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Moving beyond the plan: Exploring the opportunities to accelerate the implementation of municipal climate change adaptation policies and plans

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Abstract

Across the globe, ecosystems, biodiversity and human societies are experiencing the escalating and often catastrophic impacts of anthropogenic climate change. Well-considered, properly resourced and trans-scalar adaptation responses are essential. Local governments (e.g., municipal councils) can provide crucial support to communities enabling planning, response and recovery from climate change impacts. While innumerable municipal climate change adaptation policies, strategies and plans have been developed, the implementation of adaptation actions typically lags, creating a planning-to-implementation gap. Contributing factors and the opportunities to overcome key constraints remain underexplored. This article reports the results of research addressing that knowledge gap analysing the circumstances that give rise to a municipal climate adaptation implementation gap, and the opportunities to progress from adaptation planning to implementation. Interviews with 25 local government leaders and staff reveal five key opportunities to advance the implementation of adaptation policies and plans—(i) mobilising novel finance solutions; (ii) developing an adaptation skills pipeline; (iii) building collaborative and trans-disciplinary ways of working across municipal councils; (iv) enhancing the salience and prominence of adaptation as a core municipal concern and (v) legislating for municipal climate change adaptation mainstreaming. Establishing good climate governance and improving capacity for adaptation will be critical if local governments are to close the municipal climate change adaptation planning-to-implementation gap.

KEYWORDS

adaptive organisations, capacity-building, climate governance, implementation gap, local government, mainstreaming

1 | INTRODUCTION

Globally, the escalating and often catastrophic impacts of anthropogenic climate change are affecting ecosystems and societies (IPCC, 2023). These impacts are experienced in an acutely place-based and context-specific way (Naess & Twena, 2019; Pasquini et al., 2013). The increasing failure of international mitigation efforts means well-considered and properly resourced climate adaptation responses are essential. Complex

multi-level governance arrangements have been established to negotiate and assign responsibilities for adaptation, and to support on-the-ground action (OECD, 2010). Within these arrangements, local governments (e.g., municipal councils) have been attributed a key role (Nalau et al., 2015), and across all continents (except Antarctica) local governments are planning for climate change (Aylett, 2015).

As the level of government closest to the community, local governments can provide crucial support for climate change response and

recovery (Castán Broto & Bulkeley, 2013; Measham et al., 2011). Local governments must also ensure their assets, operations and service delivery are robust to a changing climate (Tonmoy et al., 2018). Innumerable municipal climate change adaptation policies and plans have been developed (Aguar et al., 2018; Aylett, 2015; Carmin et al., 2012; Reckien et al., 2018), and in some locations considerable efforts have been made to integrate climate responsive planning with core areas of municipal spend, such as public health, water and waste management and spatial planning (Aylett, 2015; Carmin et al., 2012). However, climate adaptation must be accommodated on already crowded municipal policy and programme agendas (Simonet & Leseur, 2019) and studies have found municipal adaptation efforts are often ad hoc, reactive and at times maladaptive (Cerrada Morato, 2024; Olazabal et al., 2021). Further, the move from adaptation planning to on-ground implementation frequently gives rise to a gap—commonly termed the *planning-to-implementation gap* (documented in Burch, 2010; Fünfgeld et al., 2023; Gadu et al., 2024; Lawrence et al., 2015; Measham et al., 2011; Pasquini et al., 2013; Ryan, 2015; Simonet & Leseur, 2019; Storbjörk et al., 2024, amongst other insightful contributions). We define this planning-to-implementation gap as the difference between stated policy goals and what is actually implemented (adapted from IPCC, 2022).

For local governments, climate change adaptation planning is an escalating and urgent challenge (Slater & Robinson, 2023), and how to bridge the planning-to-implementation gap is a critical concern. Notwithstanding the presence of a large and growing literature on the barriers and enablers of municipal climate change adaptation broadly, only a limited subset of this literature explicitly analyses the implementation stage of the policy process (Rogers et al., 2023). In a systematic review of the global literature on municipal climate change adaptation planning and implementation, it was found that only a fifth of 131 reviewed studies examine the presence of, and factors contributing to, an adaptation planning-to-implementation gap (see Rogers et al., 2023). This is despite recognition of a widespread gap (ICLEI, 2023; Runhaar et al., 2018; Storbjörk et al., 2024). While limited in number, this literature makes an important contribution to understanding the factors that frustrate local government efforts to progress from adaptation planning to implementation, or put another way, how policies and plans are followed-up and put into effect (Laurian & Crawford, 2016).

The literature identifies that climate risk and adaptation responses frequently fail to be integrated with or mainstreamed into cross-organisational municipal systems, processes and accountability frameworks (Picketts, 2018; Wamsler & Pauleit, 2016). Moreover, culturally and structurally, climate adaptation as a policy consideration is often seen as peripheral to local government core business (Baker et al., 2012; Birchall, 2020), and is not viewed as central to municipal governance, policy and operations (Fünfgeld & Mcevoy, 2014; Rogers et al., 2024; Romsdahl et al., 2019). These factors can ultimately affect the resolve of municipal leaders to prioritise the allocation of resources (e.g., human and financial resources) to plan implementation (Rosendo et al., 2018). Municipal staff may also have limited climate adaptation knowledge, and face difficulty in accessing and translating

complex climate data into locally meaningful and specific actions (Lawrence et al., 2015; Mukheibir et al., 2013). The need for leadership support, resourcing, adaptation knowledge and technical capacity are consistently documented implementation barriers.

This summary of the state of the literature points to a need for research to engage more extensively with the experience of the municipal climate adaptation planning-to-implementation gap, and in particular, potential opportunities to close the gap. To respond to this knowledge need, here we present empirical research from a cross-section of four Australian municipal councils on their experience of moving from climate adaptation planning to implementation. We examine the circumstances that give rise to an adaptation planning-to-implementation gap in these municipal councils, and we identify key opportunities to work through identified barriers to implementation. Our research answers two key questions: (1) Which factors are identified as shaping (positively, negatively) municipal climate change adaptation policy implementation? (2) Which elements are considered key to advancing the implementation of municipal climate change adaptation policies and plans? In doing so, we provide much-needed insight into municipal climate adaptation governance and the inner workings of local government that support or obstruct municipal climate change adaptation efforts. Additionally, we provide pragmatic guideposts to inform how municipal adaptation might more effectively unfold into the future. Such knowledge is critical to help overcome implementation challenges.

2 | CONCEPTUAL FRAMEWORK AND THEORETICAL FOUNDATIONS

In their pioneering work on policy implementation Pressman and Wildavsky (1984) stated that implementation is the ability to forge links in a causal chain between initial conditions and future consequences so as to obtain desired results. The literature on the municipal climate change adaptation planning-to-implementation gap points to two overarching issues within this causal chain that affect policy progress: (i) the resourcing available to implement adaptation policies and plans, and (ii) the authorising environment for policy development and implementation. We conceptualise this as municipal councils having the *capacity* and *authority* to adapt (Figure 1a, reproduced from Rogers et al., 2023). *Capacity to adapt* refers to the resources, professional networks, supportive organisational processes and systems and organisational culture of change, that enable local government to be agile and responsive. *Authority to adapt* refers to the authorising environment for municipal councils to act in adaptive and agile ways, achieved through a legislative requirement from (sub)national government for municipal adaptation, and/or a demonstrated commitment from local government elected (political) and executive (administrative) leaders for municipal adaptation action. Drawing on this conceptual framework, the empirical research reported in this article focuses on the policy implementation stage of the policy cycle (inner cog, Figure 1.) and the *capacity to adapt* side of the framework (blue side, at left on the outer cog, Figure 1b). Issues of leadership and authority

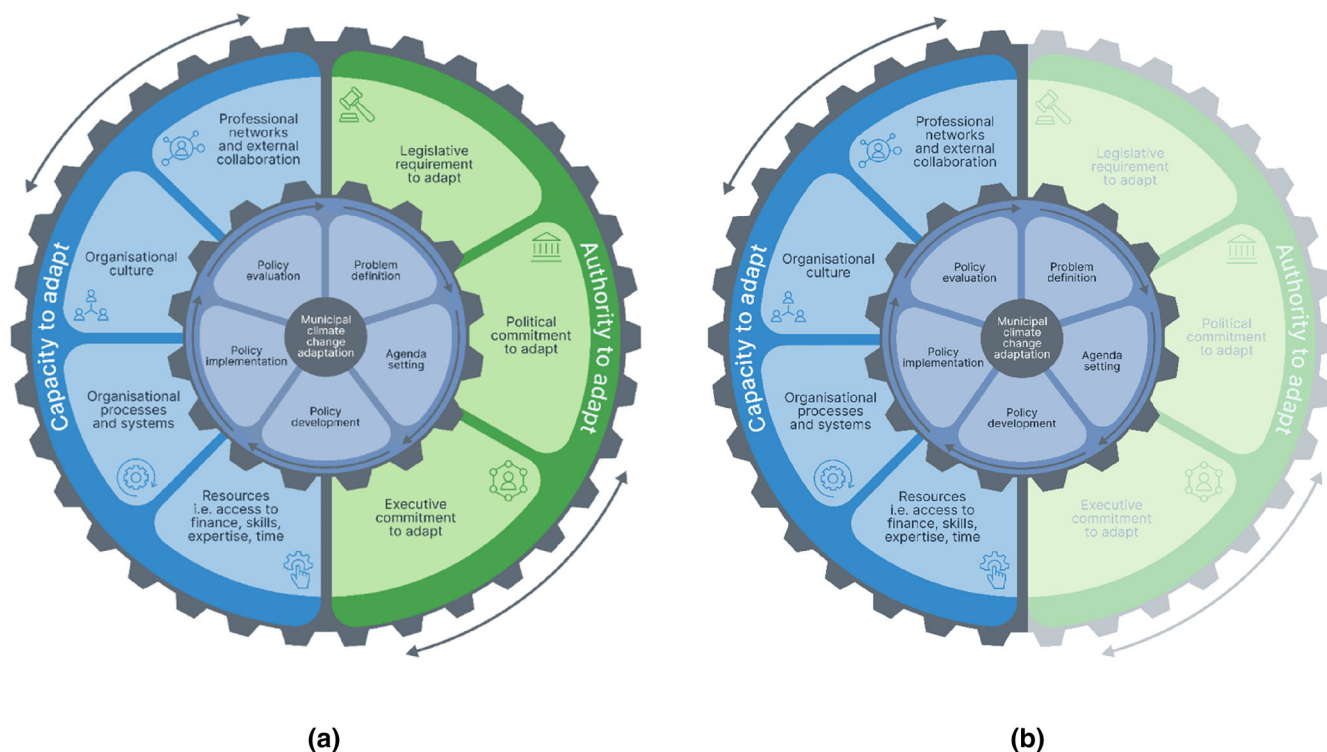


FIGURE 1 (a) Conceptual framework of the factors that shape municipal climate change adaptation (reproduced from Rogers et al., 2023); and (b) Highlights ‘Capacity to Adapt’ and its constituent parts as the focus of the research reported in this article. The analogy of mechanical cogs turning and interacting represents the configuration of factors that inform municipal climate change adaptation. The outer cog indicates that municipal climate adaptation is a function of two overarching factors—authority to adapt (in green, at right) and capacity to adapt (in blue, at left)—with their constituent parts (the wedges of the outer cog) (a). The wedges are not exclusive to either of the two overarching factors, but for the purposes of this framework reflect common associations revealed through the literature. The wedges of the outer cog may influence either (or both) authority to adapt or capacity to adapt. The empirical research reported in this article focuses on the left-hand (blue) side of the framework ‘capacity to adapt’, or the capacity of municipal councils to implement climate adaptation policy (b). Our research on the authorising environment for municipal climate change adaptation (authority to adapt) and the earlier stages of the policy process (problem definition, agenda-setting and policy development) is published elsewhere.

(i.e., the authorising environment for adaptation) are also examined where they shape organisational capacity for policy implementation.

In introducing this conceptual framework, it is important to distinguish between *adaptive capacity* and *capacity to adapt*. These are related but different terms. The term *adaptive capacity* has multiple definitions that have evolved over time. The frequently cited Intergovernmental Panel on Climate Change (IPCC) defines adaptive capacity as ‘the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences’ (IPCC, 2014, p. 118). But three generations of adaptive capacity thinking are identifiable (see Elrick-Barr et al., 2023; Fila et al., 2024; Flórez Bossio et al., 2019; Mortreux & Barnett, 2017; Siders, 2019, for their insightful analyses).

While *adaptive capacity* and *capacity to adapt* are sometimes used interchangeably (e.g., Bradley et al., 2015; Susskind & Kim, 2021), there are important nuances between the two. Importantly, adaptive capacity is often discussed in the context of individuals and communities, rather than organisations. *Capacity to adapt* resides specifically at the organisational level and includes the ‘stocks of capacity’ that reside, or are needed, within a municipal council for the task of

adaptation, but it is more than capability. As Fulmer (2000) argues, the adaptive organisation can operate in a climate of radical uncertainty. It does this through a culture that enables and sustains the ability of individuals, teams and divisions to respond effectively to change. An adaptive organisation has visionary, empowering and committed leadership that fosters effectiveness. In other words, capacity to adapt is the ‘architecture of responsiveness’ (i.e., the wedges of the capacity to adapt, Figure 1b). More than an innate capability, it refers to the intentionally cultivated set of practices and relationships that creates readiness, intent and response-ability within an organisation. Together, *capacity to adapt* and *authority to adapt* shape a municipal council’s ability as an organisation to adapt to a changing climate.

3 | RESEARCH METHODS AND STUDY LOCATION

To answer our research questions we employed a cross-sectional qualitative research design (Bryman, 2016), examining four small- and medium-sized municipalities (hereafter SMMs; noting the absence of

universally agreed population thresholds for municipalities labelled as SMMs). It is widely suggested that SMMs face greater resource constraints than their large- and mega-city counterparts (Häußler & Haupt, 2021; Kronvall et al., 2023), and yet, for whom the impacts of extreme climate related events can be devastating. SMMs are also less frequently the subject of in-depth empirical investigations than larger city-based municipalities (Buschmann et al., 2022; Fünfgeld et al., 2023; Pasquini, 2020). Further, SMMs are increasingly recognised as important participants in a 'second phase of adaptation' (Fünfgeld et al., 2023) seeking to apply lessons learned from frontrunners, early adopters or extensive adaptors (cf. Araos et al., 2016; Kern et al., 2022).

The four participating municipal councils are located in the state of Tasmania, Australia. Each has a population of less than 75,000. They were selected to offer a cross-section of Tasmanian municipal council types (e.g., city; predominantly urban; regional town or developing LGA on the margin of an urban centre; predominantly rural) and differ in their demographic and socio-economic profiles (see Appendix S1). Tasmania is experiencing some climate change impacts faster than other parts of the world (e.g., ocean warming) (Gregory et al., 2023). In recent years, Tasmania has experienced significant bushfire events, a record marine heatwave, prolonged dry periods in 2015–16 and 2019–20, and the worst statewide flooding seen in 40 years (Tasmanian Government, 2024a). The municipal councils in this research and their communities have experienced a range of these climate events and undertaken emergency response, recovery and reconstruction. The state has an ageing population with higher rates of a range chronic health conditions compared to the national average, and the lowest average weekly full-time wage earnings in Australia (Tasmanian Government, 2023, 2024b). Tasmania's changing climate and socio-economic disadvantage give rise to deep and systemic vulnerabilities within the state's population, atypical of an advanced Western nation. For these reasons, Tasmanian municipal councils can potentially shed light on issues that will be experienced by many municipal councils in the so-called developing world with characteristic socio-economic vulnerabilities and where climate change may impact hardest, as well as potentially illuminating adaptation implementation barriers and enablers that are common to small- and medium-sized municipal councils of developed nations.

The participating councils were chosen as they offer significant diversity in their experience of climate adaptation planning and implementation. All participating councils have formally adopted a climate change adaptation policy, strategy or plan. They differ in the number of years of adaptation activity, and the continuity and visibility of adaptation efforts under changing leaderships (based on analysis of publicly available documents and council website content). The four councils can each be considered early-stage climate adaptors with limited implementation of their endorsed adaptation policy, strategy or plan. The names of the participating councils and research participants are anonymised in accordance with Tasmania's privacy laws and the home institution ethics approval (University of Tasmania HREC Approval 23796). During participant recruitment, prospective participants expressed concern about the potential for reputational harm to

them or their council if they were to speak candidly about the behind-the-scenes realities and challenges of municipal (climate) leadership, decision-making, issue prioritisation and organisational cultures as they collectively affect policy implementation. Anonymity was considered essential to mitigate the risk of reputational harm and to gain deep insight into the often-opaque spaces in which decisions are made.

Semi-structured interviews were used to generate empirical data. Interviewing is well suited to exploratory research, allowing for detailed and rich insights (Bryman, 2016; Stratford & Bradshaw, 2021). We purposively recruited a sample of interview participants from three key informant groups—elected (political) leaders, executive (administrative) leaders and key staff required to operationalise leaders' decisions on climate change adaptation for their council. We recruited based on the perceived influence these positions conferred on intra-organisational climate adaptation implementation efforts. We consider the perspective of municipal leaders particularly insightful to issues of policy implementation as they provide or preclude the authorising environment for on-ground action when weighed against all other municipal priorities and are responsible for the resource allocations that either enable or constrain implementation. A total of 39 participants were invited, of which 25 were available and agreed, and 14 were unavailable (8 elected, 6 executive). Our final sample was: 14 municipal elected leaders (mayors, deputy mayors and portfolio chairpersons), six executive leaders (chief executive officers and directors) and five key staff (managers and officers) (Appendix S2). We did not actively seek to fulfil any particular demographic characteristics.

Interviews lasted 60 min on average and were conducted from April to July 2022. Interviews explored participants' understandings about the implications of a changing climate for their municipal council and community; the process of municipal policy implementation; and the factors that shape (positively, negatively) municipal climate change adaptation policy implementation in their organisation (Appendix S3). Policy agenda-setting and policy development were also explored in the interviews and are reported elsewhere (Rogers et al., 2024). We did not analyse or critique the types or content of climate adaptation responses, which is an additional and distinctly different scope to the research presented here. Nor did we seek to measure the outcomes of adaptation implementation efforts to date, which we again consider a different research focus to that reported here. Instead, through the interviews we confirmed the presence of an adaptation implementation gap in each council, and thereafter focused the interview questions on the factors that contribute to this gap and the opportunities to overcome implementation barriers. Such insights are critical to bridging the planning-to-implementation gap, as prerequisite to the accelerated achievement of adaptation outcomes. Interviews were audio-recorded, transcribed and de-identified ahead of data analysis. Anonymised quotes are included in the Results to illustrate key findings in the interviewees' own words.

We employed thematic data analysis—a method for identifying, organising, interpreting and reporting key themes within a body of qualitative data (Bryman, 2016; Nowell et al., 2017). Our thematic

TABLE 1 Definition of NVivo parent codes, as drawn from the conceptual framework (in Figure 1).

Resources

Refers to the resources available to municipal councils for policy implementation including available human resources (municipal staff time and expertise); access to internal budget and financial resources; access to external funding sources for adaptation; and access to climate information and data

Organisational processes and systems

Refers to the processes in place within municipal councils that enable or hinder implementation of policies and plans, and the systems needed to support implementation. Includes consideration of the municipal budget process; monitoring, auditing, evaluation and reporting against policy goals and plans; and other forms of accountability and oversight for policy implementation

Organisational culture

Refers to the leadership and staff culture within municipal councils, including the 'ways of working' vertically, horizontally and within teams (business units), and the internal relationships and dynamics that enable or constrain municipal policy implementation. Also includes consideration of whether the organisational culture is resistant or open to change, learning, innovation and experimentation; the organisational norms, rules in use, habitus and patterns of interaction (e.g., collaborative or siloed; hierarchical or 'flat'); and institutional (dis)incentives for implementation of planned adaptation responses

Professional networks and external collaborations

Refers to the professional networks (as distinct from social networks) that municipal leaders and staff engage with, or might seek to engage with, to support and enhance capacity for implementation of adaptation policy and plans. Includes engagement with peak and professional bodies, regional networks, council membership to (trans- or sub-)national climate change adaptation networks and organisations, access to external climate change experts (e.g., universities and research institutes) and peer networks

data analysis combined deductive and inductive analysis, supported by the use of software packages NVivo (Release 1.2) and Leximancer (Desktop 5). An a priori coding tree was deductively created in NVivo, informed by the conceptual framework and our research questions, interview questions and specific analytic interests. The coding tree was structured to be consistent with the conceptual framework (Figure 1a) and engaged four parent nodes that affect the capacity and experience of local government with policy implementation—Resources; Organisational processes and systems; Organisational culture; and Professional networks and external collaborations (Table 1). Each parent node included a subset of more detailed child nodes (Appendix S4). Additionally, we coded for evidence of a climate adaptation planning-to-implementation gap.

Leximancer was also used to provide a grounded, exploratory approach to inductive thematic analysis of the interview transcripts (Figure 2). Leximancer enables concepts to emerge as properties of the text and may reveal 'unexpected' codes and concepts that a research team might otherwise miss (Angus et al., 2013). Outputs from Leximancer and NVivo were compared to cross-check and

validate the analysis generated through each package. Leximancer's inductive analysis uncovered a small number of new codes not immediately evident in our a priori framing of the research. We added these to the NVivo coding tree. The combined use of NVivo and Leximancer outputs offers a valuable combination of automatic and manual text analysis, adding breadth and depth to the analysis (Fereday & Muir-Cochrane, 2006; Sotiriadou et al., 2014).

4 | RESULTS

Statements by interviewees in all four councils revealed a disconnect between their organisation's climate adaptation policy goals and the subsequent implementation of intended actions, as evidenced by the following interview extracts (see Appendix S5 for a larger selection of illustrative quotes).

The plan for adapting to a changing climate...we actually had one of those 10 years ago that I found gathering dust. ...the Adaptation Plan has not got on the pipeline, on the agenda, yet. It will take a little while. It's really does get low priority. ...the Climate Policy, well, that (also) got dumped. ...both of those got shelved. (Municipal staff, Council A)

When we met over our Adaptation Plan to relook at it again after years, it was apparent nobody had read it. So, it's there. It's there on the website. ...And even the people who theoretically should have been involved to begin with had no recollection of it. So, there's that interesting disconnect. (Municipal staff, Council C)

Interviewees identified a range of factors that constrain and enable their council to progress from development to implementation of adaptation policies, strategies and plans. In this section, we document these key factors under the various themes defined in Table 1. At times these themes are intertwined, and our results do not neatly or exclusively fit in one theme or another. For example, a process issue, such as how the municipal budget is determined, can give rise to a resourcing issue, or established organisational processes can shape the organisational culture or vice versa. Throughout this section we also highlight, as bracketed comments, key findings from our Leximancer analysis (Figure 2).

4.1 | Resources

Issues of resource capacity featured prominently in interviewee responses to questions about the barriers and enablers to the implementation of climate adaptation policy. While the conceptual framework considers a full range of resources, including not only financial but also knowledge, skills and information, interviewees often focused on financial and human resources and issues of funding featured prominently.

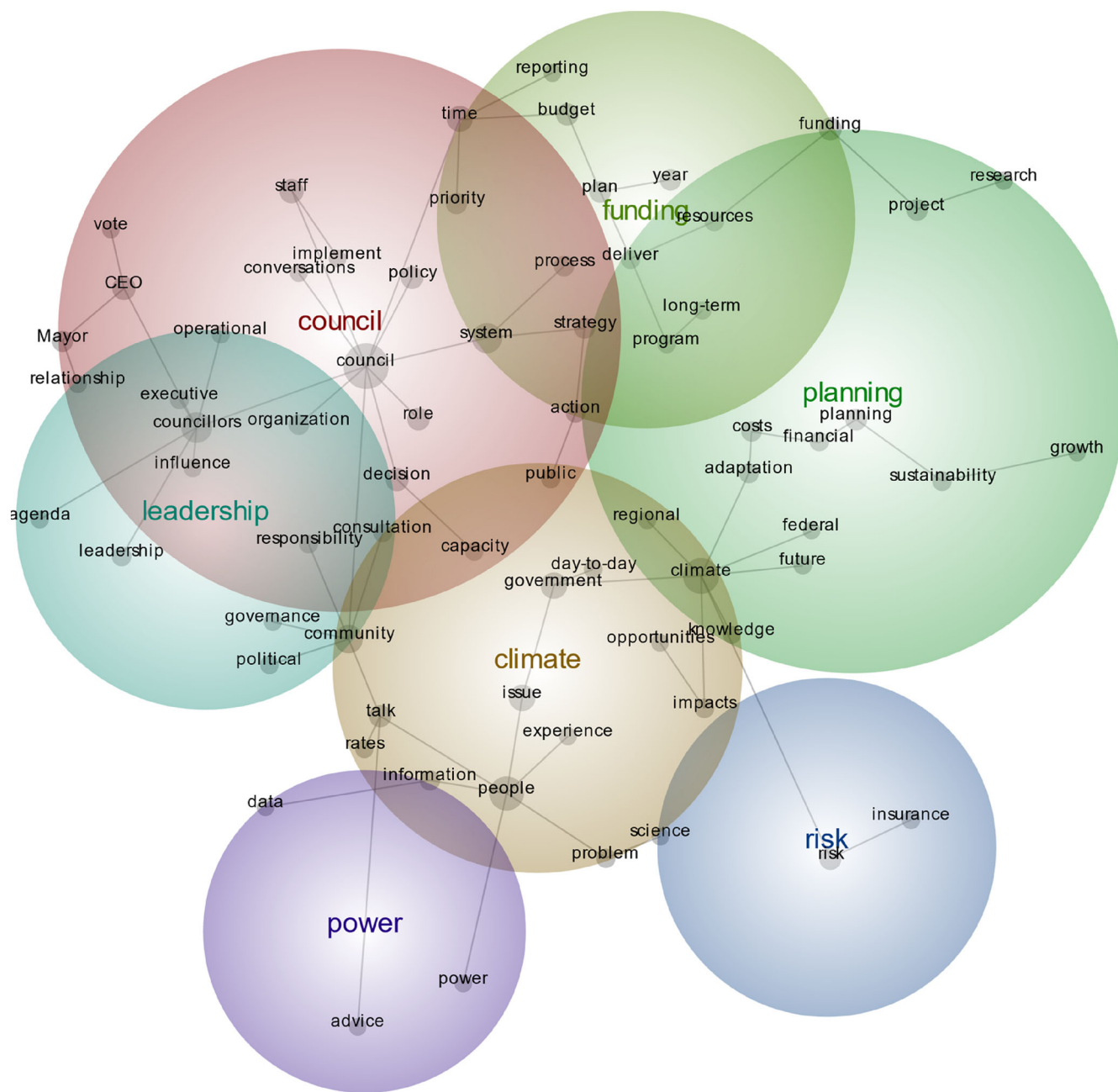


FIGURE 2 Leximancer map of dominant themes, associated concepts and relationships emerging from text analysis of 25 interview transcripts. Leximancer software uses word frequencies and collocation to generate a visualisation of patterns and relationships in text. Nodes represent individual concepts, and the size of the node denotes its relative prominence in the text. Nodes cluster into themes, indicated by spheres where size and colour denote relative importance (from hot red to cool blue/purple). Lastly, nodes are connected by lines that show conceptual relationships.

4.1.1 | Financial resources

Many interviewees identified a lack of financial resources as a core barrier to the implementation of municipal adaptation policy (see theme *funding*, Figure 2). Leaders pointed to local government's limited sources of revenue, foremost dependent on property-based municipal rates and financial assistance grants (tied and untied) from higher levels of government. Staff described immense competition within their council for financial resources, and that resource

allocations are largely aligned with the negotiated priorities of council's elected and executive leaders. Leaders and staff revealed that climate risk and adaptation as policy considerations have long been viewed as peripheral to local government core business, and thus are assigned a low priority when resource allocations are made.

...(The) *adaptation plan for council*... (we did a) *really deep dive*. ...*The problem was when we did that, and then (proceeded to) roll it out, there was no money for*



implementation. ...Our (climate) work is always the one that gets pushed and pushed and pushed back by all the other stuff coming up over the top of it. (Municipal staff, Council B)

Elected and executive leaders spoke of the pressure placed on their council to focus on the delivery of the *everyday and visible* concerns of local government, colloquially referred to as 'roads, rates, and rubbish' (i.e., the construction and maintenance of local roads, collection of municipal rates and delivery of waste and recycling services) and viewed by many in the community as the central functions of Australian local government. Leaders also spoke of rising community expectations for improved service delivery and infrastructure renewal. Conversely, they reported a shift in community expectations of local government (and higher levels of government) to address climate risk, heightened by the visibility of extreme weather events across Australia and globally. This changing public mood was noted as having some influence on municipal leaders, particularly elected leaders. However, to date this had limited effect in shifting municipal priorities and resource allocations to support adaptation policy implementation.

(In) local government, you can only do so much. ...The fundamentals, as far as I'm concerned is that traditional Roads, Rates, and Rubbish, and things that our ratepayers expect to happen seamlessly.

(Elected leader, Council A)

Once we have these storms and fires, intense and more regularly... I don't know where the money is going to come from. I don't know how you budget for that. ...The amount of money it costs councils in those situations is astronomical really. ...The burden cannot be put on councils for all of it, because it's too big. (Elected leader, Council D)

Elected and executive leaders spoke of municipal financial constraints being compounded by the Covid-19 global pandemic. Executive leaders told of increasing labour and materials costs following the pandemic and the negative impact of this on their municipal budget. Leaders revealed that the implementation of various policies, programmes and projects including for climate change had been deferred indefinitely during the height of the pandemic response and in the aftermath.

We had two and a half years of Covid-19 out of the four years of the (current political) term so it smashed budgets. It disrupted the organisation. It's really brought us back to the real basics. ...So, it's been a pretty hard slog to get much on-the-ground happening (in climate adaptation). (Elected leader, Council B)

Elected and executive leaders also spoke of declining Federal Government financial assistance, where the percentage of national

tax dollars directed to local government had reduced over the past decade. Leaders disclosed that their level of ambition to deliver on non-core policy goals, such as climate adaptation, had subsequently been curtailed to enable delivery of the everyday fundamentals (as referred to earlier), or that timeframes for project implementation must extend.

Cooperative arrangements between different levels of government is the key to our existence. ...it's a balancing act about what we can afford on our own and how long it will take to get to deliver that to the community without assistance. And we're always looking for grants and assistance. We always have the same plan. It's just that what will happen is that a project will take 10 years to get from A to B whereas with assistance 1–5 years. ...If there's not enough money, the timeframe needs to extend. (Elected leader, Council C)

Specific to grants, leaders identified the challenge of pursuing grants from higher levels of government that required demonstrable project feasibility and readiness. Interviewees expressed that a lack of in-house expertise and experience in climate risk responses affected grant success. Some leaders pointed to the risk of sunk costs when resourcing the development of grant applications. Financial risks were magnified when external consultants were engaged to undertake the project scoping and business case development for council. Executive leaders and staff identified a desire to see more external funding made available for exploratory pilots and project seed funding from which to build in-house adaptation capability, proof of concept and a positive momentum (see cluster of concepts *project, funding, research*, Figure 2).

...to get a grant you might require a feasibility study. ...every time you decide to do a feasibility study for something, there's an inherent risk that it won't get picked up.

(Elected leader, Council D)

4.1.2 | Knowledge

Interviewees spoke of in-house knowledge and skill as constraining climate adaptation policy implementation. A number of interviewees identified that leaders and staff frequently lack professional expertise in climate risk and adaptation (see theme *climate* and nested concepts *people, experience, information, problem, science, impacts, knowledge*, Figure 2). In particular, it was suggested that staff do not have an applied knowledge about adaptation opportunities and pathways, or put another way, the 'how to' of adaptation. Staff told us that consequently, councils become constrained in moving beyond generalised statements or symbolic resolutions of policy intent, to design and deliver practical on-the-ground adaptation responses.

There's a low awareness of the subject matter itself, and then a lower awareness that it (climate change) might be

part of your job role (and) responsibilities. ...there is a lack of familiarity with what it tangibly means to act on climate change...(and) there's a huge gap there in making it more digestible. The climate science is complicated. (Municipal staff, Council C)

Leaders and staff identified a reliance on external consultants to fill this knowledge gap, for example, outsourcing adaptation plan writing. However, despite large sums spent on outsourced activities, interviewees reported that the resultant products were seldom designed to equip a council to successfully move forward with policy implementation. In short, these products, whilst fulfilling the terms of a contract did not build in-house adaptation know-how. A need for an alternative form of council-expert cooperation was identified.

Consultants are going to eat us up. You know, the free market at work. The free market is not working for us. It's working for itself.

(Municipal staff, Council B)

I'm a little bit critical about council that we spend too much money on consultancies. I would like to see a lot of it done in here (in-house by council staff). ...We've got one report that on the front cover it says, 'This will remain the property of [name removed] School'. Obviously, the consultant has just done a report and changes a name. ...It really annoys me, using money for consultants. It's important to keep the number of FTEs as low as possible from a rate payers' point of view, but I think we can get more value for money from an internal person. Because they (consultants) just charge high fees and they're just churning out everybody else's stuff. (Elected leader, Council C)

4.1.3 | Staff time and skills

Interviewees identified that a failure to have enough staff with the right skills significantly affects the extent of adaptation policy implementation in their council (see proximate concepts *staff*, *implement*, *time*, *priority*, Figure 2). Numerous executive leaders and staff revealed that they and their colleagues have too much on their plate and the workload is ever-increasing. Interviewees described climate policy being addressed if staff can find time amongst the breadth of their responsibilities (see theme *council* and nested concepts *staff*, *implement*, *time*, *priority*, Figure 2).

We are a relatively lean council in terms of staff. So, people's time and capacity. We may not have enough staff to implement something even if we'd like to. We may not have the right staff. (Elected leader, Council A)

We're small, and we're all doing a lot of things... We get dragged sideways a lot... That's probably one of the

biggest barriers, getting pulled sideways and that slows down implementation and things get dropped that are probably still very important. (Executive leader, Council C)

Further, executive leaders pointed to the difficulty in securing appropriately skilled staff to oversee policy implementation and external labour for adaptation projects that have an infrastructure construction element. Labour supply shortfalls were seen to reflect the limited overall size of the labour market on the small island state of Tasmania and have intensified post-Pandemic. Executive leaders also spoke of the challenge of recruiting and retaining skilled staff in local government when wages are more attractive in private enterprise. Some interviewees revealed high levels of staff turnover in their councils, which creates instability, loss of expertise and loss of momentum in policy implementation.

In the current environment it's very hard to get project managers. We've lost all our project managers. So, how am I supposed to be able to do things if I don't have any project managers? They can get paid better in the private sector than they can in local government.

(Executive leader, Council A)

4.2 | ORGANISATIONAL PROCESSES AND SYSTEMS

Sitting at the intersection of resources and processes, the interviews revealed a stifling disconnect between the process of policy development and endorsement, and the subsequent allocation of financial resources to enable implementation. Staff stated that it is commonplace for municipal decision-makers to not allocate resources beyond adaptation planning to enable implementation; be that an intentional or inadvertent practice (see *pathway time*, *budget*, *plan*, *deliver*, Figure 2). Staff further said that a budget allocation for implementation could not be assumed, despite a policy being endorsed by a council's elected leadership. Consequently, endorsed policies can often sit idle while awaiting a budget allocation, sometimes for years. This challenge demonstrates the intertwined relationship between themes.

...our climate change strategy...you have this whole 'subject to funding' aspect to it. Even when they've (the elected leaders) endorsed something and said they want something to happen, doesn't mean they're going to provide the resources to make it happen. ...There's barely enough money to do just the basics.

(Municipal staff, Council D)

Some elected leaders and staff revealed a lack of organisational systems (and cultural expectations) to disclose policy implementation gaps (see Figure 2, where the concepts *governance* and *reporting* are remote from each other). These elected leaders expressed that they

did not have a clear line of sight between formally endorsed climate adaptation policies and implementation efforts. Interviewees stated that unless an elected leader or community member specifically and publicly asked about progress implementing a particular climate policy initiative, then a lack of implementation could go unreported and sometimes unnoticed by municipal leaders in amongst the plethora of responsibilities to which they must attend.

...no one was holding the project and saying, We're going to deliver this project. Here's the deadline, we'll get it done.

(Elected leader, Council B)

Elected and executive leaders recognised a need to strengthen organisational systems, accountability frameworks and expectations to disclose the challenges to policy implementation and instances of non-delivery. It was viewed as a work in progress. Some interviewees suggested that within their council this could take the form of enhanced reporting frameworks on the management of climate risk and periodic triggers (e.g., quarterly and yearly) to disclose the extent of progress implementing climate policy goals. Leaders and staff also saw opportunity to better use the municipal risk register and strengthen the role of the municipal risk and audit committee (or similarly titled) to heighten transparency and accountability for the management of corporate climate risk.

Accountability has become a key theme. There's a general awareness that it (climate change) is happening, but I think we need to start to talk about it in terms of 'what are you doing in your role?'. Everyone has a role in this picture. That's where there's still room to develop, in terms of people taking responsibility and accountability for it. (Municipal staff, Council C)

Interviewees expressed that external expectations for municipal climate adaptation governance provides an opportunity to strengthen internal council processes (see cluster of concepts *governance, community, responsibility*, Figure 2). Some leaders and staff expressed support for municipal climate adaptation becoming a legislated responsibility, so that adaptation policy development and implementation are less vulnerable to subjective issue prioritisation and discretionary decision-making by municipal leaders.

Law, getting things into law is really important. So, that it's a requirement. ...That focuses the mind. Law and liability. (Elected leader, Council B)

Sometimes government mandates can really push things along. Or legislative requirements. Because of the situation with budgets, when we do put budget bids it is on the form (the question) 'Is this a legislative obligation?' That's on the radar as an organisational risk. So, sometimes I think these things would happen much more

quickly if someone just told councils they have to do it.
(Municipal staff, Council D)

4.3 | ORGANISATIONAL CULTURE

Interviewees, including Mayors and CEOs, expressed that they know that climate risk and adaptation should be given more consideration across the municipal organisation, but as yet, the implementation of adaptation policy and plans largely fails to be integrated with or mainstreamed in cross-organisational processes and ways of working. Leaders and staff reported that amongst many of their colleagues, adaptation lacks salience as a municipal concern, affecting interest and commitment to work on adaptation. Interviewees said that climate change is habitually spoken about in their council as an environment issue or a green agenda, and consequently, is delegated to environment, sustainability, or natural resources staff for attention. These staff positions were said to often have limited influence in the organisational hierarchy, and consequently limited resources at their disposal to direct to policy implementation (cross over with resources theme).

I feel that the work that is being done (on climate change) is a sort of floating down the bottom (of the organisation) with some more junior officers.

(Elected leader, Council B)

Staff spoke of the challenge of gaining access to and working with colleagues across functional areas. Policy siloes were apparent in three of the four councils engaged and seemed to be particularly problematic the larger the staff size. Siloing of climate change and shifting it down the hierarchy had consequences, with staff disclosing that they did not feel they had the authority or standing to impose expectations on colleagues to engage in the implementation of council's intended climate adaptation response. This is despite these officers knowing that the task of implementation was beyond them if acting alone, due to either the scope of action or skills required.

The Risk Manager won't even want to meet with me, because what head of power do I have? You can't run it (climate policy) from the bottom up. It has to be supported from the top.

(Municipal staff, Council A)

Interviewees were asked what would assist their organisation to work through the organisational (structural and cultural) and governance constraints being experienced. Leaders and staff identified that a policy champion, particularly from within the executive or elected leadership, could be a vital catalyst for action. Interviewees suggested that this champion should ideally possess authority, a sense of agency (of self and collective), courage, tenacity and a way of working that brings people together to create shared purpose. A CEO that champions collaborative ways of working was seen as particularly valuable.

And more so, when the CEO and Mayor together championed a policy response this dynamic duo was considered unstoppable (see cluster of CEO, Mayor, relationship proximate to the concept implement, Figure 2).

If you've got a champion continuing to push, push the agenda...and they have our support at the executive level, then those strategies are normally pursued through to implementation.

(Executive leader, Council B)

Interviewees also stated that the Mayor and CEO, particularly the latter, were key to establishing expectations and the culture for how council staff progress policy goals. These leaders were observed to either reinforce traditional ways of working that maintain the status quo or to encourage a fresh and purposeful openness to try something new (e.g., to address climate adaptation, a non-traditional policy domain for local government). These ways of working were seen to flow through the organisation in the expectations set, the extent of agency and authority provided to staff to get the job done, and whether spaces were created for *safe failure* where challenges to policy implementation could be learnt from to enhance future efforts.

It would be good if all parts of the organisation were talking with each other and addressing this (climate adaptation) a lot more holistically.

(Elected leader, Council B)

4.4 | PROFESSIONAL NETWORKS AND EXTERNAL COLLABORATIONS

Interviewees identified various networks and organisations (national and sub-national) as key sources of policy guidance and support. Foremost, leaders and staff expressed that they turn to the Local Government Association of Tasmania (Tasmania's peak local government representative association) to provide advice about which issues should be a priority for attention. Interviewees identified that as yet, the local government association had provided limited leadership to councils on climate risk and adaptation, although emerging activity was noted.

LGAT [Local Government Association of Tasmania] has an interest (in climate adaptation). But there's no advice really. There's definitely training offered via LGAT ...but none of that's on climate change. ...It's really down to individual councils. (Elected leader, Council A)

Interviewees also said they look to the state and national governments to provide clear messaging as to whether (and how) climate adaptation should be a matter for local government concern. Leaders and staff said both these levels of government have been effectively absent in climate leadership and guidance to local government for the

past decade under conservative governments. Interviewees were hopeful of improved multi-level climate governance and resourcing arising with the election of a new national Labor government in mid-2022.

What has been evident in the last year or two is that there is probably a majority of councils now want to do more in this space and want more assistance and want more leadership.

(Executive leader, Council C)

Interviewees stated that a lack of policy leadership on climate risk and adaptation across the levels of governments had led to councils navigating this policy space without guidance or resourcing, hampering policy implementation and outcomes. They pointed to a lack of consistency in efforts between councils, duplication in effort, inefficiencies in policy delivery and missed opportunities to learn from each other.

There is a lack of regional consistency on climate change adaptation planning. It would be good if (we) could have greater consistency (across the region) rather than us all going our own way. Why are we reinventing the wheel? I think it's disappointing.

(Executive leader, Council A)

Leaders and staff expressed a keen desire for greater collaboration and practical support of municipal adaptation at all levels of council, to support improved adaptation mainstreaming, policy development and implementation.

5 | DISCUSSION

For municipal councils across the globe, the need to understand and manage climate risks through adaptation planning and implementation is an escalating and urgent challenge (Slater & Robinson, 2023). In response, innumerable municipal climate change adaptation policies, strategies and plans have been developed (Aguar et al., 2018; Aylett, 2015; Carmin et al., 2012; Reckien et al., 2018). Yet, fewer have been comprehensively implemented, presenting a planning-to-implementation gap. Through our empirical research with four small- and medium-sized Australian municipal councils, each early-stage climate adaptors, we sought to identify factors that affect the implementation of municipal climate change adaptation policy and which of those are most essential for advancing implementation into the future. Foremost, we find constrained access to the resources—or stocks of capacity—required for adaptation policy implementation, and issues concerning how resources are mobilised (or fail to be) by municipal leaders. While these are constraints documented in the literature by others, our research identifies issues of organisational agility that impede implementation. Solutions thus focus on building adaptability within organisational processes and culture as a means of

ensuring sufficient development of resources and embeddedness of solutions.

5.1 | Mobilising resources

Limited resources are a pervasive reason for planning to implementation gaps (di Giulio et al., 2019; Fu, 2020; Pasquini, 2020). Thus, while our finding that constrained financial and human resources are hindering implementation is not new, we shed light on the deeper causes for this, entrenched in immutable organisational cultures and limited skills pipelines. For example, staff in our interviews identified that they are often stretched across too many areas of responsibility, and executive leaders stated that limited financial resources prevent the recruitment of additional staff. However, executive leaders also identified that even when budget can be made available for adaptation responses, there are challenges recruiting and retaining appropriately skilled staff to deliver intended actions. The interviews also revealed limited staff knowledge and skill—or the ‘know how’—to move beyond policy development into the next phase of on-the-ground adaptation; a situation similarly observed in municipal councils globally (e.g., Philp & Cohen, 2019 in Canada, Simonet & Leseur, 2019 in France, Spire & Shackleton, 2018 in South Africa and Williams et al., 2020 in Mauritius). This in turn creates an over-reliance on external climate expertise largely acquired on a project-by-project basis through a traditional fee-for-service consulting model; a model noted by some municipal leaders and staff as failing to build in-house knowledge, skills and capability to deliver adaptation policies and plans. What then, can be done to address constraints on municipal financial and human resources?

5.1.1 | Accessing novel finance solutions

Finding the resources to bridge the planning-to-implementation gap requires moving beyond the government coffers to pursue novel sources of adaptation finance, for example via blended finance approaches with philanthropic foundations, private capital providers or corporate social responsibility funds (Diezmartínez & Short Gianotti, 2024; Madénian & van Neste, 2023; Net Zero Cities, 2022; Wright, 2024). Some scholars suggest it is imperative that limited public funds are strategically used to mobilise private capital for the climate adaptation response (Buchner et al., 2023; Susskind & Kim, 2021). However, the development of ‘bankable’ adaptation projects with a sound investment proposition (Whittaker et al., 2024) will require municipal resources (time, expertise and finance), and this in itself impedes project initiation and market access. Thus, concerted efforts must be made to move beyond this self-perpetuating barrier, especially in small- and medium-sized municipal councils who commonly experience greater resource constraints than their large- and mega-city counterparts (Häußler & Haupt, 2021; Kronvall et al., 2023).

While higher levels of government may not be able to substantially fund local government climate adaptation, they can show the required leadership to set the adaptation agenda by facilitating the development of finance-ready municipal adaptation projects underpinned by robust business cases and clear implementation plans. Higher levels of government could also help broker partnerships between councils and prospective investors, especially in the early stages of project scoping to ensure that projects are responsive to the needs and values of both parties, and that the pursuit of finance does not unreasonably shift power away from councils to determine which adaptation policies and projects are in the best interest of their communities (Diezmartínez & Short Gianotti, 2024; ESCAP, 2023; Madénian & van Neste, 2023). Further, efforts can be made to bring together or ‘match make’ councils with shared characteristics (e.g., councils of similar size and facing shared climate vulnerabilities) to work together on adaptation projects, thus enhancing the opportunity to improve economies of scale, share learnings and reduce transaction costs.

5.1.2 | Developing a skills pipeline

For municipal councils to adapt to a changing climate they require a comprehensive understanding of the risks that climate change poses to their organisation and its strategic goals, and they must understand their opportunities to respond and how to implement identified actions. Our research reveals that organisational capacity for adaptation policy implementation is significantly impeded by a lack of municipal staff expertise. To overcome a reliance on fee-for-service consulting arrangements, an alternative form of council-expert relationship is needed that has at its heart a focus on developing a sustained capability and confidence in municipal staff and leaders to understand and manage climate risk. One avenue to progress this objective is to build cooperation between municipal councils and universities, to increase municipal staff climate literacy and capability, co-design pathways to on-the-ground adaptation action, and support councils to evaluate and refine policy implementation in real time (Balaban & Balaban, 2015; Dannevig et al., 2013; Hahn et al., 2020; Sanchez-Rodriguez, 2009). As stated by Mocatta and Harris (2023), universities can be climate change thought leaders, trusted sources of information and positioned to motivate and enable climate action. Dannevig et al. (2013) identifies that the coproduction of knowledge between municipal councils and researchers can be a key determinant for municipal adaptive agency. These partnerships can also support academics to develop innovative research agendas with a keen eye to decision-relevant problems and end-user needs (Karcher et al., 2023). And cooperation with municipal councils can inform tertiary curriculum development, channelling the work of students to critical problems, and supporting universities to deliver ‘job ready’ graduates, some of whom may become the local government workforce of the future, thereby addressing the current skills shortages that councils point to (ICMA, 2014; Schlossberg et al., 2018).

5.1.3 | Building collaborative and transdisciplinary ways of working across councils

A commitment and capability to move from adaptation policy development to implementation can be strengthened by building transdisciplinary networks across councils that foster inclusion and empowerment as prerequisites to change (Simpson et al., 2023; Wolfram et al., 2019). Councils can be encouraged to work together—especially those that are geographically proximate, geographically similar or with other shared characteristics (see the principle of homophily discussed in Lee & van de Meene, 2012) (Enseñado, 2023). Inter-organisational collaboration can create a space to collectively define and harmonise adaptation policy goals (Braunschweiler & Pütz, 2021), and establish or reinforce a shared responsibility for adaptation. And collaboration can bring together diverse and transdisciplinary expertise for shared learning, collaborative problem-solving, critical peer analysis and reflexivity, and to experiment with reimagined and innovative policy responses (Fünfgeld & Moloney, 2018; Pitt & Bassett, 2014; Taylor et al., 2021; Wolfram et al., 2019); ultimately to support the transfer of capacities between groups (see Elrick-Barr et al., 2023; Fila et al., 2024). Importantly, for resource constrained small- and medium-sized councils, collaboration can enhance synergies, reduce duplication of efforts and achieve economies of scale between partners able to leverage the human and financial resources needed for policy implementation (Häußler & Haupt, 2021; Robb et al., 2023). But productive inter-organisational collaborations require effort to initiate, facilitate, resource and mature (Enseñado, 2023), thus emphasising the importance of building a pipeline of resources (financial, human and skills) to feed collaborations.

5.2 | Strengthening organisational responsiveness

Our interviews identified a small number of municipal elected and executive leaders and staff that seek to champion climate adaptation responses across their organisation. More commonly though, we found adaptation is viewed and managed as a low priority and peripheral concern on the policy agenda, to be resourced only after the 'core business' of municipal operations and service delivery is achieved. This scenario has been observed in research elsewhere (e.g., Birchall & Kehler, 2023 in Canada, Fünfgeld & Mcevoy, 2014 in Australia, Pasquini et al., 2013 in South Africa and Romsdahl et al., 2019 in the United States). Two key factors appear to affect the commitment of municipal leaders for climate action and in turn the responsiveness of councils to implement adaptation plans. First, low issue salience, and second, that adaptation is frequently a discretionary municipal concern. We propose pragmatic solutions for both.

5.2.1 | Enhancing the salience and prominence of adaptation

Across our councils and elsewhere, climate change is habitually spoken about as an environment issue or a green agenda, and commonly

managed as a siloed responsibility (documented by Anguelovski et al., 2014 in a study across Ecuador, India and South Africa; Lawrence et al., 2015 in New Zealand; Musah-Surugu et al., 2019 in Ghana; and Oseland, 2019 in Norway). Enhancing salience via new narratives is one pathway to addressing this issue. This includes narratives on the risks that compounding and cascading climate events pose to municipal infrastructure and asset management (Vogel et al., 2020); implications for municipal insurance coverage and costs (Edwards et al., 2019); impacts to municipal service delivery and business continuity (Tonmoy et al., 2018); interference with local land values and municipal property tax revenues (Craddock et al., 2020; Shi & Varuzzo, 2020); threats to local community safety, health, wellbeing and resilience (Mossler et al., 2017); and potential legal liabilities arising from council inaction or maladaptation to climate change (Burkett, 2013). New narratives can challenge the status quo (Robinson & van Veelen, 2022) and help overcome the inertia that hinders innovation and implementation (Laurian & Crawford, 2016).

5.2.2 | Legislating for municipal climate change adaptation mainstreaming

Municipal leaders must be actively supported to elevate climate risk and adaptation on the policy agenda, and to institutionalise new norms, goals and accountabilities for adaptation, with a focus on closing the implementation gap. However, our interviews reveal that some elected and executive leaders are reluctant to let go of traditional siloed and hierarchical ways of working, or are slow to change and innovate; a situation repeated in jurisdictions elsewhere (Aylett, 2015; Burch, 2010; Fünfgeld & Moloney, 2018). Further, elected and executive leaders identify pressures to focus on the delivery of the everyday and visible concerns of local government, for example the construction and maintenance of local roads and delivery of waste and recycling services. In jurisdictions where municipal responsibilities for climate adaptation are not well-defined, such as in the state of Tasmania, high levels of discretion arise as to how adaptation is prioritised in the policy process (Birchall & Kehler, 2023). To overcome issues of discretion and delay in the municipal adaptation response, some studies suggest legislating for climate change adaptation mainstreaming in local government could be an effective policy lever (Birchall & Kehler, 2023; Braunschweiler & Pütz, 2021; Sibiya et al., 2023).

We define municipal climate change adaptation mainstreaming as *the integration of climate change risk and adaptation considerations into the decision-making, policy, and operational functions of a municipal council, across the whole organisation* (adapted from Aylett, 2015, Bleby & Foerster, 2023, Lafferty & Hovden, 2003). Legislated adaptation mainstreaming, buttressed by monitoring, evaluation and reporting obligations, can establish clear obligations and accountabilities to embed climate risk and adaptation responses into established municipal functions (Bailey et al., 2023; Bleby & Foerster, 2023; Knieling, 2016; Pasquini et al., 2015), such that councils are able to



more effectively deliver on core commitments to their communities over the medium- to longer-term (Simpson et al., 2023).

Legislating for municipal climate adaptation mainstreaming offers a range of benefits, including: requiring municipal leaders to widen their focus beyond the immediate-term pressures of municipal governance (Homsy, 2018; Measham et al., 2011); alleviating risks of policy-dismantling following a change of leadership (Lesnikowski et al., 2016); and contributing to the emergence of new institutional norms on good climate governance (Bailey et al., 2023). Further, the prospect of public disclosure requirements may remove or dampen the influence of various cognitive, socio-political and resource allocation barriers to implementation, if only to avoid reputational harm to a municipal council and its leaders. In short, law can facilitate proactive adaptation (McDonald, 2011). However, a legislative mandate for adaptation mainstreaming will not in itself lead to deep, systemic changes in municipal governance in the absence of substantial institutional investment (Knieling, 2016; Simpson et al., 2023) and access to new sources of adaptation finance. Nor can legislation force a genuine, sustained and deep cross-organisational commitment to address climate risk and adaptation. This must come from municipal leaders themselves to empower and resource their staff to act.

6 | CONCLUSION

Local government plays a critical role improving social, economic and environmental sustainability for communities. A changing climate will however repeatedly threaten community wellbeing and local government owned assets, infrastructure and service delivery. Despite widespread development of municipal climate change adaptation policies and plans, the highly resource constrained environment in which local government operates leads to seemingly irreconcilable trade-offs between the delivery of the present-day infrastructure and service needs of local communities, and the resourcing of municipal climate risk and adaptation responses over the medium to longer term. A failure by municipal leaders to recognise and manage climate risk and adaptation as 'core business' compounds this problem and gives rise to a planning-to-implementation gap.

In research with a cross-section of four Australian municipal councils, we have examined the key factors that shape (positively and negatively) municipal climate adaptation policy implementation. Our findings potentially shed light on issues that will be experienced by many municipal councils with shared socio-economic vulnerabilities and climate exposures, and in particular those municipal councils that consider themselves participants in a 'second phase of adaptation' (Fünfgeld et al., 2023) seeking to apply lessons learned from frontrunners, early adopters or extensive adaptors (cf. Araos et al., 2016; Kern et al., 2022). Further, we propose a set of pragmatic solutions to help overcome the implementation gap. Our solutions signpost how municipal councils and partner organisations can intentionally cultivate practices and relationships that create readiness and response-ability for municipal adaptation.

Substantial and systematic efforts must be made by municipal councils, with higher levels of government and key partners, to better understand, prioritise and respond to the risks and opportunities associated with a changing climate. Municipal councils can position themselves for a 'new business-as-usual' where climate adaptation is viewed as part of the mainstream thinking, culture and activity of working in local government. Establishing good climate governance and improving capacity for adaptation will be critical if local governments are to close the climate adaptation planning-to-implementation gap.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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