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Climate change adaptation and resilience as a metapolicy framework

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Introduction

Whatever success is had with climate change *mitigation* (emission reductions), Australia's cities and towns will be severely impacted by already locked-in climate change. Social lives, environments, infrastructure, and economic flows will be disturbed, and current policy settings for *adaptation* to climate change are inadequate. We propose that thorough attention to living well with Australia's changing climate should underpin policy across jurisdictions, sectors, and portfolios, producing significant co-benefits aside from climate adaptation.

With bushfires, heatwaves, floods, severe storms, cyclones, and droughts, Australia is already experiencing longer, more severe, and/or more frequent events due to climate change (CSIRO and BOM 2020). The devastating bushfires and floods of 2019 and 2020, and more recent 2022 floods and 2023 heatwaves in the east of the country, show what a one-degree warmer Australia looks like, while the impacts of an expected three-degree warmer world by 2100 are beyond our lived experience (AAS 2021). The warnings of and evidence for severe or even catastrophic climate change impacts have become ever stronger (IPCC 2021; WMO et al. 2022).

Nearly 90 per cent of Australians live in cities, most in coastal areas vulnerable to sea-level rise and flooding (DCC 2009). One assessment identified more than A$226 billion (2008 replacement value) of commercial, industrial, road, rail, and residential assets at risk from a 1.1-metre rise in sea level (DCCEE 2011). The exposure of communities and changing perceptions of risk are impacting on the insurance and financial sectors, with perhaps one in every 19 property insurance premiums to become unaffordable by 2030 (AAS 2021).

Even if all international commitments under the Paris Agreement were to be met today, which is unlikely, we must deal with locked-in climate change. This highlights the importance of adaptation and of action to manage risks and protect communities and environments, and to exploit opportunities to enhance the resilience of our cities and societies.

There are synergies and opportunities (as well as tensions) between mitigation and adaptation, but also a commonality that must be made explicit. Both have profound social justice and equity dimensions: the costs of mitigation fall heavily on the poor, as do the impacts of climate extremes and the costs of adaptation. All policy responses must take that into account, to be just as well as effective. Calls for transformative adaptation to climate change that focus on justice and equity are increasing (FEA 2022).

Yet, Australia has been caught for decades now in a 'climate change policy impasse', both for mitigation and for adaptation (Brown and Dovers 2021). At the time of writing, a new national government indicates a greater level of action on mitigation at least, but the inheritance of inaction makes the task a challenging one. Alongside a poor record on climate policy, Australia's history of urban policy (for example, Ruming et al. 2017) has too often been one of flux, of eased regulation, and of poorly coordinated plans: strategic, structural, transport, metropolitan, open space, logistics, and others. Given its cross-sectoral scope, can we use adaptation as an integrating principle throughout urban policy and planning? That proposition, supported by the co-benefits of climate change adaptation and values delivered to the community (Table 4.1), is the central theme of this chapter.

This chapter addresses this question through the lens of resilience—a core concept of adaptation. We first assess the state of Australian adaptation policy, then describe the need for policy integration to address climate adaptation, and explore the usefulness of key adaptation concepts, especially

resilience. We then combine resilience ideas with adaptation needs, followed by a series of broad policy recommendations. Our core proposition is that, through policy integration, climate adaptation should, and can, become a 'metapolicy principle' for decision-making and planning.

Adaptation and the Australian policy vacuum

Climate change *adaptation* for human systems is 'the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities' (IPCC 2018: 542). Recently, the concept of *resilience* has become central in adaptation discourse and policy, and is defined as the

> capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation. (IPCC 2018: 557)

Yet, resilience is a contested concept and there are challenges related to the nature of the societal values and policy goals that must be negotiated (Cañizares et al. 2021).

We focus on Australian climate change adaptation and the challenges and opportunities for vertical (between levels of government) and horizontal (across sectors/portfolios) *policy integration* using the concept of resilience. Our central argument is that adaptation cannot be regarded as a discrete issue, but rather should be considered a metapolicy principle and framework focusing on desired outcomes (that is, the co-benefits and community values to be delivered). Consider the *examples* of cross-sectoral and portfolio implications of adaptation and co-benefits in Table 4.1. Co-benefits are the added benefits of adaptation policy and broader values delivered to the community beyond the direct benefits achieved from addressing climate change.

Table 4.1 Climate change adaptation: Relevant policy sectors and co-benefits

Climate change adaptation issue	Examples of adaptation measures	Relevant policy sector/portfolio	Examples of co-benefits and values delivered to the community
Heatwaves	Urban greening, building insulation	Planning, open space management, building regulation	Urban amenity, walkability, biodiversity, public health, energy efficiency
Water scarcity (worsened droughts)	Water-sensitive urban design, efficiency standards, supply augmentation	Water, housing, open space management, infrastructure, development and building standards	Public health, biodiversity, urban cooling, avoided costs
Vulnerable remote communities	Improved employment connected to Country, better health, communication, and education services	Employment, industry, communications, health, environmental management	Improved economic, health, environmental, and cultural outcomes; national moral obligation to achieve
Sea-level rise, coastal storm surge	Ecosystem engineering (impact absorption, nature-based solutions), managed retreat, protective structures	Coastal and environmental management, planning, infrastructure, housing, tourism, fisheries	Coastal amenity and access, biodiversity, avoided costs and insurance, public safety
Inland flooding	Wetland creation (nature-based solutions), protective structures, house retrofits	Water management, open space management, environmental management, infrastructure, building regulation	Urban greening, recreational and visual amenity, biodiversity, public safety
Increased pressure on emergency management	Numerous: in recommendations of about 150 post-event reviews since 2009 (Cole et al. 2018), especially regarding risk mitigation	Emergency services, health, transport, communications, planning	Avoided deaths and asset and economic losses

Source: Author's summary.

The issues and benefits illustrated in Table 4.1 spread across metropolitan, regional, rural, and remote Australia, and national and indeed state policy would at the broadest level cover all these. However, following population concentration, the bulk of actions and benefits are in cities. In terms of the nation adapting to climate change, the interdependencies between 'city and country'—in food supply, social and cultural innovation, recreation, manufacturing capacity, water supply and use, and so on—warn against separate adaptation policy frameworks, even while place-specific demands must be attended to in subsidiary policies and actions.

The examples in Table 4.1 support two vital conclusions: 1) adaptation requires policy and action *across* multiple sectors and policy portfolios, and 2) many adaptation measures offer *co-benefits* in those sectors. Conclusion (1) requires coordinated action by all three levels of government and across portfolios within each level. Conclusion (2) offers the prospect of *no-regret* or *low-regret* adaptation measures, which are made more attractive where there are benefits other than climate adaptation. The impacts of a variable climate have been attended to less than they could have been in Australia to date (in water management, fire suppression, drought policy, coastal management, thermal performance of dwellings, urban open space and greening, and more): there are advantages in doing better (that is, focusing on the values and co-benefits), even in the absence of significant climate change. A third and critical point follows: proposed adaptation actions must be analysed, costed, and assessed for their effectiveness, like any other policy proposals. The existence of co-benefits—measured comprehensively (not just near-term economic benefits) and over extended periods—will often shift cost–benefit ratios positively in favour of climate change adaptation measures. These conclusions require a focus shift in adaptation policy to articulate the broader outcomes and values to be delivered to the community (for example, liveability, urban amenity, and public health). If these conclusions hold, along with the already noted strong scientific consensus on the severity of coming climate change, there is little excuse for not implementing much more vigorous adaptation measures across policy sectors and particularly the urban.

Australia has a federal governing system comprising the national (Commonwealth) government, six state and two territory governments (hereinafter, states), and local councils that are created, regulated, and largely financed under state legislation. The Commonwealth's powers are defined by the Australian Constitution and anything else is a residual power and thus the states' responsibility. This includes matters such as

natural resource management, conservation, planning, and development, with aspects of land-use planning and development assessment delegated to local governments. Accordingly, much responsibility for disaster risk reduction and climate change adaptation falls on state governments (COAG 2011), which share responsibility for the identification of climate risk and incorporation into statutory and non-statutory decision-making with local governments. In this federal system, adaptation requires higher-level policy to establish consistent principles and, crucially, to support other levels of government and the nongovernmental sector, but implementation at local scales to ensure consistency with local geographical and economic contexts; local government has a key role.

A distinction must be drawn regarding climate change as a policy problem. The major focus of political debate has been *mitigation* (reducing emissions), and this remains an urgent challenge with serious implications for cities (and beyond the scope of this chapter). Yet, as a policy problem, given the intent and targets, there is a small number of systemic policy levers—carbon pricing, vehicle emission and technology standards, renewable energy targets, and so on—with reasonably predictable efficacy. It is a critical political failing that mitigation has been so poorly attended to nationally in Australia: it is politically difficult, but also urgent and tractable. *Adaptation* to the impacts of climate change, as a policy problem, is far messier, demanding consistent, broad policy settings but also endless variation in local adaptation actions according to the climate risks faced (coastal storm surges, bushfires, flooding, heatwaves, water supply, species at risk) across varied geographical and socioeconomic settings. There are few direct, systemic policy levers for adaptation. The intricacies of adaptation policy at all levels of government are well beyond the scope of this chapter, so coverage of issues and policy detail is kept largely to the general and illustrative.

The Australian Government does play a vital role, traditionally via the COAG and subsidiary arrangements, seeking policy coordination between governments. The COAG was replaced in 2020 with the loosely defined 'National Cabinet', involving reduced inclusion of local government. Other national organisations play key roles, including the CSIRO, the Bureau of Meteorology, Geoscience Australia, the (now vestigial) National Climate Change Adaptation Research Facility, and the recently (in 2021) established National Recovery and Resilience Agency, which was re-formed in 2022 as the National Emergency Management Agency.

Climate adaptation policy in Australia has been in a state of flux, overall and with respect to cities. While mitigation has been the focus of unproductive Australian debate for some time (the first emissions reduction proposal was submitted to the Cabinet in 1989) (Burgmann and Baer 2012), adaptation became topical only in 2006. Between 2007 and 2012, there was a rapid rise in adaptation policies and strategies at all levels of government (Howes and Dedekorkut-Howes 2017), followed by a period of decline as a result of changes of government; the national election of 2013 and some state elections (for example, Queensland in 2012) saw a shift from Labor to Liberal–National parties with climate-sceptical leaders. A timeline of national adaptation policy (and lack thereof) is presented in Table 4.2. The extensive list of documents in the table reflects the extent of the focus on adaptation relevant to each national government and the differences between them.

Table 4.2 A timeline of Australian national climate change adaptation policy, 1972–2023

Period/government	Climate change adaptation focus and key events	Key documents
1972–95 Whitlam Government (ALP) Fraser Government (Coalition) Hawke–Keating Government (ALP) Keating Government (ALP)	Global acknowledgement of the relationship between humans and the environment through the Stockholm Declaration (1962) First meeting of the Intergovernmental Panel on Climate Change (1988); rising scientific concern and public debate	*Report of a Committee on Climatic Change* (Australian Academy of Science 1976)
1996–2007 Howard Government (Coalition)	A growing focus on resourcing to address climate change at local, regional, and state scales Some states recognised the risk to properties and infrastructure from phenomena such as sea-level rise Need for better understanding of the levels of risk facing the whole nation	*Review of Australia's Ability to Respond to and Recover from Catastrophic Disasters* (Attorney-General's Department 2005) *Climate Change Impacts and Risk Management: A Guide for Business and Government* (Department of Climate Change and Energy Efficiency 2006)

Period/government	Climate change adaptation focus and key events	Key documents
2007 – June 2010 Rudd Government (ALP)	Establishment of the Department of Climate Change in 2007 (disbanded in 2013) Establishment of the National Climate Change Adaptation Research Facility Funding for programs by CSIRO Flagships, Geoscience Australia Garnaut review interim independent report (in 2008) submits that Australia is particularly vulnerable to the impacts of climate change and calls for effective climate policies Start of hearings on the impacts of climate change on coastal Australia by the House of Representatives, chaired by Jenny George MP, 2008 Department of Climate Change becomes Department of Climate Change and Energy Efficiency (2010)	*National Climate Change Adaptation Framework* (COAG 2007) *Garnaut Climate Change Review: Final Report* (2008) *Managing Our Coastal Zone in a Changing Climate: The Time to Act Is Now* (House of Representatives 2009) *Climate Change Risks to Australia's Coast: A First Pass National Assessment* (Department of Climate Change 2009) *Coastal Climate Change Advisory Committee: Issues and Options Paper* (Department of Planning and Community Development 2010) *Developing a National Coastal Adaptation Agenda: A Report on the National Coastal Climate Change Forum* (Department of Climate Change and Energy Efficiency 2010) *Adapting to Climate Change in Australia: An Australian Government Position Paper* (Department of Climate Change and Energy Efficiency 2010)

Period/government	Climate change adaptation focus and key events	Key documents
June 2010 – June 2013 Gillard Government (ALP) **June 2013 – September 2013** Rudd Government (ALP)	Multiparty Climate Change Committee created in 2010 (as required by the Labor–Greens agreement) Launch of the Climate Commission (2011) to provide expert advice and information to the public on climate change Establishment of the Coasts and Climate Change Council, an advisory body to the Minister for Climate Change and Energy Efficiency in 2009–11 Climate Change Authority and Australian Renewable Energy Agency formed in 2012 Coastal Adaptation Decision Pathways Program to provide funding for coastal councils Productivity Commission invited parties to register interest in an inquiry into regulatory and policy barriers to effective climate change adaptation Department of Climate Change is disbanded, with functions moving to other departments	*A Low Carbon and Resilient Urban Future: A Discussion Paper on an Integrated Approach to Planning for Climate Change* (Department of Climate Change and Energy Efficiency 2010) *National Strategy for Disaster Resilience* (COAG 2011) *Coastal Climate Change Risk — Legal and Policy Responses in Australia* (Department of Climate Change and Energy Efficiency 2011) *Climate Change Risks to Coastal Buildings and Infrastructure* (Department of Climate Change and Energy Efficiency 2011) *The Role of Regulation in Facilitating or Constraining Adaptation to Climate Change for Australian Infrastructure* (Department of Climate Change and Energy Efficiency 2012) *Barriers to Effective Climate Change Adaptation* (Productivity Commission 2012) *Adapting to Climate Change: An Australian Government Position Paper* (National Climate Change Adaptation Research Facility 2013) *Australia's Sixth National Communication on Climate Change: A Report Under the United Nations Framework Convention on Climate Change* (Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education 2013) *Climate Adaptation Outlook: A Proposed National Adaptation Assessment Framework* (Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education 2013)

Period/government	Climate change adaptation focus and key events	Key documents
2013–September 2015 Abbott Government (Coalition)	Dismantling of climate change programs Climate Commission abolished (later replaced with Climate Council funded by private donations) Little interest in pursuing the objectives of the Outlook Report (see above) COAG process fostering discussions on a national approach to climate change adaptation abolished In 2014 National Climate Change Adaptation Research Facility was funded to undertake the development of CoastAdapt tool to assist local councils (now ceased)	*National Disaster Funding Arrangements* (Productivity Commission 2014)
September 2015 – 2022 Turnbull/Morrison Government (Coalition)	National strategy for adaptation released (see below) Establishment of Coastal Risk Australia website in 2017 Establishment of OzCoasts website Establishment of Disaster and Climate Resilience Reference Group to integrate risk and resilience considerations into planning, policies, and programs of all government departments, in 2016	*National Climate Resilience and Adaptation Strategy* (Australian Government 2015) *Review of Climate Change Policies* (Department of Environment and Energy 2017) *National Climate Resilience and Adaptation Strategy 2021–2025*
May 2022 – Albanese Government (ALP) (In development)	Climate Risk and Opportunity Management Program; National Climate Risk Assessment; new National Adaptation Policy Office in 2023	National Adaptation Plan

Sources: Based on Talberg et al. (2016), Thom (2018), and government announcements.

Australian states and territories have undergone policy reversals. In Queensland, a shift to a Liberal National Party of Queensland (LNP) government in 2012 'systematically dismantled the forward-looking climate policies of previous governments, leaving Queensland unprepared' (DEHP 2016: 2), while the subsequent Labor government brought climate change back on to the policy agenda with a focus on adaptation. With a change of government in Victoria, the sea-level rise benchmark of 0.8 metres by 2100 (established in 2008) was revised to 0.4 metres (Gurran et al. 2013) and later moved back to the 0.8-metre mark; similar shifts occurred in New South Wales. In the absence of national leadership and direction, state sea-level rise benchmarks and responses are patchy and inconsistent (Dedekorkut-Howes et al. 2020).

Why does this matter? In policy domains with a national profile, multiple cause–effect linkages, cross-portfolio implications, shared jurisdictional responsibilities, required policy instruments, and varied implementation scales, *strategic* or *framework* policies (Samnakay 2017) are a commonly employed response, especially in federal systems. Strategic plans provide the same broader logic and structure for the urban realm within which subsidiary plans and instruments can operate in a coherent fashion. The need for strong yet flexible strategic policy is not fulfilled in Australia nationally by the previous and current strategies (Australian Government 2015, 2021) or in many state jurisdictions.

The lack of consistent long-term national and state adaptation policies and therefore consistent metrics and direction inevitably makes adaptation at the local level challenging. This results in vastly different responses across local jurisdictions—for example, neighbouring councils facing similar challenges but with different adaptation responses and planning benchmarks. It can lead to maladaptation or undermine actions—for example, when the lack of policy and action by one council undermines adaptation efforts in adjacent councils (Dedekorkut-Howes et al. 2020). This puts additional pressure on councils which rarely have the resources, capacities, and political support to address climate change but are viewed as responsible for climate adaptation (Nalau et al. 2021). Framing adaptation as a local government issue and responsibility comes with a high risk of failure, as, at the coalface of adaptation, local governments face competing planning agendas and deal with local politics, community demands, and development pressures. Some adaptation actions, such as managed retreat, have large political risk that goes beyond local governments (Gibbs 2016), but most importantly, the lack of clear adaptation leadership from higher levels leaves many

communities at risk, financially burdening governments at all levels and exposing them to litigation risks. Many adaptation actions—such as major waterway regeneration, dwelling insulation, or flood-proofing—are capital-intensive and unachievable without higher-level mandates, enabling, and funding.

Lack of adaptation policy direction from the higher levels (especially when not a high priority on state government agendas) could also be an opportunity for local governments to make a difference, but this is highly influenced by having local community and political support and effective leadership. Queensland's Sunshine Coast Regional Council has a history of environmental leadership and climate action, as reflected in local policies that are well integrated and prioritise building resilience and adaptation (Torabi et al. 2017). Similarly, Noosa Shire Council—formerly part of the Sunshine Coast—is known for its climate change leadership and declared a climate emergency in 2019, putting adaptation and mitigation at the top of its policy response (Wellington 2019). Yet, with Australian local governments existing entirely within the power of state legislation, local government adaptation actions can be undermined by state governments, such as the case of Queensland Government intervention in Moreton Bay Regional Council's planning scheme, demanding it remove references to sea-level rise to protect 'resident rights' (Solomons and Willacy 2014).

With a future highly impacted by climate change and a system of governance that struggles with wicked and complex problems (Daley et al. 2021), Australia is in desperate need of policy leadership on adaptation.

The need for adaptation policy integration

Climate change adaptation poses challenges for policymakers as it involves a high level of uncertainty over the degree of impact and timing. However, it also presents opportunities to rethink the way we plan and manage our cities and regions—the potential of significant co-benefits illustrated in Table 4.1. Adaptation aligns well with existing areas of planning and decision-making and offers considerable synergies. The challenges of adaptation policy are to embed core concepts within development priorities, strategies, and plans. This entails modifying or updating frameworks such as local planning schemes and/or developing new climate change strategies.

What is important is the level of interaction between different policies in supporting the desired outcome and their collective performance (Torabi et al. 2017).

Adaptation must be integrated vertically (between levels of government) and horizontally (across different sectors within a jurisdiction) in policy and planning to be effective. Vertical integration is common in many policy sectors (but not well achieved in adaptation) through means such as intergovernmental task forces, strategic policy frameworks, ministerial councils, coordinated regulation and statutes, and shared information systems. The means are familiar also for horizontal integration (across one government): strategic policies, state planning policies, interdepartmental committees or task forces, parliamentary inquiries, insertion of statutory objects in relevant policy sectors, or placement of responsibilities within a central agency rather than a line department. An analogous situation exists in the closely related area of emergency management, where the vast bulk of recommendations from the (very many) post-event inquiries target the operations of specialist emergency management agencies, whose role is primarily response, not other policy sectors that have the capacity to reduce future vulnerability (such as land-use planning, infrastructure development, and communications) (Cole et al. 2018). Arguments for 'mainstreaming' disaster risk reduction across policy sectors resonate with our arguments here regarding adaptation (see Dovers 2022; and associated commentaries).

Adaptation policy integration has been elusive, and we note that environmental policy integration has struggled for many years (Ross and Dovers 2008). There is a tendency to consider climate change an 'environmental' issue rather than a social, economic, or land-use planning one (Measham et al. 2011), thus forcing competition with other (usually more prominent) community needs such as housing and road upgrades. Climate change considerations are found in land-use plans, disaster management plans, and/or stand-alone climate change strategies, yet their level of focus, horizontal integration across different sectors (for example, infrastructure, agriculture, health, and development), and vertical integration under higher-level policy are fraught with challenges. Three key considerations exacerbate this problem:

- Fuzziness of key concepts: for example, the significance and meaning of resilience and adaptation vary substantially between policy documents at all levels as policymakers interpret the terms according to their interests or expertise, or as interchangeable with other paradigms such as sustainability.
- Varying degrees of understanding of and planning for different climate impacts: for example, climate adaptation is better understood and planned for in the context of rapid-onset events such as floods, than of droughts or the urban heat island effect.
- The challenge of embedding uncertainty and long-term impacts in policies and plans that have a short-term horizon.

These three issues contribute to a situation in which existing higher-order adaptation policies do not instruct, enable, or empower actions that can be taken with a recognised mandate and confidence. This is reminiscent of the failure to implement, in the 1990s, the then-prominent metapolicy imperative of ecologically sustainable development across and through all levels of government. The aspiration was strong, but the policy principles were vague, clear empowerment of actors and organisations lacking, implementation pathways not explicit, an institutional base absent, and policy instruments to enable action missing (Dovers 1992). Strategic policy frameworks are common yet strangely underexamined, however, insights from recent work on the attributes of more successful ones could inform adaptation policy (Samnakay 2021). The 2015 and 2021 national climate adaptation strategies (Australian Government 2015, 2021) would not rate highly against criteria such as acceptance of national leadership, clear objectives, use of well-designed policy instruments, or evaluation of outcomes.

Resilience: A silver bullet?

Resilience has become a focus of planning and policy, especially when adapting to climate change, moving far from its origins in ecology with Holling's (1973) work (Cañizares et al. 2021). In Australia, national policies on disasters and climate adaptation include the term, and both in New South Wales (Resilience NSW; now the NSW Reconstruction Authority) and federally (National Recovery and Resilience Agency), it is in the title of new government organisations.

Resilience has been defined as a city's ability to: 1) bounce back to its previous state (static urban resilience); 2) adjust to shocks or stresses and minimise disruption by reorganisation (socioecological resilience); and 3) learn, adapt, and transform (evolutionary resilience) (Handmer and Dovers 1996; Davidson et al. 2016). Depending on the scale and severity of shocks or stresses and the nature of the urban system, enhancing resilience could involve all these characteristics. To be flood resilient, for example, a city might withstand floods by building levees or seawalls (robustness), accommodating floodwaters (adaptability), and/or shifting from 'fighting water' to 'living with water' (transformability) (Restemeyer et al. 2015).

In an urban context, enhancing resilience provides a more positive policy framing than reducing vulnerability (McEvoy et al. 2013). Resilience encourages thinking about adaptation with a long view and delineates the transitions and transformations that can happen when the ability to adapt is overwhelmed or has reached a limit (Nelson 2011). The strategy of 'adaptation pathways' has become prominent (for example, Barnett et al. 2014), where well-designed and coordinated actions are sequenced over time to allow a buildup of adaptive measures.

Despite its popularity, resilience is challenging to define and operationalise, with this lack of a clear definition and understanding giving it 'a chameleon-like quality' (Bulkeley and Tuts 2013: 654). Existing definitions of resilience are generally situated on a spectrum ranging from 'returning to a previous (exact) state' to 'maintaining the same state and identity by adjusting structure and/or bouncing forward and transforming to new states' (Torabi et al. 2021). Some policy definitions consider resilience a synonym for other concepts such as vulnerability, sustainability, or adaptation (Meerow and Newell 2016). While some of these synonyms are normative positive concepts, the desirability of resilience depends on the identification of 'resilience of what to what' and for whom (Carpenter et al. 2001).

The application of a concept rooted in ecological models to social systems such as cities has been criticised for its lack of focus on politics, power, and equity issues (Cote and Nightingale 2012). Power, politics, and conflict are at the heart of resilience, impacting on the distribution of burdens and benefits—the winners and losers of resilience and adaptation policy (Davoudi et al. 2012). Every resilience decision involves trade-offs for balancing action across time, space, and sectors (Chelleri et al. 2015). In addressing these trade-offs, Meerow et al. (2016) raise critical questions

to consider: *who* determines what is desirable, *what* networks and sectors are included, *when* is the time to act, *where* should actions be focused or prioritised, and *why* should specific goals be considered? The question of *how* resilience could become a politically acceptable and viable policy principle remains challenging.

In policy, resilience is often used as a general term—a synonym for future-proofing, without clarity as to what it means and how it should be achieved (Davoudi et al. 2012). This leads to ad hoc policymaking in which resilience actions (and adaptation) are non-deliberate, implicit, and even unfit for the local context (Wardekker et al. 2021). For example, there are differences in the policy framing of resilience as 'quick recovery' to a previous state as opposed to adaptative recovery or transformation to different, more sustainable states. There are also policy differences focusing on resilience in general (against anything) versus specific disturbances (Matyas and Pelling 2015).

The translation of a general resilience policy principle into practical planning interventions is difficult. In line with the dominant (and politically acceptable) engineering view of resilience as 'bouncing back', in practice, building resilience and adaptation to climate change often focuses on measures to build back and a quick return to an equilibrium. This typically entails fast-tracked infrastructural solutions (levees, seawalls, rebuilding in flood-prone locations, etc.) as opposed to more transformational measures that promote societal change. There is also often a siloed focus on elements or sectors of cities such as communities, infrastructure, ecosystems, or the economy as the focus of resilience policy and, depending on the context, there are differences in what aspect of resilience (for example, flexibility, redundancy, diversity) should be improved and what aspect should be prioritised (Wardekker et al. 2021). There is a patchy history of strategic or higher-order plans for Australian cities: an open space plan laid over a transport plan, within a strategic land-use plan not connected to the infrastructure plan, at odds with a nature conservation plan, and so on. Can an approach to living well in Australia's current and future climate be an integrating strategy that brings such plans together, providing local decision-makers and social actors with broad but flexible guidance for actions accounting for the near and longer terms and across jurisdictions and sectors?

From resilience to adaptation policy integration

Despite being contested, resilience is a useful concept in climate adaptation policy. The inherent flexibility of the concept can enhance its function as a 'boundary object' that connects multiple sectors and stakeholders (Brand and Jax 2007). Davoudi et al. (2012: 309) highlight the power-laden nature of resilience as an opportunity to allow 'values to be identified, choices to be made, and political pathways to be identified'. Critically approached, 'resilience' can force explicit discussions about what matters, to whom, for whom, where, and when. This is key to understanding and consideration of values that can be delivered via policy.

We propose that, when framed in the context of resilience, climate adaptation could become a metapolicy framework focusing on best-value community outcomes through better integration across sectors and institutional levels and consideration of policy co-benefits across sectors and levels. This is a recommendation easier said than done, however, consideration of two critical issues could prove helpful. First, there is a need for clear delineations of adaptation and resilience (sometimes used interchangeably) for decision-making to better understand policy intentions. For example, adaptation is often associated with new conditions and forward-looking expectations to alter a system to accommodate anticipated climate change and seek opportunities and new benefits, while resilience is sometimes considered as withstanding a hazard and a return to pre-disturbance conditions (CRS 2021). Noting the distinctions between the two terms can help clarify policy implications: what are we seeking to achieve? Using these terms interchangeably can create confusion and uncertainty. For example, managed retreat of development and infrastructure from high-risk areas as an adaptation approach (O'Donnell 2022) is at odds with the 'bouncing back' understanding of resilience. Clear translation of key policy principles in higher-order policies and statutes can drive the direction and longevity of subsidiary policies, plans, and actions.

Second, in line with resilience thinking, adaptation policy should consider the whole socio-ecological system, focusing on cross-sectoral integration of resilience goals and outcomes, not on separate parts of the system. Treating the elements of the system (such as a city) separately—conceptually or in policies and plans—can undermine resilience by leading to larger disasters in the long term (Bettencourt and West 2010). Similarly, adaptation policy

that ignores the links between urban and rural systems will inevitably overlook important material, energy, and service flows. One way to enhance such policy integration is through the consideration of the dimensions of resilience when framing policy. These dimensions are physical/infrastructural, natural, economic, institutional, and social (Ribeiro and Gonçalves 2019). When framed by its dimensions, resilience can be a crosscutting concept, extending across organisational silos and bringing stakeholders together around a shared vision (Torabi et al. 2021). The key is interpreting resilience as concerning the capacities of a system (ecosystem, community, city) to continue to provide key outcomes (energy supply, water, employment, social connection) in the face of change, but not necessarily in the same manner as before—being able to benefit from disturbance and change rather than simply resist, defend, or recover (Cañizares et al. 2021), and realising the co-benefits that expand beyond. Resilience thus becomes closer to adaptation.

Policy recommendations

To bring the preceding arguments together, we propose several broad policy propositions. The first is bold: adaptation and resilience to climate change should be a fundamental structural consideration across policy and planning instruments. The imperative to adapt is clear, the cross-sectoral linkages are strong and demand integration, the cost of not adapting is significant, and the potential co-benefits are abundant. Strategic plans, structural plans, sectoral policies, and the like should not include subsidiary or tangential accommodation of climate change adaptation, but rather be reviewed and revised to be consistent with long-term purposeful adaptation. In planning terms, adaptation becomes a 'superior' plan and principle—one that focuses on delivering broader values and benefits to the community.

How to achieve such a commitment? We propose the following broad policy initiatives, most of which have precedents that are noted and some of which are explored in the cross-sectoral case studies in Brown and Dovers (2021) that provide lessons for climate policy (and refer to other iterations of measures equalling a transformative adaptation response—for example, FEA 2022). These reforms are not fanciful or unachievable in our political and legal system:

- Clarifying meaning and definitions to enable better policy framing of what disturbances the policy should focus on, what future scenarios to anticipate, defining levels of acceptable risk, and enabling a shift from the reactive 'predict and plan' approach to more adaptive approaches. Clarity of intent and trade-offs are core to effective policy.
- Robust strategic policy frameworks at national and state levels, developed in a coordinated fashion, with consistent, broad scope and pathways, policy principles, and general objectives, while allowing flexibility in implementation. Such policies would exhibit known policy success criteria such as those proposed by Samnakay (2021), drawing on other, previous policy reform experiences.
- Development of agreed necessary measures nationally, and formulation in policy and regulation of these at state level, to provide local government with a mandate and support to take strong and consistent adaptation measures across all sectors and levels. (A precedent at state level is sea-level rise benchmarks, noting that these have problematically been changed.)
- A review of relevant statutes and major policies at national and state levels, to identify and recommend reforms in cases where adaptation is discouraged, not enabled, or could be encouraged. (Precedent: National Competition Policy legislative review.)
- Institutional mechanisms nationally and at state level to provide information, drive and monitor policy integration and implementation, and measure success. (Precedent: National Water Commission's research and information monitoring roles for the National Water Initiative, before its disestablishment in 2014, and likely re-establishment by the new national government.)
- Insertion of nondiscretionary obligations on relevant agencies (health, transport, planning, infrastructure, etc.) to explicitly consider climate change adaptation and resilience as core concerns in policy and decision-making, principally but not only via statutory objects in enabling legislation. (Precedent: Inclusion of principles of ecologically sustainable development in multiple statutes after the 1992 national strategy for ecologically sustainable development).
- Within the above, an explicit requirement to account for the distributional and equity implications of both climate impacts and possible adaptation measures in policy.

- Development of widely promulgated methods for assessing the costs and benefits of adaptation measures, over long time frames, and considering environmental, social, and economic aspects, providing decision-makers such as local councils with an authoritative basis for regulation and investment. (Precedent: The work of Infrastructure Australia.)
- Adequate resourcing where implementation of adaptation measures consistent with strategic policies falls to local government or other local or regional actors, consistent with the principle of subsidiarity. (Precedents: Many, across national and state grant and funding programs.)
- Significant research and development coordination and support, linking research, policy, and practice. (Precedent: The productive and collaborative National Climate Change Adaptation Research Facility, when properly funded.)

Conclusion

Is such a strong, coordinated, long-term policy response possible in an era in which proactive policy reform is difficult (Brown and Dovers 2021; Daley et al. 2021), the 2022 election of an apparently more reformist government notwithstanding? Once upon a time, Australia's governments decided that our economy and society had to be more open to the world, competitive, and efficient. They drove massive policy change via the National Competition Policy suite of measures, and changed the nation profoundly with a determined, robust policy approach (Curran and Hollander 2002). In the same era, Australia recognised the need to achieve ecological sustainability, undertook much work, promised much, and failed to create or implement a believable policy response. Those were social and political choices.

In the twenty-first century, climate change demands we embrace change and adapt the way we live and how we organise and manage our cities. Should we decide we want to live well in Australia's currently changing and very different future climate, the political, institutional, informational, and policy capacity are available for the task. It is a choice.

In this chapter, we have proposed climate change adaptation as a metapolicy principle and framework for better integration of urban and planning policy across all levels of government (vertical integration) and different sectors and portfolios (horizontal integration). While contested, the concept of resilience provides opportunities for systems thinking and holistic consideration of

all elements of our cities. Framing climate change adaptation through the lens of resilience provides opportunities to benefit from change (rather than simply resisting it) and realise co-benefits that go beyond adaptation. This would underpin the sustainability of our cities.

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