level. The effectiveness of local action can be supported by strengthening the capacity of individuals and organisations to press their case. This can be further mediated by community-based organisations such as labour or environmental organisations, youth groups, sporting clubs, service clubs, or faith- or ethnicity-based bodies.

Such groups need to be assisted in capability programs by non-government sources, which would potentially balance out the influence of vested interests. An increased opportunity for community inclusion would be a blend of larger community projects (perhaps involving collaborative governance style methods), alongside bottom-up and place-based strategies.

These small-scale adaptation strategies allow community sectors to enhance their agency and capacities to overcome barriers in contributing towards adaptation, to ensure their knowledges are included and acted on.

All levels of government and governance remain important in this mix. Cross-level and multi-scale leadership can encourage, but also inhibit, the usefulness of sources of public funding for locally conceived projects, and hence determine whether inclusion is authentic. Research can assist evidence-based policy by demonstrating the co-benefits to be gained from addressing underlying injustices. For example, from a human health perspective, addressing these injustices (which arise outside the health sector) not only creates a population that is more resilient to climate changes such as increased heatwaves but at the same time reduce the burden of disease on society more generally (Fears et al., 2021).

Local government

Local government is key to supporting just adaptation in communities and addressing aspects of structural disadvantage such as uneven access to services and transport. However, despite being at the front-line in Australia's place-based adaptation this is also the level of government that often has limited powers, is generally least resourced, and has low capacity for resisting vested interests. There are often also tensions between local governments and parts of the community, particularly those that have felt excluded from government-led processes of community development and adaptation. Cultural capabilities among local governments are also often low. This limits the creation of culturally safe opportunities for

Indigenous Peoples, migrants, and people of colour to engage, contribute to, and partner in wider community processes. On top of that are the complexities that arise from co-located Indigenous jurisdictions.

Strong local community groups can counter these problems and help argue for increased levels of better targeted state and federal funding. Sympathetic funding programs can have a catalytic effect at this level and promote peer learning, as illustrated by the 2012 federal Coastal Adaptation Pathways Program, which funded 13 18-month-long local government projects. The rather modest investment had many valued outcomes for conventional coastal adaptation, despite challenges around social acceptability (Lin et al., 2017).

A similar but preferably on-going program that supports inclusion could make influential advances, boost local government capacity to incorporate just approaches, and share lessons on the costs and benefits of effective inclusion at this level. Developing appropriate and inclusive methods (see 2.4) is essential here, to help local governments to cast a justice lens over who benefits, who is included, who faces barriers and limits, and who may be left behind in adaptation decision-making.

Local government is constrained by funding from higher levels but also by legal and other frameworks. In coastal environments, for example, balancing competing interests is exceedingly difficult due to their complex political and geo-legal realities (O'Donnell 2019). This then may be exacerbated by selectively excluding community (and expert) input into and influence on policy design. One beneficial reason for achieving better inclusion in these processes ought to be to bring legitimacy to them, and at minimum to diminish increases in disruptive and inefficient litigation.

National, state, and territory governments

National, state and territory governments have a critical enabling role to support local government by investing in developing community leadership and capability, providing resources to support a community's self-determined priorities, and facilitating the learning, sharing and replication of promising solutions to support just adaptation at scale.

However, these levels of government need to embed more just adaptation practices across their own agencies, programs, and decision-making, to shape the policy and regulatory environments all stakeholders operate within. They also need to provide essential information and financial support for local governments and other stakeholders for their operations. This requires a significant re-framing of all governments' commitments to adaptation and broader policy and engagement policies through a justice lens (Godden et al. 2022; Malloy & Ashcraft 2020). This will not be achieved without strong leadership and substantial resourcing, as well as support for the need for adaptation programs, projects, and inclusive decision-making to have longer timeframes compared to those of politics.

Achieving this support requires matching these needs with the objectives of key decision-makers. Whilst there are strong moral arguments for this, the real-politik also requires clear analysis around how governments' role as insurer of last resort and provider of the welfare safety net will be increasingly challenged with rising climate risks (Deloitte Access Economics 2016). Conversely, it is argued that just and inclusive processes will lead to more effective adaptation of those in society mostly likely to need government support due to future climate risks. Hence the case must be made, and backed up by analysis, that investment in just adaptation is investment in more effective adaptation for the most disadvantaged (see: *Policy barriers to climate change adaptation in Australia's housing sector*). This will provide return for society by reducing the disruption and burden that would come from many communities in society not being well adapted to climate risks and impacts, as well as increasing the economic and social productivity of groups otherwise disadvantaged in the face of climate risks.

PHOTO CREDIT: ISTOCKPHOTO

INTERGENERATIONAL INEQUITIES

Economic thinking and decision systems have long assumed that future generations will be always better off, justifying arguments that society needs to only worry about today because the future will take care of itself. This is exemplified by the common use of discount rates to determine the impacts of current actions into the future, and to compare the value of climate impacts emerging at different times (Stern 2006), at levels that effectively assume a greater capacity of future generations to address challenges than the present generation. There are now multiple reasons to question these assumptions, resulting in calls to embrace a wider ethical and justice-oriented framework to address long-term challenges. Recent projections suggest that children born in 2020 will experience a two- to seven-fold increase in extreme events, particularly heatwaves, compared with people born in 1960, under current climate policy pledges (Thiery et al., 2021); this does not include indirect effects such as impacts on food security or slow-onset events such as sea level rise. Many would argue that this generation of decision makers has a moral responsibility to act so that future generations can enjoy a world whose climate has not been transformed in ways that makes human life much more difficult. Some authors describe a transgenerational chain in which trust and vulnerability generate responsibility towards future generations, requiring humankind not to further deplete or destroy the earth's habitability (e.g. Cerutti 2009). Others argue that growing inequality and a decline in productivity growth (Carmody 2012) mean that living standards and social adaptive capacity cannot be maintained as we destabilise our environment on a global scale.

Beyond today's humans

Different challenges are raised by seeking the inclusion of nature and future generations in climate and adaptation planning (Tschakert et al 2021). This is a growing preoccupation among diverse segments of Australia's society. Indigenous perspectives encourage all Peoples to engage with a broad concept of Country, respecting and looking after nature from a deep sense of mutual responsibility. Examples of such human/more-than-human relational ethics in practice can be seen in recent developments for the inclusion of ecological systems in environmental decision-making (O'Bryan, 2017).

In Australia, the Yarra River Protection (Wilip-gin Birrarung murron) Act 2017 is a Victorian law that combines Traditional Owner knowledge with modern river management expertise. It treats the Yarra as one integrated living natural entity to be protected, with the Birrarung Council as an intercultural advisory body to act as the Yarra's independent voice.

New Zealand has gone further by giving Te Awa Tupua (Whanganui River as an integrated entity from the mountains to the sea) legal personhood, with its voice being held by an independent guardian containing Māori and government representation (Winter 2021). These types of bi-cultural legal mechanisms are important instruments for driving inclusion. They are another avenue to formalise the voice and participation of Indigenous Peoples in environmental regulation and their governance of Country.

Intergenerational inclusion also raises issues of representation. The recognition that the well-being of future generations is likely to be poorer than ours thanks to our actions today (see: *Intergenerational inequities*) is starting to drive a proliferation of legal struggles for the rights of currently young and not-yet-born people. In 2015, 21 young Americans filed a landmark case against the government — *Juliana v. United States*. They argued that its failure to confront climate change would have serious effects on both them and future generations, leading to a violation of their rights. In 2019, 15 children and teens in Canada filed a similar lawsuit. That same year, the Supreme Court of the Netherlands issued a ground-breaking ruling ordering the government to cut its greenhouse gas emissions, citing its duty of care to current and future generations. Australia's recent case – *Sharma v Minister for Environment* – initially recognised (though subsequently overturned) the federal Minister for Environment's duty of care for young people (Peel & Markey-Towler 2022).

Thus, innovations that create space for the voices of non-human beings and future generations are being developed and advocated for.

Progress on this front notwithstanding, a truly inclusive, participatory, and just adaptation process requires further improvements and multi-scale applications of these innovations.

COOKS RIVER, EARLWOOD NSW
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

2.3 ADDRESSING ONGOING INJUSTICES

The third major Building Block deals with ongoing inequities and injustices that sustain uneven vulnerabilities and curtail adaptive capacities, and how to address these. A critical discussion of vulnerability and how the concept is used in adaptation planning, discourses, and policies is required. The same is needed for the concept of resilience that, often mistakenly, is seen as the flipside of vulnerability. Everybody is simultaneously vulnerable and resilient, but not to the same extent. Here, we illustrate the misdiagnosis of adaptation needs as well as better approaches that are required to address ongoing injustices through the lenses of Indigenous experiences, urban inequities, and outlooks beyond today's humans.

A first step in addressing ongoing injustices for just adaptation is to pay explicit attention to the seemingly well-meaning yet deeply problematic language around vulnerability and resilience. Pigeonholing 'the vulnerable' makes it seem as if people being vulnerable is their own fault, rather than questioning what may have pushed them into their precarious situations (Bodkin-Andrews and Carlson 2018). Without such insights, it is exceedingly difficult for people to protect what matters most to them, secure their lives and livelihoods, and maintain their health, identity, dignity, and wellbeing (Thurber et al. 2021).

This is exacerbated by adaptation planning and policies that uncritically promote responsible, resilient, entrepreneurial, and risk-taking individuals and communities, implying that anyone else is deficient. Promisingly, there is a shift in how this language is being used; for instance, the *Profiling Australia's Vulnerability* report (Australian Government 2018) acknowledges systemic vulnerabilities and emphasises that vulnerabilities never exist in isolation.

Presenting one-size-fits-all approaches across sectors as best-practice standards overlooks the layers of systemic disadvantage faced by millions of Australians. These layers are well documented for children and young people, Indigenous populations, women, and people from non-white or non-english speaking backgrounds, as well as low-income earners, outdoor workers, and people experiencing

homelessness, as described, for example, in the Climate Health WA Inquiry (Weeramanthri et al. 2020). However, it is also vital not to homogenise. A second step is therefore to look carefully for diverse human experiences across gender, class, ethnicity, race, neurodiversity, indigeneity, (dis)ability, location, and sexuality in their own contexts. Together with empowered inclusion (section 2.2), such intersectional insights are critical to validating these experiences and knowledges for contextualised and more meaningful responses that are also likely to increase buy-in and co-ownership.

A. ADDRESSING INJUSTICES TO INDIGENOUS PEOPLES

Indigenous Peoples are at the forefront of experiencing the impacts of climate change disproportionally, for multiple reasons. Indigenous Peoples' rights and identity as Indigenous people are embedded in their lands and waters. Thus, changes to climate, seasonal weather patterns, and the presence of animals and plants have consequences for cultural practices across domestic, spiritual, economic, and governance dimensions. Escalating climate extremes can cause catastrophic changes, as evident in the 2019-20 bushfires which burnt out entire landscapes, and from which many ecosystems are not recovering (Williamson et al. 2020).

Indigenous Peoples are also disproportionally affected because Indigenous communities are often now located on 'marginal' lands, such as arid rangelands and tropical and temperate flood plains, precisely because these lands are of less value for European agriculture and settlement. With rising temperatures and increasing floods, the liveability and future of these communities is seriously under threat, as was evident in the 2022 flooding in northern NSW. Similarly, Torres Strait Islander Peoples are profoundly affected by sea level rise that will indefinitely submerge many homelands. Thus, climate hazards exacerbate other injustices that Indigenous Peoples face, including access to education and employment, family and domestic violence, incarceration, and health. Yet importantly, Indigenous Peoples' experiences of climate change are not homogenous, nor is their ability to adapt.

Indigenous Peoples also have a disproportionate experience of the impacts of climate change because of their historic and contemporary experiences with colonisation. The colonising structures and processes that silence, marginalise, and exclude Indigenous Peoples from exercising rights within their Country continue to impact Country and Indigenous groups who have rights and responsibilities to care for it (Anderson et al. 2021). These issues intimately interact with climate change: for example, Indigenous Peoples have consistently opposed unsustainable industrial development on their Country, such as the over-extraction of river water (Moggridge & Thompson 2021). Such development confounds their capacity to live on Country whilst also heightening climate risk for all by undermining the resilience of Country.

Indigenous Peoples also remain marginalised in the disaster resilience work of national, state, and territory jurisdictions, which are dominated by non-Indigenous knowledge, institutions, norms, and priorities (Williamson et al. 2020; Williamson and Weir 2021; IGEM 2022). Intersecting and unique disadvantages that affect Indigenous Peoples (e.g. homelessness in rural vs urban settings) are often not accounted for in adaptation responses. We align with and echo the sentiments outlined in the Uluru Statement from the Heart to support a representative voice of Indigenous Peoples to make their own representations about the ongoing impacts of climate change, desires for adaptation, and how they can be supported to care for Country.

Meanwhile, there are more focused opportunities to address the ongoing impacts of injustices by developing valued roles for Indigenous knowledges in Indigenous and wider society. One possible pathway for this has been foreshadowed by the Indigenous Rangers program, where the application of Indigenous knowledge for cultural but also community development and conservation goals are supported, resulting in improved communities and livelihoods (see: *Indigenous-led restoration of marine ecosystems*).

BONDI BEACH
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

INDIGENOUS-LED RESTORATION OF MARINE ECOSYSTEMS FOR ADAPTATION

Healthy coastal ecosystems provide protection for coasts against intense storms (e.g. coral reefs, oyster reefs, seagrass and mangroves) and help mitigate coastal flooding (mangroves, saltmarshes). These ecosystems have been damaged since European colonisation, and their restoration as nature-based solutions can help adaptation to climate change. Indigenous people have an important role to lead the restoration of Australia's coasts and other lands. Inclusion of Indigenous people in the growing restoration industry, including projects for carbon credits (blue carbon), can increase justice in coastal adaptation by placing Indigenous people and their knowledge at the heart of the business of coastal restoration for adaptation (Saunders et al. 2022), albeit with significant challenges identified by Traditional Owners (see Figure). Most restoration of coastal ecosystems by Indigenous people has focussed on restoring biodiversity (e.g. Mungalla wetland restoration, shellfish reef restoration, seagrass restoration), but restoration of coastal ecosystems for climate change adaptation is emerging (e.g. the Blue Heart), which if implemented by co-design with Indigenous people, and funded adequately, can enhance justice in adaptation.

Figure 4: challenges to ecological restoration as ranked by Traditional Owners (Source: Redrawn from Saunders et al. 2022)

BIENNALE OF SYDNEY, BARRANGARROO
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

B. ADDRESSING INJUSTICES IN URBAN SETTINGS

Urban settlements are a focal point for intersecting disadvantages that can be revealed by climate impacts, particularly the direct and indirect effects of extreme events (see Box '*Urban inequities*'). An exposure narrative asks: "why don't people live elsewhere, or use air conditioning, or buy insurance?" Whereas a better question is "what prevents people from using air conditioning or buying insurance?" Focussing on structural causes of disadvantage and vulnerability highlights key dynamics: that individuals cannot move location or afford energy due to limited resources; there is a diminished stock of public housing; cheaper housing is often located in risky areas, so that low-income households (often single-parent families led by women) are forced into this and systematically cannot afford insurance; there are limited structural incentives for landlords to 'climate-proof' rental properties; and many others.

Governments at various levels can act to alleviate these problems, for example by: providing public heat refuges (such as swimming pools and public spaces in air-conditioned shopping centres); investing in more public housing; not approving developments in risky places (such as floodplains); or, requiring better-adapted building standards of landlords (such as insulation or solar powered air conditioning) (see: *Policy barriers to climate change adaptation in Australia's housing sector*). Taking these solutions for granted, however, ignores the reality of many social processes in our society. Such action requires at least (i) accurate diagnosis, (ii) well-targeted public resources, and (iii) sufficient political will to override vested interests in the status quo.

Insurance is a case in point. Government often hails insurance as the solution to risks from extreme climate events; however, requiring private sector insurers to offer cover commercially results in very expensive premiums that are out of the reach for low-income householders. Subsidising these (e.g. the UK's FloodRe scheme) or providing disaster recovery payments may set up an indefinitely expanding public liability for private risk (even though this may be necessary for legacy properties). Instead, a proper diagnosis would result in actions such as preventing building in locations which will be at risk in the future and creating funds to help manage retreat where necessary; increasing the stock of (safe) public and community housing (as of June 2020, there were 155,100 households on the waiting list for public housing (AIHW 2021)); and improving incomes among poorer families. Yet, there is limited documentation of the degree to which the Australian housing stock continues to be built in risky places. A study for the UK's Adaptation Sub-Committee (2012) showed continued at-risk building on floodplains in the UK, despite the professed contrary intent. The same is likely to be true in Australia, but data about this is not publicly available. Public resources are not necessarily well-targeted, as the insurance case illustrates. And vested interests in housing values and property development act strongly to undermine any political will, as can be seen by the difficulties in rolling back negative gearing and capital gains exemptions in Australia.

Planning legislation provides reasonable procedures but inadequate authority to local councils to successfully refuse maladaptive planning applications in the face of vested interests.

For example, there is powerful lobbying for proposals for housing or aged care residences in flood-prone areas, and against requiring new housing to be designed to combat the impacts of heatwaves, with effective screening and insulation. Local councils need

support to resist these vested interests, to create heatwave refuges, to set aside land for green spaces, and to improve public transport infrastructure so that people can transit rapidly and comfortably through urban areas during heatwave events (see: *Heatwaves in cities*). Ideally, some of this support would come from higher levels of government, but these are also affected by vested interests, so that strengthening the capacity of the community to lobby effectively can be one indirect pathway to change.

There is no simple solution to this complex system conundrum; nonetheless, various actions can help to nudge the system towards a more just state. Systems research to diagnose the drivers of disadvantage in different contexts can help to uncover the most effective leverage points and publicise data on issues such as continued building on floodplains and coast lines. Supporting the capacity of community groups and people with diverse lived experiences to engage in decision-making (see Section 2.2) can enable them to use this data to counterbalance the influence of vested interests in maintaining the status quo. Economic research can address the costs and benefits of targeting public resources at these leverage points rather than on shorter term political fixes or support for vested interests. It can also offer solutions to gracefully defuse those vested interests through transition arrangements or subsidies in the long-term public interest. Assembling convincing arguments can support awareness among political decision-makers that their electoral prospects will benefit by not leaving significant swathes of the population behind and create a virtue out of acting more justly.

C. ADDRESSING INTERGENERATIONAL INJUSTICES

As noted in Section 2.2, addressing injustices for future generations and for 'more-than-humans' and non-human entities encompassed in the framing of Country raises some additional issues. Again, how to include their voices is better understood than how to gain the change in societal norms which would require this. For example, at its simplest level, the bias towards assuming the future will look after itself (Box: *Intergenerational inequities*) can be approached by changing the use of discount rates in economic decision-making, at least to include a zero discount rate or other approaches (including considering analysis timeframes and residual values) which expose the implications of devaluing the future in those decisions (e.g. O'Mahony 2021; Espinoza et al 2020). These practices are slowly gaining traction but should be accelerated in all investment decision-making (see

HEAT WAVES IN CITIES

Heatwaves are the most significant silent killers – older people with co-morbidities, people with disabilities and people on low incomes living in densely packed urban communities distant from the sea succumb to heat stress in their own homes, away from the public eye. The social impacts of extreme heat thus reflect deep-rooted inequalities around social isolation, socio-economic disadvantage, access to decent and affordable housing and transport, community service delivery, and ageing (Miller 2014). The urban heat island effect, which can make as much as 13°C difference between rural and built-up areas (Yenneti et al. 2020), is exacerbated by the absence of green space, and by building density and poor design, all associated with low-income housing areas. After many deaths in the 2009 heatwave, the South Australian Heat Health Warning System successfully integrated public heat warnings and targeted support for the elderly, those with mental health conditions and the homeless to reduce morbidity in subsequent heatwaves (Williams et al. 2022). These actions are paralleled by the development of heat respite centres in western Sydney (Hughes et al 2021, p.46) and Queensland's Heatwave Management plan. Although such approaches successfully tackle the symptoms of disadvantage through engagement with those affected, they do little to address the underlying structural drivers, such as inequalities in society, poor housing and under-resourced aged care.

also Section 2.4). Beyond this, more profound changes in social norms could be promoted by well-publicised analyses such as those projecting the consequences of a lack of adaptation actions now for our descendants (e.g. Thiery et al., 2021), communicated to trigger an ethical concern.

D. ADDRESSING INJUSTICES TO NON-HUMAN SPECIES

Scrutinising current ethical systems is also important for non-human interests. Progress has been made to promote inclusion, for instance through creating rights for entities such as rivers and recognising the duty of care to the next generation in law (see Section 2.2). Nonetheless, the challenge remains as to how to convert the resulting voice into changed decision-making to overcome injustices. Nature-based solutions provide one pathway for this. Just adaptation requires communities to explore holistic solutions that are designed to ensure human wellbeing while being sensitive to local and regional ecosystems. Understanding and respecting the interconnections between people and their natural environment has always been fundamental to Indigenous knowledges. In western sciences, the concept of nature-based solutions has emerged recently to address the interdependent challenges of adapting to climate change, protecting biodiversity, and increasing human wellbeing (Seddon et al. 2020; Cohen-Shacham et al. 2016). The many different forms of nature-based solutions include protecting and managing natural wetland systems, using natural mangrove forests to protect communities from coastal flooding, and designing blue-green infrastructure into the urban form to cool landscapes while treating and harvesting stormwater for reuse.

Nature-based solutions are not silver bullets, nor will they protect communities from all the impacts of extreme weather (Seddon et al. 2020). However, their underpinning principles are a strong foundation for just adaptation, and their planning and implementation drives important modes of thinking and action about rectifying past damage to nature. Action is encouraged by the motivation of also delivering improved human well-being, thus presenting an important opportunity for humans to reconnect with nature and place. This should be guided by a cultural reframing of adaptation solutions that draws on interconnected understandings inherent in Indigenous knowledge systems (see also: *Indigenous-led restoration of marine ecosystems*).

Like any adaptation solution, nature-based solutions can be unjustly deployed (for example, if a solution involves dispossession of land, loss of access to resources, or damage to cultural sites) (Bennett et al. 2021). To avoid these unjust outcomes, communities, especially groups that are marginalised, must be included authentically in decision-making and governance, with processes which invite them to consider outcomes for their environments as well as themselves. Ideally, one result is a greater compassion for other species and the environment, which can help drive further cultural change and pressure political leaders to act more justly with respect to nature.

In summary, in analysing where adaptation action should be prioritised, **leading adaptation practice should always seek to diagnose what structural inequities, power imbalances, and social norms cause climate change to harm some people and systems more than others and ask how to address the injustices that underlie the unevenness of these impacts.**

COMMUNITY WORKS, PHILADELPHIA, USA
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

2.4 OVERCOMING BARRIERS AND ACKNOWLEDGING LIMITS

Barriers and limits to adaptation are well documented and range from barriers in the various stages of the adaptation process (Moser and Ekstrom 2010) to all kinds of social, cultural, behavioural, political, institution, financial, and technical obstacles, from the community to the policy level (Piggott-McKellar et al. 2018; Lee et al. 2022). Significant Barriers remain that limit opportunities in Australia to collaborate with, learn from, and empower Indigenous Peoples in climate change adaptation, and this is despite Indigenous Peoples' strengths in land holding, community networks, and knowledge (Tran et al. 2014). In the built environment, as another example, barriers to climate action range from conflicting priorities, high costs, and uncertainties in planning policy to limited regulations and community opposition (Hürlimann et al. 2022). By contrast, **there are many known enablers or facilitators to overcome such obstacles, e.g. place-based knowledge, frontline practitioners, creative communication tools, trusted leadership, robust decision-making processes, and Indigenous governance.**

From a people-, place-, and value-centric perspective, limits to adaptation are best understood as the points at which people can no longer protect what they value most (Dow et al. 2013). In the case studies below, we show how barriers and limits play out, and can be overcome, in everyday adaptation contexts, when working with Indigenous Peoples, in sectoral and rural contexts, among decision makers and adaptation/emergency leaders, and with respect to economics and financing.

INDIGENOUS ELDER AUNTY JOANNE OF THE TAUNGURUNG LAND AND WATERS COUNCIL OPENS THE YARNING CIRCLE AT PUCKAPUNYAL 2021
PHOTO CREDIT: AUSTRALIAN DEFENCE FORCE

A. EVERYDAY LIMITS

Everyday adaptations are actions people undertake in their daily lives and livelihoods to deal with the lived experiences of extreme heat, devastating fires, record-breaking floods and droughts, and the slower, incremental effects of climate change. This includes investing time, money, and energy to protect what people value most and safeguard them from more severe and frequent climatic stressors, for instance staying cool or warm among international students in Melbourne (Strengers and Maller 2017) and in low-income households in Victoria (Moore et al. 2017). Everyday limits are the obstacles people experience in their ongoing and routine adaptation choices and actions. Not enough is known about such limits in the Australia context (Henrique & Tschakert 2022). At the community level in Australia, well known adaptation barriers include lack of resourcing; diverging perceptions, values, and goals; inequities within and between communities; lacking clarity, mandate, and agency regarding roles and responsibilities; and a lack of sustained engagement and trust with external stakeholders, including governments (Lawrence et al. 2022).

The costs of everyday adaptation are diverse and not evenly distributed across society. In addition to financial costs, time, energy and other resources, adaptive actions can strain social relationships and take a toll on people's mental and physical health, often more so for older members of society. For example, Henrique & Tschakert (2022) found that in rural and urban communities in Western Australia, attending to cherished yet deteriorating places due to excessive heat, prolonged droughts, or bushfires, sometimes to no avail, was often distressing and even met with disbelief and ridicule from community members. Efforts to protect one's physical health (e.g. not go for a walk on very hot days) could also take a toll on people's mental and emotional health. The study also shows that costs and the limits to adaptation are often strongly aligned with structural inequities. They are unequally distributed along socioeconomic gradients of privilege and disadvantage, even in a seemingly homogeneous sample population of predominantly white and non-Indigenous Australians. In other words, it is easier (and more affordable) for more affluent residents to ensure their bodily safety, and that of the plants and animals around them, but more costly, in monetary terms and timewise, for younger community members.

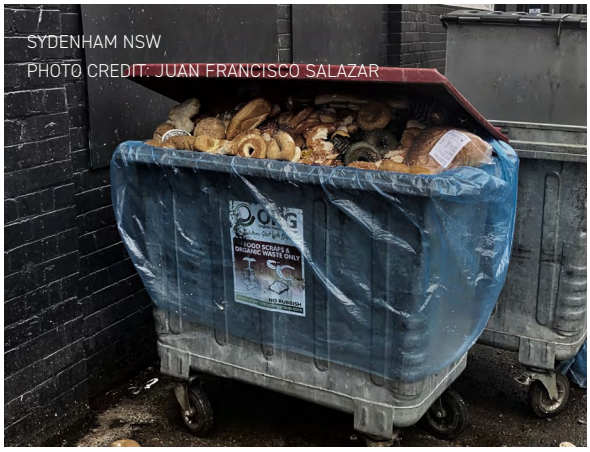
Therefore, overcoming everyday limits to adaptation requires not only sectoral adaptation plans but a better understanding of social relations, power, agency, collaborations between the local level and higher levels, and capacities and capabilities, including political capabilities across society to adapt to climate change (Barnes et al. 2020; Malloy and Ashcroft 2020; Lambert and Beilin 2021). The most recent IPCC Chapter on Australasia (Lawrence et al. 2022) highlights key enablers for adaptation in people's daily lives and communities: including actions to strengthen social capital and cohesion, partnerships, and collaborative efforts; including Indigenous Peoples and their networks and knowledge; and creative ways to support more forward-looking and dynamic decision making.

B. BARRIERS TO ENGAGING WITH INDIGENOUS PEOPLES

The persistent paucity of research and evidence-driven baselines about the experiences and priorities of Indigenous Peoples and opportunities for collaboration in climate adaptation constitutes a first key barrier. The recent literature is small relative to the importance of the topic (Nursey-Bray et al. 2020, Smith et al. 2019; Benjamin et al. 2020). This is compounded by the continuous treatment of climate change as a problem primarily for the natural sciences which leaves little room to acknowledge and appreciate Indigenous understandings of creation (cosmologies) that inform ways of knowing (epistemology), being (ontology), doing (methodology) and ethics/accounting (axiology) (Latulippe and Klenk 2020). Hence, these systems of relationships and webs of interconnectedness, deeply entwined with and through all living beings, ancestral creators, landscape forms, and more (see Section 2.1a), are side-lined and sociological contexts devalued. These holistic and integrated management perspectives so central to Indigenous Peoples' adaptive practices remain untapped or, worse, are devalued (Latulippe and Klenk 2020; Vásquez-Fernández and Ahenakew 2020; Weir 2021).

The consequences of colonisation on Indigenous societies form another barrier to adaptation (see Section 2.1.b). From the decimation of Indigenous populations, the separation of people from Country, the removal of children, and the outlawing of culture and language to ongoing injustices the passing of knowledge has been disrupted (Neale et al., 2019), within families, through generations, within groups, and across the continent (Kreig 2009). To reduce limits to adaptation, the resultant layers of trauma demand time and space for Indigenous Peoples to heal, especially with their own communities and with Country, to rebuild their families and groups, and repatriate and repair traditional knowledge systems and databases (Sangha et al. 2019). Finally, the intellectual, cultural, and material fault lines that are perpetuated between Indigenous and non-Indigenous people undermine collaborations and need to be overcome (Weir 2021).

This entails understanding land management is not a given but socially constructed. National Parks, for example, are a human construct based on colonial norms about conservation and wilderness, endangered species, acceptability of hunting, and attitudes towards invasive species, among many others. Indigenous relationships with Country are framed more strongly than those of settler perspectives by beliefs, narratives, and ideology. Ironically, the myth of wilderness remains a key tool in the continued dispossession of Indigenous Peoples from their lands and waters (Spence 1999; Fletcher 2021) and hence curtails adaptation by, once more, denying connections to Country.



SYDENHAM NSW
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

C. SECTORAL BARRIERS AND LIMITS

Barriers and limits to just adaptation, as well as opportunities for it, play out practically in the various sectors that have traditionally been the focus of adaptation approaches such as in natural systems, rural land uses such as agriculture and forestry, and tourism and conservation (see Section 1). Yet, systemic injustice, vested interests, and structural power imbalances often set barriers to action even within safe limits and influence how different actors experience those limits. Although change, not stasis, is increasingly recognised as inevitable, assumptions of uninterrupted continuity remain (Dunlop et al., 2013). These assumptions presume, in theory, to maintain every species everywhere, that the current architecture of farming can be maintained forever, or that the Great Barrier Reef will always be there for visitors. These assumptions and norms infuse sectoral policies, making their objectives unrealistic and maladaptive, and they potentially create new injustices.

Australia's rural sector is a case in point. Rural and remote inhabitants experience structural disadvantages in terms of access to services such as medical care, education, reliable internet, emergency support, and political influence (Stafford Smith and Cribb, 2009; Walker et al., 2012). Disadvantage around access has been made worse by the drive towards narrow economic efficiency, centralisation of services, and general withdrawal of government in recent decades — all largely out of the control of rural individuals.

For those dependent on the land, the way land management is approached and enacted may constitute additional barriers, limits and/or some opportunities for adaptation. Cultural norms of land management bring the question of 'whose norms' into sharp focus (van Kerkhoff et al. 2019; Weir and Duff 2017). If diverse community expectations and Indigenous perspectives are not addressed and common ground is found, new norms will simply perpetuate old patterns of inequity. Besides the colonial construction of land management, the allocation of land has too often been based on political and gendered power and vested interests which are inherently colonial, and which have resulted in the current arrangements of property rights and perceptions (Norman 2017).

People living in poor quality housing with unreliable energy supplies, for instance in low-income or remote communities, will be unable to adapt to heatwaves through air-conditioning in the way that high-income households may. Where conditions are exacerbated by poor health because of other structural injustices, residents will face real limits to adapting to heat extremes, to the point where continued habitation (and certainly continued outdoor labour) may become impossible. The level of warming at which this point is reached could be modified greatly by removing structural inequalities of access to services (Race et al., 2016a; Williams et al., 2013). Physical adaptation and resilience infrastructure too can create its own barriers and limits if not carefully screened for distributional implications.

D. DECISION MAKERS AND LEADERS

Institutional and political decision makers and leaders face numerous constraints and challenges when seeking to address climate change adaptation. These constraints and challenges can act as barriers to just adaptation. One domain is often ineffective and exclusionary leadership and governance within disaster management agencies and other governmental entities responsible for adaptation increase rather than reduce social vulnerabilities and constrain the effectiveness of how multiple risks are dealt with. Insights from decision makers in Australia, New Zealand, and the USA show that such ineffectiveness in governance has two main dimensions (Crosweller and Tschakert 2021). First, the insufficient technical, scientific, and socio-cultural knowledge to identify risks and minimise their harmful effects; and second, inadequate investments in risk mitigation, and the degradation of risk management systems designed to support risk reduction, resilience, response, and recovery.

In addition, leaders tend to ignore or deny the vulnerability of themselves and others (Crosweller and Tschakert, 2020; Godden et al. 2022), sometimes because of narrow worldviews and organisational cultures that downplay risk or to avoid what is politically and organisationally uncomfortable. Other leaders, even while wishing to be committed and accountable, are constrained by rules, processes, and procedures that makes them insensitive to equitable, just, and timely adaptation (Crosweller 2022).

For many citizens and communities, ineffective leadership and governance have increased otherwise avoidable loss and suffering.This is compounded by the failure of research bodies to diversify the evidence base as demanded by natural hazard practitioners, which then generates less effective and more stressful work conditions and results in inefficient use of scarce research monies (Weir et al. 2021).

Severe to catastrophic natural hazard events are stretching governments and disaster management agencies beyond the limits of their capacity to reduce risk and protect societies. At the same time, top-down resilience policies can shift the obligation too much away from governmental decision makers to ordinary citizens, with insufficient clarity about the precise obligations for each party (Hunt and Eburn, 2018). Central to this dilemma is the question of the social contract of the stated policy goal of 'shared responsibility' between citizens and their governments. As McLennan and Handmer (2014) note, the current understanding of shared responsibility by governments in Australia is 'articulating a new social contract but half of the contract terms [are] missing'. When analysing 55 post-event inquiries and reviews of disasters in Australia, Cole et al. (2018) found that only 9 out of a total of 1136 recommendations were attributed towards improving individual responsibility, and without a reference to Indigenous Peoples. The remaining recommendations were targeted toward institutions, suggesting significant systemic failure, insufficiency, and ineffectiveness within these same institutions when attempting to protect citizens. To overcome such barriers, the mentality needs to shift from coping with disasters to resolving the social, legal, and administrative structures and practices that produce and distribute vulnerability and risk (Ziervogel et al. 2017).

POLICY BARRIERS TO CLIMATE CHANGE ADAPTATION IN AUSTRALIA'S HOUSING SECTOR

Building regulation is a key policy mechanism to enhance the climate change resilience of housing and communities. Housing that ensures occupant comfort is critical as temperatures rise, extreme rainfall events become more intense, and Australia's population ages and has less capacity to retrofit their homes. However, building regulation in Australia is based on historical information, including on climate, and there is no explicit requirement for the Australian Building Codes Board (ABCB) to consider climate change when reviewing parts of the Building Code of Australia (BCA). Over time, prescriptive technical standards for housing construction that assume an unchanging climate will increasingly fail to meet the comfort and health needs of people (Mummery 2021). Heat stress is one area of concern as heatwaves can result in illness and death, and indoor overheating during summer is under-regulated in Australia (Hatvani-Kovacs et al. 2018). The magnitude of risk from increasing temperatures indoors was revealed in the 2009 heatwaves in southern Australia when 500 people died prematurely and 3,000 people became ill from heat stress. People in rental accommodations can be particularly vulnerable as incentives to renovate housing for occupant well-being are often lacking. Similarly, more intense extreme rainfall, projected with climate change, is not well considered in the BCA and can result in damage to homes and contents, and in mould growth with implications for health.

Looking ahead, encouraging ABCB consideration of climate change alone will be insufficient to enable policy reform. The goals of the building regulation, which unlike the building codes of some other developed nations do not include a specific principle for property durability, require a mandate from the Building Ministers Forum for change. In a similar way, amendments to the BCA need to meet regulatory guidelines (agreed by the then Council of Australian Governments) that in practice focus on readily monetised risks and do not accept uncertain future climate change projections (Productivity Commission 2012). An underlying policy objective for cost minimisation and minimum-only standards has also meant that any implications for short-term upfront costs from enhanced resilience tend to be used as justification for rejecting reform (Warren-Myers et al. 2020). Finally, the absence of processes that transparently and robustly connect climate science, community interests, and BCA review procedures has made it difficult to balance short-term costs with longer-term, avoided damages and health benefits. Australian society and communities need capacity to now engage in a wider and informed dialogue on housing, building resilience, climate change adaptation, and the trade-offs between short- and long-term financial and social costs and benefits. Such a dialogue would need to explicitly identify and address these policy barriers to reform.

HOUSE REFLECTIONS
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

E. ECONOMIC BARRIERS AND NORMATIVE ALTERNATIVES FOR ECONOMICS

Economic and financial barriers are often cited as barriers to adaptation; yet the links are complex and involve various trade-offs. These trade-offs encompass social, environmental, and economic values and are experienced differently within and across space (geography and jurisdictions), time (intra- versus inter-generational), sectors, and communities (marginalised versus advantaged). A significant obstacle is the fact that predominant approaches to accounting for these trade-offs are not designed to deliver on the principles and desired outcomes of the Sustainable Development Goals; and yet they are entrenched in the regulatory, institutional, value, and knowledge systems of societies and therefore difficult to change.

In Australia and many other predominantly western societies, these decision-making systems are based on neoliberal ideologies and practices in evaluating trade-offs. They are codified in the institutional arrangements that regulate and guide behaviours. Neoliberal-based approaches often prioritise scientific knowledge over traditional or experiential knowledge; individuals over communities; the present over the future; competition over collaboration; economic and monetized values over social and environmental values; optimisation over robustness or resilience; and markets and 'small government' over cooperatives (Baldwin et al., 2019; Fieldman, 2011).

Although this approach has served some groups extremely well, it has done so at a cost to most people in the world and the environment and has created extremely vulnerable supply chains (Commonwealth of Australia 2018; O'Connell et al. 2018). It is a fragile and extractive system, reliant *inter alia* on low-cost inputs, unconstrained production of waste, continuous short-term profits, and the transfer of risks to future generations. In fact, the neoliberal economic model has produced enormous inequality in Australia and beyond, has undermined democracy and participation, and has fuelled social and environmental injustice. As such, neoliberalism has become a barrier that undercuts just adaptation to climate change.

Therefore, these economic and financial systems must change, not only to sustain the provision of basic goods and services and economic opportunities but also to address the inequities they have created across the world and between generations. Such a change will encounter resistance and hence requires courageous leadership. Yet, it is also an opportunity to learn from Indigenous ontologies that are based on Country and interrelated webs of being. It will mean shifting from growth thinking to degrowth models (Hickel 2021) and diverse economies and re-embedding economies in ecologies (Gibson et al. 2016; 2020) to help cultivate forms of community that reduce inequality and improve human well-being.

Low regrets and reasonably actionable options exist to provide benefits to more people and contribute to just adaptation.

In the short to medium term (1 to 5 years). They include:

1. Inspiring new narratives describing alternative ways of doing things, and the authority and confidence to do so. These narratives need to be credible, inclusive of diverse values and knowledge types, and deliver sustainable, climate conscious, and just outcomes for all.
2. Enabling environments for decision makers to conduct risk and economic/business case assessments differently, based on systems- and values-based methods and anticipatory learning (Muiderman et al. 2022). These entail awareness training and education programmes, authoritative and accessible tools and guidance, and new policies and standards to incentivise adjusted behaviours (See: *Going beyond traditional economic and risk assessments*).
3. Effective and credible applications of economic and financial analyses for investments in just adaptation through, for instance, demonstration projects that support scalable innovation and learning (Mazzucato 2018; Janssen et al. 2021; Green Climate Fund 2021). This means learning from examples of successful transformative (disruptive) approaches to just adaptation (Patel et al. 2021), such as community-based sustainability cooperatives; Artificial Intelligence for Good; and disruptive digital technologies such as Blockchain.

GOING BEYOND TRADITIONAL ECONOMIC AND RISK ASSESSMENTS

Mainstream sectoral adaptation planning often relies on cost-benefit analysis (CBA), a widely used tool across Governments and Industry to quantify and assess the benefits and costs of policy, program, or project design options. This, however, is being done narrowly, based on neo-classical economic theory and methods and neoliberal principles (e.g., non-monetisable factors are excluded or subordinated, the future and climate change scenarios are most often not considered, and policy settings that underpin CBA constrain an effective focus on adaptation). CBA can be readily improved at minimal additional time and cost, using tried and tested processes, practices, and tools based on more heterodox, interdisciplinary, robust, and systems- and values-based approaches (Figure 5).

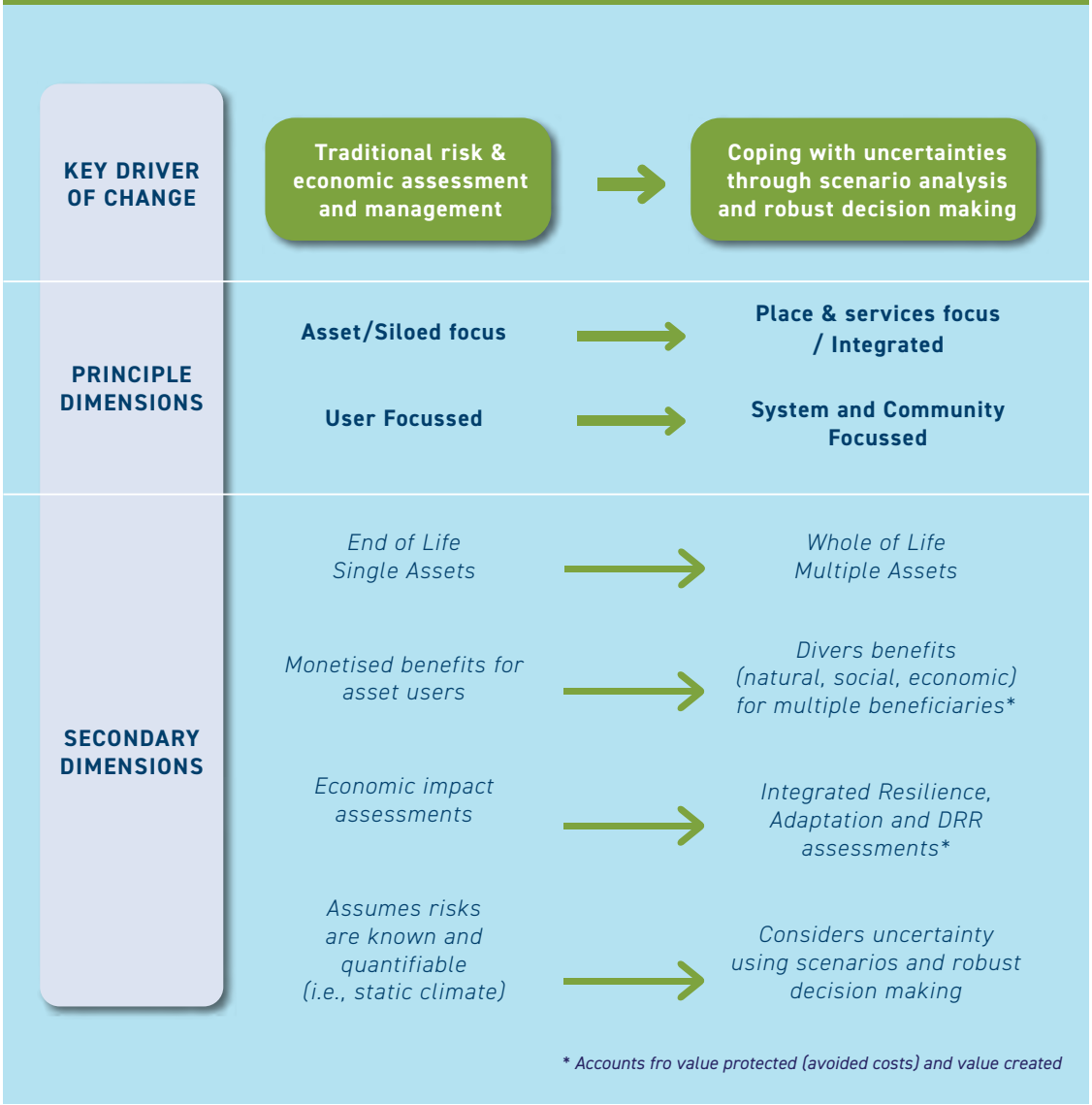


Figure 5: Shifts in thinking and practice for risks and investment assessments are assessed to promote decisions for just adaptation and more sustainable and beneficial outcomes for all (Wise et al. 2022).

NOUMÉA, NEW CALEDONIA
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

2.5 TRANSFORMING FOR JUST ADAPTATION

Just adaptation cannot happen while the systems that produce and sustain inequities and uneven vulnerabilities remain in place. The Building Blocks and case studies for moving toward a just approach to adaptation point toward the need for more fundamental changes. Figure 1 shows how protecting ourselves from climatic hazards needs to go hand in hand with addressing the many drivers of vulnerability. On top of that, large-scale, systemic thinking is required to ensure that adaptive actions are managed across sectors and scales while supporting social mobilisation. The latter includes appropriate spaces for empowered and deliberative practices as well as a commitment to recognition, justice, equity, inclusion, solidarity, responsibility, repair and regeneration, and an ethics of care (Shi and Moser 2021). Incremental change will not suffice.

Coordination across scale is vital to ensure just adaptation does not fall exclusively on grassroots communities and that their efforts are linked to planning and policy at higher levels of decision making that need to take seriously local limits to everyday adaptation. Deliberative and empowering processes, including contestation and dissent, are rarely smooth sailing. Shifting power will open the floor to new actors, preferably previously disenfranchised groups, and future generations and non-human rights-holders. They all bring their own innovative ideas, approaches, and solutions and different value systems. Fostering agency among these long-overdue players means not only more emphasis on how to nurture adaptive capacities and reduce vulnerabilities (Cinner et al 2018); it also means a genuine commitment to strengthening political capabilities so that they are fully recognised as legitimate participants with agency and power to shape their desired adaptation trajectories (Malloy et al. 2020). Such disruption of established hierarchies will likely be met with pushback from incumbent players, those who have been benefiting from their powerful positions and the status quo.

Therefore, transforming for just adaptation is not just a matter of more or better knowledge and accessible toolkits. It inevitably demands that decision makers themselves change, as vital parts of our current social, cultural, institutional, and political communities and systems. Various conditions for systems change to secure alternative pathways toward more equitable processes and

outcomes need to be in place. They range from well-coordinated and reformed adaptation policies and practices to addressing uneven power dynamics and accommodating diverse mind sets, values, and beliefs about human and more-than-human relationships (Shi and Moser 2021).

This is a substantial, simultaneous, and deep transformation of current modes of adaptation planning and implementation that will take us much further than 'climate-proofing' our industries.

Such transformation relies on decolonising climate discourses and practices by rectifying persistent marginalisations and diverse forms of oppression while striving for justice, care, and reparations; it does so via pathways of imagination, deliberation, and a commitment to reconfigure interwoven relations in equitable and regenerative ways (Sultana 2022).

GENDER-TRANSFORMATIVE ADAPTATION

One crucial element of just transformations and the task to decolonise adaptation is to redress continuous inequalities that disempower. Uneven gender dynamics are part of this mix — in addition to other axes of differentiation such as age, class, race, ethnicity, (dis)ability, and sexuality (Alston & Whittenbury 2013; Parkinson, Farrant & Duncan 2015; Garcia and Tschakert 2022). We know that climate change exacerbates gender inequality and, hence, just adaptation must respond to the diverse lived experiences based on gender and the intersections with the other categories of inequality. Member countries of the United Framework Convention on Climate Change (UNFCCC), including Australia, are now required to develop a Gender Action Plan with strategies to advance women's full, equal, and meaningful participation in climate decision making, promote gender-responsive climate policy, and mainstream a gender perspective into all climate actions (UNFCCC 2017). This global expectation provides a significant opportunity for just adaptation processes to respond to the many embodied experiences of people of all genders. It promotes gender equality and the empowerment of women and non-binary Peoples.

Gender-transformative approaches to just adaptation celebrate and engage women and non-binary Peoples in all their diversities as climate knowledge holders, leaders, decision makers, and actors in achieving just climate solutions (UNDP 2016). Just adaptation approaches must overcome systemic barriers to gender equality, including social norms, institutions, and processes that entrench unequal gendered power relations and the intersection with other hierarchies of power (Sultana 2021). Resurrección and colleagues (2019) provide guidelines for gender-transformative adaptation that considers gender analysis and planning; supporting the agency of women and other groups (through policy, resourcing, and empowerment); and mainstreaming gender in climate adaptation programs.

Similarly, the UNDP (2016) outlines how gender-just adaptation involves applying a gender analysis to adaptation roles and responsibilities, access to and control over resources and incomes, and power, participation, and decision making; and ensuring that gendered barriers and injustices are addressed in adaptation responses. For example, the full and equal participation of women in climate adaptation decision making and action must not increase women's disproportionate burden of unpaid domestic labour. A gender-transformative approach to just adaptation also requires fair remuneration and redistribution of care work in households, institutions, and communities (Resurrección et al. 2019). Just and transformative adaptation pay explicit attention to the dimensions of inequality at play in specific contexts: often gender is part of the mix, but at times, race or age or ability may be more important. Such transformative adaptation keeps our analytical and practical lenses alert.

KINTORE GREAT DESERT SKINK KNOWLEDGE TRANSFER, NT 2019
PHOTO CREDIT: 10 DESERTS PROJECT

A. SUPPORTING INDIGENOUS KNOWLEDGES TO TRANSFORM ADAPTATION PRACTICES

We have previously highlighted how the deep and ancient knowledges of adaptation held by Indigenous Peoples are relevant and necessary to respond to climate change (see Sections 2.2b and 2.3a). Caring for Country programs have already been discussed in this Strategy as a centrepiece in Australia's response to climate change (see 2.2a). There is bi-partisan support to increase funding for these programs into the medium future. The challenge now is to build understanding about the consequential reach of Caring for Country for non-Indigenous people, to transform the understanding of climate change and just adaptation. This returns us to the two principles of Country introduced earlier:

- Respect for co-dependent futures with the Land, including all other living beings and landscape features such as freshwater sources; and,
- Humility about the role of humans in relation to the extraordinary power and importance of natural forces, without forgoing the responsibilities humans have with Country as part of life-sustaining reciprocal relationality.

We are already deeply in an intercultural place of exchange about these two principles, as Indigenous leadership and the climate adaptation literature find common ground for the shared goal of supporting the diversity of life on earth. As Australia transforms to respond to the challenges of climate change, we are reimagining concepts and institutions together, including in the preparation of this report. There is already substantial scholarship about how Indigenous knowledge systems can work in respectful collaboration with academic institutions dominated by non-Indigenous people (Moggridge 2019). Those knowledge systems that separate nature and society as different categories need to be brought into relation with Indigenous knowledge systems that deeply understand the co-dependency of nature and society.

This includes the work of the academy to find surer transdisciplinary footing. It also extends to all society. It is placing oneself within a web of interconnectedness, to the past, the future, to Country, to others, to non-human relations. It compels people to take account of their choices and weigh these against the impacts on others. This will facilitate a knowledge and practice where all people can comprehend the consequential value of their adaptive efforts.

B. DELIBERATIVE PATHWAYS TOWARD JUST TRANSFORMATION

Pathway thinking has become essential for research and policy decision making on climate change adaptation and resilience. Pathways are best understood as solution-oriented trajectories that connect today's realities with desirable and fair climate futures; they emphasize equity and justice towards low-carbon transitions, climate-resilient development, and inclusive societal transformations (Fazey et al. 2016; Roy et al. 2018). The 2022 IPCC Report, Working Group II, highlights the need for meaningful participation of the most vulnerable groups and diverse interests, values, and worldviews to be included in equitable pathways (Pörtner et al. 2022); this reduces structural vulnerabilities and allows space to deliberate competing priorities. Deliberating socially salient solutions between a variety of stakeholders, and the often difficult trade-offs and tipping points that come with them, is a vital component of such decision-making processes. Rather than conducting often exclusionary top-down risk assessments, the goal is to jointly identify, sequence, and implement desirable and fair adaptation trajectories while avoiding maladaptation and exacerbating inequalities. Participatory, inclusive, co-produced, and equitable processes and outcomes, including what people value most in their lives and how these valued things are affected by climate change (Barnett et al. 2014a), are indeed core principles for effective adaptation and transformation (Singh et al. 2021).

Deliberative pathways are also part of transformative adaptation, and explicitly so under what Shi and Moser (2021) call empowered and deliberative practices, including dialogue, co-creation, and power mapping and sharing (see Figure 1). This requires an understanding of how individuals and communities navigate changing climate conditions, juggle their experiences and aspirations, and engage with different viewpoints of what desirable futures may be, for whom and how (Barnett et al. 2014b; Henrique et al. 2022). In short, this is an ethical, emotional, and political process, informed by both rigorous science and the hope for responsible co-existence.

Deliberative pathways toward just societal transformation often start at the level of communities and local government areas. There, the main aim is to ensure that socially disempowered people (and non-human species) are included as 'full participants with agency to shape the decisions that affect them' and that their political capabilities are strengthened (Malloy et al. 2020, p. 5). However, ultimately, local pathway planning needs to tie into higher-level adaptation decision and policy making, connecting just adaptation across scales. In Australia, substantial change is needed to move from incremental and reactive to transformative and proactive adaptation and to support inclusive adaptation decision making (Lawrence et al. 2022). This is a long overdue opportunity to validate and embrace Indigenous Peoples' self-determination and deep and ancient knowledges of adaptation with respectful collaboration and engagement and to foster society-wide processes of co-production.

C. DECISION-SUPPORT TOOLS AND PROCESSES FOR JUST ADAPTATION AND TRANSFORMATION

Just adaptation requires the right enablers, tools, and processes. This entails processes for inclusive interactions across and within difference, and curiosity and respect for diverse knowledge systems and needs. Among the enablers most directly addressing justice questions and overcoming barriers, the IPCC AR6 Chapter on Australasia (Lawrence et al. 2022) lists community partnerships and collaborative engagement, dynamic adaptive decision making, and reducing systemic vulnerabilities. Among most relevant tools are Serious Games, Dynamic Adaptive Pathway Planning (DAPP), and Real Options Analysis (ROA). Inclusive attitudes, questioning our assumptions, and filling knowledge gaps on what is fair and for whom are equally important.

Decision support toolkits for just adaptation are best understood along the following three dimensions. First, there are toolkits that explicitly focus on just adaptation: building decision makers' capacity to take adaptation actions which are just, for instance by increasing literacy around climate financing, building stakeholder communication skills, and improving community service delivery. In the UK, the ClimateJust website (climatejust.org.uk) supports public service providers to deliver just adaptation by guiding them to identify who is vulnerable to climate change and the neighbourhoods where climate disadvantage is highest; the website explains the factors involved and provides guidance for just decision-making. The following case study from Western Australia shows how the community services sector is strengthening its knowledge and capacity to respond to the social justice impacts of climate change.

A second type of toolkits provides information and support for adaptation decision making across a wide spectrum from households through to local and central government, usually via websites. Because these are generally open access at no cost, and diverse in the knowledge and guidance they provide for risk assessment, they can contribute to just adaptation. All that is needed from the user is a commitment of time to seek out the knowledge they require. An example of this type of decision support in the USA is the Climate Resilience Toolkit (https://toolkit.climate.gov/). In Australia, CoastAdapt (coastadapt.com.au), aimed at coastal adaptation, provides wide ranging information, from climate change scenarios to impacts analysis through to advice on getting buy-in for adaptation from stakeholders and how to evaluate adaptation progress. Such toolkits, even if not explicitly aimed at just adaptation, help to level the playing field, and offer knowledge in a context where knowledge is power. Alternatively, the Australian Council of Social Services provides a justice-focussed resource – the Resilient Community Organisations toolkit to help community sector organisations measure and improve their resilience to disasters and emergencies (https://resilience.acoss.org.au).

Third, some toolkits focus explicitly on learning and sharing to support just adaptation and transformation. Learning is what underpins the adoption of new mental models, policies, technologies, and practices (e.g. https://www.humanlearning.systems/), and it helps overcome old approaches (Novalia et al. 2022) in change processes. People and organisations must be prepared to embrace system complexity, learn new skills, try innovative solutions, and be honest about failures and learn from them. They should also share evidence and insights on what works and what does not so that collective learning can accelerate transformations.

More needs to be done to learn from Indigenous People's land- and community centred methodologies and relational ethics (Latiliullipe and Klenck 2020). Platforms that bring people together with place-based data and insights are invaluable tools for learning, often at reasonably low cost. For example, the Water Sensitive Cities Index (Rogers et al. 2020) is a benchmarking tool designed for use in a participatory process to support stakeholders to gain diagnostic insights and develop shared priorities for change. Networks of people dedicated to learning and sharing are also critical. For example, the Fire-Adapted Communities Learning Network k (https://fireadaptednetwork.org/) in the USA connects community leaders to empower them, resource strategic action, develop tools, and create and share approaches to increase wildfire resilience.

COMMUNITY-BASED ADAPTATION PATHWAY MAPPING TOWARD DESIRABLE AND JUST CLIMATE FUTURES, WESTERN AUSTRALIA

This case study from Western Australia shows how such deliberative pathway approaches and inclusive adaptation decision making may work in practice. As part of an ongoing four-year research project entitled 'Locating Loss from Climate Change in Everyday Places' (see Henrique et al. 2022), the research team has used a variety of activities to better understand how urban, peri-urban, and rural residents from south of Perth to the eastern Wheatbelt experience heat waves, drought, river erosion, flooding, and bush fires. They have learned what they value most in their homes, communities, and the surrounding environment and what they prioritise and protect in the face of current climatic hazards, through daily adaptation actions. The team also listened to what the residents anticipate they will do to adapt in in the future, under more severe climatic conditions, and where they see limits to adaptation.

Community adaptation priorities and goals were also investigated using a technique of pathway thinking called 'backcasting'. It starts with what local residents had described, through iterative engagements, as most desirable futures (~20 years from now), brought together under the following four pillars: protection of the most vulnerable people; human health and wellbeing; protection of the environment; and education and leadership for responsible living.

In whole-day workshops, community residents, most of whom had already participated in previous project activities, deliberated, and visually mapped out likely pathways toward this desirable future by 2040 (see Figures 6 & 7). Working in four separate groups, one for each adaptation pillar, they identified three key aspects: 1) currently available resources, key people, and initiatives; 2) actions to be undertaken; and 3) positive and negative pivot points along the way – in other words things that would support their anticipated trajectories toward the desirable future and things that could go wrong or would be an obstacle and result in worst possible outcomes.

The two illustrations here show two pathway results: The first (Figure 6) is rather optimistic, depicting several possible trajectories and the needed support toward best outcomes, with the help of a sustainability teacher and improved home living skills for resilience. The other result (Figure 7) is quite pessimistic, with no foreseeable pathway beyond 2030 at which a critical junction is predicted: either 'climate rescue' for everybody will happen through adequate governmental support or social breakdown and catastrophic climate breakdown would coincide.

Rich and sometimes heated deliberations and negotiations emerged in the second half of the workshops when the groups presented their mapped-out pathways and discussed how they may reinforce each other or possibly cancel each other out. In one instance, important contributions were made from a representative of the Shire Planning Office, with concrete recommendations on how to take the merged pathways forward, via further consultations, including with the WA Local Government Association. The ultimate step will be to discuss effective and just options for integrating such community-driven pathway planning into the thematic priority of Resilient Communities and Regions as laid out under the State's Climate Policy.

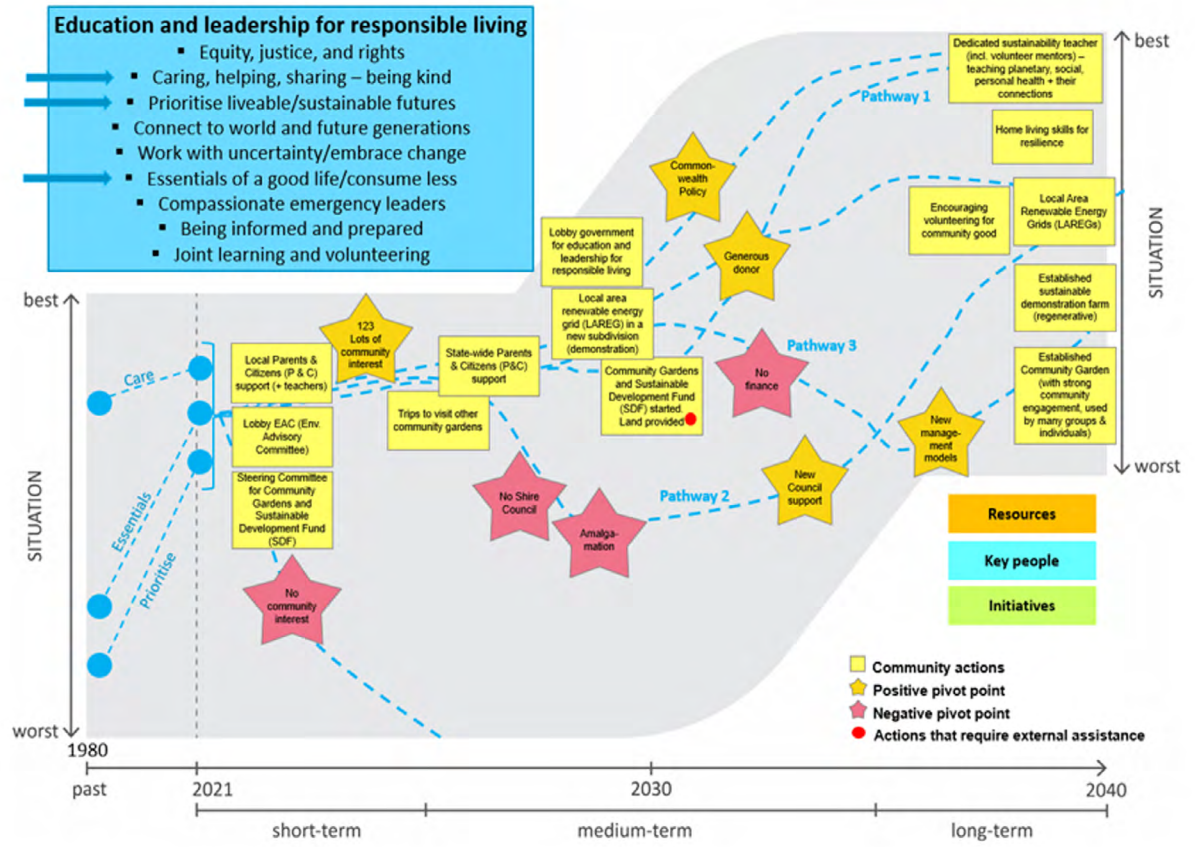


Figure 6: Positive pivot points

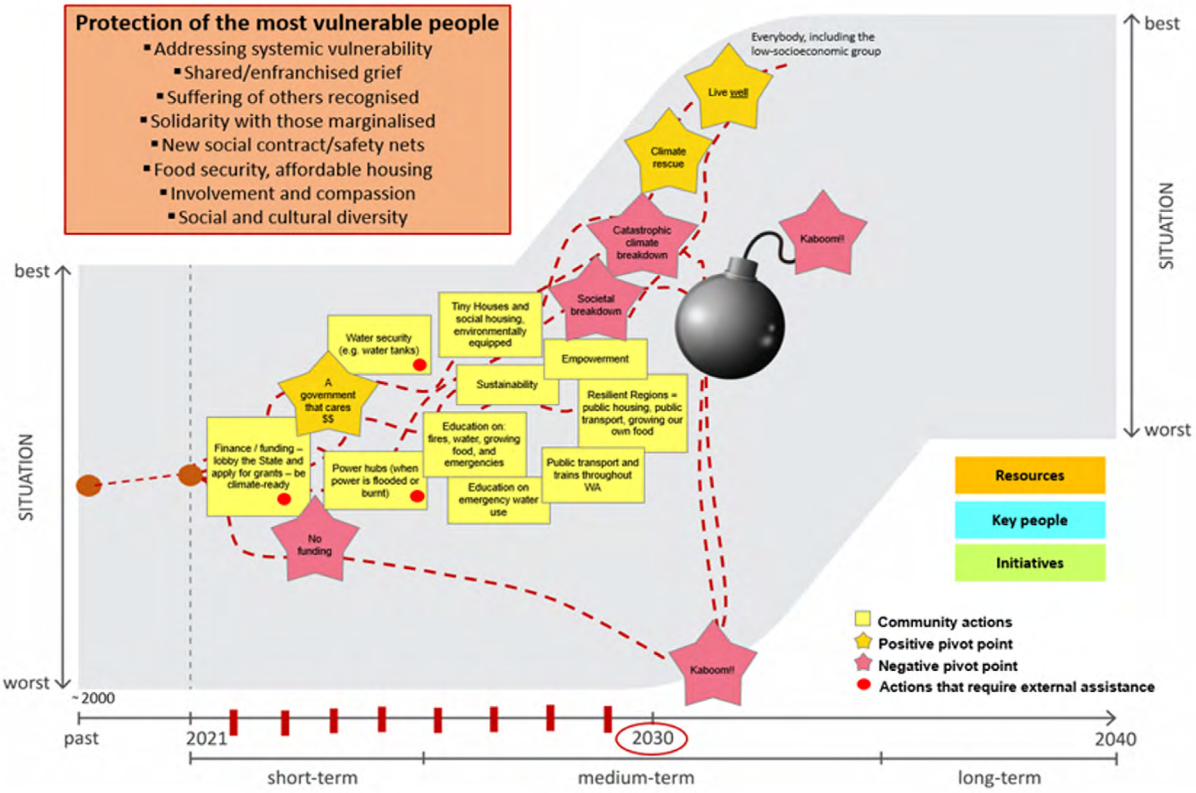


Figure 7: Negative pivot points

Figures 6 & 7: Examples of community adaptation pathway mapping toward desirable WA futures by 2040, including positive and negative pivot points and actions.

CLIMATE JUSTICE AND THE WA COMMUNITY SECTOR

Community sector leaders in Western Australia partnered with Edith Cowan University to undertake a participatory action research project about how community sector workers understand climate justice, and actions the sector could take to strengthen organisational policies, culture, and practices to respond to the needs of communities at risk of climate change.

Participants first reported a range of social justice impacts of climate change, ranging from increased cost of living for heating and cooling and financial and mental health stress; mental health issues; physical illness and/or injuries; difficulties adapting homes; to discrimination and difficulties accessing community activities and social support networks. However, community organisations did not seem to have abundant policies and procedures relating to social justice and climate change. Exceptions include promoting energy justice for low-income clients, strategies for disaster risk management, and investing in solar energy. To overcome knowledge gaps on the relationship between social justice and climate change, participants identified some overdue learning opportunities. These would more actively engage and educate community members regarding climate change, policies and practices to adapt and mitigate. Becoming part of collaborative work in this space and supporting vulnerable households is easier when practices are embedded in sustainability work of community sector organisations.

The Steering Group of this participatory action research project then prioritised to develop a Climate Justice Toolkit with tools and resources to support WA community sector organisations to incorporate climate justice in all areas of their institutions and practice. This practical online toolkit is currently in the making, to enhance climate change mitigation and adaptation across their programs. It covers the themes of governance; policies and procedures; finance and investment; procurement; service delivery and programs; advocacy; campaigns; monitoring and evaluation; research; communications; staff, volunteers and human resources; and reducing our footprint (energy, waste, transport, buildings, water). By using the toolkit, organisations and their staff will be able to:

- √ Define climate justice and identify climate injustices in their communities.
- √ Learn about the lived experiences of people already affected by climate change, such as First Nations Peoples, LGBTQIA+ communities, people experiencing homelessness, low-income people, people of colour, people with disability, and others.
- √ Access practical support for integrating climate justice into organisational governance, policies, and culture.
- √ Increase literacy about climate-responsive funding and fundraising, investment and divestment, and budgeting.
- √ Improve service delivery by co-designing impactful community services and programs that prepare for and respond to climate change.
- √ Participate in climate justice advocacy, campaigning, and research.
- √ Communicate with stakeholders (internal and external) about climate change and social justice.
- √ Implement strategies to reduce individual and organisational carbon footprints.
- √ Connect with other organisations and the climate justice movement to enrich learnings and share experiences of climate justice mainstreaming in the community sector.

D. INCORPORATING JUSTICE INTO POLICY AND INSTITUTIONAL SETTINGS

The need to move from slow and incremental approaches to climate change adaptation to more transformational ones is evident, and so is the need for more just, inclusive, deliberative approaches that are sustained over time. Yet, many of our policy and institutional settings, developed in the past, don't lend themselves to immediate use, or even to revision or renewal. Policy processes, decision-making protocols and institutional settings are the 'means to the ends' of climate change adaptation (Dovers and Hezri 2010); they determine who makes decisions, what information is called on, what groups get to have a say, and who will be affected. When government organisations need to meet growing program delivery expectations within limited resources, for pragmatic reasons, they often resist acknowledging and acting on expanded responsibilities for emerging climate risks and their justice implications. Legislation, policies, and regulations may disregard just adaptation and constrain action or, preferably, empower those who wish to drive action and instruct others to follow guidance on how to do so. Hence, adaptation to just transformation also involves identifying policy and institutional reform pathways that are systemic, cross sectors relevant to adaptation – transport, construction, environment, health, infrastructure and more. Pathways, processes, and capacities are likely to be at different stages, some in their infancy, others well advanced (Hussey et al. 2013).

Driving just adaptation across Australia's policy and institutional system will empower groups and individuals to pursue their own strategies and actions.

Key enablers for just adaptation in these settings include political commitment, inclusive governance processes, institutional frameworks and policies with clear goals and priorities, fair funding mechanisms, and access to monitoring, evaluation, and reporting (IPCC 2022; Lawrence et al. 2022).

Given the urgency to embed just adaptation in all public policy and decision making, a systematic, cross-sectoral review of major policy settings, legislation, and decision-making processes is needed. This means to identify where in our policy and institutional landscape, barriers, and enablers of just adaptation occur, from local council to federal agencies, with room for modest and more substantial reforms. Australia's political system has experience with policy reviews, for instance through inquiries and inter-governmental task forces. The review recently proposed for disaster risk reduction (Dovers 2022) could well be expanded to also entail climate change adaptation. Such a multi-jurisdictional and cross-sectoral review encourages learning, assists with questioning pervasive assumptions about a 'stationary climate' in policies, and expands our menu of just adaptation options. To ensure that the review process is consultative, inclusive, and just, it needs to deliberately seek the views and involvement of groups historically and currently disenfranchised, including those made vulnerable (e.g. via substandard housing), those facing converging crises and vulnerabilities (poor housing plus heat stress and/or flooding), and the many exclusions that Indigenous people experience with colonisation (Williamson and Weir 2021).

Equally important for such a comprehensive review is the explicit recognition of climate impacts on more-than-human environments. This entails the relations between people and non-human communities across policy areas, and core ecological entities and processes (such as rivers) being recognized as 'persons' to be protected in adaptation planning. Climate justice and just adaptation require this multilayered attention and the inclusion of and responsibilities for affected populations experiencing marginalisation, human and non-human alike (Tschakert et al. 2021).

WINTER WATTLE
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3. CONCLUSION

This *National Strategy for Just Adaptation* has demonstrated the substantial imperatives to embed a justice framework within current adaptive approaches, and the opportunities available to transform Australia into both a more sustainable and a more just nation.

Building on the diverse expertise brought by members of the Expert Working Group, we have sought to lay out an approach that, for governments at every level, policy experts, academics, community leaders, community-based organisations, and society at-large, will strengthen ongoing efforts to advocate for just adaptation and ensure widespread implementation, in alignment with place- and values-based priorities at multiple levels. This Strategy illustrates that, across sectoral adaptation portfolios, just adaptation requires responsibility and skills to navigate and overcome diverse but interconnected challenges.

The five Building Blocks – Practicing recognition of all Peoples and their Knowledge, Fostering Inclusion of Communities Experiencing Marginalisation, Addressing Ongoing Injustices, Overcoming Barriers and Acknowledging Limits, and Transforming for Just Adaptation – offer both the scientific and conceptual framework and the practical blueprint to usher in a new era of adaptation thinking and doing, for Australia's diverse populations and across the multitude of climatic hazards experienced now and anticipated for the future. This approach, as the Strategy showcases, takes climate change as a strategic opportunity to address processes of colonisation, disenfranchisement, and other injustices that continue to produce vulnerabilities in our most marginalised communities. At the heart of this approach is realising, finally, the immense opportunity available to all Australians from engaging with the perspectives and knowledges of Indigenous Peoples. In the writing, we ourselves have uncovered dynamic challenges and opportunities that provide rich analytical and material grounds for just adaptation.

The National Strategy has identified five key Priority Reform Areas that, together, offer a viable pathway to strengthen and enhance just adaptation across society. Appropriate and collaborative action research is needed to enable and progress all five areas, simultaneously.

- Empowering indigenous leadership
- Embedding a just adaptation framework across governments and sectors
- Including the voices and experiences of diverse stakeholders across areas of marginalisation into just adaptation processes.
- Supporting communities and community groups to drive transformation
- Advancing research agendas that promote just adaptation

The Expert Working Group has synthesised the discussion of the Building Blocks in the previous sections into a set of key directions and actions for each of these Priority Reform Areas; these are listed at the end of the Executive Summary on pp.3-7.

Committing to just adaptation through action in the Priority Reform Areas requires confronting colonial systems that produce social inequities and perpetuate vulnerabilities across many marginalised groups. In this way, this Strategy speaks to different actors in different ways, whilst striving to create positive change for those denizens who experience intersecting inequalities and marginalisation.

The contributors to this Strategy view this document as a starting point, rather than an end point, for a difficult but critical and long overdue discussion.

Future Earth Australia is proud to present this National Strategy as part of larger efforts to respond to the increasing challenges posed by climate change and to drive positive societal change. This Strategy provides a foundation for action to transform our thinking and practice and to strive for a more sustainable and more equitable future for all.

APPENDIX 1
CONSULTATION SUMMARY

THE UNIVERSITY OF SYDNEY
Sydney Environment Institute

WESTERN SYDNEY UNIVERSITY
Institute for Culture and Society

futureearth AUSTRALIA

Australian Academy of Science

REIMAGINING CLIMATE CHANGE ADAPTATION

Leaders from across the private sector, finance, all levels of government, Indigenous community, land management, social services, and universities, in all states and territories, gathered between 13-16 July 2020 for *Securing Australia's Future: Reimagining Climate Adaptation*, to discuss Australia's adaptation to climate and environmental change. Conducted as a series of roundtables, these meetings took stock of Australia's successes, failures, opportunities, and pathways for adapting to a changing climate, and had a focus on the role of community-led approaches to adaptation.

A high-level summary of these meetings is available **here**, and a full synthesis of findings is **here**.

BUILDING COMMUNITY, CONVENING AND OUTREACH

The Reimagining Climate Adaptation Summit was held 19–22 April 2021, led by Future Earth Australia and supported by the University of Sydney and Western Sydney University, and with the assistance of the Climate Adaptation working group. Over the course of three days, participants engaged with several themes that explored how Australia's climate adaptation and resilience agenda can be made more robust, effective, and inclusive. The program was designed to incorporate a range of different types of knowledge and expertise across communities and sectors. The aim of the summit was to create clear pathways to developing adaptive actions across government, business, and on the ground.

Day 1 of the summit focused on the importance and opportunities associated with centring non-Western worldviews, knowledge, and practices for adaptation. Bruce Pascoe, author of Dark Emu and Yuin, Bunurong, and Tasmanian man, opened the summit with a keynote extolling the efficacy of cooperation as the basis of adaptation and sustainability. The following sessions explored the diverse knowledge systems of Australia's First Peoples, knowledge systems across Oceania, and how these knowledge systems can drive transformative adaptation.

Day 2 of the summit explored the key aspects of putting adaptation into action, through topics like community-led planning, cross-sectoral collaboration, and initiatives, and developing climate lenses for business and finance to use across their portfolios. In his keynote address, Dr Marcelo Mena, Chilean Minister for Environment 2014–18 and founder of the Coalition of Finance Ministers for Climate Action at the World Bank, said that "addressing climate change, building resilience, and promoting social equality is the growth story of the 21st century".

Day 3 of the summit focused on transforming sectors and systems such as agriculture, coastal and marine systems, and cities and towns to prepare and adapt. Proper valuing of natural and social capital associated with healthy ecosystems and resilient communities in our governance and business planning is a major priority. Building the capacity of practitioners across sectors to work with uncertain and constantly changing conditions, which can be informed by quality research, is also a key step. **Videos** for all sessions from the summit are available to watch on our website. Read the **summit program**.

The summit was followed by the *Empowering Future Leaders in Adaptation* day, to build networks and capacity of early career researchers and practitioners in the field.

Following the *Reimagining Climate Adaptation Summit 2021*, the Expert Working Group was established and three co-chairs appointed to begin writing *A National Strategy for Climate Adaptation*. This document is the result of that process.

APPENDIX 2 CONTRIBUTORS TO JUST ADAPTATION

Triggered especially by the bushfires in summer 2019/20, the Reimagining Climate Change Adaptation process started with four virtual roundtables of adaptation leaders from governments at all levels, industry, NGOs and research nationwide during 13-16 July 2020 (NSW/ACT, Vic/Tas, SA/WA and QLD/NT), which led to the online *Reimagining Climate Adaptation Summit* during 19-22 Apr 2021.

We thank all participants in these roundtables and presenters at the Summit for their input, which led then to the establishment of the present EWG and this Strategy. The 475 attendees of the Summit and subsequent *Empowering Future Leaders* ECR event are too numerous to mention – however we extend our profound thanks to everyone involved.

Adrian Turner
Anne Poelina
Arnagretta Hunter
Bob Speirs
Blair Trewin
Brian Foster
Bronwyn Lay
Bruce Pascoe
Cecilia Woolford
Charlee Law
Chels Marshall
Chris Croker
Christine Winter
Crystal Fleming
David Tissue
David Tucker
Declan Clausen
Diane Favier
Donovan Burton
Dorean Erhart
Duncan Ivison
Erfan Diliri
Eric Lede
Gayle Schueller
Georgina Woods
Hillary Montague
Ian Fry
Ian Southall
Ili Bone
Jakelin Troy
James Wheelan
Jane Colton
Jen Cleary
Jenny Newell
Joe Morrison
John Richardson
John Thwaites
Judith Bruinsma
Karen Avery
Karen Cain
Kate Auty
Kate MacKenzie
Katie Eberle
Katrina Graham
Keith Bradby
Kellie Caught
Ketan Joshi
The Hon Lily D'Ambrosio MP
Louise Crabtree
Luke Reade
Marcelo Mena Carrasco
Mark Siebentritt
Mark Greenhill
Mark Stege
Matthew Chesnais
Maxie Archer
Meg Parsons
Melissa Haswell
Michael-Shawn Fletcher
Neil Cliffe
Nick Post
Parry Agius
Paul Bertsch
Phoebe Evans
Rameen Mailk
Rebecca Harris
Rebecca Lang
Peter See
Rodrick Simpson
Ruth Irwin
Sarah Boulter
Sarah Day
Scott Hickman
Simon Holmes à Court
Sophie Webber
Susie Moloney
Tammi Jonas
Tammy Tabe
Tom Stead
Zoe Whitton

ENMORE PARK, ENMORE NSW
PHOTO CREDIT: JUAN FRANCISCO SALAZAR

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ABOUT
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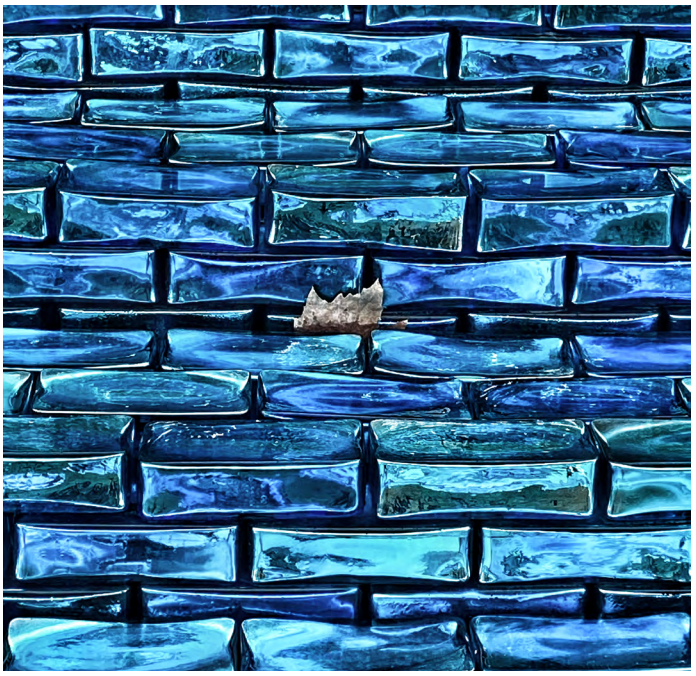

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