

ACT climate adaptation for nature framework

Document developed to guide cross-team work

Led by Office of Nature Conservation, 2023

Context

Climate change is increasingly **re-shaping our ecosystems and society**, with the scale and pace of change expected to accelerate in coming decades. Average annual temperatures across Australia have increased by approximately 1.5°C since 1910 (CSIRO & Bureau of Meteorology, 2022). Globally, the pathway to limiting temperature increase to 1.5°C is increasingly unrealistic (United Nations Environment Programme, 2022) with at least 2°C warming by 2100 likely even under the optimistic scenario of all current long-term net zero pledges assumed to be successful (Climate Action Tracker, 2022). This 2°C of global surface warming equates to approximately 2.8°C warming here in the ACT.

Drought, heatwaves, high precipitation events and bushfire risks are all set to escalate. Nationally, many species are already shifting their ranges (Lawrence et al., 2022) and this process will accelerate in coming years. Some will have no suitable habitat in the ACT or at all, and new species both native and exotic will arrive. Heatwaves are already causing mass mortality of birds in parts of Australia, and such events are expected to become more frequent. Bushfire frequency is already causing changes to community composition and vegetation structure in our forests and expected patterns will lead to transformation of the ecological communities in some reserves. Some of the potential challenges of climate change include emergence of novel pathogens, geopolitical conflicts and tensions between land use priorities and nature conservation. The effects of climate change will not only be incremental and single but complex and cascading and will transform not just our natural environment but our relationship to nature.

The impacts of climate change pose **far-reaching and unprecedented challenges** for decision-making and planning at every level in the environment context. Climate change impacts on nature will also impact human wellbeing, affecting health (through dust, smoke, diminished recreational opportunities), cultural and spiritual connections to place, access to valued experiences of nature and social activities taking place in nature. The culture and wellbeing of Ngunnawal people, who have been custodians of this landscape for tens of thousands of years, is particularly closely linked to nature and will be particularly impacted.

While there is considerable uncertainty around how climate change will impact different aspects of nature, it is essential that we **act now to anticipate and prepare** for change. Large-scale change is highly likely but acting now gives us the best chance of maintaining the values the ACT community holds in relation to nature. **Acting in the face of uncertainty** involves a shift in the way we think and make decisions – it requires iterative experimentation with no guarantee of success. The costs of doing nothing, however, are extremely high.

The ACT Government's *Climate Change Strategy 2019-2025* has established the ACT as a global and national leader in emissions reduction and the *Living Infrastructure Plan: Cooling the City* established a powerful framework for adaptation to increased heat in the urban context. In relation to adaptation for nature, however, a **coordinated and systematic approach** is required to navigate the complex challenges in this realm and to embed adaptation across relevant programs and policies.

The goal of this initiative is to develop a systematic and effective response to the impacts of climate change on nature and nature conservation and management, in which the **knowledge, capacities and processes for effective adaptation** are embedded firmly within the mainstream of ACT Government work.

The challenge of adaptation

In the context of conserving and managing the natural world, the challenge of adaptation is highly complex and multi-faceted. It involves dealing with the diversity of life from genes to ecosystems; processes from hydrology to evolution; and operating over multiple spatial and temporal scales. It requires working with; a multiplicity of stakeholders with diverse and- sometimes divergent - values; a highly complex legislative and policy framework; and an interacting array of institutions.

For relatively minor levels of climate change, such as that to date, it might be possible to pursue existing nature conservation objectives with small adjustments to conservation practice. These objectives essentially involve resisting change, maintaining species populations and communities, or restoring them to past conditions. However, this is unlikely to be possible with future climate change. More significant warming, changes in rainfall, changes in variation and extremes of wet and dry, and changes in disturbances such as fire and storms, have the potential to drive significant changes in the behaviour, abundance and distribution of species (including exotic). These effects of climate change extend to the composition and identity of ecological communities, and the structure and functioning of ecosystems across the ACT and in surrounding areas. Future nature conservation efforts may need to focus on preserving values that can be maintained *while* accommodating significant ecological change. This could include minimising extinctions of species while their distributions change or maintaining the health and function of ecosystems while they change in composition and structure.

Transformational changes such as these, in the future, could represent a significant departure from current practices, and they will only be possible with support from the community, new knowledge about ecosystems and their management, revised policies and institutions. Transformational changes will affect how we make decisions, set priorities, and relate to species and places. And it will require anticipation and planning that transcends usual policy and funding time spans. These changes will be made incrementally over time, potentially over decades, responding to new information and societal expectations. But they need to be actively enabled through raising awareness, collaboration, research, landscape experiments and deliberation among all those with a stake in the nature of the ACT.

The magnitude and precise details of future climate changes and ecological impacts are uncertain, and to a degree unknowable until they occur. This is due to global social, economic and political factors driving greenhouse gas emissions, the complexity of earth-climate system dynamics, and variation in local and regional ecological responses. But the nature of the possible changes and their

implications for society and management mean that we need to anticipate them as best we can, and start to prepare for them, so that we can transition from our current ecosystem management objectives and practices, if and when needed, in a timely and effective manner.

Departing from well-established practices and accommodating change will involve accepting new risks. However, we risk exposing ourselves to significant losses of nature if we continue to resist change until it overwhelms us without learning about new ways to manage our landscapes enabling our diverse relationships with nature to evolve.

Adaptation will be a continual process, but it needs to be supported with new knowledge and processes, and narratives about nature. Future change is inevitable and has to become a part of how we live with nature.

Principles for adaptation for nature

All these dynamics mean that embedding adaptation for nature into our systems will not happen in one step and is not a discrete process to be done once. Rather, it will be an iterative and ongoing process which evolves to meet new knowledge, values, and information as they become available.

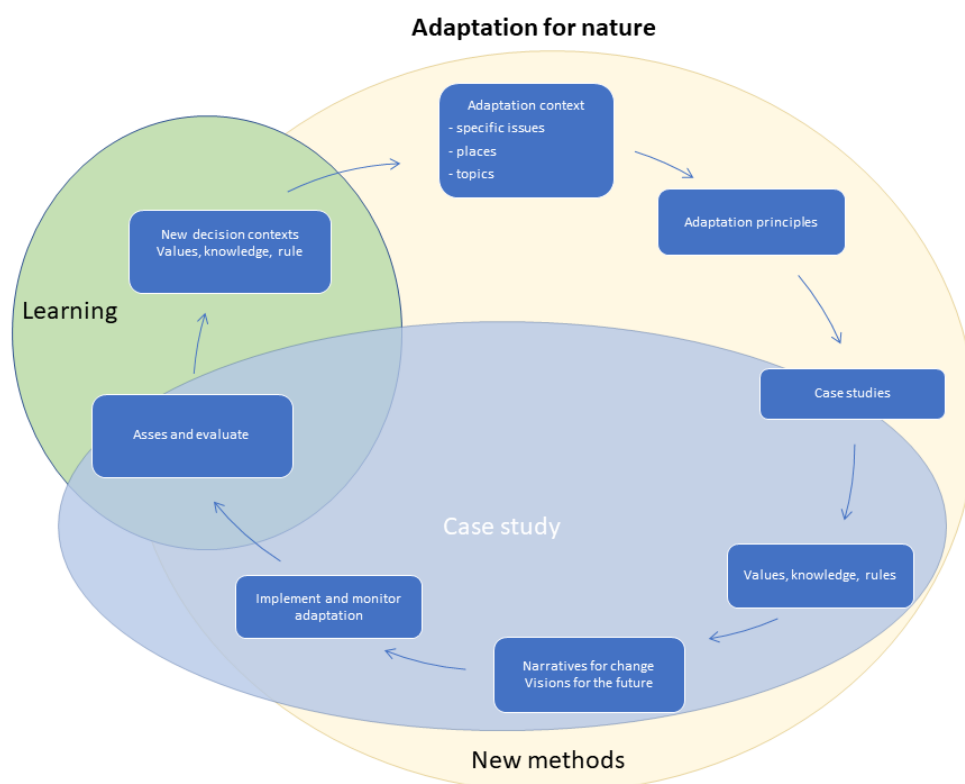


Figure 1. Conceptual diagram of adaptation for nature in the ACT.

Our work will be guided by the following key principles:

Learning Adaptation necessarily involves innovation and experimentation, learning from what works and what doesn't, and responding to new information when it becomes available. Adaptation also needs to respond to the evolution of how society values nature, as it responds to climate change. The successes and failures of interventions need to be robustly monitored and analysed to draw out

lessons and insights and these need to be communicated and shared to foster learning. Adaption also involves learning to think and talk about change and being comfortable with accommodating ambiguities that will arise where a changing future is inconsistent with the way we currently make sense of nature.

Inclusivity The values held by stakeholders related to nature are highly diverse. A diversity of stakeholders and knowledges need to be engaged in the development of shared narratives, co-design of interventions, and the adaptation process in general. In particular, climate adaptation needs to recognise the importance of country to traditional custodians, and the value of traditional custodians' knowledge and culture in responding to climate change.

Incorporating Ngunnawal knowledge In addition to recognising the importance of country to Ngunnawal Traditional Custodians, adaptation is an opportunity to incorporate traditional cultural and ecological knowledge into frameworks for navigating land management under climate change. This could include building mechanisms to incorporate Ngunnawal knowledge into adaptation, acknowledging the need to fully respect the intellectual property of Traditional Custodians over their knowledge and data.

Systems thinking Systems thinking is an approach to problem-solving that views problems as part of a wider dynamic system or systems. Using systems concepts in adaptation planning can help reveal relationships, interactions and interdependencies between different system components. This involves looking at patterns, structures, underlying drivers, and possible disruptions, risks and impacts to the systems. It extends adaptation thinking well beyond assets (e.g. a river), to all the interacting system components that could affect management (laws, supply chains, communications networks, vehicles, disease). It helps prepare for unanticipated dynamics between species and between nature and people.

Place based Climate change will affect different places in different ways. This means adaptation work must be 'place-based' – tailored to specific contexts, responding to who and what is there now and into the future, and engaging with the perspectives, values and knowledges linked to that place. Place based adaptation may include the development of scenarios and narratives which allow these values and priorities to be made explicit.

Common narratives and visioning By inviting the community to envision possible futures we can identify the things people value about nature and work to build common narratives about what these values will look in the future or futures. This allows us to be transparent about the values for which we manage, recognising we are going to need to actively choose these values and there will be trade-offs involved, as maintaining current values will in most cases not be an option.

Evidence-based decision making Uncertainty is an inherent feature of climate change but there is unequivocal evidence that climate change is having and will continue to have significant impacts on nature. Adaptation planning and implementation should be underpinned by and respond to the best available data and be revised if or as better data or projections become available. It may be necessary for stages withing adaptation planning and implementation to consider different types of data and levels of uncertainty.

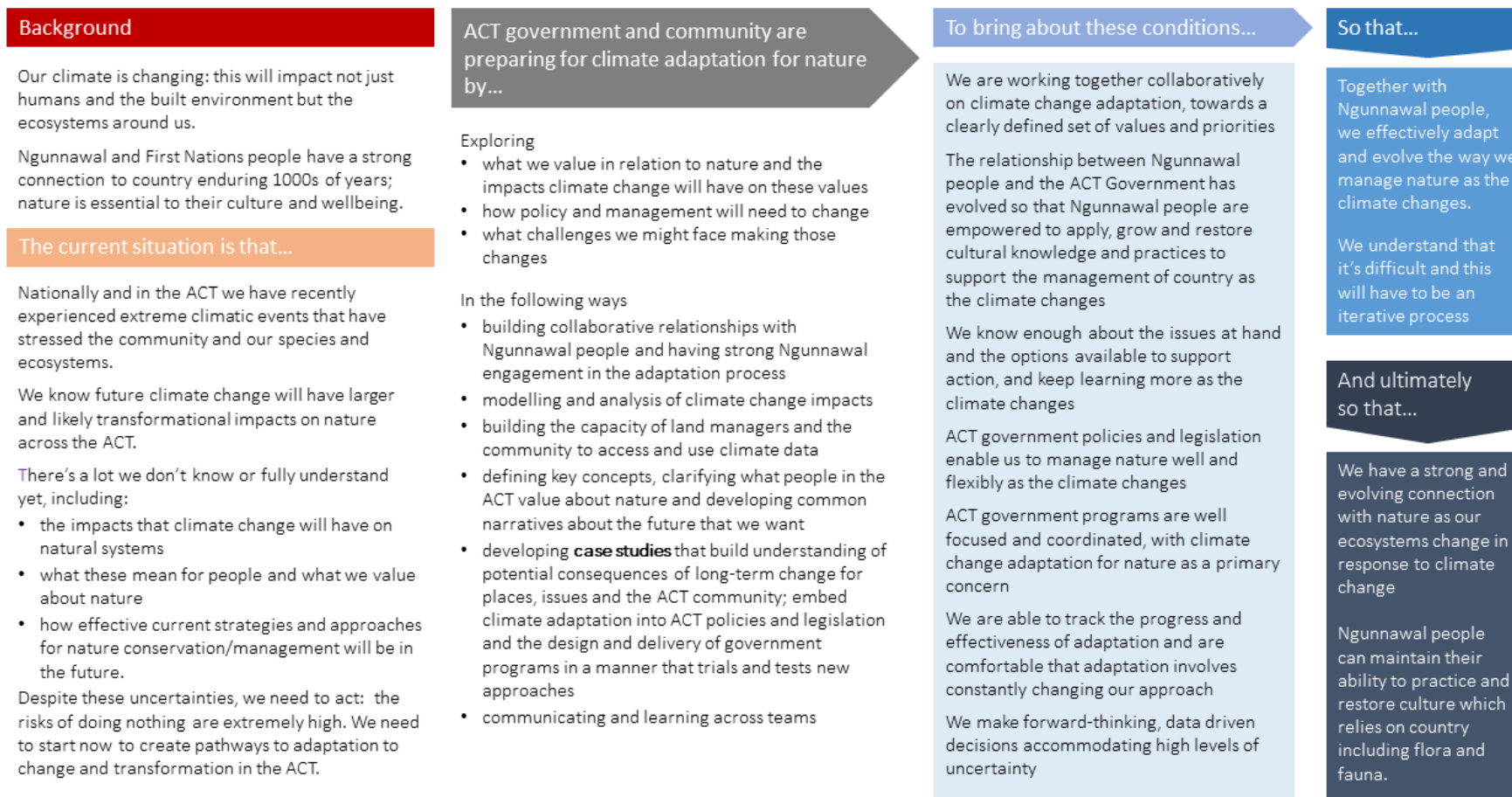
Accommodating uncertainty While we have very high confidence climate change will affect nature there will always be significant uncertainty about the details of future ecological change and how people will respond to them. Our approach must regularly seek and accommodate updated information about ecological change, societal aspirations for biodiversity and the effectiveness of management options. We may need to change direction rapidly and be comfortable with that approach. Moreover, we need to ensure our planning and management is robust to uncertainty and accommodate a range of scenarios of ecological and societal change.

The Climate Adaptation for Nature initiative: objectives and approach

There is confidence that climate change will have extensive and likely transformational impacts on the natural environment. However, there are significant gaps in knowledge about how these changes will impact the ACT including what the impacts on the natural environment will look like, how people in the ACT will respond to these changes and whether and where current management objectives and practices will remain relevant. A series of actions have been developed across different time scales to navigate these questions and to guide climate change adaptation for nature in the ACT.

The program logic has been developed to identify the objectives and approach of this framework informed by the adaptation principles.

ACT government climate change adaptation for nature: Logic v5



Case studies – exploring adaptation pathways

Learning needs to be a central part of climate adaptation. Case studies are a tool for progressively and collectively exploring, in an inclusive, systems-based, and context-specific way, what adaptation to future change may involve for specific issues, places and topics. These case studies will be used to generate approaches and knowledge that can be applied more broadly to adaptation in other parts of the ACT. The case studies will be practical, involving actively trialling new ways of engaging with nature, managing, and planning, and providing a basis for revising research priorities and policy settings.

The case studies will be collaborative exercises in which a core team of ACT Government Staff, supported by CSIRO's expertise, will work with and support the teams leading a particular issue or area to incorporate adaptation into their work. Staff in each area are supported in:

- examination of the values management is seeking to safeguard
- how these may be impacted by the transformations wrought by climate change
- derivation of *climate-ready* objectives and management approaches
- exploration of the potential challenges people making adaptation decisions may face in terms of values (e.g., priority, social licence), rules (e.g. institutions, norms, regulation) and knowledge (e.g. scientific, practical)
- scoping of the roles of EPSDD, other directorates and community partners in adaptation
- development of pathways for adaptation – what has to be done, and in what order, for effective adaptation, meeting near-term objectives, responding to emerging impacts and enabling future responses to uncertain and higher-level impacts.

Case studies can be tailored to different contexts and example case studies include exploration of fire as a landscape management tool under climate change and revision of the Namadgi Plan of Management.

Vision for well adapted management of nature in the ACT

A well-adapted system for managing nature in the ACT will be one where policy objectives, management programs and community expectations are developed **anticipating future change** and readily **revised as new information** comes to hand. The capacities to anticipate and revise will be built into business-as-usual policy development, planning, evaluation, research and community engagement, and common narratives about people and nature will incorporate past and future change. In this way, adaptation will be continual and mainstreamed rather than a once off separate from standard processes.

Achieving this vision will require new supporting structures, capabilities and common narratives that help us learn rapidly and effectively about unfolding and future change and help us evolve our connections to nature so they remain strong as nature changes.

This framework is intended to help develop an understanding about what supporting structures and processes might be needed to set the ACT on the path to having a system for living with and managing nature as it continues to change for decades to come.

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