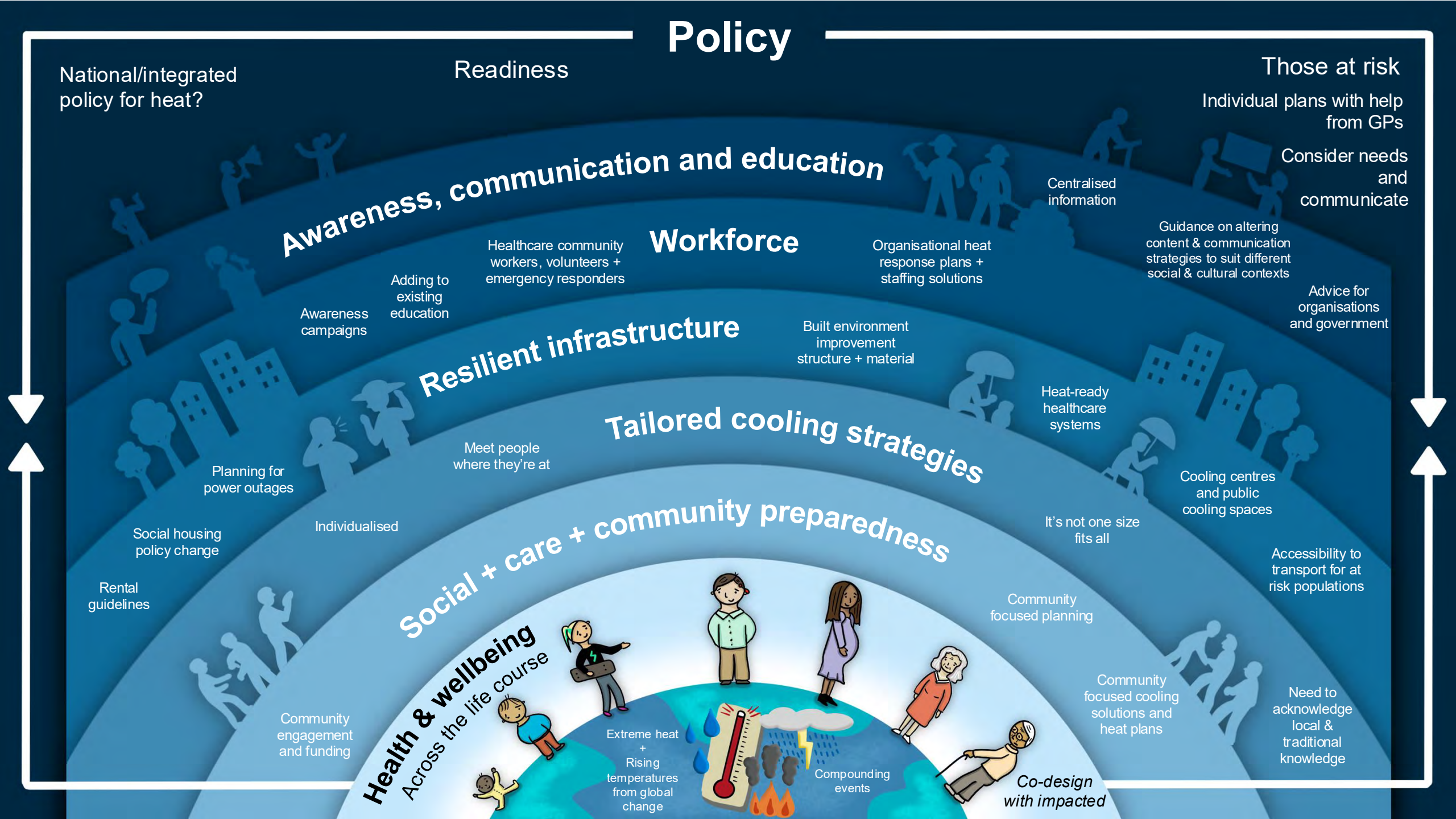

Policy
National/integrated policy for heat?
Readiness
Those at risk
Individual plans with help from GPs
Consider needs and communicate
Awareness, communication and education
Centralised information
Guidance on altering content & communication strategies to suit different social & cultural contexts
Advice for organisations and government
Workforce
Healthcare community workers, volunteers + emergency responders
Organisational heat response plans + staffing solutions
Adding to existing education
Awareness campaigns
Resilient infrastructure
Built environment improvement structure + material
Heat-ready healthcare systems
Tailored cooling strategies
Meet people where they're at
Planning for power outages
Cooling centres and public cooling spaces
Social + care + community preparedness
Individualised
It's not one size fits all
Social housing policy change
Accessibility to transport for at risk populations
Rental guidelines
Community focused planning
Health & wellbeing
Across the life course
Community engagement and funding
Community focused cooling solutions and heat plans
Need to acknowledge local & traditional knowledge
Extreme heat + Rising temperatures from global change
Compounding events
Co-design with impacted

Identifying research needs and building research capacity towards heat health action in Australia

A HEAL Innovation Funding Program

GRIFFITH UNIVERSITY

HEALTHY • ENVIRONMENTS AND • LIVES

Project overview

The **HEAL Heat & Health Research Project** is an interdisciplinary initiative dedicated to understanding the complex and interconnected ways climate and extreme heat affect human health. Led by a collaborative team of researchers within the Healthy Environments and Lives (HEAL) Network, this project brings together expertise spanning public health, climate science, epidemiology, thermo-physiology, urban planning, clinical care, economics, community engagement, and design.

Our team is committed to co-creating knowledge that is scientifically robust, community-informed, and actionable for policy and practice. Through activities such as visual mapping, collaborative workshops, and cross-sector dialogue, we aim to make the complexity of heat-health relationships more accessible for researchers, practitioners, and decision-makers. ***This project is supported through the HEAL Innovation Funding Program***, enabling us to explore new methods and foster collaborative approaches that strengthen Australia's resilience to emerging heat and health challenges.

You can learn more about our work in this short video: HEAL Network Heat & Health Research Overview.

Project Team

A/Prof Shannon Rutherford
Principal Investigator
Griffith University

Dr Sharon Campbell
Co-Investigator
University of Tasmania

A/ Prof Caitlin Wyroll
Co-Investigator
University of Western Australia

Prof Geoffrey Morgan
Co-Investigator
University of Sydney

Prof Rebecca Bentley
Co-Investigator
University of Melbourne

Mehak Oberai
SRA and Project coordinator
Griffith University

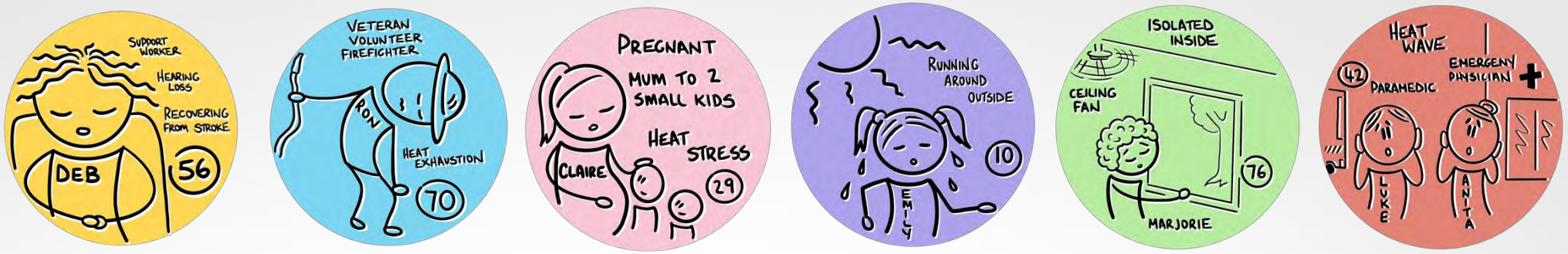
A/ Prof Supriya Mathew
Co-Investigator
Menzies School of Health Research

Prof Priya Rajagopalan
Co-Investigator
Royal Melbourne Institute of Technology

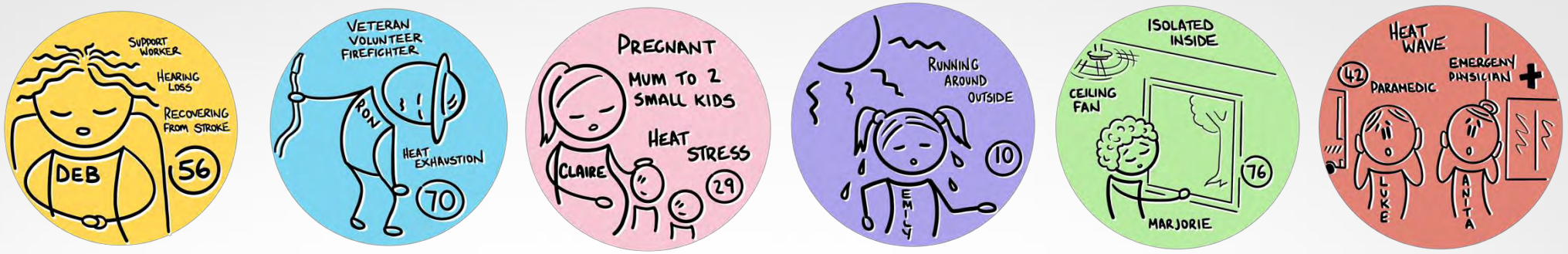
Emma Bacon
Co-Investigator
Sweltering Cities

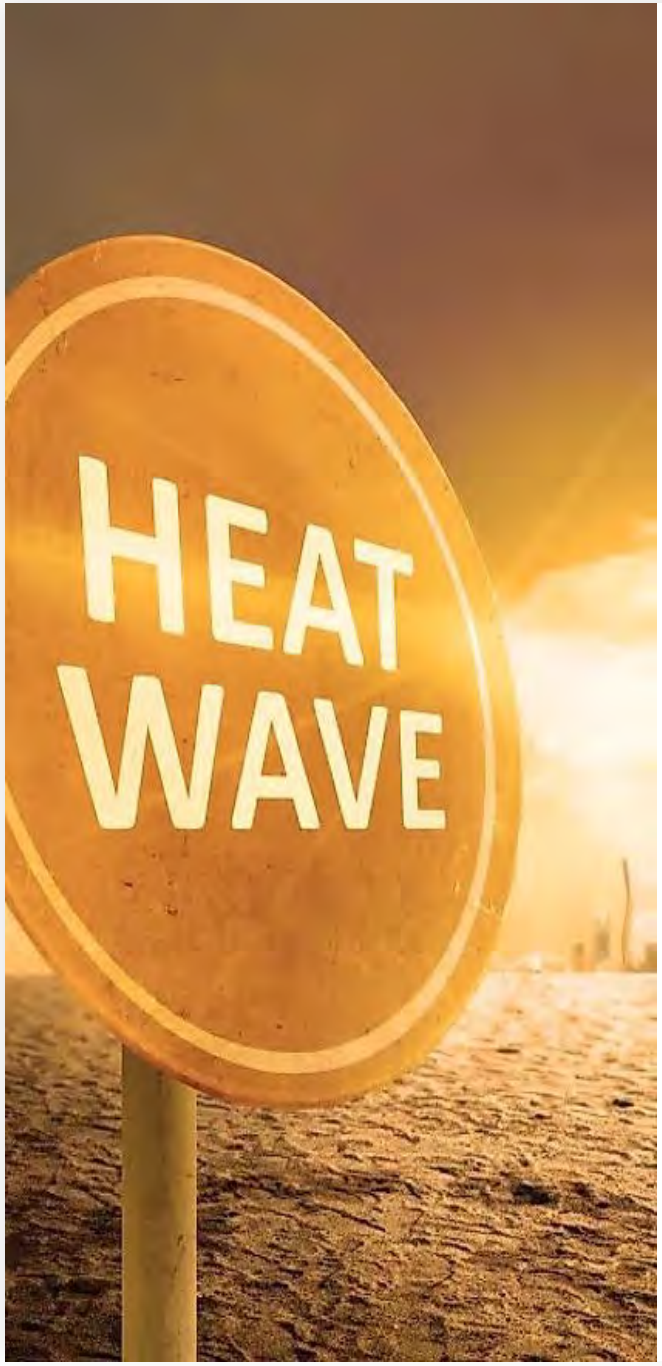
Dr Fergus O'Connor
Co- Investigator
Griffith University

The Heat-health Talk book:
Exploring the impacts of rising temperatures and extreme heat events on people and places



Methods and our approach



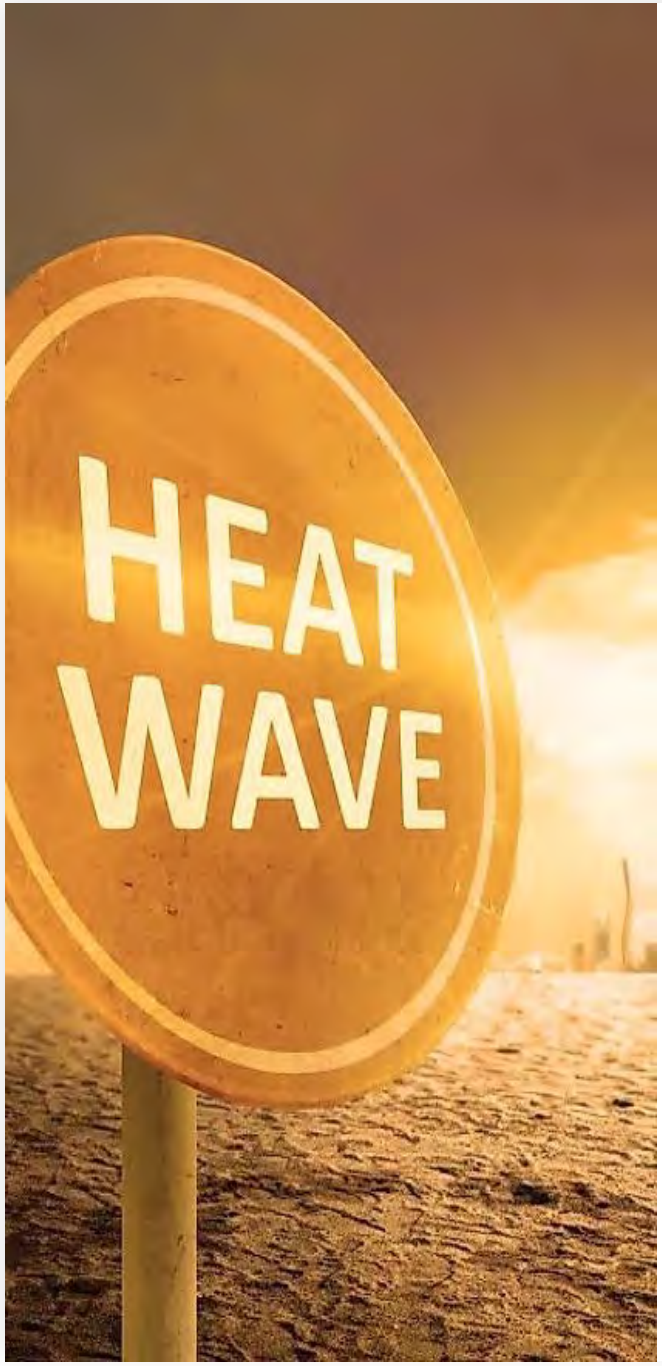


What did we do?

The 2.5-hour online workshop, held on 26 August 2025 (11:00 AM–1:30 PM AEST), was designed to generate actionable insights into the drivers, impacts, mediating factors, and research gaps associated with heat and health.

The session employed a structured, interactive format that combined scenario-based exploration with systems thinking. It was designed to be a dynamic and engaging space—not just for discussion, but for visual collaboration and ideation.

Instead of simply talking about heat-health challenges, we were working together – but apart - to understand heat and how can we create heat resilient communities and promote and protect human health.



How

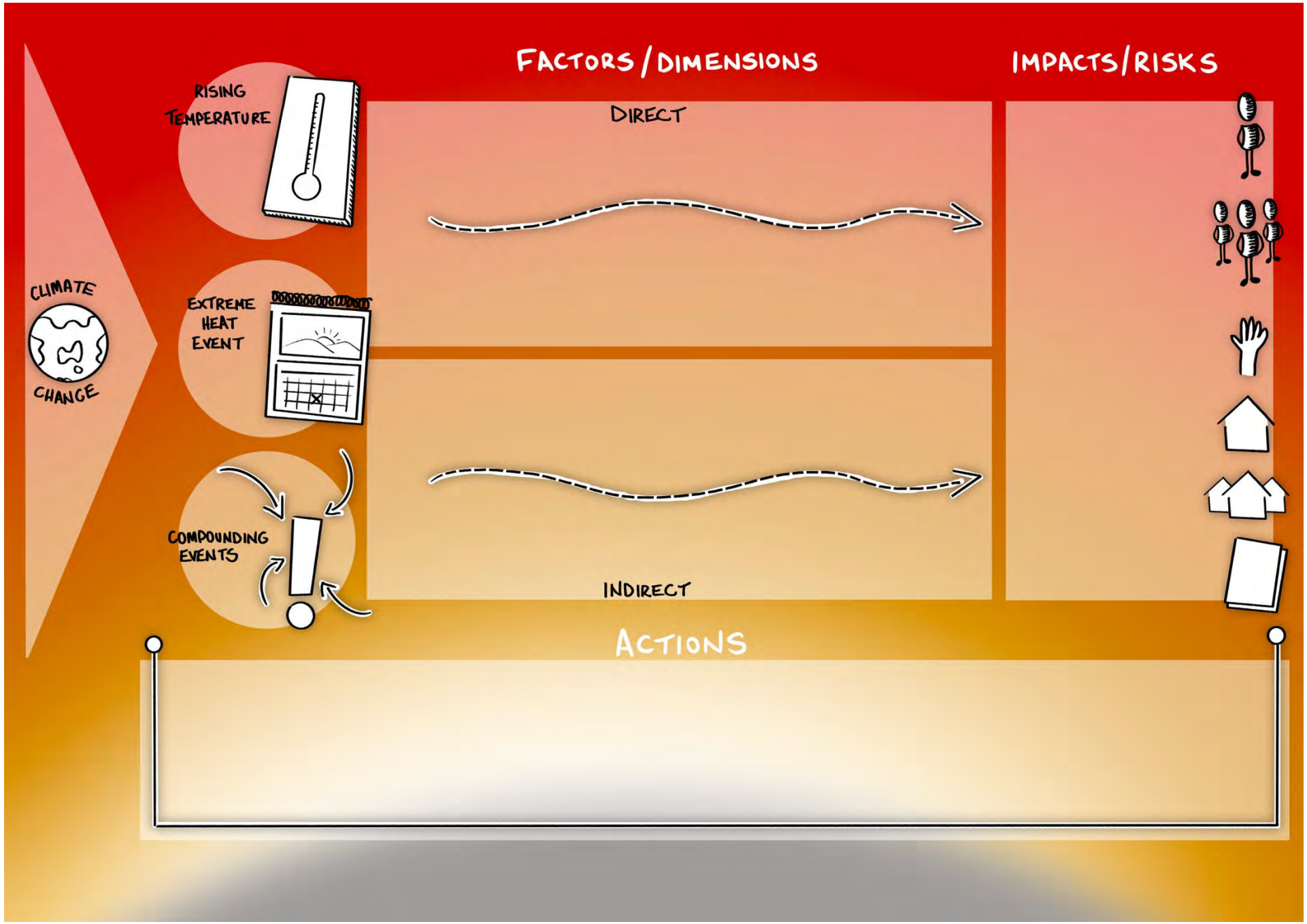
To ground discussions in real-world contexts, six scenarios were developed to reflect different stages of the life course and diverse settings. At the start of the workshop, participants were invited to explore the scenarios most relevant to their expertise or interests.

In Part 1 : Understanding heat: We explored the dimensions of heat and its impacts across various levels—from individual health to community systems and infrastructure.

In Part 2: Taking action: We shifted focus to actions towards building more heat-resilient communities.

Throughout the session, participants engaged with guiding questions, shared disciplinary knowledge, and contributed to the iterative development of a visual systems diagram. This process highlighted intersections, dependencies, and potential pathways for future research and policy innovation, ensuring that insights were both comprehensive and actionable.

The ‘frame’ used for populating during the workshop session



Our Personas and Their Scenarios

Compounding Climate Events: Extreme Heat with Storms or Bushfires

It's mid-January, and South-East Queensland is in the grip of an intense heatwave. For five consecutive days, max temperatures in Brisbane have recorded over 36°C with unusually high humidity. On the third day, a dry lightning storm ignites bushfires on the city's outskirts. Emergency services are stretched across fire containment efforts and a surge in heat-related emergencies. Meanwhile, storm-related power outages have cut electricity to parts of the city, leaving residents without air conditioning, fans, or phone service. Deb, a 56-year-old woman living in public housing, is recovering from a recent stroke and lives with hearing loss. She relies on a personal support worker who hasn't been able to reach her. With no power and no way to hear emergency warnings or contact help, Deb struggles to manage the stifling heat alone.

Vulnerability of volunteering Workforce in Summer Disasters

Scenario: In December, as bushfires burn through regional Victoria, rural volunteer crews are working around the clock in extreme conditions. Resources are stretched as there are multiple fire fronts across the state and in NSW. The temperature has climbed to 38°C, and smoke thickens the air. In these remote areas, water is scarce — local tanks are running low, and access to clean, cool water is limited. Crews are rationing what little they have between firefighting and hydration.
Ron, a 70-year-old veteran volunteer firefighter, has been on the fireground for hours with minimal breaks, little shade, and barely enough water to stay hydrated.
Despite his experience, the intense heat takes a toll—Ron becomes disoriented and eventually collapses from heat exhaustion.

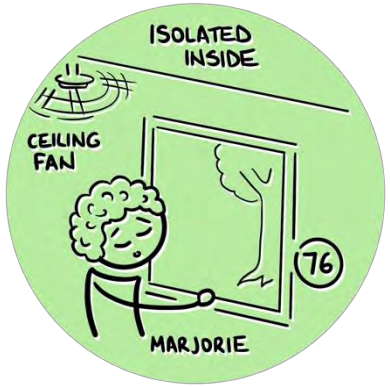
Hot Suburbs, Hot Homes, No Air Conditioning

Scenario: In a densely populated, older suburb of Western Sydney—where concrete, brick, and bitumen trap the day's heat well into the night- Claire, a pregnant mother in her third trimester is struggling to cope with a week-long heatwave. Living in a poorly ventilated rental unit with her two young children and no air conditioning, she relies on fans, cold showers, and wet towels to stay cool. With limited income, she cannot afford to run electrical appliances constantly. As the days pass, she begins experiencing swelling, dizziness, and fatigue—symptoms worsened by the extreme heat. One afternoon, her condition deteriorates, and she is taken to hospital with signs of heat stress. Though community cooling centres are open nearby, Claire had no knowledge of them, and no access to transport to reach them.

Our Personas and Their Scenarios continued

Schools and Heat: Active Play and Safety

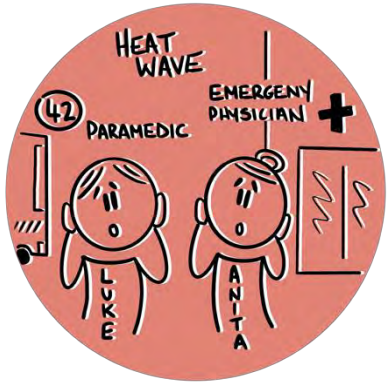
Scenario: At a primary school in Perth, 10-year-old Emily heads out with her classmates as the temperature climbs to 36°C. Eager to train for the upcoming sports carnival, she spends most of her lunchbreak running in the sun. She doesn't use the bubblers because she doesn't 'have time' and there is little shade on the oval even when she takes a break from the game. Not long after returning to class, Emily begins to feel lightheaded and nauseous. Several other students also complain of dizziness and fatigue following outdoor play in the intense heat.



Public Spaces in Hotter Summers — Park

Marjorie, a 76-year-old widow, lives just a few blocks from a popular park in central Adelaide. Leading up to summer, she regularly walked there each afternoon, strolling through the gardens and often sitting under a tree, watching children play, and catching up with her friends and neighbours. She looks forward to this social interaction, sometimes it's the only time she gets to connect with others.

But as temperatures soar past 35°C Day after day, Marjorie stops going. Recently, many of the park's trees were heavily pruned due to storm risk, leaving little natural shade. The metal benches become too hot to sit on, and as a result, the regular community gatherings in the park have come to a halt. She now spends most afternoons inside, isolated and trying to stay cool with just a ceiling fan and lukewarm water.

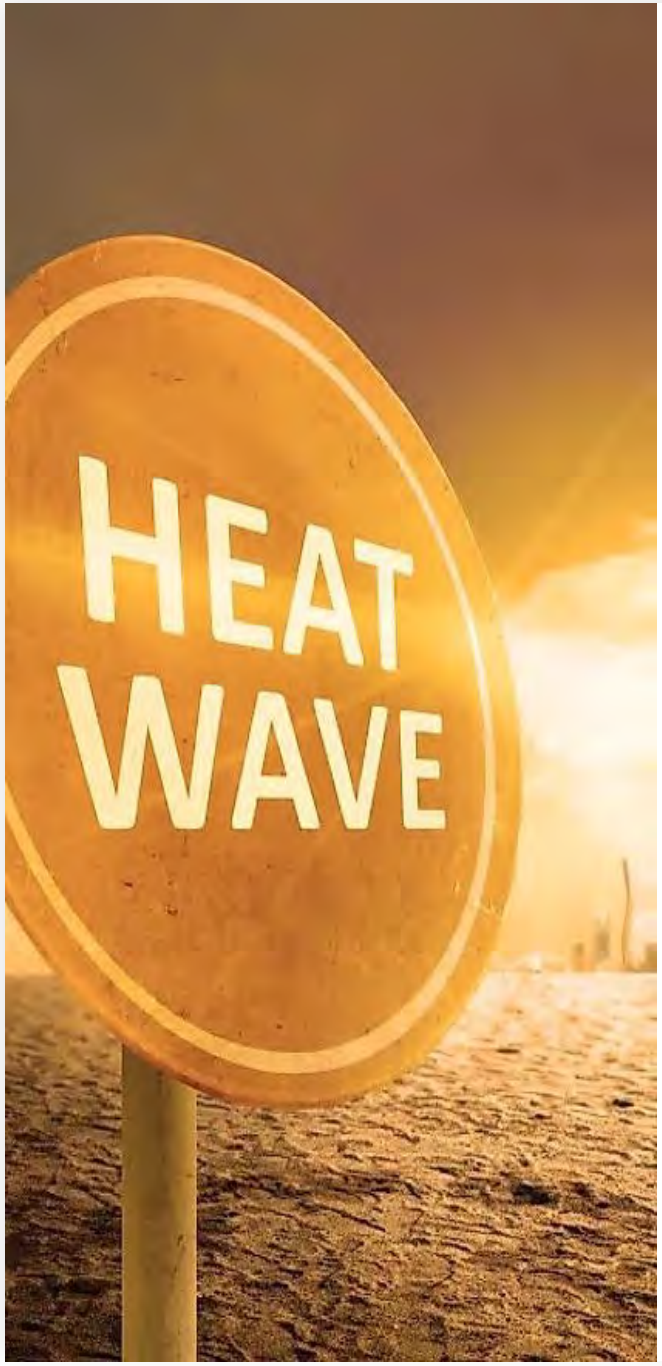


Health System Overwhelm During Heatwaves — Alice Springs Hospital

It's 40°C outside. Already feeling the weight of the heatwave, paramedics in Alice Springs are stretched to their limits. Luke, a 42-year-old intensive care paramedic, has been on shift since dawn, responding to triple-zero calls across the region. He's already attended to an elderly man collapsed in a stifling bedroom, a teenager overcome by heat on a job site, and a toddler suffering from dehydration. Working in full uniform under the blazing Red Centre sun, lifting patients from tin-roofed homes and pushing stretchers across scorching ground, the heat is punishing.

By early afternoon, Luke finds himself waiting outside the Alice Springs Hospital with his latest patient—there are no beds available inside. The back of the ambulance is sweltering, and he tries to keep the patient stable while monitoring vitals and checking in with dispatch.

Inside, Anita, a senior emergency physician, is also under intense pressure. The small emergency department is overwhelmed, the waiting area packed, and the stream of ambulance arrivals hasn't let up. Staff shortages—common in remote Australia—mean fewer hands to manage the growing crisis. Anita hasn't taken a break in over six hours. Some patients in the waiting room are becoming agitated, frustrated by the long delays and lack of communication. Anita worries a critical patient could be missed as the system strains under the growing weight of extreme heat, limited resources, and a workforce pushed to its limits.

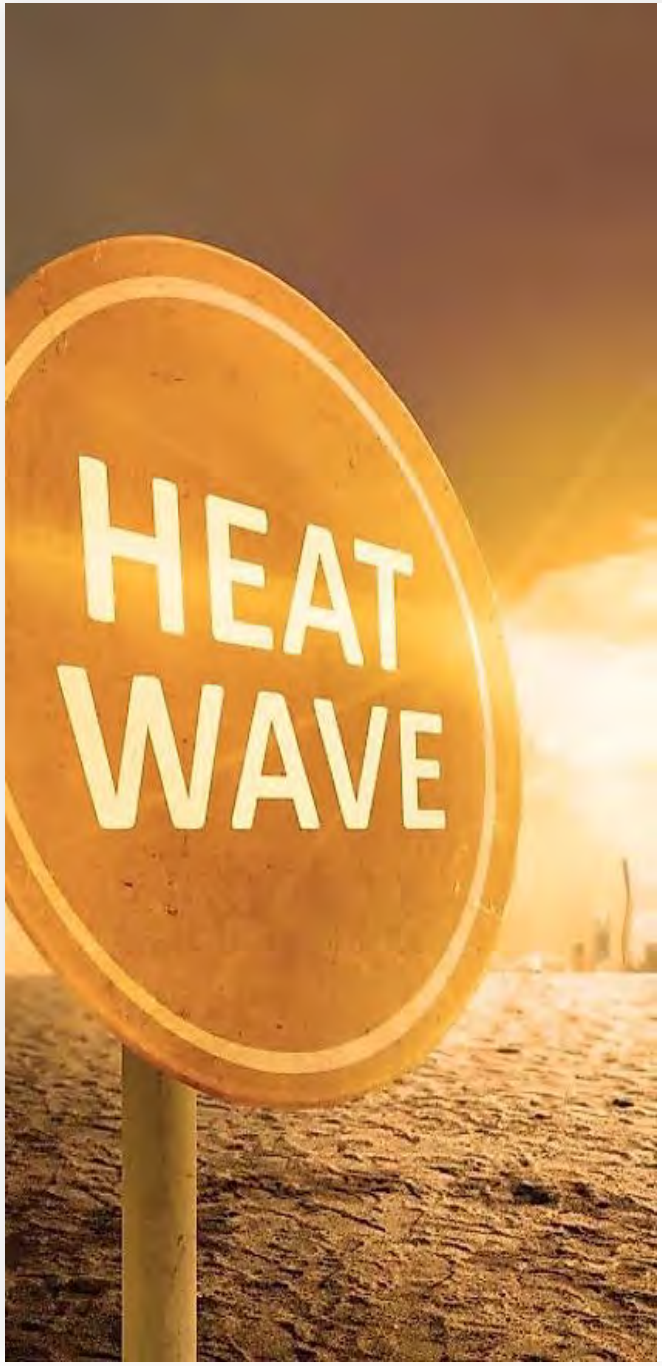


Facilitation and Visual Methods

The workshop was facilitated by Hayley Langsdorf (Thoughts Drawn Out), a visual facilitator and designer with extensive experience in communication, systems mapping, and human-centred design. Her expertise in illustrated storytelling and collaborative sense-making supported an inclusive and accessible process, enabling participants to collectively explore and visually articulate the complexity of heat–health relationships. This visual facilitation approach was selected to enhance engagement, reveal shared patterns, and support the translation of complex ideas into actionable insights.

Digital Collaboration Platform

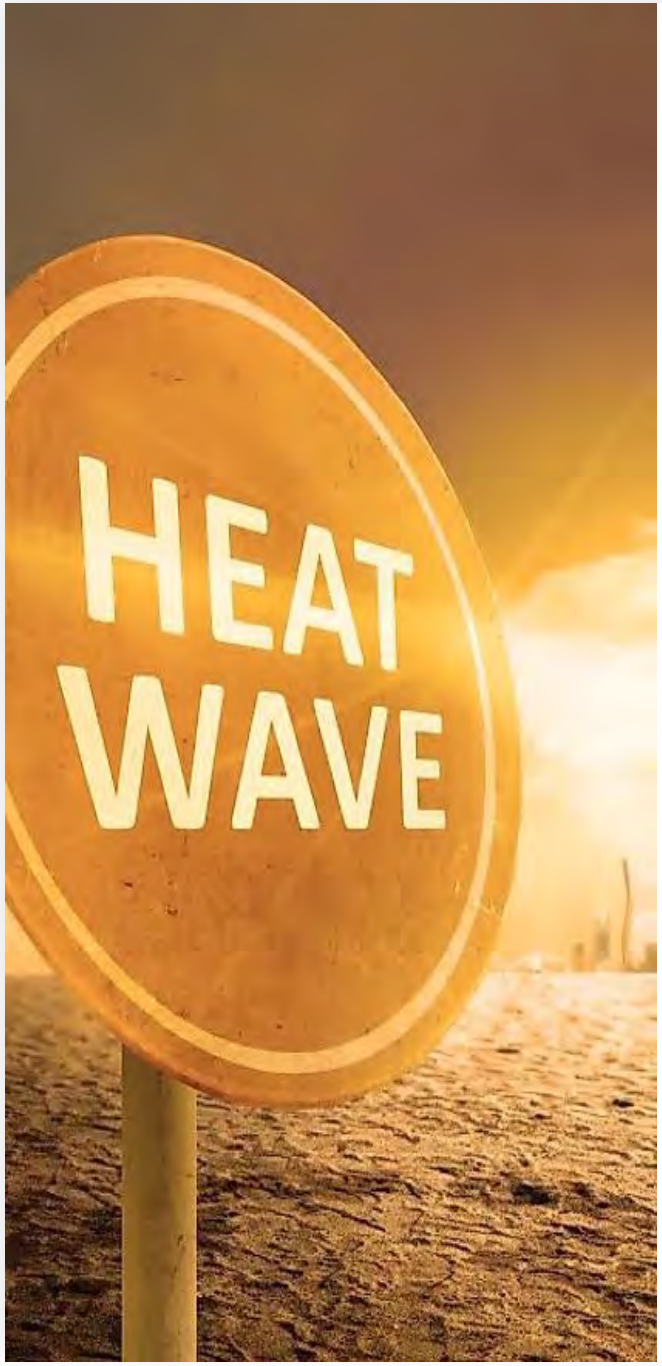
Miro, an online collaborative whiteboard tool, was used as the primary platform for interactive mapping and discussion. Miro was selected for its flexibility, visual interface, and capacity to support real-time contributions from participants. Brief instructions were provided at the start of the session to ensure accessibility for participants unfamiliar with the platform. No advance preparation was required, and contributions were based on participants' expertise, experience, and professional insights.



Participants - Recruitment & Attendance

Participants were invited from a broad range of domains relevant to heat and health. Invitations were extended via targeted email outreach to individuals and organisations with expertise or lived experience relevant to the scope of the workshop.

A total of 30 participants attended the workshop, representing a diverse range of fields including lived experience of heat vulnerability, community engagement, Aboriginal and Torres Strait Islander health research, thermophysiology, epidemiology, climate science and meteorology, health economics, clinical and health services research, workplace heat and safety, mental health, urban planning and the built environment, energy and architecture, social science and anthropology, disaster risk reduction and emergency management, risk communication and behaviour change, policy and governance, as well as early career researchers working in areas such as ageing, maternal and child health, and heat-health communication.



Outcome Development

The primary output of the workshop was a collaboratively generated visual map representing the dimensions of heat and health. This diagram serves as a foundational tool to:

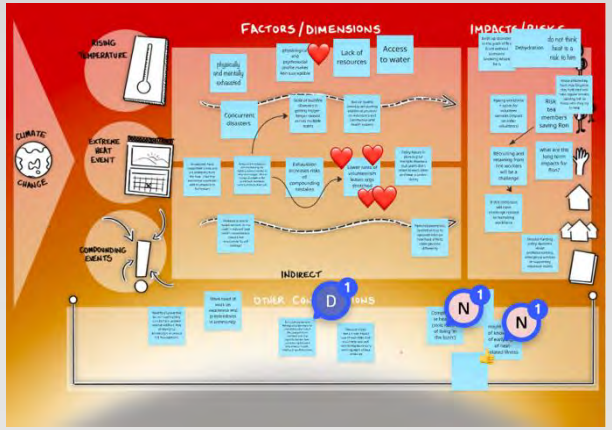
- Support interdisciplinary understanding of heat-related vulnerabilities and system interactions,
- Identify priority areas for impactful research, &
- Inform policy development

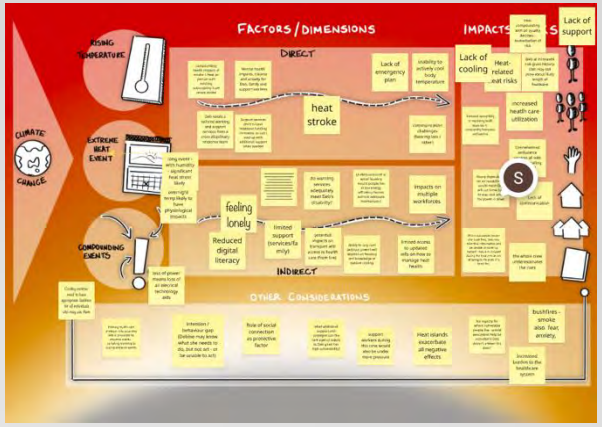
Feeding into the final visual map, the workshop generated a series of key points and discussions for each scenario, all of which were captured directly on the Miro board.

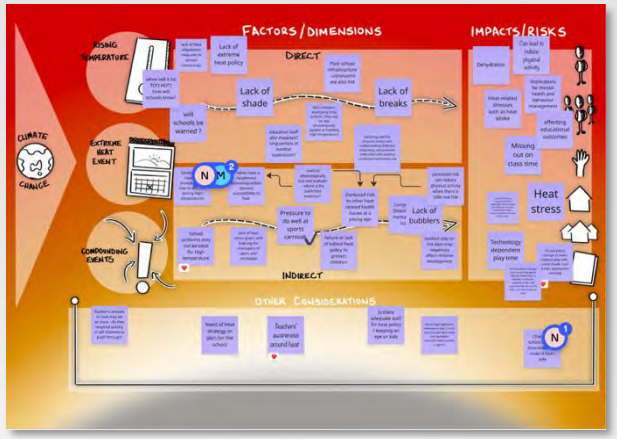
We then used Miro's built-in AI tools to summarise the content generated in each scenario and manually reviewed these summaries to ensure accuracy and coherence.

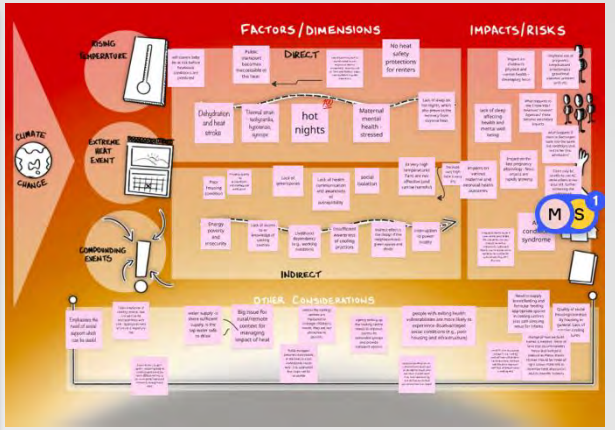
These validated summaries formed the basis for creating individual visual representations for each scenario, and the consolidated insights were subsequently synthesised into a final overarching visual.

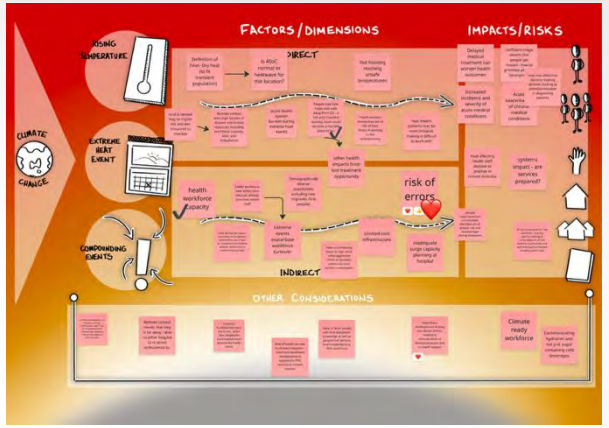
Miro board screenshots of each scenario after the workshop- this was then summarised using built in Gen AI in Miro board and then visuals were created as stated earlier.

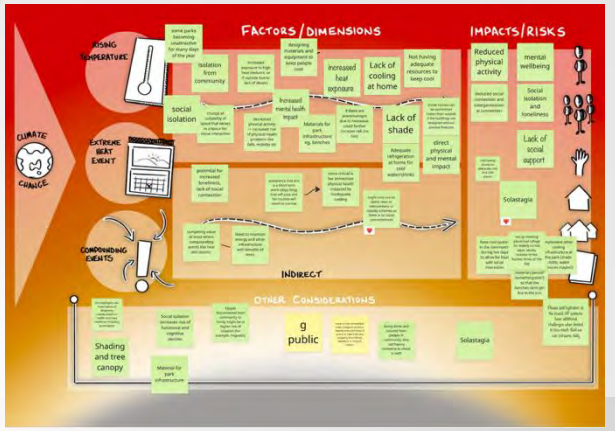




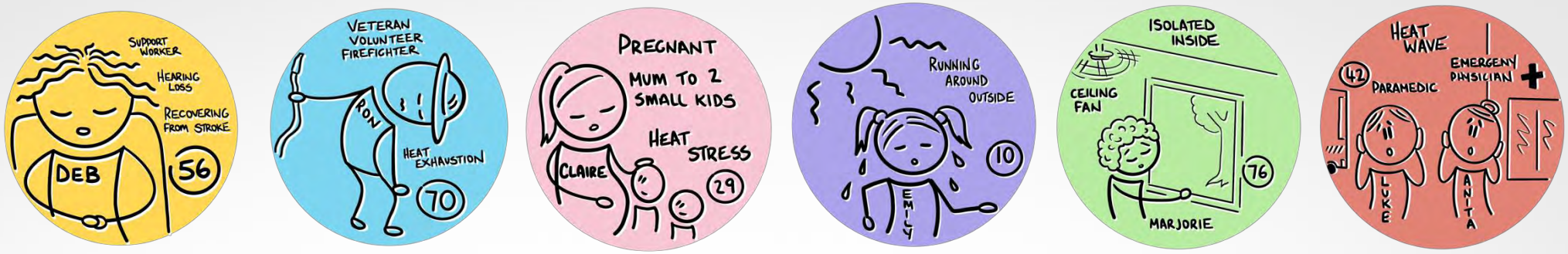


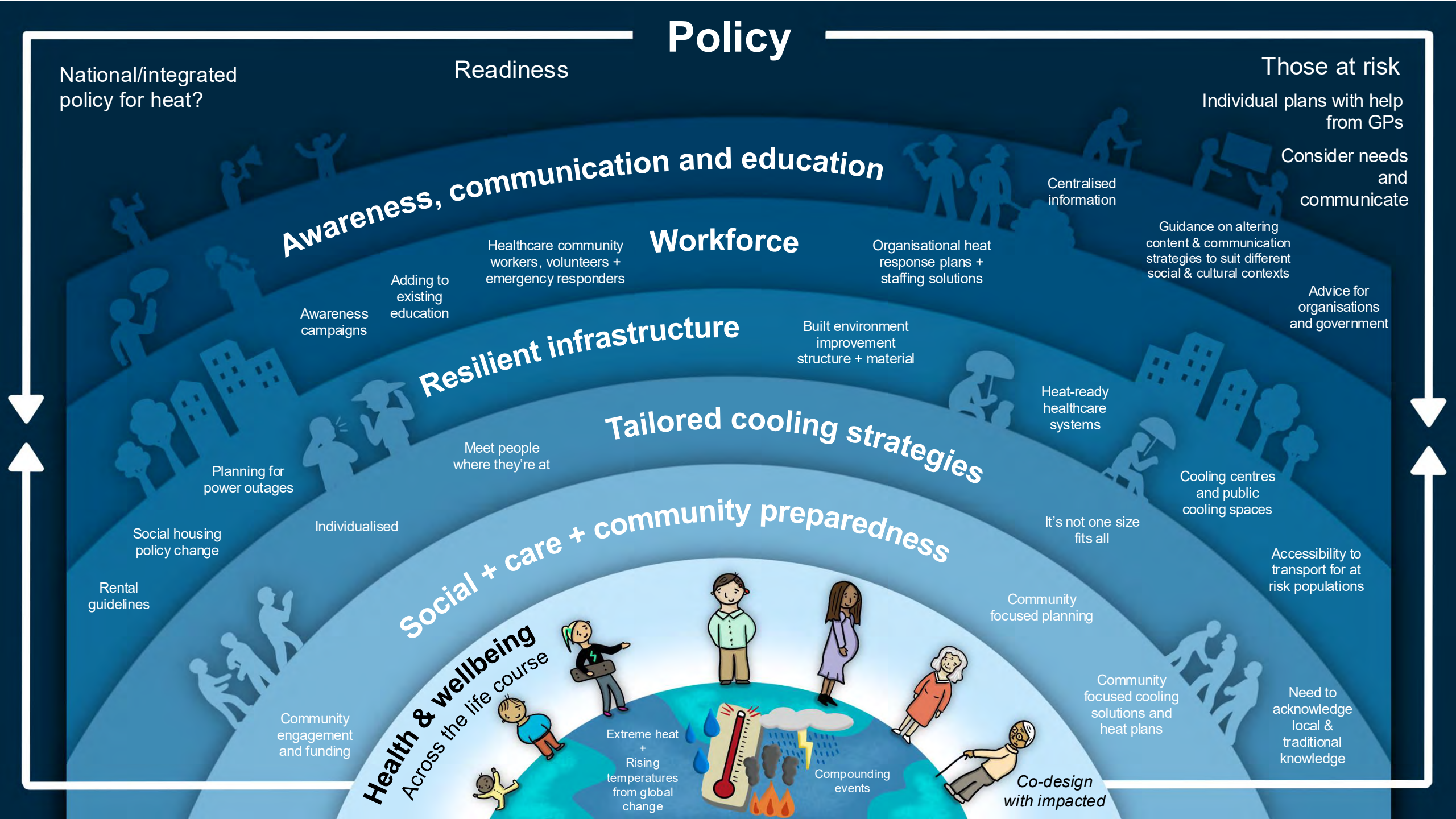






Final Visual




Policy
National/integrated policy for heat?
Readiness
Those at risk
Individual plans with help from GPs
Consider needs and communicate
Awareness, communication and education
Centralised information
Guidance on altering content & communication strategies to suit different social & cultural contexts
Advice for organisations and government
Workforce
Healthcare community workers, volunteers + emergency responders
Organisational heat response plans + staffing solutions
Adding to existing education
Awareness campaigns
Resilient infrastructure
Built environment improvement structure + material
Heat-ready healthcare systems
Tailored cooling strategies
Meet people where they're at
Planning for power outages
Cooling centres and public cooling spaces
Social + care + community preparedness
Individualised
It's not one size fits all
Social housing policy change
Accessibility to transport for at risk populations
Rental guidelines
Community focused planning
Health & wellbeing
Across the life course
Community engagement and funding
Community focused cooling solutions and heat plans
Need to acknowledge local & traditional knowledge
Extreme heat + Rising temperatures from global change
Compounding events
Co-design with impacted

Overall takeaways

1. Heat as a Universal and Cross-Life-Course Risk

- Heat affects people of all ages, health statuses, and life circumstances.
- Responses must recognise its broad and interconnected impacts across daily life, health, work, and community functioning.

2. Importance of Co-Design and Community Involvement

- Meaningful co-design with people most affected by heat is essential for developing effective solutions and communication campaigns.
- Community engagement and sustained funding are required to ensure that policies and programs reflect real needs.

3. Policy Readiness and Centralised Information

- There is a strong need for coherent, centralised heat-health guidance for governments, organisations, and communities.
- Centralised resources should be adaptable for local contexts and needs.
- Clear policy frameworks are required, particularly for vulnerable populations.

4. Organisational and Workforce Readiness

- Organisations need heat-response plans, including staffing and operational contingencies.
- Workforce education (healthcare, community care, volunteers, firefighters, emergency responders) should include heat-specific training and awareness modules.
- Infrastructure to support workers during heat is critical.

5. Tailored Cooling Strategies

- Cooling advice and interventions must be individualised and consider cultural and social contexts, drawing on traditional knowledges where possible; a one-size-fits-all approach is not effective.
- Community-based planning is needed to develop accessible local cooling solutions and heat plans.

Overall takeaways

6. Role of Infrastructure and Built Environment

- Built environment improvements are crucial—housing design, building materials, and ventilation standards all influence heat exposure.
- Social housing and rental regulations need to embed heat-resilient design and protections.
- Infrastructure planning should include:
  - Workforce-appropriate cooling and safety measures
  - Public cooling centres
  - Power outage planning
  - Heat-resilient and accessible transportation options

7. Healthcare System Preparedness

- The healthcare system must become heat-ready, including staffing solutions, operational backup plans, and clear heat-response protocols.
- Primary care, especially GPs, can assist at-risk individuals in developing personalised heat plans.

8. Social and Community Support

- Strong social networks and community support play a key role in reducing heat-related harm.
- Community-centred programs can support vulnerable populations and foster local resilience.

9. Communication, Awareness, and Education

- Heat communication strategies need major improvement.
- Education and public awareness campaigns should highlight:
  - Heat as a serious health risk
  - Availability of cooling centres and support services where they exist
  - Subsidy schemes or financial assistance for cooling
- Mental health impacts of heat are significant but manageable with appropriate strategies and planning.

10. Protecting At-Risk Populations

- Policies must specifically address the needs of at-risk groups.
- Engagement, tailored communication, and personalised heat plans are essential to supporting those at highest risk.

"Building heat resilience requires an integrated approach—starting with national policy and cascading through awareness, workforce readiness, resilient infrastructure, tailored cooling strategies, and community preparedness. Collaboration across sectors and co-design with those most impacted are essential to protect health and wellbeing across the life course."