



ACT
Government

Understanding climate risk: Co-designed applications for local decision making

Climate Narrative Scenarios Project Report

Adaptation and Resilience Policy

Climate Change, Energy and Water Division

City and Environment Directorate (CED)

May 2025

Acknowledgement of Country

Yuma Dhawura nguna ngurumbangu gunangu Ngunnawal. Nginggada dindi dhawura Ngunnawalbun yindjumaralidjinyin. Mura bidji mulanggaridjindjula. Naraganawaliyiri yarabindjula.

Hello. This country is Ngunnawal (ancestral/spiritual) homeland. We all always respect elders, male and female, as well as Ngunnawal country itself. They always keep the pathways of their ancestors alive. They walk together as one.

We acknowledge the Ngunnawal people as traditional custodians of the ACT and recognise any other people or families with connection to the lands of the ACT and region. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

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Executive Summary

The *Climate Narrative Scenarios Project* is collaboration between the ACT Government's Adaptation and Resilience Policy (ARP) Team and the University of Tasmania (UTAS), aimed at enhancing climate risk understanding and decision-making through co-designed, narrative-based scenario planning. Conducted between January and May 2025, this project is part of a broader national research effort under the NESP Climate Systems Hub, funded by the National Emergency Management Agency (NEMA).

The project was delivered through a structured co-design process involving stakeholders from across ACT Government directorates, academia, utilities, and community organisations. Three interactive workshops were held to:

- Map climate hazards and systemic vulnerabilities
- Develop narrative scenarios using climate and shock cards
- Refine and explore the application of scenarios in policy and planning

Key Deliverables

- **Draft Climate Narrative Scenarios:** A set of detailed, time-phased scenarios (near-, mid-, and long-term) illustrating plausible futures for the ACT under escalating climate hazards.
- **Capacity Building:** Participants gained hands-on experience in scenario planning, systems thinking, and climate foresight, strengthening institutional capability.

This project demonstrates the value of narrative foresight in climate adaptation and offers a replicable model for integrating scientific, policy, and community perspectives into climate risk planning.

Contents

Understanding climate risk: Co-designed applications for local decision making.....	1
Executive Summary	3
Introduction.....	7
Background.....	7
UTAS Research Project	7
ACT Government	7
Purpose.....	8
Project Delivery Team	8
Project Advisory Group	8
Research Ethics.....	9
Methodology	9
Research Precedent.....	9
New Zealand and Australian Tertiary Education Sector	9
Foresight Foundations.....	9
Approaches and Assumptions	10
Scenario Planning	10
Climate Hazards.....	11
Systems-thinking Lens	11
Data Sources.....	12
Future Climate Projections.....	12
Historical Context and Lived Experience.....	13
Stakeholder Engagement	13
Stakeholder Identification	14
Engagement Strategy	14
Communication Channels	15
Feedback Mechanisms	15

Traditional Custodian Engagement	15
Co-design process.....	15
Planning phase	16
Initial Stakeholder Meeting.....	16
Workshop 1	17
Post-workshop consolidation	17
Workshop 2	17
Post-workshop consolidation.....	18
Workshop 3	18
Post-workshop consolidation.....	19
Stakeholder Survey.....	19
Presentation of Draft Outputs.....	20
Deliverables	20
Sample Scenarios.....	20
Capacity Building	21
Lessons Learned	22
Strategic Design and Delivery.....	22
Capacity Building and Learning	22
Engagement and Inclusion	23
Scenario Communication and Application	24
Next Steps.....	24
1. Finalisation and Dissemination	24
Finalise and Visualise Scenario Outputs.....	24
Present to Key Stakeholders	24
2. Potential Integration into Government Planning.....	25
Apply Scenarios in Strategic Planning	25
Strengthen Whole-of-Government Risk Frameworks.....	25

3. Continuation within the UTAS Project	25
Engage in UTAS future collaborative work.....	25
Appendices	26
Appendix A – Glossary.....	26
Appendix B – ACT Government Original Pitch.....	28
Appendix C – Historical Event Information	29
Appendix D – Emissions Scenario Analysis.....	32
Appendix E – Copy of Interactive Scenarios Game.....	33
Changes to the ACT climate (annual averages).....	33
Instructions.....	34
Appendix F – Copy of Stakeholder Survey.....	45
Appendix G – Workshop 3 Responses.....	47

Introduction

This report summarises the collaborative work undertaken between January and May 2025 by the Adaptation and Resilience Policy (ARP) Team and the University of Tasmania (UTAS) to develop future climate change narrative scenarios for the ACT Government. It outlines the project's purpose and objectives, stakeholder engagement activities, scenario development methodology, key lessons learned, and recommendations for finalising the scenarios.

Background

UTAS Research Project

The ARP project is part of a broader research project conducted in partnership by the UTAS and the NESP Climate Systems Hub. The objective of the project is to improve access to climate change information to aid decision making. The project will do this by developing regionally consistent qualitative climate change scenarios across no more than three localities.

To understand regional climate change hazards, UTAS engaged project partners:

- The Glenelg Hopkins Catchment Management Authority (in Victoria) to assess climate change risks for biodiversity
- The ACT assesses climate change risks for bushfire, heatwave, and smoke
- A third partner TBC

Each project has involved the development and application of locally relevant climate change scenarios. There is an opportunity to compare scientific methods, stakeholder engagement processes, scenario products, what worked well, what could have been done better, and lessons that could inform 'good practice' principles. Each project has been asked by the University of Tasmania to produce a short report on these aspects (this report). The three reports will have a similar structure to facilitate comparison. A final comparison report will be published publicly as a NESP Climate Systems Hub report.

The project is funded through the Disaster Risk Reduction (DRR) package of the National Emergency Management Agency (NEMA), which supports action that contributes toward the [National Disaster Risk Reduction Framework](#) (NDRRF). These actions include:

- Take action to reduce current disaster risk.
- Minimising the creation of future disaster risk
- Equip decision-makers with the capabilities and information they need to reduce disaster risk.

ACT Government

UTAS invited the ACT Government to participate in this nationally significant project. The ACT Government entered into a subcontractor agreement with UTAS in October 2024, joining as one of the three partners in this collaborative initiative.

Through this partnership, the ACT Government received \$50,000 in funding to support the development and application of scenario-based planning and narrative approaches to climate change risk management. This funding presents a strategic opportunity to build internal expertise and institutional capacity, particularly in addressing the compounding and cascading impacts from extreme heat, bushfires, and smoke. It also supports the integration of scenario planning into strategic decision-making and risk analysis.

Purpose

The purpose of this project is to improve the accessibility and applicability of climate hazard information to better inform risk analysis and decision-making through a narrative-based approach. By integrating scientific research with local knowledge and lived experience, the project fosters innovative and inclusive approaches to climate adaptation.

Narrative scenarios help translate complex climate models into relatable, story-driven formats that promote understanding across sectors. For the ACT Government, this approach strengthens its capacity to anticipate and respond to climate-related challenges, embed adaptation into policy and planning, and support evidence-based decision-making. It also contributes to broader efforts to mainstream climate adaptation across government and deepen collaboration with academic and community stakeholders.

Project Delivery Team

The project was delivered through a close collaboration between ARP and UTAS. The ARP Team led the coordination of all stakeholder engagement activities, both internal and external, including the organisation of three co-design workshops. UTAS provided support and expert facilitation for these workshops, ensuring a collaborative, inclusive, and well-supported engagement process.

This partnership model enabled the integration of local policy expertise with academic research, fostering a shared understanding of climate risks and co-creating practical, locally relevant scenario narratives.

Project Advisory Group

To support governance and cross-project learning, UTAS established a Project Advisory Group with formal Terms of Reference. This group provided strategic oversight and help coordinate learnings across the three regional projects. Membership included representatives from:

- UTAS
- Carolyn Goonrey, Senior Director, Climate Change Policy - ACT Government
- Glenelg Hopkins Catchment Management Authority
- Commonwealth Department of Climate Change, Energy, the Environment, and Water (DCCEEW)
- National Environmental Science Program – Climate Systems Hub (NESP)

The Advisory Group met in February, April, and June 2025, with a final meeting scheduled for September 2025. These meetings have been instrumental in sharing insights, aligning methodologies, and identifying opportunities for broader application of scenario-based planning.

Research Ethics

The broader UTAS-led research project, including the ACT component, was reviewed and approved by the University of Tasmania Human Research Ethics Committee in January 2025. An amendment to include a participant follow-up survey was subsequently approved in May 2025.

This ethical oversight ensured that all engagement activities were conducted in accordance with best practice principles, including informed consent, participant confidentiality, and respectful inclusion of diverse perspectives.

Methodology

Research Precedent

This project acknowledges some preceding work that has helped guide the design of the project.

New Zealand and Australian Tertiary Education Sector

The New Zealand and Australian tertiary education sectors independently conducted scenario building workshops in 2024. Lessons from these workshops informed the design of this project, particularly in adapting co-design processes to meet the specific local and sector needs of this project.

Foresight Foundations

The foundation for this project was established through a series of foresight-focused engagements led by the ARP Team in collaboration with consulting futurist Dr. Steven Cork from the Crawford School of Public Policy at the Australian National University (ANU). Between January and March 2025, the ARP Team hosted a seminar and three full-day workshops aimed at building futures-thinking capability within the ACT Government.

These sessions introduced key foresight concepts and tools, including:

- Human cognitive processes and their implications for policy and futures-thinking.
- The role of foresight in planning and policy development.
- Core concepts such as the futures cone and types of futures (possible, probable, preferred).
- A step-by-step overview of typical foresight processes.
- Interactive session with practical tools and frameworks.

These engagements laid the groundwork for the scenario development process by fostering a shared understanding of foresight principles among participants.

Approaches and Assumptions

Scenario Planning

Scenario planning is a strategic foresight method used to explore and prepare for a range of potential futures. It is particularly valuable in the context of climate change adaptation, where uncertainty, complexity, and long-term impacts challenge traditional planning approaches.

It enables the development of narrative-based futures that integrate data, trend analysis, stakeholder insights, and creative thinking. This approach helps translate complex climate models into accessible, story-driven frameworks that enhance understanding and engagement across diverse audiences.

Future scenarios are commonly framed using the **Cone of Possibilities** (see Figure 1 below), a conceptual model that illustrates the expanding range of potential outcomes over time. The model emphasises that uncertainty increases as projections extend further into the future, represented by the widening shape of the cone.

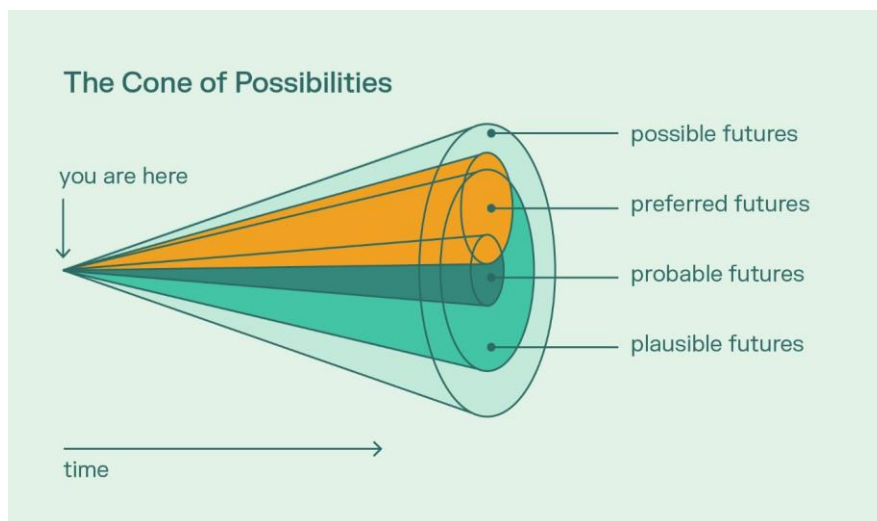


Figure 1. The Cone of Possibilities (retrieved from [Delve](#))

This project specifically focuses on the development of **plausible futures**—scenarios that are logically consistent and supported by current evidence, trends, and scientific understanding. While the final deliverables may include elements of **probable futures** (those likely to occur if existing trends persist) and **preferred futures** (those aligned with stakeholder values and aspirations), these are not the primary focus of the work.

The emphasis remains on constructing futures that are realistic and grounded in present-day knowledge from stakeholders involved in the project. Importantly, scenarios are not forecasts or predictions; they are "what if" narratives designed to inform, challenge, and expand strategic thinking.

Narratives Scenarios

The project adopted a **narrative scenario** approach, which combines quantitative data with qualitative insights to explore the interactions between climate hazards, social systems, and policy responses. This method is particularly effective in climate adaptation planning, as it addresses several limitations of traditional quantitative models in capturing the full complexity of climate change:

- **Climate system complexity and uncertainty:** The dynamic and interconnected nature of the climate system makes precise predictions difficult.
- **Data limitations:** Incomplete or inconsistent data, particularly at regional and local levels, can constrain model accuracy. Climate models rely on assumptions about emissions, technology, and policy that may not hold over time.
- **Integration of socioeconomic factors:** Human behaviour, governance, and economic systems are hard to quantify but critical to adaptation outcomes.
- **Regional variability:** Climate impacts differ significantly across regions, requiring context-specific planning.
- **Outlier events:** such as high impact low likelihood (HILL) events, wildcard events, compound events etc. These types of events are particularly impactful but hard to quantify.

This approach enabled the development of rich, locally relevant scenarios that reflect the lived experience of stakeholders and the unique climate risks facing the ACT.

Climate Hazards

The project focused on three interrelated climate hazards of particular concern to the ACT:

- **Heat**
- **Bushfires**
- **Smoke**

These hazards were selected due to their historical significance, which had significant negative impacts across the ACT, and their potential to produce compounding and cascading impacts. The project aimed to test whether narrative scenarios could more effectively capture these dynamics than traditional risk assessments.

Systems-thinking Lens

A systems-thinking perspective was applied throughout the project to understand the interdependencies between climate hazards, social systems, and institutional responses. This approach enabled the development of more realistic and actionable scenarios by highlighting how climate hazards like heat, bushfires, and smoke can trigger ripple effects across multiple domains, revealing vulnerabilities and opportunities for more integrated adaptation strategies.

By applying this lens, the project was able to:

- Identify **points of failure** in critical service delivery systems.
- Trace **cascading and compounding impacts** across interconnected sectors.
- Distinguish between **gradual disruptions** (e.g. slow-onset stressors) and **step-change events** (e.g. sudden, high-impact shocks).

To support this analysis, the project examined interactions across seven key systems:

- **Built Environment:** including housing, infrastructure, and urban design.
- **Natural Environment:** such as ecosystems, biodiversity, and land use.
- **Utilities:** including water, energy, and waste services.
- **Telecommunications:** critical for emergency communication and continuity of services.
- **Emergency Response:** encompassing preparedness, response, and recovery systems.
- **Health:** including public health systems, hospitals, and vulnerable populations.
- **Community and Cultural Heritage:** recognising the social fabric, cultural assets, and community resilience.

Importantly, this systems-thinking approach is particularly valuable given the project's intended use within government. By mapping interdependencies and shared vulnerabilities across directorates, it helps break down silos and encourages cross-sectoral collaboration. This ensures that adaptation planning is not only more comprehensive but also better aligned with the interconnected nature of government operations and service delivery.

Data Sources

The development of climate narrative scenarios in this project was informed by a combination of quantitative climate projections and qualitative historical insights. This blended approach ensured that the scenarios were both evidence-based and grounded in lived experience, enabling a more nuanced understanding of future risks and adaptation needs.

Future Climate Projections

The project drew upon the NSW and Australian Regional Climate Modelling (NARClIM) data to determine plausible changes to the hazards in the future. This climate modelling project is led by NSW Government in partnership with the ACT Government and other organisations and provides the most recent and detailed climate projections for the ACT.

Emissions Scenario

A high emissions pathway—the SSP3-7.0 scenario from the Intergovernmental Panel on Climate Change (IPCC)—was selected to guide scenario development. This aligns with the ACT Government's risk-based approach to adaptation, which considers a range of possible futures, including those aligned with current global emissions trajectories under the Paris Agreement.

(See in **Appendix E – Emissions Scenario Analysis** for further detail.)

Timeframes

The timeframes for the project were selected based on available NARClIM data and alignment with the timeframes in the Sixth Assessment Report of the IPCC.

- **Near term:** 2020-2039.
- **Medium term** (mid-century): 2040-2059.
- **Long term** (end of century): 2080-2099.

Historical Context and Lived Experience

To complement the climate projections, this project drew upon historical events to identify previous occurrences of these hazards and their impacts. Historical events within the 1990-2009 timeframe were prioritised to allow for direct comparison to the projected changes in climate.

Key sources included:

- **Heatwaves:** A synthesis of multiple historical events based on news archives and a national study on heatwave fatalities.
- **Bushfires:** Detailed accounts of the 2003 Canberra Bushfire and the 2020 Black Summer Bushfire, primarily sourced from the Australian Disaster Resilience Knowledge Hub.
- **Smoke:** Impacts from the 2020 Black Summer smoke event, including news articles, the 2023 ANU study [Human Effects of the 2019–20 Bushfire Season on the Community of the ACT](#), and ACT Government air quality monitoring data.

(See **Appendix C – Historical Event Information** for full details.)

Stakeholder Engagement

Engaging stakeholders in the development of climate narrative scenarios was a central pillar of this project. A collaborative and inclusive approach ensured that the scenarios were informed by a broad range of perspectives, expertise, and lived experiences—both within and outside the ACT Government.

This engagement aimed to:

1. **Promote inclusivity, relevance, and practicality:** Diverse stakeholder input ensured the scenarios reflected a broad spectrum of experiences, enhancing their creativity, realism, and applicability.
2. **Build credibility and trust:** Co-developing scenarios fostered legitimacy and increased support for climate adaptation actions.
3. **Ensure transparency and accountability:** An open process encouraged shared ownership and clear communication.
4. **Support capacity building:** Through co-design workshops and consultations, participants gained knowledge and skills to better address climate-related challenges.

Stakeholder Identification

The first step in the engagement process was to identify relevant stakeholders. These were grouped into two main categories:

- **Internal stakeholders** were identified through the ARP Team’s existing networks, complemented by a semi-systematic review of the ACT Government organisational chart. This approach ensured broad representation across Directorates. Initially, internal stakeholders were classified into primary and secondary groups based on their roles and relevance. The project later adopted a more inclusive, whole-of-government approach to encourage broad participation and cross-sectoral collaboration.
- **External stakeholders**, while not the primary audience for the scenarios, were engaged for their critical expertise and influence across key systems. These included:
 - Utility providers
 - Members of the ACT Climate Change Council –which advises the Minister for Climate Change, Environment, Energy and Water on emissions reduction and adaptation.
 - Representatives from ACT Council of Social Services (ACTCOSS) –the peak body for community sector organisations in the ACT.
 - Academics from the Australian National University (ANU) and the University of Canberra (UC).

(See **Appendix B – Stakeholder List** full list of stakeholders)

Engagement Strategy

The project adopted a **co-design approach**, meaning scenarios were developed *with* stakeholders, not *for* them. This ensured the narratives were grounded in local context, reflected diverse perspectives, and were tailored to the unique needs of the ACT.

Benefits of the Approach:

- Improved risk awareness through relatable, story-driven communication of climate impacts.
- Enhanced accessibility of technical data by embedding it within real-world contexts.
- Stronger collaboration between scientists, policymakers, and communities, fostering trust and shared ownership of climate adaptation strategies.
- More effective climate action through inclusive, informed, and locally relevant planning.

Participation was based on stakeholder interest and availability. Internal stakeholders were nominated by their Senior Directors / Directors, with flexibility to rotate participants. External stakeholders were invited based on relevance and capacity.

Individual consultations were held to introduce the project and secure early buy-in. These conversations also helped identify additional stakeholders and fill any gaps in representation. The engagement process remained open and adaptive, with new participants welcomed throughout the project. Some areas identified as relevant by the project team did not have the capacity to participate in workshops.

Communication Channels

To ensure simplicity and accessibility, communication was primarily conducted through:

- Email and calendar invitations for workshop scheduling and updates.
- In-person workshops as the primary forum for scenario development and collaboration.
- Document sharing via the ACT Government's Objective system for transparency and record-keeping.

Feedback Mechanisms

Stakeholder feedback was central to the iterative design of the scenarios. Mechanisms included:

- An initial stakeholder meeting to introduce the project and gather input on the scope and co-design process.
- Workshop feedback loops, where verbal and written feedback informed the design of subsequent sessions. For example, feedback from Workshop 1 indicated the session was too rushed, leading to adjustments in Workshop 2.
- A participant survey conducted at the end of the project to evaluate the engagement process and gather final reflections.

Traditional Custodian Engagement

Recognising the disproportionate impacts of climate change on First Nations peoples and the importance of embedding Indigenous knowledge in adaptation planning, the project team engaged early with the CED Traditional Custodian Engagement Office. This was aimed at ensuring that First Nations perspectives were respectfully and meaningfully incorporated into the scenario development process, including participation of First Nations staff in all workshops.

As a result of the co-design process, one of the scenarios developed in Workshop 2 focused on First Nations culture, tradition and knowledge taking a leading role in community resilience following a major climate disaster. As a result, the project team decided that the scenario should be further co-developed with guidance from the Traditional Custodian Engagement Office. *As of May 2025, this is still an ongoing deliverable of this project.*

Co-design process

The workshop series was designed with a dual purpose:

1. To collaboratively develop climate narrative scenarios for the ACT Government and contribute to the broader UTAS research project.

2. To provide a soft training experience in scenario development for participants.

This approach ensured that the process was both productive and capacity-building, equipping stakeholders with tools and insights to support long-term climate adaptation planning.

Planning phase

The project began with the development of a high-level workshop plan outlining the program structure, key research questions, and a framework for iterative development. While the core structure and research questions remained consistent, the delivery team adapted workshop activities over time to improve engagement and respond to participant feedback.

Key research questions for each workshop:

Workshop 1	A1 - Hazard impact mapping – past and future hazards	How are participants and their work impacted by the identified hazards? What are the points of failure? What are potential step changes vs gradual changes?
	A2 - Identifying other drivers of change	What other issues influence the identified hazards?
Workshop 2	A3 - Scenario development	In the projected futures, what scenarios are most important to participants?
	A4 - Integrate scenarios with other drivers of change	How might the climate scenarios be impacted by the other issues identified?
Workshop 3	A5 - Explore scenario implications for decision making	What are the implications for decision making?

Initial Stakeholder Meeting

Before the workshops began, an initial stakeholder meeting was held on Tuesday 4 February 2025 to introduce the project, outline the co-design process, and gather early input. This session helped shape the engagement strategy and ensured alignment with stakeholder expectations.

Workshop 1

Thursday 20 February | Nara Centre, Training Rooms 2.06 & 2.07

Purpose: To explore how the climate hazards—heat, bushfires, and smoke—impact the ACT through a systems lens.

Key Activities:

- **Activity 1 – Systems Mapping Exercise**

Objective: Introduce participants to the systemic nature of climate impacts in the ACT.

Participants were divided into groups, each focusing on one of six systems: Built Environment, Natural Environment, Utilities, Telecommunications, Emergency Response, Health, and Community & Cultural Heritage. Using large-format paper, they mapped how their assigned system interacts with others and how it may be affected by climate hazards. This exercise helped participants visualise interdependencies and potential points of failure.

- **Activity 2 – Mapping Future Impacts**

Objective: Explore how climate hazards might affect ACT systems in the future.

In Part A, participants reflected on historical events and how their work areas were impacted. In Part B, they used a matrix template to map potential future impacts of each hazard across all systems. This structured approach helped surface both direct and cascading effects.

- **Activity 3 – Identifying Emerging Issues and Drivers of Change**

Objective: Identify broader social, economic, and environmental drivers that could shape future climate risks.

Participants listed plausible macro-level drivers (e.g. population growth, technological change, political shifts) and selected the top three. They then explored how these drivers might interact with climate hazards to amplify or mitigate impacts.

Post-workshop consolidation

During the workshops the project team collected the sheets of paper that the participants completed. After the workshops the project team underwent a systematic transposition of the workshop material verbatim to digital format in Microsoft excel. The materials were also photographed for record keeping.

This data was then assessed for common themes and the language was made consistent. Summaries of each activity were created and shared with participants at future workshops. This ensured continuity and allowed participants to build on previous insights.

Workshop 2

Thursday 20 March | Nara Centre, Room 2.01 Collaboration Space

Purpose: To co-create narrative climate scenarios for three future timeframes using a structured, game-based approach.

Key Activities:

- **Activity 1 – Scenario Building with Climate and Shock Cards**

Objective: Develop plausible future scenarios using climate projections and identified drivers.

Participants were grouped and given sets of “Climate Cards” (based on NARClIM projections for a high-emissions future) and “Shock Cards” (representing the top drivers identified in Workshop 1). Each group developed scenarios for the near (2020–2039), medium (2040–2059), and long term (2080–2099), incorporating both climate hazards and broader societal changes.

(See **Appendix F – Copy of Scenario Game** for more details)

- **Activity 2 – Process Reflection and Feedback**

Objective: Evaluate the scenario-building process and identify areas for improvement.

Participants shared feedback on the interactive format. While the narrative approach was praised for sparking discussion and relationship-building, challenges included managing the complexity of long-term scenarios and capturing detailed insights. Suggestions included incorporating more data, clearer boundaries, and a stronger focus on adaptation solutions.

Post-workshop consolidation

After Workshop 2, the six group-developed scenarios were synthesised into three core narratives. All workshop materials were transcribed into digital format and photographed for record-keeping, ensuring participant input was preserved and accurately reflected.

One scenario, which prominently featured First Nations perspectives, was identified for further development through a parallel engagement process with select stakeholders, ensuring cultural integrity and appropriate representation.

The ARP Team expanded the remaining two scenarios using workshop outputs and relevant ACT Government strategic documents to fill gaps and inform assumptions. While the scenarios captured plausible future conditions, further detail was needed to describe the specific impacts of climate hazards. To address this, each scenario included two projected climate events (circa 2040 and 2060), with placeholders for additional input from stakeholders for Workshop 3.

Workshop 3

Tuesday 29 April | 480 Northbourne Avenue, Rooms 0.022 & 0.023

Purpose: To finalise the draft scenarios and explore their practical implications for policy and planning.

Key Activities:

- **Activity 1 – Scenario Completion and Quality Assurance**

Objective: Fill in missing narrative elements and validate scenario content.

Participants were assigned one of the six systems from Workshop 1 and given two draft scenarios. Each

scenario included two blank narrative sections describing the fortnight following a major climate event. Groups were tasked with completing these sections based on their system expertise, ensuring the scenarios were grounded in realistic, system-specific impacts.

- **Activity 2 – Exploring Scenario Use and Application**

Objective: Identify how the scenarios and the co-design process could be used within government.

Participants discussed the potential application of the scenarios, including:

- Who should use them and when
- How they could inform planning, policy, and risk analysis
- How the process could be replicated or scaled across other areas of government

Feedback was captured on worksheets and used to inform recommendations for future integration.

Post-workshop consolidation

Following Workshop 3, the project team compiled and digitised all participant materials. Responses from the scenario refinement activities were incorporated into two of the existing draft scenarios. These were independently reviewed by both ARP and UTAS for internal consistency, with adjustments made as needed.

The two draft scenarios were then compiled into a single resource document. While the scenarios are intentionally comprehensive—reflecting the depth of insight gathered during the workshops—they are designed to be adaptable. The project team agreed that the content could be edited for brevity and tailored to specific audiences in future applications.

The third scenario, which focused on First Nations perspectives, continued to be developed through a parallel engagement process. Input from First Nations representatives was reviewed separately by ARP and UTAS to ensure cultural integrity and narrative coherence.

Stakeholder Survey

Following Workshop 3, as the project transitioned into the reporting and reflection phase, ARP and UTAS identified a need to better understand stakeholder experiences and perspectives. In May 2025, a **stakeholder survey** was developed to gather insights on:

- Participants' prior knowledge of scenario planning
- Their experience of the co-design process
- Feedback on the draft scenarios and their potential uses

This feedback will inform both the finalisation of the scenarios and the broader UTAS research project, including comparisons with other scenario-building approaches.

(See **Appendix H – Stakeholder Survey** for a copy of the survey questions)

Presentation of Draft Outputs

To conclude the co-design process, a final presentation of the draft climate narrative scenarios was held on Monday 26 May 2025 for all workshop participants. This session served as both a validation step and an opportunity to gather final feedback on the scenarios' content, presentation, and potential applications.

The presentation included:

- A recap of the project's objectives, methodology, and co-design journey.
- An overview of the draft narrative scenarios, including their structure, key themes, and development process.
- Reflections on lessons learned and capacity building achieved through the workshops.
- Participant feedback on how the scenarios could be used across ACT Government and with external stakeholders.

The session also explored next steps, including the development of graphically designed scenario summaries, integration into strategic planning and risk frameworks, and continued capability building across the ACT Public Service.

This final presentation marked the formal conclusion of the co-design phase and reinforced the collaborative spirit of the project, ensuring that the scenarios reflect both expert input and lived experience.

Deliverables

As outlined earlier, the co-design process was designed with a dual purpose:

1. To collaboratively develop climate narrative scenarios for the ACT Government and contribute to the broader UTAS research project.
2. To provide a soft training experience in scenario development for participants.

Together, the following deliverables provide both a **practical output**—the draft scenarios—and a **strategic foundation** for embedding climate foresight into ACT Government planning, policy, and risk management.

Sample Scenarios

The primary deliverable of the co-design process is a set of **draft climate narrative scenarios**, each exploring plausible futures for the ACT under the influence of key climate hazards—heat, bushfires, and smoke—across the three timeframes.

These scenarios:

- Were co-developed through a structured, stakeholder-driven process across three workshops.

- Integrate quantitative data (e.g. NARClIM climate projections), historical events, and qualitative local knowledge.
- Highlight cascading and compounding risks across interconnected systems.
- Are intended to support strategic planning, risk assessment, and cross-agency collaboration within the ACT Government.

The set of scenarios is currently in **draft narrative form**, capturing detailed insights from workshop participants and some relevant ACT Government strategic documents. This level of detail was necessary to preserve the richness of stakeholder contributions and ensure the scenarios are grounded in real-world context.

However, during Workshop 3, stakeholders emphasised the need for more succinct, engaging, and accessible formats to support broader use. Suggestions included:

- **Infographics**
- **Short videos or animations**
- **Illustrated storyboards or comics**

Additional feedback on effective presentation strategies included:

- Using a mix of formats to suit different learning styles
- Incorporating first-person narratives to enhance relatability
- Emphasising realism and local relevance
- Highlighting key insights and takeaways
- Including data analysis to support evidence-based decisions

These formats would make the scenarios more digestible and actionable as a final deliverable for a wider range of audiences across government and the community.

(See **Appendix I – Workshop 3 Responses** for more details)

Capacity Building

In parallel with scenario development, the project delivered significant **capacity building** for ACT Government and external stakeholders. This included:

- Hands-on experience with scenario planning through three co-design workshops.
- Exposure to systems thinking, helping participants understand interdependencies and cascading impacts.
- Collaborative learning, fostering cross-sectoral relationships and shared understanding of climate risks.
- New networks and connections to support future climate adaptation work.

To support replication and institutional learning, this report serves as a comprehensive documentation of the methodology that can be used to guide future work.

Lessons Learned

The co-design process for developing climate narrative scenarios in the ACT provided valuable insights into both the opportunities and challenges of applying foresight methods in a government context. The following lessons reflect reflections from the project delivery team, stakeholder feedback, and observations throughout the process.

Strategic Design and Delivery

Timelines and Resourcing

The project aimed to deliver a complex, multi-stakeholder scenario development process within a six-month timeframe. While this was achievable, it placed significant pressure on staff capacity—particularly in coordinating five engagement sessions, synthesising large volumes of input, and drafting technically consistent scenarios. The compressed timeline increased the risk of underdeveloped outputs and limited the opportunity for broader testing or refinement.

Recommendation 1: Future projects of this nature should allow for a longer delivery window, particularly when dealing with complex subject matter and cross-sectoral engagement. A minimum of 9–12 months is recommended to ensure quality, reflection, and internal review.

Time for Consolidation Between Workshops

Three co-design workshops proved to be an effective structure for gathering input and building momentum. However, the short intervals between sessions limited the time available for meaningful consolidation, reflection, and iteration.

Recommendation 2: Space workshops at least two months apart to allow for thorough synthesis of outputs, stakeholder follow-up, and refinement of materials and facilitation methods.

Capacity Building and Learning

Value of Preparatory Training

Many participants had previously attended foresight training sessions delivered by the ARP Team and Dr. Steven Cork. This foundational knowledge significantly enhanced the quality of engagement and the depth of contributions during the workshops.

Recommendation: Where possible, integrate futures-thinking or scenario planning training into the early stages of similar projects. This helps align expectations, build confidence, and ensure participants are equipped to contribute meaningfully.

Survey Design and Evaluation

While a stakeholder survey was developed at the end of the project, a pre- and post-engagement survey would have provided a clearer picture of how participants' understanding and confidence evolved over time.

Recommendation: Future projects should incorporate baseline and follow-up surveys to evaluate learning outcomes, track changes in perception, and inform continuous improvement.

Engagement and Inclusion

Stakeholder Identification

While a stakeholder identification process was undertaken, some key stakeholders—such as EvoEnergy—were inadvertently excluded. Others, like the CED Office of Water, were unable to participate due to capacity constraints. This highlights the importance of allocating sufficient time for stakeholder planning before scheduling engagement activities.

Recommendation: Ensure adequate time is built into future project timelines for comprehensive stakeholder mapping and engagement planning. This will help maximise participation and ensure all relevant voices are included from the outset.

Importance of First Nations Involvement

One of the most valuable outcomes of the project was the development of a scenario centred on First Nations knowledge and leadership. However, this scenario required a different engagement approach and timeline to ensure respectful and meaningful inclusion.

Recommendation: Prioritise First Nations engagement from the beginning of any future project. This includes allocating dedicated time, resources, and culturally appropriate processes to support genuine collaboration and leadership.

Scenario Communication and Application

Scenario Presentation and Communication

Stakeholders provided valuable feedback on how the draft scenarios could be made more accessible and impactful. While the current narrative format is rich in detail, it is not easily digestible for all audiences without some visual integration.

Recommendation 1: Future iterations of the scenarios should be adapted into multiple formats—such as infographics, short videos, or illustrated summaries—to support broader engagement and practical application. It is recommended that a **professional designer be engaged** to transform the extended draft scenarios into visually compelling and digestible formats.

Recommendation 2: Only once these visual formats are developed should the scenarios be presented to the broader ACT Government and Executives. Clear, engaging presentation is key to ensuring the scenarios are understood, valued, and used effectively in decision-making.

Next Steps

Building on the successful co-design process and the development of draft climate narrative scenarios, the following next steps are recommended to ensure the outputs are refined, communicated effectively, and embedded into ACT Government planning and decision-making processes.

1. Finalisation and Dissemination

Finalise and Visualise Scenario Outputs

- **Engage a professional designer** to transform the extended draft scenarios into visually engaging and accessible formats (e.g. infographics, illustrated summaries, short videos).
- **Develop graphically designed scenario summaries** to complement the written narratives tailored for different audiences across government.

Present to Key Stakeholders

- Ensure that draft **visual formats are tested** with key internal stakeholders, including senior stakeholders prior to finalising graphic designs for broader dissemination. This allows for final feedback to be considered and supports approval process for wider application and use.
- Conduct targeted presentations of the finalised scenarios to key ACT Government stakeholders and Executives.
- Use these sessions to demonstrate the value of narrative scenarios in supporting strategic foresight and climate risk planning.

2. Potential Integration into Government Planning

Apply Scenarios in Strategic Planning

- Integrate scenarios into **strategic planning processes** across Directorates building on existing work focused on both compounding and cascading risks. Scenarios are key tool to help identify cross-cutting climate risks and support more integrated planning efforts.

Strengthen Whole-of-Government Risk Frameworks

- Use scenarios can support **embedding climate risk considerations** into ACT Public Service (ACTPS) operations, including asset management and service delivery planning. Potential collaborations with **ACT Insurance Authority (ACTIA)** to integrate climate related risk considerations into existing organisational risk management processes.
- Use scenarios to support **cross-agency collaboration** and promote long-term, systems-based thinking

3. Continuation within the UTAS Project

Engage in UTAS future collaborative work

- Participate in a cross-comparison workshop with other project partners in August.
- Use this report and co-design process to inform the NESP comparative report due in November.

Appendices

Appendix A – Glossary

For consistency across the project, the following definitions of key terms are agreed to be adopted by project partners:

Term	Definition	Source
Risk	Risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system.	IPCC AR6 WG2 Glossary
Cascading impacts	Cascading impacts from extreme weather/climate events occur when an extreme hazard generates a sequence of secondary events in natural and human systems that result in physical, natural, social or economic disruption, whereby the resulting impact is significantly larger than the initial impact. Cascading impacts are complex and multi-dimensional, and are associated more with the magnitude of vulnerability than with that of the hazard (modified from Pescaroli & Alexander, 2015).	IPCC AR6 WG2 Glossary
Compound risks	Compound risks arise from the interaction of hazards, which may be characterised by single extreme events or multiple coincident or sequential events that interact with exposed systems or sectors.	IPCC AR6 WG2 Glossary Simpson et al (2021, https://doi.org/10.1016/j.oneear.2021.03.005)
Cascading risk	One event or trend triggering others; interactions can be one way (e.g., domino or contagion effects) but can also have feedbacks; cascading risk is often associated with the vulnerability component of risk, such as critical infrastructure.	Simpson et al (2021, https://doi.org/10.1016/j.oneear.2021.03.005)

Aggregate risk	The accumulation of independent determinants of risk.	Simpson et al (2021, https://doi.org/10.1016/j.oneear.2021.03.005)
Response	Simpson et al (2021) state "responses to risk are often excluded as drivers of risk even though they play a key role in driving potential outcomes, including inaction, and are well recognized in financial and policy domains". They suggest that 'response' should be a 4th determinant of risk, alongside hazard, exposure and vulnerability. Most IPCC authors are reluctant to accept this because response is considered a time dimension within the IPCC risk framework which notes 'dynamic interactions between climate-related hazards with the exposure and vulnerability'.	
Aggregate risks	Not defined in IPCC	

Appendix B – ACT Government Original Pitch

This was submitted on the 5th of September 2023, to the Federal DCCEEW before the project was transferred to the NESP.

A storyline for the ACT would provide a good demonstration of the interface between urban and bush environments, in an area with readily available data on climate projections and historical records of previous extreme events. Impacts that could be examined are likely to have wide applications across Australia, such as impacts on electricity networks, water catchments, the built environment, human health in the urban environment, environmental impacts in urban nature as well as a national parks, cross government border issues (ACT and NSW Governments) and impacts on the transport sector including an airport and evacuation routes. The ACT also has the unique situation of being a seat of local and Australian Government so could examine the functioning of national government impacts (e.g. national security impacts). One or more of the following four storyline hazards could be examined: “bushfire and smoke”; “heat and dust”; “storms” and/or “air pollution.”

Further background on data and information available for the above storylines is provided below.

- **ACT Bushfire and Smoke.** Climate change is increasing the risk the ACT faces from bushfires. Previous bushfires have burnt through the outer suburbs of Canberra, placed essential public infrastructure at risk and inundated the ACT with smoke. Consideration of impacts could include damage or destruction to essential ACT or Commonwealth infrastructure, safety of evacuation routes and cross-border management with NSW. Historical Examples: 2003 ACT bushfires, 2019-20 ACT Black Summer bushfires.
- **ACT Heat & Dust.** Heatwaves are increasing in frequency and intensity, which also increases the risk of dust storms. Previous heatwaves and dust storms have impacted the health of Canberrans, limited work that needs to be completed outside, and winds from the dust storm have brought down parts of the electricity network. Consideration of impacts could include the damage to health and the capacity of the medical system, dust damaging sensitive medical and scientific equipment, and possible conflicts between using ventilation to control heat but also needing to keep dust out. Historical Examples: 2018-19 ACT heatwaves, 2019 ACT dust storm, 2019-20 ACT heatwaves.
- **ACT Storms.** Extreme storm events are expected to increase in intensity and frequency with climate change. Previous storms and hail have caused property damage and disruptions to the electricity network. Consideration of impacts could include damage to private property especially to homes, damage to the electrical network, and potential combined impacts with bushfires as the storm & fire season overlaps. Historical Examples: 2016 ACT hailstorm, 2020 ACT hailstorm.
- **ACT Air Pollution.** Climate change is likely to increase air pollution in several ways including bushfire smoke, dust storms, and pollen. Canberra experienced record-breaking air pollution during the Black Summer fires and has also recorded record level of pollen in recent years. Consideration of the impacts on health, the capacity of the medical system, air conditioning systems, sensitive medical and scientific equipment, and airport operations. Historical Examples: 2016 Melbourne thunderstorm asthma, 2019 ACT dust storm, 2019-20 Black Summer smoke, 2022 ACT spring pollen (we note, however, that this does not have a single central climate hazard narrative)

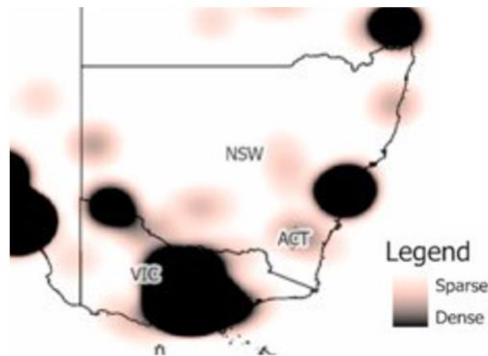
Appendix C – Historical Event Information

ACT Historical Heatwaves

Climate Conditions: Heatwaves are a three day or more period with temperatures that are unusually high for the area and occur throughout the ACT.

Impacts:

- 354 people killed in Australia by heatwaves between 2000 and 2018, mostly during the heatwaves of 2009 and 2014
- Illness including heat stroke, heat exhaustion, heat cramps, heat rash and exacerbation of pre-existing illnesses.
- Increased use of electricity and water for cooling.
- Increased recreational water activities e.g. lakes, ponds, rivers, swimming pools



Fatal Heatwave Locations (2001-2018) [Coates, 2022, Heatwave fatalities in Australia](#)



ACT Historical Heatwaves

Other Impacts:

- [2024](#) - Road surfaces melt causing damage to roads and cars
- [2019](#) – ACT residents asked to reduce their electricity on the fourth day of a heatwave due to the strain on the network (also happened in [2017](#))
- [1993](#) - Calvary Hospital's air conditioning is only 25% operational and is limited to intensive care, maternity, and operating wards.
- [1988](#) – Unions hold a protest meeting at Royal Canberra Hospital due to its lack of air conditioning during the heatwave
- [1988](#) – Record high (at the time) consumption of water in a day with both water treatment plants running at capacity.



ACT Historical Bushfires - 2003

Climate Conditions: high temperatures (above 37°C), low humidity, lightning strikes, strong gusty winds.

Impacts:

- 4 deaths, 435 people injured, 5000 people evacuated.
- \$350 million total damages, 488 homes destroyed and 160,000 hectares of ACT land burnt



Map of the 2003
Fire across ACT

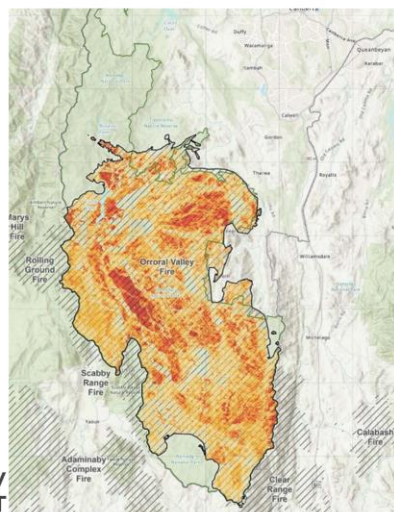


ACT Historical Bushfires – 2020

Climate Conditions: record low rainfall, record high temperatures

Impacts:

- Residents of Tharwa sought shelter, Banks and nearby suburbs enacted bushfire plans, evacuation centre established
- \$10.2 million of insurable assets burnt in Namadgi, 90,494 hectares of ACT land burnt



Map of the Orroral Valley
Fire across southern ACT



ACT Historical Smoke Events – 2019-20

Climate Conditions: Fires burning in Braidwood NSW, Pialligo ACT, and Orroral Valley.

Impacts:

- An estimated 31 excess deaths and over 200 excess hospitalizations for cardiovascular and respiratory.
- 99% of ACT residents impacted by smoke in some way.
- Federal Department of Home Affairs (disaster & emergency management agency) unable to use Canberra offices ([ABC News](#)).

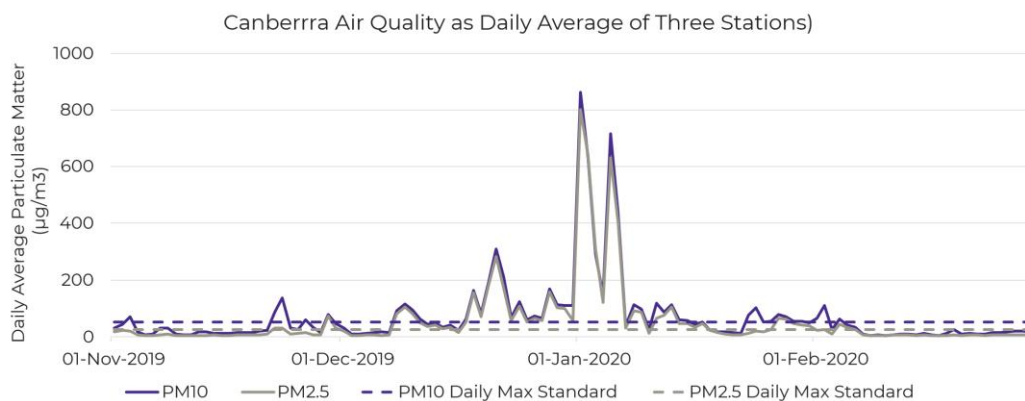


Photo from Region Media via RiotACT

Data Source: ANU, 2023, Human Effects of the 2019 -20 Bushfire Season on the Community of the ACT



ACT Historical Smoke Events – 2019-2020



Data Source: ACT Health Protection Service through the ACT Open Data Portal, Max Daily Standard from the National Environment Protection (Ambient Air Quality) Measure

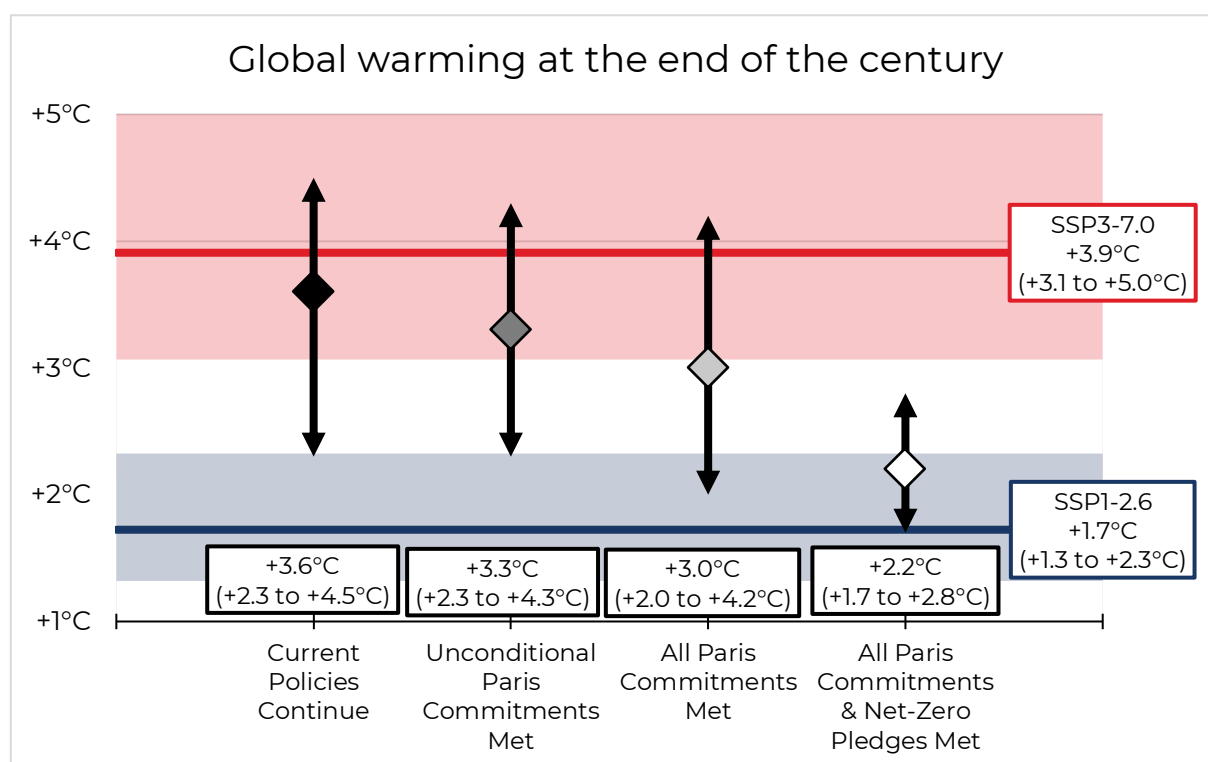


Appendix D – Emissions Scenario Analysis

Global warming data for the analysis was sourced for:

- The NARcliM emissions scenarios from the Intergovernmental Panel on Climate Change (IPCC), 2021, Climate Change 2021: The Physical Science Basis. (Figure SPM.8)
- The UNEP Paris Agreement scenarios from the United Nations Environment Programme (UNEP), 2024, Emissions Gap Report 2024 (Appendix Table C.1)

Scenario	Global warming at the end of the century
NARcliM High emissions (SSP3-7.0)	+3.9°C (+3.1 to +5.0°C)
UNEP Current Policies Continue	+3.6°C (+2.3 to +4.5°C)
UNEP Unconditional Paris Commitments Met	+3.3°C (+2.3 to +4.3°C)
UNEP Conditional Paris Commitments Met	+3.0°C (+2.0 to +4.2°C)
UNEP All Paris Commitments & Net-Zero Pledges Met	+2.2°C (+1.7 to +2.8°C)
NARcliM Low emissions (SSP1-2.6)	+1.7°C (+1.3 to +2.3°C)



Appendix E – Copy of Interactive Scenarios Game

Changes to the ACT climate (annual averages)

Based on scenario SSP3-7.0. GWL from IPCC. ACT Climate Data from NARClIM2.0. Mean is given in bold. Range is given below mean in brackets and italics.

ACT Average Annual Climate²

Year	Global Warming ¹	ACT Climate	Average Temperature (°C)	Number of Hot Days (≥35°C)	Number of Cold Nights (<2°C)	Number of Severe Fire Weather Days (FFDI >50)	Total rainfall (mm)
2000 (1990-2009)	+0.75	Observed	11.5°C	2.8 days	116.2 nights	0.3 days	741mm
2030 (2020-2039)	+1.5 (1.2 to 1.8)	Change	+0.7°C (0.0 to 1.1)	+1.4 days (-0.6 to 4.3)	-13.1 nights (-19.8 to 0.4)	+0.1 days (-0.1 to 0.4)	-1.4% (-14.1 to 10.3)
		Climate	12.2°C (11.5 to 12.6)	4.2 days (2.2 to 7.1)	103.1 nights (96.4 to 116.6)	0.4 days (0.2 to 0.7)	730.6mm (636.5 to 817.3)
2050 (2040-2059)	2.1 (1.70 to 2.6)	Change	+1.8°C (0.9 to 2.7)	+5.3 days (0.5 to 12.6)	-32.4 nights (-42.4 to -19.3)	+0.6 days (0.1 to 1.2)	-13.9% (-34.7 to 1.3)
		Climate	13.3°C (12.4 to 14.2)	8.1 days (3.3 to 15.4)	83.8 nights (73.8 to 96.9)	0.9 days (0.4 to 1.5)	638.0mm (483.9 to 750.6)
2090 (2080-2099)	3.6 (2.8 to 4.6)	Change	+3.7°C (2.5 to 5.2)	+12.8 days (4.5 to 27.3)	-67.7 nights (-54.5 to -88.1)	+1.3 days (0.1 to 2.9)	-12.9% (-37.0 to 18.1)
		Climate	15.2°C (14.0 to 16.7)	15.6 days (7.3 to 30.1)	48.5 nights (28.1 to 61.7)	1.6 days (0.4 to 3.2)	645.4mm (466.8 to 875.1)

¹ Global warming data from IPCC, 2021, Climate Change 2021: The Physical Science Basis

² ACT climate data from NSW Gov, 2024, NARClIM2.0

Instructions

Fire event cards

The ACT is projected to experience an increasing risk of fire with increasing temperatures, decreasing rainfall and increasing winds all contributing to more frequent and more dangerous fire weather conditions. The fire season is also projected to increase, first extending into spring and in the long-term possibly into autumn.

Forest Fire Danger Index (FFDI) is an estimate of this fire weather risk with days where FFDI ≥ 50 considered at least a severe fire risk, and possibly an extreme or catastrophic risk depending on how dangerous the weather conditions are. The number of these severe fire weather days can be used as an indicator of the increasing severity of fire.

Heatwave event cards

The ACT is projected to have hotter, longer, and more frequent heatwaves. A heatwave is defined as a period of unusually high temperatures for that location that last for several days.

Storm event cards

The ACT is projected to have more intense extreme rainfall events, which is also used as an indicator of increases in related events such as thunderstorms, hailstorms, extreme winds, and floods. The shorter an extreme rainfall event is the greater the projected increases in intensity.

Dry weather event cards

The ACT's rainfall is projected to decrease overall and current rainfall patterns will change. Spring rainfall projections show the greatest decrease, but rainfall remains highly variable. Adding to the drying climate are the additional decreases in water runoff from the increased uptake of water by dry soil and plants and the increasing rate of evaporation in a hotter climate.

Unlucky cards

Severe events may occur earlier than indicated by climate projections indicate. There are number of potential reasons behind this including:

- global warming is faster than expected due to increased emissions and/or climate feedback loops
- rare weather conditions this year (e.g. 1 in 1,000)
- climate models tend to underestimate extremes, especially when they occur over a small area or small timeframe

Shock event cards

Shock cards present external factors that can impact futures and scenarios. They draw from something similar to a PESTLE analysis. They are based on the Workshop 1 discussions and the information gathered from participants.



Near term - Fire

A fire burns through Canberra and blankets Canberra in smoke!

The city is directly hit, with infrastructure damaged or destroyed. Thick smoke lingers, worsening air quality and straining health services. Evacuations disrupt communities and daily life, while emergency services are stretched thin containing the flames and supporting those impacted.



Near term – Fire

UNLUCKY! A severe fire has occurred earlier than climate projections indicated.

Multiple fire burns through the ACT and NSW and blankets Canberra in smoke!

Bushfires across the region create a widespread emergency. Air quality worsens from smoke, disrupting communities and daily life. Emergency services are stretched thin containing the fire and supporting those impacted across borders.



Near term - Fire

A fire burns through Namadgi and blankets Canberra in smoke!

Wildlife and ecosystems are threatened and water catchments face contamination risk. While urban areas remained safe from flames, air quality worsens from smoke and ash, disrupting communities and daily life. Emergency services are stretched thin containing the flames and supporting those impacted.



Near term - Fire

LUCKY! No bushfire impacts to Canberra!
Years with no days of severe fire weather are still possible but are less frequent.



Near term - Fire

A fire burns through NSW and blankets Canberra in smoke!

While Canberra escapes the flames, the city feels the impacts. Heavy smoke disrupts daily life, affecting air quality and public health. Cross-border workers face travel disruptions, supply chains are disrupted, and local emergency services and resources are sent to support NSW during the crisis.



Near term - Fire

LUCKY! No bushfire impacts to Canberra!

Years with no days of severe fire weather are still possible but are less frequent.

**Medium term - Fire****A fire burns through NSW and blankets Canberra in smoke!**

While Canberra escapes the flames, the city feels the impacts. Heavy smoke disrupts daily life, affecting air quality and public health. Cross-border workers face travel disruptions, supply chains are disrupted, and local emergency services and resources are sent to support NSW during the crisis.

**Medium term - Fire****A fire burns through Canberra and blankets Canberra in smoke!**

The city is directly hit, with infrastructure damaged or destroyed. Thick smoke lingers, worsening air quality and straining health services. Evacuations disrupt communities and daily life, while emergency services are stretched thin containing the flames and supporting those impacted.

**Medium term - Fire****UNLUCKY! A severe fire has occurred earlier than climate projections indicated.****Multiple fire burns through the ACT and NSW and blankets Canberra in smoke!**

Bushfires across the region create a widespread emergency. Air quality worsens from smoke, disrupting communities and daily life. Emergency services are stretched thin containing the fire and supporting those impacted across borders.

**Medium term - Fire****A fire burns through Namadgi and blankets Canberra in smoke!**

Wildlife and ecosystems are threatened and water catchments face contamination risk. While urban areas remained safe from flames, air quality worsens from smoke and ash, disrupting communities and daily life. Emergency services are stretched thin containing the flames and supporting those impacted.

**Long term - Fire****A fire burns through Namadgi and blankets Canberra in smoke!**

Wildlife and ecosystems are threatened and water catchments face contamination risk. While urban areas remained safe from flames, air quality worsens from smoke and ash, disrupting communities and daily life. Emergency services are stretched thin containing the fire and supporting those impacted.



Long term - Fire

Multiple fire burns through the ACT and NSW and blankets Canberra in smoke!

Bushfires across the region create a widespread emergency. Air quality worsens from smoke, disrupting communities and daily life. Emergency services are stretched thin containing the fire and supporting those impacted across borders.



Near term - Heatwave

Canberra swelters through a long heatwave!

The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure prolonged heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Long term - Fire

A fire burns through NSW and blankets Canberra in smoke!

While Canberra escapes the flames, the city feels the impacts. Heavy smoke disrupts daily life, affecting air quality and public health. Cross-border workers face travel disruptions, supply chains are disrupted, and local emergency services and resources are sent to support NSW during the crisis.



Near term - Heatwave

Canberra swelters through multiple heatwaves!

The season is marked by repeated heatwaves, each bringing intense heat to Canberra. The heat wears on the city, challenging infrastructure, utility supplies, health services and the economy. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Near term - Heatwave

Canberra swelters through a hot heatwave!

A scorching heatwave grips Canberra, with temperatures soaring to 42°C on the hottest day.

The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Near term - Heatwave

UNLUCKY! A severe heatwave has occurred earlier than climate projections indicated.

Canberra swelters through multiple heatwaves!

The season is marked by repeated heatwaves, each bringing intense heat to Canberra. The heat wears on the city, challenging infrastructure, utility supplies, health services and the economy. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Medium term - Heatwave

Canberra swelters through a hot heatwave!

A scorching heatwave grips Canberra. The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Medium term - Heatwave

Canberra swelters through a long heatwave!

The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure prolonged heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Medium term - Heatwave

Canberra swelters through multiple heatwaves!

The season is marked by repeated heatwaves, each bringing intense heat to Canberra. The heat wears on the city, challenging infrastructure, utility supplies, health services and the economy. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Medium term - Heatwave

UNLUCKY! A severe heatwave has occurred much earlier than climate projections indicated.

Canberra swelters through multiple heatwaves!

The season is marked by repeated heatwaves, each bringing intense heat to Canberra. The heat wears on the city, challenging infrastructure, utility supplies, health services and the economy. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Long term - Heatwave

Canberra swelters through a hot heatwave!

A scorching heatwave grips Canberra. The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Long term - Heatwave

Canberra swelters through a long heatwave!

A prolonged heatwave lasts for 23 days, with temperatures consistently reaching the 34°C mark.

The heat wears on the city, challenging infrastructure, utility supplies, and health services. Communities endure prolonged heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Long term - Heatwave

Canberra swelters through multiple heatwaves!

The season is marked by repeated heatwaves, each bringing intense heat to Canberra. The heat wears on the city, challenging infrastructure, utility supplies, health services and the economy. Communities endure extreme heat, as the strain on power grids and cooling systems intensifies. Vulnerable populations are hit hardest, while daily routines are disrupted.



Near term - Storm

A major rainstorm sweeps across Canberra!

A major rainstorm hits Canberra, bringing a significant amount of rain in a short time. Lightning strikes pose risks to people, infrastructure, and bushland. Strong wind gusts cause damage to infrastructure and property and bring down trees and branches. The heavy rainfall also brings a risk of flash floods, soil erosion and landslides.



Near term - Storm

A major hailstorm sweeps across Canberra!

A major hailstorm sweeps across Canberra, bringing a significant amount of hail in a short time. The hail causes damage to property and infrastructure and harm to people. Lightning strikes pose risks to people, infrastructure, and bushland. Strong wind gusts cause damage to infrastructure and property and bring down trees and branches.



Medium term - Storm

A major rainstorm sweeps across Canberra!

A major rainstorm hits Canberra, bringing a significant amount of rain in a short time. Lightning strikes pose risks to people, infrastructure, and bushland. Strong wind gusts cause damage to infrastructure and property and bring down trees and branches. The heavy rainfall also brings a risk of flash floods, soil erosion and landslides.



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Near term - Dry

The ACT dries up over spring and summer!

The landscape shows signs of stress as the drought conditions persist, affecting both urban and rural areas. Water reserves are stretched, and agricultural output declines. With reduced water availability, communities are forced to adopt stringent water-saving measures, while local wildlife and ecosystems face increasing difficulty in maintaining their balance.



Long term - Storm

A major rainstorm sweeps across Canberra!

A major rainstorm hits Canberra, bringing a significant amount of rain in a short time. Lightning strikes pose risks to people, infrastructure, and bushland. Strong wind gusts cause damage to infrastructure and property and bring down trees and branches. The heavy rainfall also brings a risk of flash floods, soil erosion and landslides.



Near term - Dry

The ACT dries up over the last few years!

There is a significant reduction in rainfall, leading to prolonged dry conditions. Water reserves are running low, and the landscape is showing signs of strain. Agriculture and local ecosystems struggle to adapt to the ongoing drought, while water restrictions become a regular part of daily life.



Long term - Storm

A major hailstorm sweeps across Canberra!

A major hailstorm sweeps across Canberra, bringing a significant amount of hail in a short time. The hail causes damage to property and infrastructure and harm to people. Lightning strikes pose risks to people, infrastructure, and bushland. Strong wind gusts cause damage to infrastructure and property and bring down trees and branches.



Medium term - Dry

The ACT dries up over spring and summer!

The landscape shows signs of stress as the drought conditions persist, affecting both urban and rural areas. Water reserves are stretched, and agricultural output declines. With reduced water availability, communities are forced to adopt stringent water-saving measures, while local wildlife and ecosystems face increasing difficulty in maintaining their balance.

**Long term - Dry****The ACT dries up over the last few years!**

There is a significant reduction in rainfall, leading to prolonged dry conditions. Water reserves are running low, and the landscape is showing signs of strain. Agriculture and local ecosystems struggle to adapt to the ongoing drought, while water restrictions become a regular part of daily life.

**Medium term - Dry****The ACT dries up over the last few years!**

There is a significant reduction in rainfall, leading to prolonged dry conditions. Water reserves are running low, and the landscape is showing signs of strain. Agriculture and local ecosystems struggle to adapt to the ongoing drought, while water restrictions become a regular part of daily life.

**Shock - Diseases****New diseases and epidemics cause widespread disruption!**

A sudden epidemic or pandemic challenges public health systems and disrupts daily life again. Communities face uncertainty, and the impacts disrupt social, economic, and political stability.

**Long term - Dry****The ACT dries up over spring and summer!**

The landscape shows signs of stress as the drought conditions persist, affecting both urban and rural areas. Water reserves are stretched, and agricultural output declines. With reduced water availability, communities are forced to adopt stringent water-saving measures, while local wildlife and ecosystems face increasing difficulty in maintaining their balance.

**Shocker - Diseases****New health innovations and stronger biosecurity systems are transforming the health sector!**

Advances in medical research, combined with lessons learned from past pandemics and epidemics, lead to the rapid development of vaccines and treatments for emerging diseases. Stronger biosecurity measures help reduce widespread outbreaks.



Shocker - Cost of living

Rising living costs exacerbate inequality!

A sharp rise in the cost of living causes financial strain for many households. Social inequality deepens, with vulnerable populations suffering disproportionately and social services struggle to keep up with rising demand.

Social cohesion weakens, leading to rising tensions!

A combination of economic hardship, political instability, and societal divisions create rising tensions. Fragmented communities and a breakdown of trust in institutions result in increased social unrest and a growing sense of disconnection among people.



Shocker - Economic

A new economic crisis plunges society into turmoil!

A financial collapse triggers widespread economic hardship. Unemployment spikes, businesses close, and government funding for services is slashed.

Social safety nets are weakened, and many individuals face mounting mental health challenges.

Trust in the government erodes as citizens face a future of uncertainty and austerity.



Shocker - Social Cohesion

Communities unite in times of crisis, strengthening social cohesion!

People reconnect with their neighbours, share resources, and collaborate on rebuilding efforts. Social programs emerge that focus on community wellbeing and fostering inclusivity. Over time, the experience of rebuilding strengthens social cohesion, creating a more united and resourceful community for the future.



Shocker - Social Cohesion



Shockers - Climate

Climate events abroad cause ripple effects locally!

Devastating weather events in neighbouring regions create a cascade of effects, from food shortages to rising migration pressures. Public health and social services are overwhelmed as resources become scarce. Communities feel the strain as they manage the impacts of these external disasters, and tensions rise both locally and internationally.



Shocker - Governance

Governance changes lead to widespread political instability!

A shift in governance toward more centralised or fragmented political structures creates confusion and mistrust. The government's reduced capacity to provide services leads to frustration, and citizens question the legitimacy of leadership.



Shocker – Technologies

AI and smart tech revolutionize life, but also create new societal tensions!

AI and smart technologies become deeply integrated into daily life, boosting productivity but also disrupting traditional industries and employment. As critical thinking skills decline and new job categories emerge, social tensions rise, particularly in relation to privacy, cybersecurity, and deepfake technology.



Shocker - Governance

Trusted leadership fosters participatory governance and better public policy!

Leaders build trust with communities and actively involve them in decision-making. This inclusive approach leads to more transparent and accountable governance. The strengthened relationship between the government and the people fosters a sense of shared responsibility and a commitment to better solutions.



Shocker – Geopolitics

A shifting global order sparks conflict and widespread disruption!

Geopolitical shifts lead to trade disruptions, supply chain breakdowns, and increased inflation. Mass migration occurs as people flee conflict zones, adding to the pressure on resources and public services. The environment and social stability are sidelined, in response to growing global tensions.



Shocker – Population

Population growth and demographic shifts bring new challenges!

As Canberra's population increases, housing, infrastructure, and services are stretched to their limits. An aging population and increased cultural diversity create new tensions around resources, healthcare, and employment.

Appendix F – Copy of Stakeholder Survey

ACT Climate Scenarios Workshops Survey

Section 1- Baseline participant knowledge

Q1 - Did you attend one of the three futures-thinking workshops hosted by Adaptation and Resilience Policy Team, Climate Change, Energy, and Water Division, in February -March 2025?

Yes/No

Q2 - Which scenario workshops were you able to attend?

Check all that apply:

- ☐ Initial meeting
- ☐ Workshop 1
- ☐ Workshop 2
- ☐ Workshop 3

Q3 - What was your level of understanding of the foundational subject matter in the scenario workshops? (E.g. futures-thinking, climate science, adaptation, systems thinking, theory of change, etc.)

Likert scale

Very poor 1---2---3---4---5 Very good

Q4 - For the purposes of the ACT climate scenarios workshops, do you think there was adequate introduction of this background subject matter?

Likert scale

Not enough 1---2---3---4---5 More than enough

Q5 - Has your directorate/area of work previously undertaken a climate risk assessment?

Yes/No/Unsure

Q6 - If yes, were narrative climate scenarios used?

Yes/No/Unsure

Q7 - Has your participation in these workshops improved your understanding of the potential impacts of climate change (including climate hazards, exposure, vulnerability, and compounding impacts) on the work of your area?

Likert scale

Not at all 1---2---3---4---5 Quite a lot

Section 2 - Feedback on climate scenarios workshops experience

Q8 - Why did you attend the workshop(s) on behalf of your area of work?

Check all that apply:

- ☐ To explore how climate scenarios could inform our strategic planning
- ☐ To build internal capability in climate adaptation and futures thinking
- ☐ To represent my team in cross-government collaboration
- ☐ To better understand climate risks relevant to our sector
- ☐ To contribute to the co-development of climate scenarios
- ☐ To align our work with ACT Government climate policy and planning
- ☐ To gather insights for an upcoming climate risk assessment
- ☐ To network with other directorates and share knowledge

- To learn about tools and methods for scenario planning
- To support our team's climate resilience initiatives
- Other (please specify): _____

Q9 - How could we have better included you in the co-development of the project and workshops?

Check all that apply:

- More involvement earlier in the project design phase
- Opportunities to contribute to the workshop agenda
- Involvement in drafting or refining the climate scenarios
- More regular updates and communication between workshops
- A clearer explanation of how our input would be used
- More time allocated for discussion and feedback during workshops
- Opportunities to review and comment on materials before workshops
- More tailored engagement relevant to our sector or area of work
- Greater clarity on the goals and expected outcomes of the project
- I think the level of co-development was appropriate
- Other (please specify): _____

Q10 - Did you find the workshops useful as a training exercise in scenario planning/building/climate futures thinking?

Likert scale

Not very useful 1---2---3---4---5 Very useful

Section 3 – Feedback on available climate information for decision making

Q11 - Do you consider scenario planning to be an important tool in your area of work? If yes, please explain how you currently use climate scenario planning in your work, or how you envision using it in the future?

Long form answer (up to 200 words)

Q12 - What kind of climate information do you feel would most help to inform your work and/or decision making?

Consider: format, qualitative vs quantitative, scenario-based, scale, event-based, compounding impacts, non-climate drivers of change, spatial and temporal detail, extreme/worst case scenarios, target audiences, etc

Long form answer (up to 500 words)

Q13 - What forms of climate information do you primarily engage with? e.g. NARCLIM., IPCC reports, new media,

Check all that apply:

- Scientific reports (e.g. IPCC Assessment Reports, CSIRO State of the Climate)
- Regional climate projections (e.g. NARCLIM, Climate Analogues)
- Government publications (e.g. ACT Climate Strategy, National Adaptation Plans)
- Academic research papers or journals
- Workshops, webinars, or training sessions
- Internal reports or risk assessments
- Consultant reports or commissioned studies
- Climate data dashboards or portals (e.g. Climate Change in Australia, Climate Data Online)
- Media coverage (e.g. ABC, The Guardian, Climate Council)
- Professional networks or communities of practice
- Social media or newsletters from climate-focused organisations
- Scenario planning tools or visualisation platforms
- Other (please specify)

Q14 - Any other feedback? (optional)

Long form answer (up to 200 words)

Appendix G – Workshop 3 Responses

At the end of Workshop 3, participants were asked to reflect and answer the following questions in their groups regarding the future steps in using narrative scenarios. The questions focus on users, application and presentation.

There were around 30 participants in Workshop 3, with representation from CED, Health, CHS, Education, JACS and TCCS, and external stakeholders including Icon Water and Climate Change Council.

1. *What specific directorates or teams would benefit from these scenarios?*

Participants overall indicated that all areas of the ACT Government could benefit from the scenarios due to the cross-cutting nature of climate impacts and the importance of involving people who have specialist knowledge in their subject area. Some examples of relevant areas and bodies of work are provided below:

Leadership and ministers	Planning & Urban Policy	Building regulations	Planning guide	Education infrastructure
Urban Forest Act	Sale of residentials	EER Regulations	Access Canberra	TCCS – Transport
City Services – maintenance	Infrastructure/living	Urban treescapes	Suburban Land Agency – land release	Climate resilience guidelines
Climate policy	ACT Renewal Authority	Public housing	Health	iCBR
	Treasury	ACT Insurance Authority	Security & Emergency Management	

There was an acknowledgment that not everyone in ACTPS has the time or capacity to develop bespoke scenarios, the scenarios could be provided for the purpose of prompting conversations about climate risks to their policy area. This could be tacked on to the risk register processes that most teams already undertake.

Presentations to executive/ministers were also considered vital to create senior leadership buy-in to champion this process. It was also considered important that Ministers/advisors can have a role to ensure they can develop appropriate competencies for considering climate risks. These briefings should also be interactive so that they have

the capacity to undertake foresight thinking.

Participants also mentioned external stakeholders that could benefit from the scenarios. A summary is provided below:

Community Partners

Business communities
Community Organisations
ACT Climate Change Council
CSIRO
ANU
UC

Federal Government

- Department of Infrastructure
- National Capital Authority
- Asset management planning for Commonwealth Land
- ACT representatives

Cross-boarder partnerships

Queanbeyan Council
Yass Valley Council
NSW Regional office
Canberra Regional Joint Organisation

Large/major facility owners

- Defense
- ANU
- CSIRO

Others

- Insurance Industry
- Planners and architects

2. How can these scenarios or similar be integrated into the decision-making processes of your area of wider ACT government and key external stakeholders?

Responses included:

- **Initial scene setting:** provide context and parameters to frame and prompt discussion.
- **Bottom-up approach:** ideally through a 'bottom-up' approach, where teams/branches/divisions develop management plans relevant to their subject area.
- **Strategic discussions:** guide internal strategic discussions. Future-oriented thinking – start from the desired future state and reverse engineer to determine current actions needed.
- **Risk assessment:** incorporate scenarios as part of the risk assessment process.
- **Risk management:** enhance risk management and mitigation for workforce, assets, and service delivery.
- **Wellbeing framework:** while there is a further opportunity through things such as the wellbeing framework for cabinet submissions, it is preferable that these scenarios have already informed policy thinking and development from an early stage.
- **Multi-criteria analysis:** embed multi-criteria analysis, testing through policies and programs.
- **Periodic review:** conduct reviews of major policies and programs once every 3 to 5 years, ideally 12 months before elections.
- **Policy review:** perform a matrix review of all government policies impacted by climate.
- **Strategic planning:** inform strategic plans and align thinking with workshop outcomes, such as the new climate change strategy.

- **Asset management:** integrate scenarios into asset management planning.
- **Cost-benefit analysis:** use scenarios as a cost-benefit analysis and safety feature.
- **Bushfire survival plans:** use it in climate-ready survival packs for bushfire survival plans.

It was also indicated that scenarios are already applied in reserve management planning, for example, but with different scenarios.

3. Which of your stakeholders do you envisage using these scenarios, what are some effective way to present these scenarios?

Participants provided the below examples of ways of presenting the sample scenarios:

- **Visuals:** Include more visuals to make it easier to understand
- **Infographics:** Minimise text (in moderation). A useful method of 'painting the picture', especially for more time-poor audiences.
- **Short Videos:** Use animated or infographic videos combining visuals and words.
- **Comics:** Create two large comics for engaging storytelling.
- **Podcast**

4. How can we ensure that the scenarios are easily understood and actionable?

In relation to keeping scenarios easily understood or more effective, they highlighted the below points:

- **Combination of presentations:** Use a mix of methods to connect with different learning styles.
- **First-person descriptions:** Make presentations relatable by using first-person narratives.
- **Include presentations:** Ensure presentations are part of the communication strategy.
- **Mapping benefits:** Map scenarios to financial vs. non-financial benefits, reframing to highlight avoided losses/costs.
- **Realism:** Keep the content realistic and relatable.