

International lessons for how Australian cities and towns can adapt to climate change



Based on AHURI Final Report No. 411:
Improving Australian climate change adaptation
strategies: learning from international experience

What this research is about

This research explores climate change adaptation practices, strategies and policies implemented internationally that could be adopted to support the sustainable development of cities and towns across Australia.

The context of this research

The increasing frequency, duration, and intensity of extreme weather events are heavily impacting Australian capital and regional urban centres. During the bushfire season of 2019–20 3,500 dwellings were affected in New South Wales (NSW). At the beginning of 2022, flooding devastated parts of NSW and Queensland (QLD), impacting an estimated 10,500 properties. Forecasts predict that natural disasters will cost Australia \$73 billion by 2060.

The key findings

The global responses to climate change can be grouped into two broad categories: mitigation and adaptation. Mitigation focuses on tackling the causes of climate change, while adaptation focuses on reducing the impact of its effects.

Adaptation strategies refer to all urban policies and programs that reduce immediate risks posed by natural events (triggered or exacerbated by climate change) while promoting sustainable development. Compared to mitigation, adaptation strategies present a higher level of complexity due to the range of values involved, from collective to personal; therefore, their benefits have been found to be valued differently depending on the social, economic and political contexts within which they occur.

The Intergovernmental Panel on Climate Change states that: 'Adaptation can generate multiple additional benefits such as improving agricultural productivity, innovation, health and wellbeing, food security, livelihood, and biodiversity conservation as well as reduction of risks and damages'. In the 2015 Paris Agreement, adaptation was recognised as an equal priority to mitigation in the global fight against climate change.

Urban planning and policies are regarded as crucial instruments to promote adaptation; they facilitate decisions on the future use of space and management of infrastructure (planning and delivery) that can reduce the likelihood and impacts of disasters on the built environment.

Australia lacks direction in climate change adaptation

Australia lacks a strong overarching direction in climate change adaptation, including legislation and funding. In a peer-reviewed 2019 assessment of adaptation plans across 54 countries, Australia was the lowest performer. Australia scored zero in eight of the 20 areas evaluated, including participation, identification of vulnerable communities and ecosystems, prioritisation, monitoring and evaluation of actions and economic diversification. This poor performance can be linked to the narrow scope of Australia's approach to adaptation.

Adaptation is framed as a shared responsibility between governments at all levels, businesses, communities and individuals. Within this overarching framework, each level of government has a specific role. The role of the Australian Government is to support, coordinate and monitor policies and programs delivered at the state, territory and local levels, facilitate knowledge sharing and establish financial incentives to encourage private sector investment relative to risk reduction.

Urban interventions and policies are key to adaptation. States/territories and local governments are responsible for legislating in this area. However, a new National Urban Policy is on the horizon for Australia. In the 2023—24 Federal Budget, the Australian Government announced the \$687.4 million plan to finance interventions to support 'sustainable urban development in Australia'. This plan includes the establishment of the Cities and Suburbs Unit, which will deliver the National Urban Policy and report on the State of Australian Cities. The National Urban Policy will work in combination with two other initiatives: the Thriving Suburbs Program and the Urban Precincts and Partnerships.

The current situation of State and Territory adaption legislation

In the Australian Constitution, environmental law falls under the jurisdiction of individual states and territories; this includes land-use planning, water management, coastal protection, and all aspects related to natural hazards management (floods, bushfires, cyclones). Consequently, each state and territory autonomously legislates on these matters and has its institutional governing structure, with different arrangements in place relative to the distribution of responsibilities.

Only four states address Climate change in legislation:

- Victoria *Climate Change Act 2017*
- South Australia *Climate Change and Greenhouse Emissions Reduction Act 2007*
- Tasmania *Climate Change (State Action) Amendment Bill 2022*
- Australian Capital Territory- *Climate Change and Greenhouse Gas Reduction Act 2010*.

Each of these documents addresses adaptation and mitigation—contrary to the federal legislation, the Commonwealth *Climate Change Act 2022*, which only addresses mitigation. Each state/territory act recognises the responsibility of the climate change minister to support actions aimed at implementing adaptation measures. Only the Victorian *Climate Change Act* identifies strategies for intervention by mandating climate change adaptation plans.

Within the state/territory policies, the top three implementation measures cover:

- urban policy development, improvement, and integration relative to planning and land use, building codes and risk management plans. This also includes all activities that support aligning of actions taken in different contexts and decisions taken within different policy frameworks
- dwelling retrofitting for improved thermal performance, better infrastructural design, and delivery of building with an emphasis on achieving higher thermal performance, targeting emission reduction and climate resilience (heat control)
- building institutional and sectorial capacity in education and training, improving government capacity to lead the conversation on climate change through research and the use of up-to-date technologies and information.

In regional areas, retrofitting programs aim specifically at public building, and facilities focus on maintaining the buildings' functionality in an emergency caused by a natural disaster.

Activities to build community resilience and preparedness include awareness of climate change for households (house performance and energy savings) and communities (disaster risk preparedness); strengthening stakeholders' networks between different sectors and between institutions and community settings; and Australian traditional owners' self-determination relative to land management and implementation of traditional land management methods for hazard mitigation, particularly flood and bushfire.

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Three international case studies

Flooding - USA

The city of Tulsa is an exemplary flood management case; from being the most flood-prone city in the 1970s to leading on floodplain management. It relies on a combination of structural and non-structural intervention measures and is based on:

- land use and planning, including basin drainage plans, citywide drainage plans, and planning regulations for land use and building construction
- capital improvements, including redesign (and maintenance) of the drainage system
- multi-objective management, including merging of the water management systems and park and recreational infrastructure
- planning partnerships, including active community participation in devising and delivering the new systems and leadership in flood awareness and preparedness.

The city has seen the construction of a flood control system based on a network of landscaped detention basins. The project has highlighted that local adaptation actions have been implemented in the context of, and supported by, overarching national policy and funding frameworks. Moreover, the combination of top-down and bottom-up solutions has provided impactful outcomes in terms of socio-economic assessments.

Bushfires - Spain

Riba-roja de Túria is a small municipality (just over 22,000 residents) in the National Park of Túria that has been facing aggravated bushfire risk due to physical and climatic impacts associated with decreasing rain and water scarcity.

GUARDIANS (Green Urban Actions for Resilient Fire Defence of the Interface Area) is designed to improve the fire resilience of the city while preserving the National Park. It has two main objectives: (1) to protect natural habitats and (2) to lower community vulnerability to bushfire hazards through sustainable water management principles. In addition, the project aims to improve ecosystem conditions and raise community fire risk awareness.

The case study is underpinned by three main strategies:

- use of nature-based solutions: over 35 hectares of multi-layered, low-flammable vegetation strips, served by artificial water inputs, has created a micro-climate that lowers downwind temperatures and enhances humidity
- water recycling

- community resilience: awareness-building campaigns were undertaken for the citizens and school-age children.

Cyclones – USA

The My Safe Florida Home program supports households (and in particular, low-income households) to assess the condition of their homes and provides financial assistance to carry structural improvements needed to benefit from insurance discounts.

The program has three main components:

- hurricane mitigation inspections: free inspections offered to all homeowners of site-built, single-family residential homes identify mitigation and retrofitting measures needed to reduce the dwelling vulnerability to wind damage, including an estimated cost and insurance premium discounts
- mitigation grants: to implement recommended building retrofitting
- education and consumer awareness: to publicise the program and inform residents of the benefits of retrofitting their homes.

The analysis of the program found that the retrofitting component of the program reduced the state-wide economic liability and the risk carried by the homeowners.

Barriers to adaption strategies in Australia

The experts interviewed in this research pointed out the lack of leadership as a barrier to adaptation. They also identified the division of powers and allocation of responsibilities in the three tiers of government and the legislative autonomy of the states and territories as being at the core of the problem. This fragmentation is exacerbated by the limited and unclear position of the Australian Government on environmental policies and the limited support offered to states. Fragmentation at a local level is also a barrier to achieving comprehensive and integrated responses to hazard mitigation, such as the one implemented in the Tulsa case study of flood management.

Through scoping international policies and case studies, the research identified the following barriers and opportunities:

- the governance structure relative to adaptation was identified as fragmented and lacking coherence, comprehensiveness and consistency

- there is a misalignment between the time needed to devise and implement adaptation strategies and the political life of leaders called to support such long-term projects. This results in either a lack of action or a preference for a business-as-usual approach that delivers an immediate short-term solution but lacks innovation
- there is a need to shift values when considering intervention strategies away from short-term economic stability and prosperity and towards long-term benefits connected to human health and wellbeing and preservation and consideration of our ecosystem at large for current and future generations
- a community-based risk management approach could be very positive in the Australian context.

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What this research means for policy makers

There are three main strategic approaches for effective adaptation intervention:

- long-term investment and holistic approaches to addressing the issues
- building community resilience to sustain the resilience of cities
- innovation in approaches to structural solutions that rely on respecting and reinforcing the ecological system as a means to build resilience, implementing nature-based solutions.

Specific policy approaches and strategies could include:

- integrating climate change adaptation into the national Climate Change Bill to demonstrate a legislative commitment to tackle issues of adaptation
- delivery of a more robust policy framework by developing a national adaptation plan identifying concrete actions, timeframes and resources for implementation in the short and long-term
- revision of national environmental policy for stricter and more comprehensive consideration of the impact of existing and future development of climate change
- development of financial mechanisms that provide ongoing financial support for adaptation initiatives, including insurance schemes
- building institutional capacity and better coordination of, and communication between, stakeholders across different levels of government and other external actors
- ongoing investment in community resilience and engagement in adaptation to deliver more resilient and sustainable infrastructures.
- Local governments' adaptation and sustainability plans and initiatives could be leveraged to create a more comprehensive national platform similar to the European Union.

Methodology

This research reviewed academic and grey literature; explored three case studies that address three common climate change-related natural disasters (flooding, cyclones and bushfires); and interviewed experts in urban policy and governance, sustainability and housing.

To cite the AHURI research, please refer to:

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