Climate Change Strategy in Local Government: The Role of Psychological Adaptation in

Understanding Community Engagement

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Abstract

Climate change response is a social contract that requires collective action and can be enhanced through human agency. Management research is needed to examine how institutions at various levels are accountable for climate change and to consider the social and behavioural contexts relevant to the institutions' engagement with the community. Community climate change response is also an under-researched phenomenon, particular into how the social dimensions of climate actions coalesce with an institutional response. Community collective climate action has been conceptualised as the collective effort between citizens and local government.

This multilevel mixed methods research explored public accountability at the local government level and collective climate actions, through a social-psychological lens, at an individual level. A case study of six local governments in Victoria, Australia was undertaken, where council interview transcripts and documents were examined via discourse analysis. Results from the analysis suggest that accountability mechanisms include community demands, hierarchical chain of command, and embedding climate change response within the council and the political interests of its leaders. In the second study, 603 Victorian citizens participated in a survey that focused on how psychological adaptation, social norms, collective efficacy, and procedural justice contribute to collective climate action tendencies. Results of a structural equation model indicated a positive psychological appraisal of climate change influenced the degree to which an individual engages in collective actions, but the magnitude of this relationship depends on the degree to which the individual believes the group can act. Procedural justice had a dampening effect on this positive relationship.

The results of these two studies were then synthesised and conceptually integrated in a joint display. Community collective climate actions encompass systems, processes, and behaviours at multiple levels and require incentives that promote self-interest, as well as the collective good. People need to see the benefits of their contributions to the collective good, as

this awareness of the benefits of their contribution enhances efficacy and builds a sense of agency. Community response to climate change has an important and complementary role, and insights from public accountability and psychology can contribute to a nuanced understanding of this phenomenon in the Australian context.
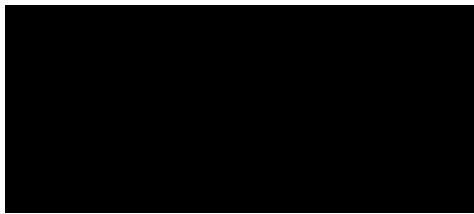
Declaration

I, Brett Quayle, declare that the PhD thesis entitled "Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement" is no more than 80,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures. All research procedures reported in the thesis were approved by VU Research Ethics Committee with approval number HRE17-188.

I also declare that my thesis was edited by John McAndrew, and editorial intervention was restricted to the Australian Standards for Editing Practice.

Signature: Date: 29 11 2021

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I was told that completing a PhD was about resilience and motivation rather than intelligence. I couldn't agree more with this statement. Completing this PhD has been such an arduous endeavour and truly has been a test for me. Many times, have I wanted to throw in the towel, but I persevered with encouragement from my family and friends. The fact that I have completed this piece of work reflects my determination and I am most proud of pushing through.

Thank you to my principal supervisor, Associate Professor Nick Sciulli, for his guidance and direction of my thesis. We got there in the end! I'd also like to extend my gratitude toward my associate supervisor, Elisabeth Wilson-Evered, for her thoughtful contributions and insights. I'd like to also extend my regards to all the staff at Victoria University for their assistance along my PhD journey. Many thanks also to all the people who gave up their time to participate in my research. It is appreciated.

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Publications associated with the thesis

Quayle, B., Sciulli, N., & Wilson-Evered, E. (2020). Accountable to who, to whom, for what and how? Unpacking accountability in local government response to climate change. *The Australasian Accounting Business and Finance Journal*, *14*(3), 56-74. doi:10.14453/aabfj.v14i3.5

Quayle, B., Sciulli, N., & Wilson-Evered, E. (2019, September 3-5). *An integrated conceptual framework of collective climate action: Examining local government accountability and the socio-psychological processes of citizen participation* [Conference session]. British Academy of Management Annual Conference, Birmingham, United Kingdom.

Chapter 1   Introduction

1.1   Background to the research

Climate change is a global problem that requires the collective actions of all members of society (Scavenius & Rayner, 2016). One of the goals of the United Nations 2030 Agenda for Sustainable Development is to initiate action urgently action on climate change, which includes improving human and institutional capacity on climate change adaptation and mitigation (United Nations, n.d.). Although the 2015 Paris Climate Agreement is a formalised agreement for participating nations to cut emissions at a national level (Cassotta, 2016), there is still considerable contention amongst policymakers, decision-makers, and citizens on how society should address climate change (Head, 2019). United States President Joe Biden addressed the United Nationals in September 2021 and called for a collective response to global issues such as climate change and the global pandemic coronavirus (Greenberg et al, 2021). Collective action involves making decisions that forgo short-term material benefits in favour of outcomes that are jointly shared and affect everyone involved (Ostrom, 2016). Collective action on climate change that is undertaken locally can provide a community with a sense of agency amongst citizens (Karlsson & Hovelsrud, 2015) and is an important determinant of citizens' relationships with governing institutions (Smith & Mayer, 2018).

A climate change response is required at local, regional, and global levels to keep global temperature rises below two degrees by the end of the 21st century (Moloney et al, 2018). Grassroots actions at a community level have an important and complementary role in achieving the United Nations 2030 Sustainability Development agenda (Fischer, 2021). Local governments are the tier of government most connected with citizens and have an important role in implementing policy and organizing a community response to climate change (Torabi et al, 2017; van den Berg & Coenan, 2012). Following the systematic review of 78 case studies, Villamayor-Tomas and García-López (2018) examined how local communities are collectively mobilised into action on environmental threats. Results suggest that the collective actions of communities may

reinvigorate community identity amongst residents, encouraging citizen voice in making collective decisions, and the promotion of grassroots economic ventures.

Collective actions are necessary to respond to climate change though there is a disagreement of what actions should be taken and by whom (Kamarck, 2019). Collective actions involve exercising individual agency, that is, the belief that personal actions culminate in the desired consequence which are shaped by social relationships and institutional forces (Cleaver, 2007). Climate change response is a social contract whereby governments have an expectation of how citizens will behave, and citizens also have an expectation of how governing institutions should intervene (Adger et al, 2018). Just as all citizens must act, so too must all levels of government and its actions must also be perceived as legitimate by its citizens. For an effective response to climate change, all segments of society must forgo short-term self-interest for the *greater good* (Ostrom, 2016).

According to Ostrom (2003), collective actions are composed of three interlinking components: trust, reciprocity, and reputation. Firstly, trust refers to the expectations that individuals have of the behaviour of other people. Secondly, reciprocity describes the norms shared amongst individuals whereby the positive actions of others result in positive responses and the negative actions of others result in negative responses. Lastly, reputation refers to the preservation of an individual's self-image, intentions, and norms. Levels of cooperation that result in the sharing of pooled resources are more likely if these interlinking components are high. In addition to mobilising individuals into pro-social action, the core tenets of collective action have important implications for legitimising institutional rules and holding institutions to account.

The concept of collective action implies that common-pool resources, such as natural resources are organised and governed by the resource users (i.e., groups within the community) through cooperative institutions. According to Ostrom (2016), these groups are defined by clear parameters, which include the appropriation and provision of rules that are jointly determined. If these rules are violated, sanctions are then imposed on those resource users. Each resource

user is responsible for their actions within the group but is accountable to the appropriators for ensuring compliance of collective decisions.

This conception of collective action, however, oversimplifies the variability of human behaviour and assumes all people are willing to contribute to the greater good. Climate change protest, activism, or advocacy are examples of resource users holding institutions to account due to the perceived unfairness or injustice of inadequate governmental action on climate change (Gulliver et al, 2019; van Zomeren et al, 2008). Evidence suggests actions may contribute to community responses to climate change; however, the underlying processes of such actions in different social contexts is not clearly understood (Badaan et al, 2020; Singh et al, 2017; Smith & Mayer, 2018; Ostrom, 2010).

An effective response to climate change requires the collective actions of local, regional, and national private and public institutions as well as the actions of individual citizens (Ostrom, 2016). Preliminary research has proposed an alternative form of governance in responding to climate change that is non-hierarchical. Morrison et al. (2017) suggest several benefits of a multi-level approach in responding to climate change: increased democratic representation, opportunities for different actors to trial a range of strategies, implementation of localised and context-specific strategies, and an ability to configure policy and processes due to the high level of uncertainty that is tied to climate change. However, the authors emphasise that vertical and horizontal cooperation is difficult and raises questions of who or what has power in overseeing multi-level systems.

Climate change is a highly complex public policy issue where a lack of coordination, accountability, governmental trust, and leadership have contributed to limited action (Kamarck, 2019). Although a coordinated international effort is necessary to reduce greenhouse gas emissions, there is scope to examine how the collective actions within communities contribute to the management of natural resources (Ostrom, 2016). According to Scoville-Simonds et al. (2020), the implementation of climate change strategies across different counties is hampered by the

politicized nature of assigning responsibilities, poor articulation of local-level interventions, and difficulties in decision making. The authors call for research that examines the structural mechanisms that shape climate action in local contexts through examining the intersection of local perspectives with political drivers, such as institutional accountability. Research examining the interrelationships of institutions and citizens who contribute to community climate actions is, however, scant (Groulx et al, 2017).

Climate change is a collective action problem (Niemiec et al, 2020; Smith & Mayer, 2018), where solutions at multiple levels are proposed (Ostrom, 2016), for example, community efforts to reduce carbon emissions, or tariffs imposed on companies to reduce emissions that benefit the consumer. Ostrom (2016) states that multi-scale solutions through collective actions may enhance responsibility and assist how an individual copes with climate change through fostering agency. However, research is warranted in the domain of collective actions that specifically focus on the underpinnings of human agency at multiple levels (DeMarrais & Earle, 2017; Otto et al, 2020), as well as understanding the accountability of climate change decision making (Kamarck, 2019).

1.1.1   Climate change response

Average global temperatures are rising due to the burning of fossil fuels and deforestation – that is, there is ample evidence to support the premise of human-induced climate change (Scavenius & Lindberg, 2016). If no action is taken, the consequences of climate change could be catastrophic (Lackner, Chen & Suzuki, 2012). Climate change response involves both the processes of adaptation and mitigation strategies. According to Jones et al. (2007), both processes serve different functions: "Adaptive capacity is expressed locally, whereas mitigative capacity is different for each activity and location but needs to be aggregated at the global scale to properly assess its potential benefits in reducing climate hazards" (p. 686).

Climate change mitigation refers to the efforts to reduce or prevent greenhouse gas emissions, and it has the potential for global benefits but relies on the actions of most major

greenhouse-gas emitters to be effective (Intergovernmental Panel on Climate Change, 2018). Mardani, Streimikiene, Cavallaro, Loganathan and Khoshnoudi (2019) conducted a systematic review of 175 published articles appearing in 55 scholarly international journals between 1995 and 2017 on the relationship between economic growth and CO_2 emissions. The result of this review suggests that the reduction of emissions will affect economic growth though there are also opportunities for new investment in renewable energy resources. Although most developed nations have committed to reducing greenhouse gas emissions and adopting more sustainable infrastructure, energy consumption particularly in developing countries like China and India, is likely to increase (Lackner et al., 2012). The largest greenhouse gas emitters have pledged to make larger cuts. For example, China has pledged a 60 to 65% reduction in carbon intensity by 2030 on 2005 levels, while the European Union has pledged 40% below 1990 levels by 2030, and the USA has pledged 26 to 28% below 2005 levels by 2025 (Climate Change Authority, 2015).

Adaptation refers to how a system changes to better adjust to manage exposure and/or sensitive to the impacts of climate change (Preston & Stafford-Smith, 2009; p. 12). Furthermore, adaptation includes a set of actions and decision-making processes that are undertaken to either maintain or strengthen the capacity of a system to deal with current or future predicted climate change. Even if the impact of gradual or extreme weather patterns are stabilized relatively soon, scholars expect that climate change and its likely effects will last many years, and that adaptation will be a necessary step to minimise using future limited resource (Owen, 2020).

Adaptation and mitigation, however, are interrelated in several ways and this relationship has been well documented at global and national levels but has received less empirical investigation at a regional and local level (Klein et al, 2007; Landauer et al, 2019). According to Pollit (2015), the responses of institutions to climate change is an intractable problem from a public policy perspective (Pollitt, 2015). Mitigation is enacted at a macro level and adaptation is undertaken locally, and local governments may benefit from a more integrative approach to

climate change response (Grafakos et al, 2019). Although representing separate elements of climate action, adaptation and mitigation are interlinked and share commonalities that can be addressed at multiple scales of society. Integrating adaptation and mitigation is appropriate at the operational level and, although decisions regarding climate change response are made at the federal government level, these decisions are enacted locally and regionally (Landauer et al, 2015). However, several research gaps currently exist in understanding how the decisions related to climate change response are implemented at a local level (Göpfert et al, 2020). Local-level responses to both adaptation and mitigation processes framed through the concept of climate change response are, therefore, the focus of the thesis.

1.1.2 Australia's obligation in climate change

Despite rising support for climate policy by the Australian public, the Australian political context has delayed action (Colvin & Jotzo, 2021). The Australian Government has agreed to cut greenhouse emissions to 26 to 28% below 2005 levels by 2030 (Climate Change Authority, 2015) and is obliged to meet this target. Comparatively, New Zealand has pledged to cut greenhouse gas emissions by 30% below 2005 levels by 2030. Although Australia is on track to reach this target, the Australian Government has been criticised for the use of carryover credits in reaching its international obligations. The use of carryover credits is a carbon accounting measure that uses historical emissions targets to reach its current goals and is considered dubious because this practice breaches the intention of the Paris Agreement (Pears, 2019). Following public backlash for being the only developed nation in the world to use carryover credits, the Australian Prime Minister, Scott Morrison, has stated that as of December 2020, the Australian Government will no longer adopt this approach but did not provide details on how the target will be reached (Doherty, 2020). It has been suggested, however, that the action taken is not meaningful in comparison to other developed nations (McDonald, 2020).

Although Australia's greenhouse emissions are relatively small (i.e., approximately 1% of the world's global greenhouse emissions), it is the world's third-highest emitters of greenhouse

gases per capita at 16.18 tonnes (Ritchie & Roser, 2017). The Australian Government response to climate change is considered inadequate (Climate Council, 2018; Hudson, 2015; Rowley, 2015). Australia was rated 57th in the 2020 Climate Change Performance Index and ranked 56th of 62 countries on the Climate Action indicator in the 2020 UN Sustainable Development Report (Burck et al, 2020). This report is designed to independently monitor the performance of climate change protection of countries and is published by Germanwatch, the New Climate Institute, and the Climate Action Network. According to this report, the Australian Government is an

> increasingly regressive force in negotiations and has been criticised for its lack of ambition by several Pacific Island nations in the context of this year's Pacific Island Forum. The dismissal of recent IPCC reports, the government not attending the UN Climate Action Summit in September, and the withdrawal from funding the Green Climate Fund (GCF) underpin the overall very low performance in the Climate Policy category (p.23).

Additionally, a recent systematic literature review of the evidence shows that Australia's climate change adaptation is mostly at a preliminary stage (Pearce et al, 2018), where the current emissions reduction target is also considered unacceptable (Hughes et al, 2021). The Australian state of Victoria may also encounter issues in the future if the current emissions continue; Victoria is expected to experience the largest population growth between 2017 and 2066 (Australian Bureau of Statistics, 2017) and the current uptake of renewable energy is only moderate compared with other Australian states and territories (Climate Council, 2018).

Government in Australia is structured across three levels: federal, state, and local. Although power is shared across all three levels in areas including public health, environmental management, and roads, both the state and federal levels of government can enact laws, with the federal government taking precedent if there is a conflict between the two levels. The federal government enacts laws by the Australian constitution, including defence, trade, foreign affairs, immigration, currency, and postal services. State governments enact laws that are not covered by the federal government and in the State of Victoria. State government agencies include schools,

hospitals, transport, agriculture, and law and order. Local government has powers as defined by state parliament and manages local issues, such as waste management, building regulations, and pet control (Local Government Act, 2020). In Australia, local governments are the third tier of government after federal and state. While local governments are best situated to manage climate change response at a grassroots level, there are severe limitations with what councils can achieve with minimal resources. There are 79 local government areas in Victoria, Australia (State Government of Victoria, 2018).

The Australian Government Department of Environment states that climate change is a shared responsibility whereby "governments at all levels, businesses, communities and individuals each have different but complementary and important roles to play in managing climate risk" (Australian Government, 2015, p. 7). However, Henry and Chandrashekeran (2021) report a misalignment on actions in response to climate change at the state and federal levels, where state governments have led on climate action in the absence of a comprehensive national government plan. Research suggests greater collaboration amongst all levels of government in Australia (i.e., federal, state and local) is necessary, where the responsibilities for climate change response at each level is outlined (Menzies, 2020, Mason et al, 2009; Booth & Cox, 2012). The level of response between Australian states and territories, however, is not consistent, and the uptake of renewable energy is much higher in Tasmania, Australian Capital Territory and South Australia compared to the rest of the nation (Climate Council, 2018).

Local governments are the tier of government most closely connected to their constituents and can engage in a grassroots understanding of climate impacts as they are responsible for a range of community services and assets (Sciulli, 2018; Torabi et al., 2017; van den Berg & Coenan, 2012). Although there are national policies on climate change response, Australia's states and territories have separate policies (Menzies, 2020). Local government is a significant contributor to the Victorian economy and is a critical delivery partner for the state government in improving the lives of Victorians. Local governments in Victoria manage over $70 billion in public

assets, spend more than $7 billion on service delivery and $2 billion on infrastructure annually, and employ over 50,000 people (Victoria State Government, 2018). The importance of local government in overseeing climate change response has been advocated for in earlier research though Australian efforts have been stagnant and require innovative solutions (Kelly et al, 2019; Mukheibir et al., 2013). Statutory power is severely limited, as is the number of resources within local government to enact change, and there are calls to integrate accountability principles with which local government works with stakeholders whilst complying with its obligations (Menzies, 2020).

Local governments affect how the action is taken on climate change; however, Australian initiatives at all levels of government have been inadequate (Beaudry et al, 2020; Hughes et al., 2021). There are research and policy gaps concerning community climate action, namely insufficient identifying and engaging with diverse resources and a lack of systematic attention to the processes and impacts of a gradually changing climate (Head et al., 2014; Romsdahl et al, 2018). However, recent research suggests that local governments are more likely to adopt climate policy if there is public support (Yeganeh et al, 2020).

Empirical evidence has also identified similar issues in international contexts as well. For example, despite the existence of mandated climate change reporting in South Africa and citizen concerns over the impacts of climate change, the planning of two local governments was considered minimal and only contained "sophisticated rhetoric" (Faling et al, 2012). A Norwegian case study identified that climate change targets were observed as only serving to legitimise accountability metrics within local municipalities rather than enacting concrete change, where a mix of embedding decision making and having control over the allocation of funds may lead to more substantive change (Haarstad, 2020). Much is unknown still on the legitimacy of accountability metrics within local government structures, however, and whether these measures contribute to adequate action on climate change.

Climate change is an extensive and unavoidable social issue likely to impact Australian society for years; however, governmental response to climate change at all levels is considered insufficient (McDonald, 2020). In addition to mandated action by tiers of government, individuals and organisations have a duty to act on climate change (Ostrom, 2016). Further research is necessary to identify the institutional and social dimensions that contribute to effective local action on climate change, particularly concerning the roles and responsibilities of government whilst drawing on different contexts and interdisciplinary insights (Moloney et al., 2018).

The 2021 Australia Talks National Survey surveyed 60,000 Australians on a range of issues, including government accountability and action on climate change (Australian Broadcasting Corporation, 2021). The survey results indicate that many survey respondents thought Australian politicians were not trustworthy for their actions. For instance, 95% of survey respondents stated that politicians would mislead parliament, 94% reported that politicians would lie, and 77% said they would engage in pork barrelling. Evidentially, there is a lack of trust in the actions of elected leaders. These results also support existing research citing a lack of citizen trust in governments in other Western countries (Lim & Moon, 2020; Schleich et al, 2016; Thaker et al, 2018). The Australia Talks survey also captured people's views on climate change: 60% agree that immediate action is necessary. Participants also stated that they would be willing to contribute at least $200 each year to help mitigate climate change. The Australian population, regardless of political affiliation or level of income, wants action on climate change. At the same time, however, there is scepticism relating to governmental action.

1.2 Research problem

Australia's response to climate change is considered inadequate though the level of action varies between Australia's states and territories (Climate Council, 2018). Compared with all other Australian states and territories, Victoria's population growth is expected to be the largest between 2017 and 2066 (Australian Bureau of Statistics, 2017). However, a recent renewable energy scorecard by Australia's Climate Council (2018) ranked Victoria's progress as

moderate, with only 13.6% renewables, compared with 87.4% in Tasmania and 46.2% in the Australian Capital Territory. The capital of Victoria, Melbourne, is also projected to experience a significant increase in coastal flooding if greenhouse gas emissions are not reduced (Climate Council of Australia, 2018). Given the large projected population increase in Victoria and the limited uptake of renewable energy, effective community climate action is essential given the risks associated with climate change for the state of Victoria. Considering the importance of grassroots climate action in helping Australia achieve the United Nations 2030 Sustainability Development agenda (Fischer, 2021), community response to climate change was the focus of the thesis.

Collective actions in response to climate change depend partly on the political engagement of its citizens and that level of engagement depends on whether the perceived risk of climate change is high, the belief that individual actions can lead to collective outcomes, and shared environmental values (Badaan et al., 2020). According to Huang and Shen (2020), the political context surrounding the relationship between citizens and government will dictate climate change policy outcomes. Further, Lubell et al. (2015) suggest that the citizen-government relationship is more important for public policy, while the citizen-citizen relationship is relevant to environmental behaviours and participation. The dynamics of these relationships is critical in developing solutions that benefit from collective actions.

Local governments have an important interlinking role with other tiers of government and depend on effective leadership, engagement, and how climate change information is disseminated and evaluated (Albright et al, 2020). Nevertheless, several barriers exist in local Australian councils, including a lack of internal expertise, resources, and commitment from within the council, as well as a lack of guidance from the state and federal tiers of government (Sciulli, 2018; Scott & Moloney, 2021). While authors generally agree that many factors contribute to climate change strategy in local government, further research is necessary to examine how

strategy is implemented and evaluated (Kuruppu et al, 2013; Linnenluecke et al, 2013; Olazabal et al, 2019; Porter et al, 2015; Preston & Stafford-Smith, 2009; Romsdahl et al., 2018).

Local-level actions–through individual interactions–can be particularly powerful in influencing the institutional decisions that are made to adjust to a changing climate (Reyes-Garcia et al., 2016). Collective actions are the summation of individual responses to climate change and, from a psychological perspective, result from optimism and resilience (Andrews & Hoggett, 2019). The United Nations 2030 Agenda for Sustainable Development states that the social dimensions related to climate change are poorly understood, and such knowledge would enhance awareness of many socioeconomic conditions (e.g., human and social resources, institutions, policies and power relations) (United Nations, n.d.). Current climate change policy and research underemphasises the social attributes associated with individual and community climate actions, including symbolic and psychological factors (Adger et al, 2011; Badaan et al., 2020; Clayton, 2020; Tschakert et al, 2019).

As previously mentioned, the role of local government in engaging with and overseeing community services and assets is an integral component of community-level climate action (Ireland & Clausen, 2019; Moloney et al., 2018). However, several institutional constraints coalesce to restrict action, including lack of information and resource limitations (Scott & Moloney, 2021), as well as minimal accountability metrics (Haarstard, 2020) and articulation of responsibilities (Mukheibir et al., 2013; Nalau et al, 2015). More research is required to determine effective community climate action, including considerations of the social context (i.e., the cultural values, psychological processes, language, and ethics) and institutional context (i.e., governance structures and the rules that shape human behaviour) (Jones et al., 2014; Scavenius & Lindberg, 2016).

Aside from electoral participation, little is known of how citizen perspectives and knowledge can be used to provide oversight to local government decision making (Marino & Presti, 2019; Bovens et al, 2014). Conversely, it is unclear whether community engagement or behaviour

change interventions by local governments are currently effective in shifting community climate actions (Howard, 2017; Smith & Mayer, 2018). Important questions remain to be asked as to the role of local government in providing the oversight to collective climate change action, which requires a more nuanced understanding of human behaviour (Ostrom, 2016)

1.2.1 Climate change response: A wicked problem

Climate change is a *wicked* public policy issue (Pollitt, 2015), that is, a highly complex social issue with no readily identifiable solutions (Ney & Verwij, 2015). Wicked public policy issues do not have simple solutions because of a lack of information or differing perspectives, where the problem itself may be constantly changing (Head, 2022). The complexity of climate change means there are no easy answers for policy developers and decision-makers in tackling climate change (Stang & Ujvari, 2015).. For instance, from a public policy perspective distinguishing whether a flood is due to global warming or a part of normal weather patterns is debatable. In responding to the flood, it is difficult to differentiate climate change measures from domestic policy measures (Scott & Moloney, 2021).

Head (2019) surmises that public policy solutions to climate change are complex for several reasons: climate change represents a combination of small interlinked legal and political challenges; identifying the costs, benefits and impacts of climate change is broad and will change over time; climate impacts occur simultaneously at a global, national, regional, and local level; the attribution of humans to climate change is contentious by sections of the community; and the attribution of responsibility and required behavioural change in governments, organisations, and citizens are difficult. A major barrier for policy developers and decision-makers is the uncertainty and long-term nature surrounding climate change, which has made it difficult for governments to implement policy when there is a short-term focus and available knowledge is often incomplete (Arneth et al., 2019).

The existence or severity of climate impacts are not always realised by decision-makers, and implementation of climate change adaptation policies will take many years to undertake

(Pollitt, 2015). There is also a disconnect between what is recommended by climate scientists and what is implemented by public officials (Preston et al, 2015; Thoni & Livingston, 2021). A recent comparison of European official and semi-official scientific literature on climate change with central government publications on public management reform found minimal overlap between the two (Pollitt, 2015). Although nations have committed to global reductions in greenhouse gas emissions, governmental implementation of climate policy only minimally addresses the complex issue of climate change.

Effective climate response is possible; however, new strategies are needed that include focusing on decentralised local government in service planning and delivery, community support toward a more sustainable socio-economic system (Head, 2019; Grafakos et al., 2018; Torabi et al., 2017), and public-sector staff that understand scientific issues and work closely with experts (Pollitt, 2015). The ability of local communities to act in response to climate change may be limited by a lack of innovation in planning and development (Broto et al, 2019). Van Wijk et al. (2019) propose that solutions to complex social problems require a re-think of how multiple systems and actors are interlinked at various levels. Social innovation is framed as agentic, relational, and contextual, and the authors consider three levels of analysis: micro, meso, and macro: individual agency is the focus of the micro level; the foundation for interactions is at the meso level; and the macro level frames the overarching interactions. Developing solutions for complex social problems requires consideration of these three interlinking levels.

Stakeholder engagement is vital for the successful implementation of climate change policy though the quality of the stakeholder relationship is important (Fowler, 2019). Ney and Verwij (2015) suggest that governmental response to environmental issues can best be addressed through interacting with stakeholders that share diverse perspectives to creatively combine all policy perspectives. Involvement of the public and the wider community is necessary for several reasons: to achieve behavioural change through education, informing policy design through public knowledge and participation, and changing the systems through which greenhouse

gas emissions are produced. An important component of implementing climate change policy exists in the bidirectional relationship between government and the community: public involvement, attitudes and beliefs can help shape policy design, while government intervention can prompt behavioural change (Hügel & Davies, 2020). The methods used to involve citizens and how this is evaluated, however, remains a challenge for local governments (Scott & Moloney, 2021).

How climate change is addressed will depend on the types of decisions made by political leaders in the coming decades (Head, 2019). According to Jones et al. (2014) an iterative process involving scoping, analysis, implementation, and review is necessary for making effective decisions that respond to the risks associated with climate change. Underlying this process is an understanding of the social context and institutional context, as well as region-specific and indigenous knowledge. Information that is localised and context-specific provides the necessary scope for decision-makers, which in turn can facilitate trust-building in working with multiple stakeholders in managing current and future climate risks (Landauer et al, 2019).

There are also questions surrounding what it means for local governments to engage with the community or to integrate the community into its decision-making (Dinica, 2018; Johnston, 2010; Samaddar et al, 2019; Schafer, 2018). Community participation is multifaceted and there is a lack of operational specificity regarding terminology to describe this practice. Terms such as *community engagement*, *stakeholder engagement*, *public participation*, and *engaged communities* all refer to citizens and institutions working collectively for a common good. A systematic literature review of civic engagement identified that this phenomenon was a multidimensional construct that bridged public institutions and their citizen stakeholders (Marino & Presti, 2019).

Community climate actions require a range of formal and informal approaches from accountable institutions and collective self-determination amongst citizens. Such initiatives imply that citizens are active agents and can include advocacy and practical action in community climate

actions (Ross et al, 2016). Citizens can be active agents under the right conditions, and government has a role to play in overseeing these behaviours (Charli-Joseph et al, 2018). Climate change is a complex public policy issue and presents several challenges to communities, and the intersecting role of government and citizens may contribute to potential solutions.

Chou (2020) conducted a document analysis of 44 Australian local government climate emergency declarations and found that the actions taken by councils were symbolic and aspirational. Of the local governments examined, only a few had taken steps to enact change, such as reporting on emissions targets and petitioning for federal government response on climate change. For most councils, the commitment made to addressing the climate emergency has not translated to substantive actions.

1.2.2 An interdisciplinary framework of community climate change response

Community climate response must also be articulated comprehensively and transparently (Runhaar et al, 2015) and may be enhanced through interdisciplinary research (Dumay and Guthrie, 2019). According to Wohlgezogen et al. (2020) the interdisciplinary research necessary to aid climate action will benefit from the contributions of business and management scholarship in understanding the socio-economic impacts of climate change. Further, a systematic review of the accounting literature found that organisational responsibilities associated with environmental challenges, such as biodiversity loss and climate change, were under-researched (Roberts et al, 2021). An impetus exists, therefore, for accounting and management research to explore climate change through an interdisciplinary lens.

There is a discrepancy in current climate action in Australia, whereby the implementation of climate change policy does not reflect the recommendation of climate scientists(Hughes et al., 2021). A 2021 national poll found that most Australians cited climate change as the most personally relevant social issue (ABC, 2021). While climate scientists advocate for the important role of local governments in climate action (Manuamorn et al, 2020; van den Berg & Coenen, 2012), local government in Australia is bound by the state government jurisdiction and minimal

action is taken (Menzies, 2020). This is an issue of governance though, more importantly, this highlights the lack of answerability on the part of local government in its role of overseeing community climate response. It is imperative to find who in local government is responsible for climate change action and how they are held to account for these actions – components that are essential for effective climate policy implementation within communities (Scott & Moloney, 2021; Juhola, 2019).

Research by Mees (2017) examined the division of climate change responsibilities by Dutch decision-makers through a comparative analysis of three empirical studies. Following the content analysis of policy documents, interviews and multi-stakeholder workshops, the results determined that local public authorities hold the greatest responsibilities for implementing climate change strategies. The author recommends that local public authorities are required to engage with the community, including private citizens and businesses, to adequately respond to climate change. Although these findings support claims for the importance of local public authorities in climate policy implementation, the results are based on research conducted in the Netherlands, where culturally specific institutional and contextual factors may limit the applicability of results to an Australian context.

Accountability for climate change response is complex, so a simplistic approach to claim that local governments are accountable for climate change may not result in adequate action. The question arises about who in local government and the community it serves is accountable for what, to whom, and through what means. (MacDonald, 2014). According to Dumay and Guthrie (2019), the accounting literature must incorporate multidisciplinary research that extends beyond accounting and reporting on climate change and consider human and relational dimensions other than institutional agendas. Importantly, local government accountability can be strengthened through integrating citizen perceptions and actions that are based on behavioural science research (Grimmelikhuijsen et al, 2016; Kácha & Ruggeri, 2019); where psychological adaptation – the ability of an individual to cope with and assess the threat of climate change (Reser et al,

2014) – influences the degree to which citizens act in response to climate change. Although minimal empirical evidence currently exists, psychological adaptation is defined as the changes and adjustments in thinking, feeling, and general understanding in response to climate change and is positively correlated with self-reported tendencies to cope with climate change (Reser et al, 2014). Nielsen et al. (2021) recommend that psychological research consider the situational elements with regards to the transactions between an individual's psychological processes and their social setting, particularly in the realm of climate change research. According to Wouters et al. (2015), integration of citizen behaviours with social contracts and accountability may lead to successful policy implementation.

Steccolini (2019) states that accounting and accountability research is limited in its impact on improving public sector performance outcomes by negating a focus on the visible public" aspects of account-giving to the public. This shortfall may be strengthened by incorporating different disciplines, such as psychological and social mechanisms, that contribute to public sector account-giving. A conceptualisation of community-based climate response is presented in this thesis, building on calls to integrate the institutional and social dimensions at different levels (Moloney et al., 2018; Ostrom, 2016). This multidisciplinary investigation drew on insights from the fields of psychology and accountability to explore collective climate change response, which could contribute to a deeper understanding of the nexus of accountability and psychological processes (Gray, 2010; O'Dwyer and Unerman, 2014, Overman et al, 2020; Thomson et al, 2014). Specifically, the overarching research question of the thesis was, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? The empirical evidence to support the research propositions of how the concepts are linked are developed in the subsequent chapters.

1.3   Justification for the research

The Australian Government Department of Environment states that climate change is a shared responsibility whereby "governments at all levels, businesses, communities and individuals each have different but complementary and important roles to play in managing climate risk" (Australian Government, 2015, p. 7). However, effective coordination across different sections of government is lacking, and there are recommendations for collaboration amongst all levels of government in Australia (i.e., federal, state and local) to develop a framework that clearly outline each level's responsibilities for climate change response (Menzies, 2020, Mason et al, 2009; Booth & Cox, 2012). The level of response between Australian states and territories, however, is not consistent with the uptake of renewable energy; it is much higher in Tasmania, Australian Capital Territory and South Australia compared to the rest of the nation (Climate Council, 2018).

Australia is prone to the effects of climate change in several ways, including drought, bushfires, rising sea levels, storms, and coastal erosion (Head et al, 2014; Scott & Moloney, 2021) and will be one of the most vulnerable nations on earth due to the impact of climate change (Gergis, 2018). Climate change inaction is not unique to Australia; it is an issue worldwide. The enormity of inaction on climate change is so vast that it is identified as the most significant global risk, as reported by the World Economic Forum (Fleming, 2021). Recently, Australia experienced severe bushfires that destroyed 21% of the eastern broad-leafed forests, and three billion animals were either killed or displaced. In addition, mass-coral bleaching has resulted in the death of 50% of hard corals in the Great Barrier (Climate Council, 2021).

Not only will climate change impact the biodiversity of Australia, but the economic impacts are also expected to be severe. Australia's coastal regions, for example, contribute significantly to revenue from industries, including tourism, housing, and commercial fishing (Rolfe et al, 2021). Modelling conducted by the Climate Council of Australia (2019) indicates that by '2100', sea-level rise will jeopardize more than $226 billion in assets. Being more equipped to manage exposure

or sensitivity to future climate impacts will likely minimise future resource expenditures and is predicted to result in long-term financial savings for the Australian Government. For example, the Australian Business Roundtable estimated that $250 million funding per year on pre-disaster resilience would generate budget savings of $12.2 billion for the government by 2050 (Australian Business Roundtable for Disaster Resilience & Safer Communities, 2013). Inadequate preparation for future climate risk may also have legal implications for local government (Schuijers & Young, 2021). Australia's property industry is also predicted to be directly affected by rising costs through local government expenditure on climate risk (Warren-Myers et al, 2020).

The multiple perspectives on and characteristics of climate change render the area a significant research challenge for the development of effective policy linking human behaviour and the environment (Granco et al., 2019). Community climate change response is a multilevel problem in which the social dimensions of climate change response link with an institutional response, and it is facilitated through political forces (Brondizio et al, 2009; Huang & Shen, 2020). According to Jacquet et al. (2014) individual attitudes toward climate change policy consists of institutional forces and psychological factors (Jacquet et al, 2014). One perspective that has received some multidisciplinary attention is the matter of who is accountable for designing and implementing policy and for instigating and monitoring behaviour change (Cassotta, 2016; Kácha & Ruggeri, 2019).

Although viewed as an important issue, the public may not be clear on government action to address climate change (Crawley et al, 2020). Nalau et al. (2015) examined the roles and responsibilities of local government representatives in climate adaptation in a case study in Southeast Queensland. Based on semi-structured interviews with 45 adaptation researchers and practitioners, as well as quantitative content analysis and a review of the literature, the authors confirmed other research and found that unclear responsibilities and policy inhibited action on climate change. Perceptions of residents were also included, and interviewees noted that it was the responsibility of the government to distribute information to residents, but it was the

responsibility of the individual residents for how they climate-proof their private assets. While this study offers insights into the role of local government in community-based climate change interventions in Southeast Queensland, the findings cannot be generalised to reflect all local governments due to limitations associated with qualitative research.

Given the scale of climate change, there are major challenges in determining who or what is ultimately responsible for undertaking initiatives and whether such actions are an individual or collective responsibility (Newell et al, 2015). Current governmental structures inhibit climate action, and there are calls for reform on many public sector practices to achieve this, including institutional frameworks and accountability systems (Oberlack, 2017). There are also current opportunities for accounting scholars to contribute to research that relates to the organisational challenges in meeting the United Nations Sustainability Goals (Bebbington & Unerman, 2020). Accountability in local government response to climate change was examined in this thesis (Olazabal et al., 2019).

There is a growing body of research advocating for the inclusion of citizens' perceptions of organisational performance in public administration settings (Grimmelikhuijsen et al., 2015; Kácha & Ruggeri, 2019; Overman et al., 2020). As local governments are expected to be accountable to their constituents, then, it is prudent for decision-makers to know how people behave and form attitudes about climate change. To date, there is only minimal evidence on how government accountability and performance interact to influence public perception and vice-versa (Beshi & Kaur, 2020). It has been recommended that the study of accountability could benefit from micro-level analysis of individuals and groups and how they form attitudes and behaviours in a public-sector context (Grimmelikhuijsen et al., 2015). Further, Nielsen et al. (2021) emphasize the contributions made by psychological research to climate change, particularly the contextual elements, including an individual's social setting. Incorporating both psychological and accountability perspectives afforded a theory of community-level response to the impacts of climate change.

1.4   Research methods and design

This section provides a brief overview of the research methods that were used to address the research question, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Community collective climate actions were investigated via social psychological theories and processes within the structures that govern local action (van Riper et al., 2018).

Given there is a lack of conceptual clarity surrounding collective community climate action across different levels (Ostrom, 2016), an examination of the literature was employed to clarify what was known and not known (Gulluscio et al., 2020). As an initial step, relevant literature was organised so that specific propositions were presented. This was achieved via a systematic literature review, which is a process that is increasingly used in management and accounting research to enhance the methodological rigour of the traditional literature review and to produce high quality and publishable research (Malviya & Kant, 2015; Svejvig & Anderson, 2015). Three research questions guided the systematic literature review. These questions were addressed via the appraisal of evidence uncovered by the articles selected. Chapter 3 presents the details of the systematic literature review.

A key focus of the thesis was to integrate theoretical propositions from multiple disciplines (i.e., accountability and behavioural science) to gain new insights into community climate action across multiple levels (Räsänen et al., 2017). A multilevel mixed methods research design (Headley & Plano Clark, 2019) was implemented to address the theoretical propositions developed from the systematic literature review. The research design was grounded in a philosophical perspective of pragmatism and incorporated both qualitative and quantitative approaches (Molina-Azorin & Cameron, 2010). A concurrent triangulation design was adopted to define the proposed relationships (Castro et al, 2010) and to offer empirical support of these propositions.

This design employed a simultaneous collection and analysis of both quantitative and qualitative data (Creswell et al, 2003). This was achieved via three levels of analysis: local government accountability at a macro level; micro-level analysis examining the psychological responses of individual intention to participate in collective climate actions; and meso-level analysis, which exists as an interlinking level of concepts drawn from the macro and micro levels to explain community participation (Van Wijk et al., 2019). Inferences were drawn from each level and integrated at all stages of the research process, including the design stage, interaction stage, and through the summation of meta-inferences (Yin, 2006).

The macro-level analysis involved an exploration of accountability within local government institutions via case study research. The research was undertaken via interviews with council staff and through analysis of council documents. Participants (i.e., council staff within each council) were recruited to participate in an interview via a convenience sampling technique (Anderson, 2010), and interviews were conducted using a semi-structured interview protocol (Fowler, 2013). The content of interview transcripts and council documents was subsequently analysed for the identification of themes (Armat et al, 2018).

The micro-level analysis involved the examination of associations amongst psychological constructs via a psychological survey of well-validated pre-existing scales. This scale examined a social-psychological contract of collective climate actions. Participants were recruited via a virtual snowball sampling technique (Baltar & Brunet, 2011) and were available to any Victorian resident aged over 18 years to complete. Quantitative analysis techniques were then employed to examine the relationships amongst these constructs and draw conclusions of the population (Wellington & Szczerbinski, 2007). Structural equation modelling is a multivariant procedure that incorporates multiple regression and factor analysis and was the statistical analysis employed to analyse these relationships. According to Abu-Alhaija (2019), this statistical approach is useful to confirm theoretical propositions but also predict future behaviours, as well as the direct and indirect influences on theoretical constructs.).

The meso-level analysis was a composite of meta-inferences based on the empirical findings of the qualitative and quantitative studies. This involved theoretical assertions gathered through a contiguous approach integrated through narrative (Fetters et al, 2013). These concepts were structured and organised at each level to form theoretical inferences of community-level collective response to climate change. Figure 1 provides an overview of how the analysis developed from the main research question. The systematic literature review posed three research questions to address the main research question, which resulted in the development of three research propositions. The research propositions were subsequently investigated via different analytical techniques.

Figure 1
Flowchart of thesis research development

Main Research Question	***What are the theoretical and empirical links between local government accountability and individual psychological processes to influence the collective actions of community climate change response***

Systematic Literature Review	*SLR – Question 1: What empirical research exists in the literature that examines accountability within local government climate change response?*	*SLR – Question 2: What empirical research exists that examines the social-psychological factors that influence collective climate actions?*	*SLR – Question 3: To what degree is there empirical evidence linking local government accountability and individual-psychological processes to explain collective community climate actions?*
Research Propositions	***Proposition 1:*** *Local government accountability for climate change response is the result of leaders who are answerable to the community and through transparent and measurable information that is embedded in the organisation.*	***Proposition 2:*** *Psychological adaptation determines a person's intention to engage in collective environmental behaviours, though this relationship depends on social norms, collective efficacy and procedural justice.*	***Proposition 3:*** *Community collective climate actions involve a demonstration of accountability in local government and citizen psychosocial responses to climate change.*
Analysis of Research Propositions	*Macro-level analysis: Exploratory research in local governments*	*Micro-level analysis: Six research hypotheses*	*Meso-level analysis: Conceptual integration of macro-level and micro-level themes*

1.5   Thesis structure

This thesis is structured into three sections: introduction and context, results and analysis, and synthesis and conceptualization. Figure 2 provides a visualisation of the thesis structure, and an outline of each chapter is described.

Figure 2
Flowchart of thesis structure
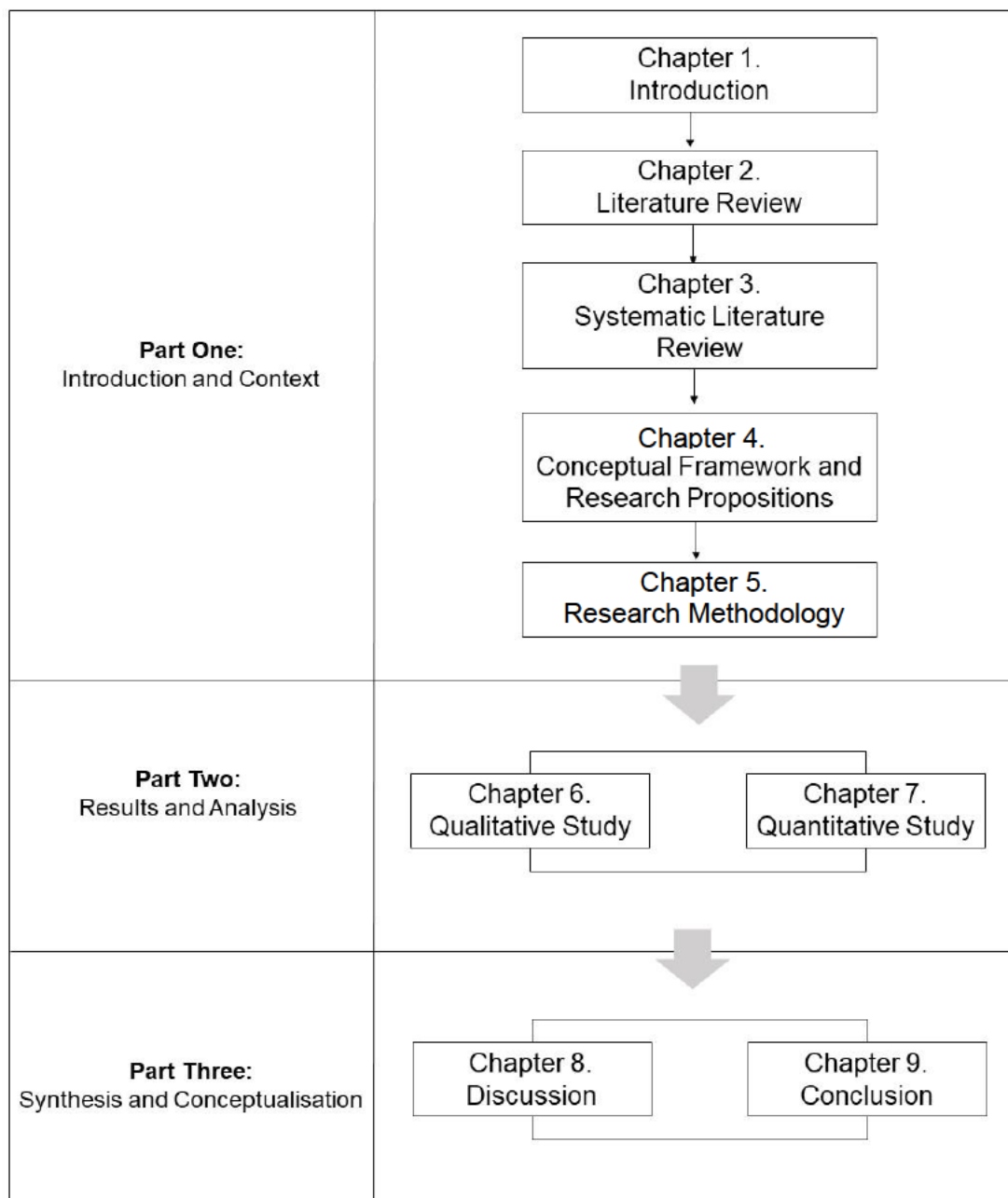
The first five chapters of the thesis offer an introduction and provide context. An outline of this thesis as a complete research project has been presented in Chapter 1. This has included the background and context of the research problem and the justification of the thesis. A brief overview of the research methods was given, as was the thesis structure, and a list of key definitions. The thesis delimitations and key assumptions were then presented. The purpose of Chapter 1 has been to *set the scene* and to provide the reader with the overarching research question and the context surrounding this problem, specifically, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change?

The focus of Chapter 2 is to present existing literature to build a theoretical foundation. Specifically, the concept of community collective climate actions is articulated as a social contract between citizens and local government and explained through the perspective of human agency. The literature presented provides a rationale for further empirical enquiry by drawing on accountability and psychological research.

Next, the systematic literature review is presented in Chapter 3. The literature review protocol is outlined, followed by the process of how the studies were selected for inclusion of analysis. The articles that were selected for inclusion were then synthesised and grouped according to themes. The purpose of the systematic literature review is to articulate the main research question and to draw key findings grounded in a rigorous methodology. Chapter 4 then uses these themes to guide the formation of specific research hypotheses. A conceptual framework is presented in Chapter 4 which articulates how the themes are conceptually linked.

Chapter 5 provides an overview of the thesis research methodology. Firstly, the methodology is presented and the philosophical worldview and justification for the research paradigm is articulated. Next, the multi-level mixed methods design approach is described for each level of analysis (i.e., institution, citizen, and community levels), including the sampling strategy and data collection process. Ethical considerations and methodological considerations

are then described. The purpose of this chapter is to provide a detailed account of the research approach used and how this is achieved.

The second part of the thesis offers the analysis of the research questions presented in part one and presents the results across two chapters. Chapter 6 presents the qualitative component of the investigation, which includes the analysis of council interviews and annual reports. The data analysis of the interviews is described and subsequent themes from the analysis are presented according to the following questions: Who is (are) accountable? Accountable to whom? Accountable for what? How are they accountable? Council documents were then analysed according to a coding matrix. The results of this analysis are presented. Lastly, a summary of findings is given.

The quantitative analysis and results of the psychological survey are presented in Chapter 7. First, the hypotheses are stated. Next, the preliminary analysis of the structural equation modelling was detailed, followed by the presentation of the measurement and structural model. A discussion of findings is then provided and explains the key inferences of the supported hypotheses.

The final part of the thesis synthesises the main findings and conceptualizes these in the context of the research questions. Chapter 7 details the Discussion. Firstly, an overview of community participation is given, followed by an overview of how local government and citizens contribute to this conceptualisation. A thematic analysis of citizen comments is then provided. The process of conceptual integration and subsequent inferences is then presented, followed by a summary of findings.

The overall discussion of the thesis is presented in Chapter 8. Conclusions about the research problem are presented, and these conclusions are based on the findings in Chapters 5, 6 and 7. The contributions of the thesis were then detailed, which included implications for theory, policy, and practice. Limitations of the thesis are described, followed by areas for future research.

1.6   Definitions

Several prominent terms used in this thesis require operational specification, that is, the language and context used to define these terms must be clearly expressed.

Accountability: Accountability emphasises clarity, transparency, and collaboration (Schillemans, 2015; Chatzivgeri et al, 2020) and can be useful in generating policy fulfilment and governmental change (Bovens, 2010). Accountability mechanisms can influence behaviour and organisational processes and may also decrease conflicts of interest and enhance responsibility (Gray et al, 1996). For example, voting is a form of political accountability, and the forum of judges, courts and prosecutors is a type of legal accountability (Bovens, 2007).

Climate change response: In this thesis, climate change response specifically refers to adaptation and mitigation. Adaptation involves taking actions to manage the risks from future climate impacts, to care for communities, and to bolster the resilience of the economy (Owen, 2020), whereas mitigation refers to the efforts to reduce or prevent greenhouse gas emissions (Intergovernmental Panel on Climate Change, 2014). Although representing separate elements of climate action, adaptation and mitigation are interlinked and require a coordinated response to achieve a sustainable future (Landauer et al., 2019).

Community climate action: Community climate action refers to the collective actions of community members in response to climate change. It is essential for policymakers to consider the interconnectedness of human/environment interactions and to articulate these institutional arrangements while fostering agency amongst all citizens (Brondizio et al., 2009; Webber et al, 2017). Citizens can be active agents under certain conditions, and government has a role to play in overseeing these behaviours.

Collective action: Collective action involves making decisions that forgo short-term material benefits in favour of outcomes that are jointly shared and affect everyone involved (Ostrom, 2010). Collective action in responding to climate change may be enhanced through a

multi-level approach between local, regional, and national levels of government, as well as the actions of individual citizens.

Community: A community is defined as a "society of persons having common rights, interests" (Webster et al, 1906, p. 74). Community is a social construction that emphasis belongingness (Delanty, 2009), such as a shared geographic space. In the context of the current thesis, a community is a collective of individuals that share a geographic location (Edelenbos et al, 2018).

Local government: According to the *Local Government Act 2020* (Victoria), local government is a "distinct and essential tier of government consisting of democratically elected councils having the functions and powers that the Parliament considers are necessary to ensure the peace, order and good government of each municipal district" (p. 1). The terms *local government* or *local council* were used interchangeably in this thesis.

Human agency: Human agency is the belief that individuals can influence important outcomes in their life. People who experience human agency tend to adopt two beliefs: the belief they have developed the requisite capabilities to affect change and the belief that consequences of actions are fair (Bandura, 2018). In the context of the current thesis, human agency underpins much of what constitutes psychological adaptation, collective action, and community participation.

Interdisciplinary research: A major tenet of interdisciplinary research is the undertaking of a study from two or more distinct scientific disciplines, utilising the skills and perspectives of each discipline at multiple stages throughout the research (Dumay & Guthrie, 2019).

Psychological adaptation: The changes and adjustments in thinking, feeling, and general understanding in response to climate change, and it is positively correlated with self-reported tendencies to cope with climate change (Reser et al, 2014).

Social contract: A social contract is a bidirectional relationship involving community expectations tied with the capacity of political institutions to fulfil these expectations. Such a social

contract must also be perceived to be legitimate by the parties involved (Blackburn & Pelling, 2018). The current thesis purports that a social contract exists whereby local governments are expected to be accountable to their constituents. A social contract underlies the concepts of accountability, collective action, and community participation.

1.7 Delimitations and key assumptions

The theoretical and empirical links between institutional-level accountability and individual-level psychosocial responses that explain collective actions in community climate change response was the focus of this thesis. Therefore, several assumptions of the research must be addressed, as with the overall scope. The concept of accountability is based on Western democratic ideals and values that include constitutional and electoral arrangements, which are intended to foster answerability and responsiveness of officials and hold power to account (Nguyenm et al, 2020; Olsen, 2017). As such, the concepts relating to collective actions and accountability are based on a Western democratic ideology.

The scope of the thesis centred on the human and political dimensions of community climate change response in an Australian context. As a nation, the Australian Government has committed to reducing Australia's emissions by 26 to 28 per cent below 2005 levels by 2030 under the Paris Agreement (Australian Government, 2015); however, a recent report has highlighted that Australia is not yet on track to reach this target (ClimateWorks Australia, 2018). To supply context, Australia is comprised of six states and two territories; and the State of Victoria is currently Australia's third large emitter of fossil fuels. In 2016, the Victorian government had an emissions reduction target of 15-20% below 2005 levels and net-zero by 2050, as well as a renewable energy target of 25% by 2020 and 40% by 2025 (Climate Change Authority, 2019). Despite these targets, a 2019 report outlined that Australia's environmental condition was worsening, including an increase in temperatures, a decline in rainfall, poor vegetation growth and destruction of vegetation and ecosystems through drought, fire, and land clearing (Van Dijk et al, 2020).

The focus on local government in Victoria, Australia may limit the generalisability of these findings to other populations. Specifically, the empirical evidence collected was based on the staff within the six participating councils, and the councils were selected based on a convenience sampling technique of predominantly coastal local government areas. Participants ranged in level of seniority at each council and included executive, management, coordinators, and officers. Many participants were from the environment and planning departments within council. Despite efforts to recruit participants from a range of organisational area, the data collected should be viewed through the opinions of those who participated. Similarly, the survey recruited participants via a virtual snowballing technique through the social media platform Facebook, so any inferences made by the data collected may be subject to self-selection bias. All empirical research is subject to bias and limitations (Podsakoff et al, 2003); however, the methodological techniques used are justified considering the scope of the research.

Since the start of 2019, much of the world has been dealing with the global pandemic COVID-19. The pandemic is a collective action problem, just like climate change, and this has been commented on by the media and academics (King & Borrud, 2020). The council interviews were conducted between November 2017 and February 2018, before the start of the pandemic. The data collection of the citizen survey was carried out from March to May 2019, so responses may be skewed due to the impacts of COVID-19. Community response to the coronavirus pandemic has demonstrated how citizens can collectively act, particularly by holding public institutions to account (Kennedy et al, 2021) and the psychological appraisal of COVID-19 (Dryhurst et al., 2020). The findings uncovered from this thesis should be critiqued within the boundaries previously mentioned.

It is also noteworthy that global action on climate change has changed significantly due to changing political forces, namely the election of Donald Trump resulted in the United States exiting from the Paris Climate Agreement. The subsequent election of Joe Biden in 2020 has meant that the United States has increased its commitment to reducing greenhouse emissions

and working with other countries on solutions to reducing the impacts of climate change (South et al, 2021). These changes will likely have implications on the political landscape in Australia, where in April 2021 President Biden stated that Australia needed to reduce greenhouse gas emissions sooner than current commitments laid out by Prime Minister Scott Morrison (Morton & Murphy, 2021).

1.8 Chapter summary

This chapter has articulated the foundations for the thesis: the background to the research was presented and the research problem was formulated. The main research question was then justified, along with a brief overview of the research methods, thesis structure, and key definitions. Considerations of the delimitations of scope and key assumptions of the thesis were then presented. Having set up the groundwork of the thesis in this chapter, the remaining chapters describe the research process in detail. Chapter 2 presents a review of the literature and builds the theoretical foundation of community collective climate actions.

Chapter 2   Literature Review

2.1   Chapter overview

The previous chapter laid the foundation for the thesis and presented the overall structure. This included the articulation of the research problem and justification for the empirical enquiry. The literature review is the focus of Chapter 2, and the primary aim is to build a theoretical foundation of community climate change response. The relationship between local government and its citizens is viewed through the perspective of a social contract whereby citizen actions is explored through the psychological conception of human agency. Public accountability is presented as a means of articulating the social contract of community climate change response within local government, while citizen environmental behaviours are explored from social-psychological theories and processes. The chapter concludes with a justification of why empirical research is necessary to examine community collective climate action as a multilevel phenomenon.

2.2   The social contract of community climate change response

Collective action on climate change is a social contract (Stehr & von Storch, 1995), and a social contract is a bidirectional relationship involving community expectations tied with the capacity of political institutions to fulfil these expectations. According to Blackburn and Pelling (2018), a social contract needs to be perceived as legitimate by those involved. In the case of community climate change response, the public expects those governing institutions – local governments, in particular – will act on climate change, while local governments encourage behaviours amongst residents that are conducive to climate change response (Adger et al., 2018). As a means of legitimising a governing authority, social contract theory (O'Brien et al., 2009) stipulates that human behaviour be regulated by mutually beneficial agreements, where obligations are made for accepting certain conditions. A social contractis one way of clarifying community expectations surrounding climate change response (Blackburn & Pelling, 2018).

A social contract that outlines the responsibilities of citizens and local government will likely impact how community response to climate change is implemented (Adger et al., 2018; O'Brien et al., 2009; Ogentho et al, 2021). Whether intentional or not, however there is an absence of clear accountability mechanisms overseeing climate action (Howlett, 2014). Bache et al. (2015) explored this concept in an investigation of emissions reporting of transport policy in four UK cities. A theoretical framework on accountability devised by the authors was used to assess the policies, which comprisesa balance of organisational processes versus political *blame-shifting*. Significant gaps were found in local government attempts to embed climate change processes within organisations and delivering on national emissions targets, and there was very little incentive for local authorities to act. Hickey and King (2016) state that a deeper understanding of the mechanisms that shape local decision-making is required in the social contract between citizens and local government. Furthermore, citizens demand accountability from public institutions on climate action though there are few incentives to act because of existing political structures.

Gray (1992) argues that the community has a right to information about environmental actions that influence society through the process of accountability. It is not enough to simply say that local government manages climate change at a community level, and MacDonald (2014) highlights the importance in asking questions, such as responsible *for what*, *to whom* and *through what means*. To that end, accountability is a concept that emphasises clarity, transparency, and collaboration (Schillemans, 2015; Chatzivgeri et al., 2020) and can be useful in generating policy fulfilment and governmental change (Bovens, 2010). Effective accountability is essential for a responsive and responsible government to be answerable on climate change, whether it is at the federal, state, or local tiers of government (Bovens et al., 2014; Brunelli et al, 2021). However, accountability for climate change remains an enigmatic concept, and Hoffman (2016) proposes further empirical enquiry that articulates the measures and dynamics of accountability in its many guises.

2.3 The importance and challenges of accountability

Accountability is important for several reasons. From a democratic perspective, accountability offers a forum for citizens to control those holding public office – which can be achieved through government elections. Constitutionally, being held to account also refers to the checks and balances such as an independent judicial power to remedy corrupt government (Bovens et al., 2014). Accountability gives a means of moderating absolute political power (Gray, 1992), builds legitimacy in complex situations (Black, 2008), qualifies certain behaviours within government (Bovens, 2007), and ensures that public resources are utilised to meet public policy outcomes (Jarvis, 2014).

Bovens et al. (2014) summarise accountability as the relationship between parties who owe account and those to whom it is owed, and it is investigated retrospectively. Though there is a multitude of accountability arrangements, the one that is most closely aligned to this thesis, however, is public accountability – transparent account giving within the public domain for matters of public interest (Bovens et al., 2014). This is because the research problem focused on the processes that relate to accountability within local government.

Bovens (2007; 2010) describes accountability in a narrow sense as the relationship between an actor and a forum whereby the actor is expected to be answerable to the forum (Greco et al, 2015). Public officials in government – the actors – are answerable to the public – the forum – whereby public officials are obligated to inform and justify their activities to the public. Accountability involves a justification of actions on the part of the actor and enforcement of certain rules of conduct by the forum. Negative sanctions are then imposed by external forces on public officials who violate certain rules of conduct.

To be held to account is to also be subjected to external scrutiny by stakeholders. This involves either a subjective or objective evaluation from an external party in responding to the contributions of other individuals to a consequence (Bergsteiner & Avery, 2010). The social exchange that exists between the actor and forum during the justification and enforcement of

behaviours is critical to the concept of accountability. In this sense, accountability is a dialectical activity and is essential for a democratic society to function though this relationship is unequal as public officials have more power than private citizens (Bovens et al., 2014). It is through this dialogue that members of public office can answer, explain, and justify its behaviours through the questions and assessments of those holding them to account (Mulgan, 2000). This relationship is essential for accountability, as it enables open discussion of political accounts within a context of shared beliefs and values.

In broad terms, accountability involves the responsibility of taking certain actions and providing an account of those actions, and, while it predominantly falls under the realm of monetary accounting, it is by no means limited to financial accountability (Gray et al, 1996). Accountability refers to how rights and responsibilities are divided, provides an outline for conversations about liability and compensation, and highlights procedural deficits (Gupta & van Asselt, 2019). Accountability, a concept that is both vague (Goddard, 2005) and expansive (Mulgan, 2000), contains two key elements. Firstly, accountability is the relationship between those who owe account and those to whom it is owed (Bovens et al., 2014). Accountability involves a justification of actions on the part of the actor and enforcement of certain rules of conduct by the forum. Negative sanctions are then imposed by external forces on public officials who violate certain rules of conduct. The second key element in determining accountability are the contextual factors or mechanisms that define these relationships (Akpanuko & Asogwa, 2013; Lerner & Tetlock, 1999). Underpinning both elements is the provision of information used as evidence of accountability (Brandsma & Schillemans, 2012).

2.3.1 Accountability mechanisms

In a public sector context, accountability mechanisms are the institutional arrangements that hold public officials to account in the policymaking process (Hong, 2017).An accountability evaluative framework has been proposed by Mulgan (2003) in answering the following questions: *who* is accountable to *whom*; for *what*, by *which* standards, and *why*? In showing who is

accountable to whom, Mulgan (2003) states that this will depend on the organisational structure and the number of forums. For instance: the who can be decided corporately – an entire organisation is a legal entity to give an account; collectively – all members within an organisation must provide an account; hierarchically – the head of the organisation (e.g., CEO) must provide an account; or individually – singular people are held to account for their separate contributions. Multiple forums or stakeholders define the whom within public administration, which changes depending on the type of accountability. Bovens (2007) cites several types of accountability: politically – the forum of voters, political parties and the media provide an account; bureaucratically – the forum of managerial superiors along the organisational chain of command provides an account to less senior representatives; administratively – independent, external forums, such as financial ombudsmen and auditors, provide an account; legally – the forum of judges, courts, and prosecutors provide an account; professionally – the forum of professional bodies provide an account; and socially – interest groups and affected third parties is the forum that provides an account.

Next, Mulgan (2003) asks to define what is to be held to account, and by what standards. For example, financial accountability is the dominant research area in the accounting discipline and is guided by relevant rules and processes. The final question that Mulgan asks is *why* the actor should provide an account, where three reasons are proposed. First, – the forum exercises its power on the actor to provide an account (e.g., a disciplinary hearing or law enforced) mandatorily. Second, ;there is no formal obligation to provide an account, but the actor does so voluntarily (e.g., altruism). Lastly, the actor is compelled to provide an account by authorities (e.g., ombudsmen) that report to more senior public officials, but is not mandated.

Determining the *who* and *whom*, the *what*, the *standards*, and the *why* are necessary research questions in moving forward an understanding of the accountability mechanisms in community climate response. The *what* focuses on local government climate change response, which has been a challenging question to answer as earlier research has noted the variability of

standards in which sustainability issues have been measured and reported (Milne & Grubnic, 2011; Gibassier and Alcouffe,2018). However, this may reflect policy inconsistencies and the types of processes surrounding implementation within the public sector. According to Puroila, and Mäkelä (2019) social and environmental information that is currently used in accounting and reporting practices is inconsistent and may not consider the social and political contexts.

Olsen (2013) states that accountability can be achieved when there are clear role expectations, established behavioural norms, availability of resources allowing prescribed behaviours, compliance through external controls, reciprocal communicative action, and separation between checks and balances and established power structures. However, as the author asserts, these are aspirational processes, noting that further research should address how these processes exist in unfamiliar situations. Traditional accountability mechanisms thus far have tended to focus on financial outcomes and emissions targets, whilst omitting other aspects of climate change response, including adaptation and mitigation, as well as environmental and social capital (Hudaya et al, 2015; Milne & Grubnic, 2011; Puroila, and Mäkelä, 2019).

2.3.2   Types of accountability

Empirical interest in public accountability has proliferated in recent years as policy creation and implementation grow in complexity in governments worldwide (de Fine Licht, 2020). Consequently, difficulties arise with holding those responsible to account in public administration settings on climate change response (Basak & van der Werf, 2019). The hierarchical structure within public administration is the most common mechanism of accountability, in which democratically chosen representatives give account to senior ministers, who then report to more senior ministers and so on – the chain of delegation (Brandsma & Adriaensen, 2017). Hierarchical control is a distinct mechanism of accountability due to the authoritarian relationship between superior and subordinate, and, depending on who the accountable actor is, the types of mechanisms vary, for example, formal performance measurement appraisals, scrutiny of management actions by legislative committees, or votes of confidence in the government. Each

one of these examples is a formalised method with which an actor is held to account, and some mechanisms are more effective within the public sector (Bovens et al., 2014).

Hierarchical accountability can also be problematic, however, when an institution is too large and suffers from 'many hands' and the process of accountability becomes delegitimised (Black, 2008). According to Thompson (2014), the problem of many hands in a public administration context refers to the diffusion of responsibilities in large organisations in which a multitude of individuals contribute to decisions and policy implementation. Thomson argues this can be overcome by greater attention to the design of organisational processes that cultivate responsibilities. The diffusion of responsibilities in hierarchical institutions can hinder effective policy implementation (Bache et al., 2015).

Accountability relies on the accuracy of the information, but also on how this information is filtered – through collaboration and discussions (Sorenson, 2012). Brandsma and Schillemans (2014) noted that previous research on public accountability has focused mainly on the exchange of information and sanctions of accountability, and seldom focused on the discussions between parties. The authors argue that discussions are important as accountability relationships are strengthened as a result and processes are more likely to be embedded. According to Masiero et al. (2019), scholarly understanding of accountability may be enhanced by examining the role of how information is shared and communicated.

Determining who or what should be held to account is a highly subjective phenomenon, where considerations of the social context (Gray et al., 1996) and ideological beliefs (Tetlock et al, 2013) are integral in the attribution of accountability. Bovens (2007) states that standards of accountability vary considerably in different situations, where 'fair behaviour' in one situation might not be considered 'fair' in another situation. The desire to conform to societal standards will influence the degree to which an actor will justify one's decision, actions, or judgements. Contextual factors, therefore, are important in delineating what it means to be accountable (MacDonald, 2014; Parker, 2008).

2.3.3   Climate action in local government: An accountability perspective

Decision-makers have an obligation to justify and explain their actions on climate change to members of the public (Brunelli et al., 2021). Accountability on climate action is problematic due to the uncertainties surrounding how carbon emissions are estimated and the lack of clearly defined terminology (Ahmad & Hossain, 2019; Milne & Grubnic, 2011). Kuruppu et al. (2019) explored the legitimacy of environmental reporting in a case study of a single New Zealand multinational organisation. The case study was based on interviews with 26 staff, including senior leadership and operations, and an analysis of the annual reports. The analysis identified that environmental issues that were more publicly visible were reported on in more depth in external documents to manage stakeholder perceptions. While it is important for organisations to be seen to be perceived to be responding actively in the environmental space (Gibassier & Alcouffe, 2018), the validity of the data used in reporting on environmental performance is questionable (Russell et al, 2017) as *environmental performance* is not clearly defined. Further, it is unclear as to how reporting on and measuring environmental performance adequately responds to climate change impacts.

Like the private sector, local governments have also started to increase their reporting of environmental performance (Chou, 2020). However, this tends to fall into the category of sustainability reporting and is not consistent across all government jurisdictions (Hossain, 2018; Sciulli, 2011). According to Niemann and Hoppe (2018), local government sustainability reporting is influenced by three factors. The first factor is context, and it considers the political system, availability of data, local political agenda, and reporting obligations. Content is the second factor, and it considers the reporting framework, format, scope, and length. The third factor is process characteristics, and it focuses on organisational involvement and political engagement. While there is overlap in reporting on both climate change and sustainability initiatives, a lack of conceptual clarity exists in what it means to account for climate change, particularly in a situation of political uncertainty and a lack of enforceability through legislative reporting.

Current methods of accountability are not conducive to addressing climate change response in local government settings. This is because there is a focus on monitoring, and subsequently enforcing existing functions and processes into existing organisational objectives that do not prioritise environmental objectives (Kramarz & Park, 2016). Gibassier and Alcouffe (2018) cite several factors that may contribute to this, including a narrow focus on capturing and measuring business transactions, reliance on numerical quantification, and short-term orientation. Climate change information that is reported by local governments is often limited (Albright et al., 2020; Hossain, 2018), and it is important to be seen to be 'doing something' even though the actions may be superficial. A hybrid approach to accountability – through integrating multiple disciplines and perspectives (Hestad et al, 2020) – may identify innovative approaches to how local governments are accountable for their response to climate change.

Combining both environmental and economic performance within accounting practices, however, has been suggested as a means of addressing these shortcomings (Gibassier & Alcouffe, 2018). Thomson et al. (2014) posit that to link environmental and accounting practices, local governments should embed sustainability and accounting practices into existing processes. Embedding environmental initiatives across organisations may be a way forward in determining climate change response in local governments (Khalid et al, 2019). Based on a review of the public administration literature, Zeemering (2018) proposes several solutions on integrating environmental objectives into local government practices. These include organisational wide collaboration, reviewing existing policies and plans, tailored communication, and senior management support.

While social and environmental accounting practices have the potential to adjust how organisations operate in terms of their environmental obligations, minimal change has occurred in recent decades and such practices are viewed to enhance *business as usual* activities rather than enacting long-lasting environmental change (Deegan, 2017). Gulluscio et al. (2020) conducted a systematic review of the accounting and accountability literature to identify current

research gaps on climate change accounting and reporting. The authors identified that traditional accounting approaches have often been used as a way of capturing and accounting for climate change strategies such as emissions as these are subjected to managerial control within organisations. However, there is an opportunity for future research to examine the decisions that lead to the implementation of climate change strategy, as well as integrating accountability and accounting with other disciplines.

The scant information about climate change focuses on emissions and sustainability reporting (Thomson et al., 2014), whilst ignoring other factors of adaptation and mitigation (Jude et al, 2017). The limited information that focuses on climate change in organisational reports has resulted in minimal response to climate change. For example, Tang & Demeritt, (2018) conducted a British study of mandatory carbon reporting and found that this practice did not result in a shift to increased sustainability practices as there were minimal financial incentives to do so. The concept of climate change response in local government requires conceptual clarity (Williams, 2015) and warrants a pluralistic discourse through the lens of social and environmental accounting research, particularly in the realm of what it means to be accountable for climate change (Lehman & Kurrupu, 2017).

The hybridisation of environmental or social objectives into existing management practises has been proposed as a method to address government obligations more clearly on climate change (Gherardi et al, 2021; Gibassier & Alcouffe, 2018; Hestad et al., 2020). According to Thomson et al. (2014), the integration of climate change response into existing accounting practices may also be furthered through interdisciplinary research. An analysis of emerging trends in environmental accounting research by Marrone et al. (2020) cited a need to broaden accounting research through cross-disciplinary contributions that pay closer attention to the human impacts on the environment.

2.3.4   Holding institutions to account through citizen actions

Involvement of the public and the wider community is necessary for several reasons: to achieve behavioural change through education, informing policy design through public knowledge and participation, and changing the systems through which greenhouse gas emissions are produced (Bulkeley & Newell, 2015). Insights detailing public responsiveness to governments and corporations can strengthen the accountability of public institutions, particularly through enhancing service delivery. For example, a critical analysis of social accountability of Zimbabwean local governments by Muchadenyika (2017) concluded that information dissemination, embedding of processes within organisations, and community capacity building were critical factors necessary for community engagement.

Marino and Presti (2019) argue that local governments involve citizens in the decisions that affect the community through meaningful dialogue and relationship building. This process is considered a key accountability mechanism (Kaur & Lodhia, 2018). Active civic involvement is necessary, particularly when governing institutions are unresponsive when it comes to i climate change (Fox, 2015). Hoff (2018) developed a conceptual framework to analyse citizen behaviours in climate change adaptation strategies whereby initiatives exist on a spectrum from partnerships, delegated responsibility to civil society driven initiatives in decision-making. This framework was then applied to an analysis of resiliency plans in the city of New York. A shift of responsibilities to citizens was not observed where planning was still controlled by the municipality. The analysis concluded that the adoption of new practices and processes is dampened by existing political-administrative systems. While the perceptions of fairness and government performance by citizens can influence the effectiveness of climate action, there are questions about how to incorporate citizen perceptions into local government decision making (Hügel & Davies, 2020)

Community collective climate actions involve the input of several stakeholders, including citizens and local government. Webber et al. (2017) postulate that greater input of citizens into local government decision making is necessary for managing environmental risks. For example,

Alonso et al. (2019) identified that higher levels of self-efficacy and civic engagements correlated with a greater likelihood of working with local councils on environmental initiatives. Following a systematic literature review of behavioural science research of accountability in public administration settings, Aleksovska et al. (2019) highlight how accountability mechanisms influence decision making and behaviour. These mechanisms are the involvement of citizens along a continuum of accountability: from the lowest level of participation, passive reception of information, to tokenistic involvement, advice, and collaboration, and finally to joint ownership between citizens and government. As local governments are expected to be accountable to their constituents, then, it is prudent for decision-makers to know how people behave and form attitudes concerning climate change (Adger et al., 2018; Bovens et al., 2014; Deslatte, 2019).

2.4   A psychological perspective on citizen climate change behaviours

Current climate change policy and research underemphasises the social attributes associated with individual and community climate change response, including symbolic and psychological factors (Adger et al., 2018). Previous research has established the significant role of social capital – the normative relations of trust, reciprocity and exchange in society that govern collective action – in adjusting to a changing climate (Adger, 2018). For instance, Bernauer et al. (2016) postulate that the collective involvement of citizens on social issues such as climate change can have an impact on the accountability of government institutions within different contexts. Notwithstanding, there is less evidence that can explain the role of social processes in ameliorating responses to climate change (Yamin et al, 2019).

To date, there is limited empirical evidence relating to the human dimensions of climate change strategy, such as psychological processes (Nielsen et al, 2021) and engagement (Bamberg et al, 2015). Psychological determinants of climate risk perception include a variety of factors, such as experience, emotional responses, norms, values, and knowledge (Van der Linden et al., 2015). The behaviours that follow climate change perception are influenced by different indicators (Lacasse, 2017). Previous research has examined the factors that contribute

to pro-environmental behaviours, including place attachment (Daryantoa & Song, 2021; Groshong et al, 2020), social media usage (Xu & Han, 2019), psychological barriers, including denial and morality (Dursun et al, 2019), optimism (Kaida & Kaida, 2019), and gender (Trelohan, 2021). Bamberg and Moser (2007) conducted an analysis of 57 samples within the existing environmental psychological literature between 1995 and 2006 and identified eight determinants of pro-environmental behaviour: problem awareness, internal attribution, social norm, feelings of guilt, perceived behavioural control, attitude, intention, and behaviour.

In a paper that reviewed three UK-based mixed method studies, Lorenzoni et al. (2007) outline environmental engagement as comprising three components: cognitive, affective, and behaviour. The authors state that simply being aware of climate change is not sufficient, where the individual is emotionally invested, motivated, and can act sustainably. In addition, several individual and social barriers currently exist that limit the degree to which people engage with climate change: diffusion of personal responsibility, fatalistic beliefs on climate change, lack of knowledge, and unwillingness to forgo certain standards of living. The authors conclude that these barriers are likely to be ongoing unless there are changes in policy and governance structure; they also emphasise the importance of tailoring messages to slowly shift public discourse on issues related to climate change. Citizen engagement with climate change is multifaceted, and more detailed research of the underlying factors is required, particularly within the context that surrounds individual response to climate change (Nielsen et al., 2021; Webber et al., 2017).

Much of the extant psychological literature focusing on determinants of pro-environmental attitudes and behaviour have examined factors that influence individual-level behaviour. However, Bamberg et al. (2015) report limited evidence with regards to the structural conditions and social context that shape such attitudes and behaviour toward collective action. Individual responses to climate change are personally experienced but collectively organised, and psychological resources such as resilience, mentalisation and hope can influence the degree to which a person behaves in response to the threat of climate change (Andrews & Hoggett, 2019).

An effective response to climate change requires collective actions – the process of forgoing short-term material benefits in favour of joint outcomes (Lacroix & Gifford, 2018; Ostrom, 2010). Within local communities, collective actions provide a sense of agency amongst citizens (Karlsson & Hovelsrud, 2015) and can determine citizen relationships with governing institutions (Smith & Mayer, 2018). Collective action is necessary for society to adjust to changing climate, where both individual behavioural change and system-wide transformations are required (Bamberg et al, 2015). The collective response required for climate change depends on how a person recognises the value of their contributions to the greater good and the extent to which beliefs are shared amongst groups of people (Atkinson et al, 2017; Bandura, 2000; Niemiec et al 2020; Ostrom, 2016; Pesci et al, 2020).

The political context around collective actions is important when examining how citizens and governments intersect, such that the citizen-government relationship is more important for public policy, and the citizen-citizen relationship is relevant to environmental behaviours and participation (Scott & Moloney, 2021). Kythreotis et al. (2019) propose an avenue of research through the integration of citizen participation and climate change policymaking. The authors suggest a more *inclusive* model of climate policy that focuses on the processes that enable localised citizen agency whereby citizens offer solutions and make decisions. The dynamics of these relationships are critical in developing solutions that benefit from collective actions though further empirical enquiry is required (Ostrom, 2016). Reciprocity is a hallmark of collective actions (Ostrom, 2003), that is, the government expects certain behaviour from citizens and citizens expect governments to intervene (Adger et al., 2018). Further, how citizens perceive these interventions (i.e., whether they are considered fair) may also influence the type of collective actions undertaken by citizens about climate change response.

From a psychological perspective, individual intention to engage in collective actions has been studied through an examination of personality and social norms. However, these social-psychological models of collective action have not examined sufficiently the role of individual

motivations (Sweetman & Marsh, 2016). Further, existing models of collective actions have seldom considered the contextual factors that shape behaviour. Bamberg et al. (2018) postulate that collective actions which result in successful environmental change (e.g., a grassroots campaign) depends on several psychological factors. Accordingly, successful collective actions may also result in individual empowerment. Several psychological and contextual factors contribute to collective actions, and three psychological theories are key to explaining this in more detail: human agency theory, social identity theory, and protection motivation theory. An explanation of why each of these theories is important is provided.

2.4.1 Human agency

According to Bandura (2000), collective action is a combination of individuals who recognise the value of their actions and the shared belief that a group can act. Human agency is a concept that recognises human functioning as a product of three determinants: individual perception, the behaviour an individual engages in, and the environmental forces that encroach on an individual's perceptions and behaviours. Derived from social cognitive theory, human agency typifies perceived self-efficacy within the broader social context (Bandura, 2018).

Human agency is particularly pertinent for unpacking how individuals and society can respond to environmental changes (O'Brien et al., 2009; Ogentho et al., 2021). According to this theory, humans do not have direct control over the institutional practices that affect their lives, and governments also have a role in providing the conditions for localised action on climate change. This is not to absolve the individual of personal responsibilities, however, but it acknowledges that human behaviour is a part of a complex overarching system. Accordingly, human agency underpins much of what constitutes collective action, and there is a greater need to identify how and why individuals act in response to climate change within the confines of their social structure (Atkinson et al, 2017).

2.4.2   Social identity

Perceived collective self-efficacy is reliant not only on individual perception but also on how the individual shares beliefs with other group members (Bandura, 2000). This is particularly important in the realm of climate change response, where identification with a particular social group can impact our environmental attitudes and behaviour. Viewed through the prism of the social identity approach, a person may engage in environmental behaviours that are reflective of the norms of a particular social group with which the individual identifies. Social identity theory purports that group membership is a subjective belief structure and that it influences an individual's self-concept (Trepte & Loy, 2017). The individual will tend to make intergroup comparisons between the perceived *in-group* and *out-group* (Fielding & Hornsey, 2016). Thus, the social norms of the perceived in-group will affect an individual's self-image.

Social norms were effective in fostering pro-environmental behaviour in earlier research when examined with other psychological factors (Yamin et al., 2019). For example, in a Swiss study by Terrier and Marfaing (2015), the framing of normative messages to reuse bath towels, such as "75% of guests reuse their towels", resulted in hotel guests being more likely to support the hotel's pro-environmental initiative. Buchanan and Russo (2015) examined the role of the sucker effect – the degree to which individuals experience motivation loss when they suspect capable others (e.g., large corporations) of not contributing to the environment – on people's willingness to engage in energy conservation behaviours. The authors conducted a correlational study and determined that participants' willingness to enact energy conservation behaviours was determined by an organisation's environmental responsibility, but not by its environmental actions. Perception of government environmental responsibilities was then manipulated – government taking environmental action or not acting – and it was found that a perceived shortfall in responsibility by the government increased participants' willingness to enact energy conservation behaviours. However, the effect sizes of these findings are only small and medium, suggesting that other factors may influence individual decisions to enact environmentally, apart from

perceptions of governmental responsibility. Caution needs to be taken when interpreting these findings because they are drawn from a self-reported convenience sample; nevertheless, the results highlight the interplay of perceived governmental responsibility and individual behaviours on climate change and suggest that both are interconnected.

Dwyer et al. (2015) investigated the influence of social norms and personal responsibility on a specific energy conservation behaviour (i.e., turning off a light switch) amongst university students in a quasi-experimental field study. Participants were more likely to turn the light switch off in a public bathroom when it was off when they entered the bathroom, while the presence of a confederate acting the light switching norm (i.e., either turning the light off or on) diminished participants' energy conservation behaviour; where personal responsibility – measured observationally by whether the participants switched the light off themselves – moderated this relationship. Replicating the findings from an earlier study, the authors concluded that the influence of norms on pro-environmental behaviour depends on the level of responsibility a person assumes for that behaviour, where even a slight change in an individual's environment can change behaviour in important ways. However, as noted by the authors of this study, there may have been several plausible explanations as to why the participants turned the light switch off, regardless of the manipulated conditions. Also, other underlying behaviours may have influenced the pro-environmental behaviour, other than personal responsibility, which may not have been considered in these results.

Social identity theory has been used to analyse environmental behaviours in several contexts at a micro level, but also at a macro level. For example, social identity theory was applied in examining the socio-political issues involved with environmental and natural resource management (Colvin et al, 2015). Although research thus far has generated useful insights into individual behaviours, there is a need for an empirical enquiry involving social identity theory in the context of community climate actions (Fielding et al, 2014).

2.4.3   Protection motivation theory

Collective action is further shaped by individual perceptions and motivations, which has been researched in examining environmental behaviours. For example, perceptions of local vulnerabilities to climate risk are an important factor in the adoption of climate change policies (Wiest et al, 2015). Protection motivation theory is a useful framework to explain pro-environmental behaviour and has been examined in predicting pro-environmental behaviours in the context of gradual onset risks such as climate change (Keshavarz & Karami, 2016; Shafiei & Maleksaeidi, 2020). Originally developed to study the behavioural change in health-related risks, protection motivation theory stipulates that when faced with a threat, people make a threat appraisal (i.e., if the threat is high, people will be motivated to protect themselves from a threat) and a coping appraisal (i.e., people will assess their capability to act). In short, people that sense a harmful event coupled with the belief that they can cope with the event are more likely to engage in protective behaviours (Rogers, 1975).

Research has previously examined the utility of protection motivation theory in several contexts, such as public support and attribution of responsibility for climate policies (Lam, 2015; Yang et al, 2015). Bockarjova and Steg (2014) applied protection motivation theory in explaining the adoption of electric vehicles in the Netherlands, concluding that participants were more likely to adopt an electric vehicle when the perceived environmental risk was higher. More recently, Tchetchika et al. (2021) examined the threat appraisal and coping appraisal of the recycling behaviour of Israeli citizens during the COVID-19 lockdown. The results of the survey reflect previous studies, suggesting that the lockdown heightened threat appraisal but the likelihood of recycling behaviours was offset by coping appraisal. There is a need, however, to examine protection motivation theory with other variables, such as identity within the context of pro-environmental behaviour (Kothe et al, 2019). This theory is relevant as the focus is on people's underlying motivations to act on climate change, which has only seldom been empirically investigated.

2.5   Community collective climate actions

According to Ogentho et al. (2021) communities are the link between individual behaviour and accountability in the context of local government. Collective actions involve all members of a community working toward a common good; however, several barriers exist, including existing market forces, economic stability, and short-term individual self-interest (Pesci et al., 2020). Despite these challenges, scholars argue that a collective response is required to deal with the effects of climate change (Ostrom, 2010). Current research would benefit from unique insights on how and why people engage collectively (Albareda & Sison, 2020). This is particularly prudent with collective actions that are undertaken at the grassroots level, in which local governments are responsible for a range of assets and services and support community engagement (Reyes-Garcia et al., 2016; van den Berg & Coenan, 2012). Community collective climate actions refer to the grassroots actions of communities, including individuals and local institutions.

There is a growing body of research advocating for the inclusion of citizens' perceptions of organisational performance in public administration settings (Grimmelikhuijsen et al., 2015). As local governments are expected to be accountable to their constituents, then, it is prudent for decision-makers to know how people behave and form attitudes about climate change. A recent report by the OECD highlights the use of behavioural insights to guide effective environmental policy design and implementation; where such behavioural interventions include implication and framing of information, changes to the physical environment, and the use of social norms and comparisons to adjust people's energy and water conversation (OECD, 2014). Community participation and individual perceptions are important measures of accountability (Quinlivan et al 2014) though previous research has yet to focus on this in the context of climate change. There are questions about how citizens should be involved, and research needs to examine the role of the community in climate change policy implementation (Williams et al, 2020).

Local councils are required to engage with residents on issues that affect the community (*Local Government Act 2020*, Victoria). However, challenges exist for local governments to

involve community members in any meaningful way (Johnston, 2010). Stewart and Lithgow (2015) examined three government-sponsored initiatives in Canberra, Australia. The authors examined the processes that enabled citizen input into development projects by interviewing stakeholders and analysing documents. The results suggest that only minimal community participation was observed, and this was when representatives would engage with residents when there had been demonstrated procedural errors.

Theoretically, community collective climate actions refer to the interplay of individual behaviours and local government accountability processes. Marino and Presti (2019) conducted a systematic literature review on civic engagement and found that this phenomenon is a multidimensional construct that is interdisciplinary whereby civic engagement incorporates the relationships of public organisations with their social stakeholders. The authors determined that public managers must engage with citizens in a meaningful way through greater consideration of the social context. Community collective climate actions were viewed as an amalgamation of collective action tendencies amongst individual citizens and the perspectives of local council employees through an accountability lens.

2.5.1   An interdisciplinary approach to community collective climate action

According to O'Brien et al. (2009), considerations of human agency are necessary in contextualising the social contract of climate change response. Further, the multiple perspectives generated through interdisciplinary research may generate insights to solve complex public policy issues (Head, 2019). A psychological perspective can focus on the human responses to climate change (i.e., engagement behaviours and underlying motivations), as well as identifying links between these aspects of climate change and the related responses and processes (Nielsen et al., 2021). Further, Clayton et al. (2016) have highlighted a need for psychological research to employ a contextualised approach, rather than the traditional theory-based. By examining the transactions between an individual's psychological processes and their social setting, researchers can apply existing psychological constructs and theories to specific environmental concerns.

Limited empirical research has examined how individual attitudes and behaviours contextualise understanding of accountability in the public-sector (Aleksovska et al., 2019; Grimmelikhuijsen et al., 2015). Behavioural insights from psychological research may also contribute to a deeper understanding of accountability and organisational performance (Marrone et al., 2020; Kácha & Ruggeri, 2019; Quinlivan et al., 2014). Comparatively, accountability research may contextualise findings from psychological research on community-based climate interventions (Zucker & Schilke, 2019). A recent study by Ogentho et al. (2021) examined the relationship between individual behaviour, community bonding, and local government accountability. A cross-sectional and quantitative research survey design was employed based on 511 citizens from four local government areas. The results found that social capital mediated the relationship between citizens' behaviour and accountability in local governments. Although this study highlighted the important role of social ties in holding institutions to account, the generalisability of the findings were limited due to the accountability arrangements were only contextually relevant to the local government areas studied.

Although the levels of analysis are different, there is alignment among these concepts. Local government accountability has been examined through the lens of social contracts; the human agency can also be applied to how local governments are held to account. For instance, citizen perceptions not only drive human agency but are also a mechanism of accountability in overseeing local government climate change response. Further, a key tenet of accountability is answerability whereby local governments are answerable to the citizens who elect their representatives (Ebdon, 2002; Olazabal et al., 2018). The social-psychological processes related to community collective climate actions are also intuitively linked with social contracts whereby the social contract between citizens and government help shape the norms that guide human behaviour (e.g., a community of pro-environmental citizens with explicit behaviours). Further, human agency can dictate the degree to which organisational actors are accountable (e.g., demonstrated by accountable leadership or stakeholder engagement (Hall et al., 2015; Ogentho

et al., 2020)). Figure 3 provides an overview of the main concepts described in the literature review and the associated conceptual links aligned with community collective climate actions.

Figure 3.
Conceptual definitions and associations

Social contracts

- Clear responsibilities of participating actors are articulated.
- Information must be transparent
- Sanctions are imposed if rules are violated.

- Perceived level of individual responsibility will influence individual environmental actions.
- Individual behaviours are influenced by social contracts/norms.
- Individuals behave in socially approved ways.

Public accountability

Social-psychological processes

- The types of decisions made will be influenced by the individual perceptions of leaders.
- Stakeholder relationships formed internally and externally to an organisation will influence the types of decisions made.

- Individual perception influences how the threat of climate change is appraised.
- Social norms influence how an individual respond to climate risks.
- Pro-environmental behaviours are influenced by threat appraisals, collective efficacy and social norms.

Human agency

2.5.2 Community collective climate actions as a multilevel phenomenon

Ostrom (2010) recognises that multilevel research will assist citizens and public officials to articulate responsibilities and, in turn, will develop solutions. Communities are inextricably linked to national and global issues, and there is a need to examine the interplay of institutions across different levels (Charli-Joseph et a, 2018). There is an argument for the necessity of a multilevel analysis to address the complexities surrounding climate change, and this has been examined through the analysis of multilevel governance (Fidelman et al, 2013). To date, however, the implementation of climate change strategy amongst stakeholders at different levels is minimal (Essl & Mauerhofer, 2018; Nilsson et al, 2012) and poorly understood (DeMarrais & Earle, 2017; McLaughlin & Dietz, 2008; Otto et al., 2020).

A conceptual paper by Slawinksi et al. (2017) draws on concepts from psychological, sociological, and organisational theories and proposes that organisational inaction toward climate change is a result of short-termism and uncertainty avoidance at three levels (i.e., micro, meso and macro). Focusing on corporate sustainability, the authors emphasise that in addition to inaction at each level, the interactions between the different levels further reinforce stagnant change. The authors conclude that inaction will be overcome when the often taken for granted behaviours will be challenged within and between each level of society. There is a lack of conceptual clarity from researchers on terms used, nor are there any multi-disciplinary conceptual frameworks that examine climate change response regarding the human and social dimensions in local contexts (McDowell et al, 2016; Ostrom, 2010; Räsänen et al., 2016).

As shown in Figure 4, community collective climate actions exist through citizen behaviours, which can supply oversight to local governments (Ebdon, 2002; Goetz & Jenkins, 2001; Pandeya, & Oyama, 2019). Further, Bernauer et al. (2016) postulate that the collective involvement of citizens on social issues, such as climate change, can have an impact on the accountability of government institutions within different contexts. Local governments have an important role in overseeing community-based climate change responses that consider the local context, and successful grassroots interventions are strengthened through effective accountability mechanisms that consider the inherent complexity of managing the impacts of climate change (Fischer, 2021). Involvement of the public and the wider community is necessary for several reasons: to achieve behavioural change through education, informing policy design through public knowledge and participation, and changing the systems through which greenhouse gas emissions are produced. Citizen action is necessary (Gaventa & Barrett, 2012), particularly when governing institutions are unresponsive when it comes to issues like climate change (Fox, 2015).

Figure 4.
Multilevel conceptual framework
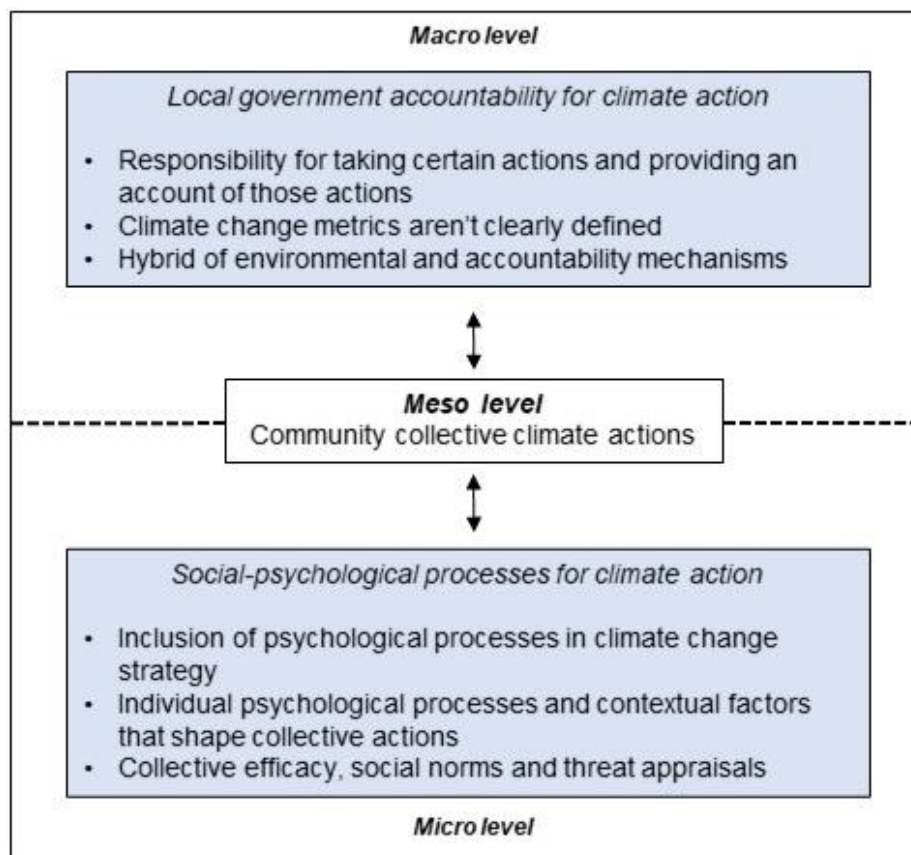
The overarching research question asked, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Limited research currently exists in identifying accountability within local government response to climate change, especially within the context of collective actions and with the inclusion of social psychological theories. Undertaking multidisciplinary research offers an insight into community collective climate actions and could contribute to a deeper understanding of the nexus of accountability and psychological research (Gray, 2010; O'Dwyer & Unerman, 2014, Thomson et al., 2014).

2.6   Chapter summary

The primary purpose of Chapter 2 was to lay the theoretical groundwork of community collective climate actions as a multilevel phenomenon. A social contract exists between local government and its citizens concerning climate change response within communities whereby a mutually agreed arrangement exists. The accountability literature was reviewed to identify the mechanisms that shape local decision-making about this social contract. Underpinning this social contract is the role of human agency, that is, the individual processes and behaviour that may lead to collective climate actions. This was explored through social-psychological theories and was achieved by a review of the psychological literature. An interdisciplinary approach to community climate actions as a multilevel phenomenon was then presented. The literature review identified several avenues for investigation. The empirical evidence to support the theoretical model and offer propositions of how the concepts are linked is developed in Chapter 3.

Chapter 3   Systematic Literature Review

3.1   Chapter overview

In the previous chapter, a review of the accountability and psychological literature was conducted to conceptualise community collective climate actions as a multilevel phenomenon. The focus of the current chapter is to build upon the theoretical groundwork developed in Chapter 2 and to appraise the evidence through the process of a systematic literature review (Tranfield et al, 2003). Three specific research questions guided the systematic literature review. Articles were selected based on inclusion and exclusion criteria and were analysed using a critical appraisal tool (Parris & Peachey, 2015). Several themes were identified based on the analysis and conclusions were drawn, and the themes developed guided the formation of specific research propositions in Chapter 4.

3.2   Rationale for a systematic literature review

The purpose of conducting this systematic literature review was to identify research and to assess this research for replicability in terms of the evidence presented and transparency of design. The main research question asked, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Parris and Peachey (2013) recommend that the systematic literature review can assist to formulate a research agenda based on high quality empirical evidence.

The systematic literature review process originated in the health sciences and is increasingly being used in management research as a means of ensuring the literature used to produce knowledge is of a high standard while minimising researcher bias (Tranfield et al., 2003). This intention is achieved through analysing and identifying previous studies within the contemporary academic literature and follows a transparent and rigorous protocol that enables replication by other researchers (Massaro et al, 2016). There is also evidence of the application of the systematic approach within the accounting literature for scholars to create insightful and

publishable research and is referred to as a structured literature review (Jansen, 2018; Malviya & Kant, 2015).

The systematic literature review begins with the formulation of well-defined research questions. These research questions were distinct from the main research question of the thesis. Fisch and Block (2018) state that the most important part of the systematic literature review is the research question as this guides the review process. Three research questions were developed based on the literature presented in Chapter 2. Specifically, RQ1 relates to the literature on accountability and local government climate change response in Section 2.3. Secondly, RQ2 reflects the literature presented in Section 2.4. Lastly, RQ3 relates to how the literature on accountability in local governments and the socio-psychological responses to climate change intersect to explain based interventions. The research questions are listed as follows:

- RQ1. What empirical research exists in the literature that examines accountability within local government climate change response?

- RQ2. What empirical research exists that examines the social-psychological factors that influence community collective climate actions?

- RQ3. What empirical evidence links local government accountability and individual-psychological processes to explain collective actions in response to climate change?

3.3   The systematic literature review protocol

The protocol used in conducting a systematic review varies between disciplines. For instance, the preferred reporting items for systematic reviews and meta-analyses (Moher et al, 2009) technique is commonly used in medical research and involves the use of a flow diagram to describe search methods and a justification of which publications were included and excluded. The resulting articles are then analysed for pertinent information and categorised on how the articles answer specific questions. A scoping review is an emerging method of synthesising evidence and may serve as a precursor to a systematic literature review. The evidence reported

on may include the types of evidence and the way the research has been conducted in a particular field. The scoping review is based on a broader set of inclusion criteria than a traditional systematic literature review (Peters et al, 2015).

A systematic review in management research, however, may not contain a specific research question and may instead contain a conceptual discussion of a research problem. Tranfield et al. (2003) recommend that the systematic review in management research allows for greater flexibility concerning the protocol, so long as the steps involved are articulated clearly and transparently. According to Massaro et al. (2016), the protocol for a structured literature review in accounting research begins with the research questions, search parameters, total citation analysis, framework development, reliability, and validity testing, and concludes with the coding of information and insights drawn. A systematic review protocol has also been developed within environmental management research, beginning with the question formulation, and followed by developing a review protocol, selection of relevant data, quality assessment, data extraction and synthesis (Pullin & Stewart, 2007).

While variations exist in the approaches of a systematic review between disciplines, philosophical perspectives, or field of research, the underlying approach is similar along with the intention being to improve the standard of research (Durach et al, 2017). The systematic review commences with the research question and follows a process that includes the identification of research, inclusion and exclusion search parameters, selection of studies, quality assessment and analysing and reporting of the results. The systematic literature review presented uses the protocol developed by Tranfield et al. (2003). A flowchart is presented in Figure 5 outlining the protocol for the systematic review of the existing literature on community collective climate actions, local government accountability, and the socio-psychological processes of citizen behaviour.

Figure 5.
Flowchart of the systematic literature review process (Tranfield et al, 2003)

1: Identification of research

- Define a keyword search strategy and specify sources
- Determine search strings by grouping key terms into groups

2: Selection of primary studies

- Specify article inclusion and exclusion criteria
- Remove duplicate studies

3: Study quality assessment

- Filter away studies that are not thematically relevant
- Each study is judged against a predetermined criteria and checklist

4: Data extraction

- Create a data extraction form containing pertinent information; including:
  - General details (i.e., title, author, publication details)
  - Study features (i.e., methods, results etc.)
  - Notes on emerging themes

5: Analysis of articles

- Summarise and integrate study findings
- Synthesis cumulative findings according to themes based on the research question

3.3.1   Identification of research

Keywords were identified based on the three research questions. Clusters of keywords were grouped according to research fields, all within the context of climate change response: 1) local government accountability, 2) group environmental actions and behaviours, and 3) collective actions. Berrang-Ford, Pearce, and Ford (2015) recommend that search strings, terms, and selection criteria are explicitly outlined. Different combinations of clusters were also searched using the Boolean search terms (i.e., combining search terms using quotations, parenthesis, and the operators *AND*, *OR*, and *NOT*), where this technique has been shown to return more relevant

articles than free text query in information retrieval (Aliyu, 2017). The keyword searches that were used are as follows:

- ("climate change" or environment*) AND (accountab* OR "local government")

- ("climate change" or environment*) AND (64erspectiv* or social or 64erspe*)

- ("climate change" or environment*) AND (accountab* OR "local government") AND (64erspectiv* or social or 64erspe*)

- ("climate change" or environment*) AND (accountab* OR "local government") AND ("community engagement" OR "collective action")

- ("climate change" or environment*) AND (64 erspectiv* or social or 64 erspe*) AND ("community engagement" OR "collective action")

- ("climate change" or environment*) AND (accountab* OR "local government") AND (64 erspectiv* or social or 64 erspe*) AND ("community engagement" OR "collective action")

The exploration of community collective climate actions that are both multitiered and from an interdisciplinary approach would be considered an emerging area in management research and requires broader parameters, which includes grey literature (e.g., conference proceedings, government, and industry reports) in addition to traditional academic journals (Massaro et al., 2016; Tranfield et al. 2013). As such, a greater emphasis was placed on selecting studies that were conceptually related to the research question. The articles were found by inputting the abovementioned search strings through the following sources from the author's library system: academic databases (e.g., Academic Search Premier, Scopus, Business Source Complete, Science Direct), international organizations (e.g., Organisation for Economic Co-operation and Development, World Bank), and government reports (e.g., reports from Commonwealth Scientific and Industrial Research Organisation and the three tiers of government).

3.3.2   Selection of studies

The criteria for the selection of articles was that they were required to be 1) peer-reviewed, 2) contain only primary data sources, 3) in the English language, and 4) include any combination of keywords in the abstract or title that relate to the research questions (see Section 3.2). Therefore, selected studies focused on either individual or combinations of local government accountability, psychosocial behaviours, community engagement, and collective actions as they related to climate change response. As the focus was on individual behaviours that contribute to collective outcomes, articles that focused on individual environmental behaviours were not included. This search was conducted in April 2021.

An initial result of 4,217 articles was identified through this search. During this stage, 965 duplicate articles were removed, and a further 66 articles were excluded that were published before 1988. The reason for excluding articles before this date was to reflect the establishment of the Intergovernmental Panel on Climate Change, which is an organisation that provides climate change information to guide policy development within governments (Styles, 2009). A further 3,122 articles were also removed that did not contain a reference to elements of the research question in the title, abstract or keywords (Massaro et al., 2016), which resulted in 64 remaining articles from 48 journals.

3.3.3   Quality assessment

Quality assessment was achieved by adopting the recommendations for internal, external, and construct validity by Massaro et al. (2016) and the critical appraisal tool developed by Parris and Peachey (2013). External validity of a systematic literature review focuses on the generalisability of the results based on theory and the source material and was assessed through comprehensive and precise reading of titles, abstracts, and full papers. Internal validity was ensured by stating a search period (i.e., any articles after 1988), as well as examining the number of citations per year (Massaro et al., 2016). As shown in Figure 5, the trend line suggests that the number of article citations has gradually increased.

Figure 5.
Number of publication citations per year and trend.
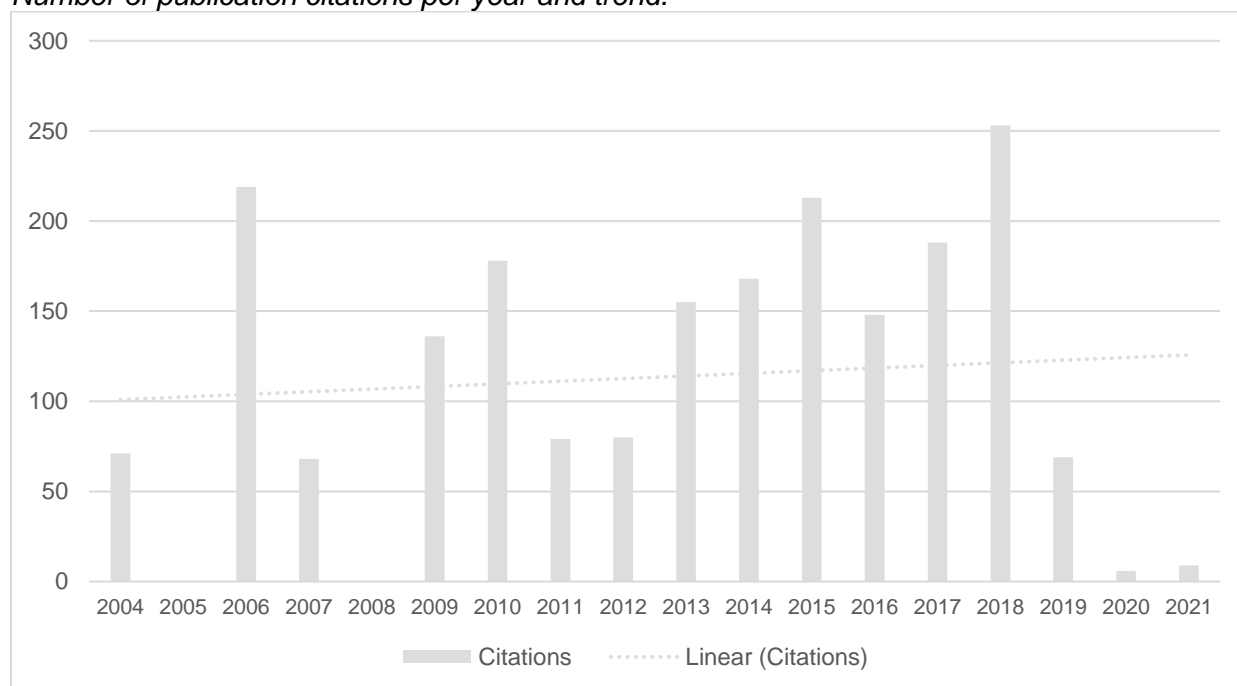
Construct validity was assessed by examining the scholarly impact of each journal. Petersen et al. (2017) assert that scholarly impact is important in screening for academic relevance and recognition in management and business journals. This was determined by the SCImago journal ranking, which is a score that is calculated by the average number of weighted citations in an academic journal in a year. The higher the ranking gained (i.e., Q1 is the highest, followed by Q2 and Q3) is an indication of academic prestige (SCImago, n.d.); and 81.25% of journals selected (*n* = 39) had a Q1 SCImago rank. The types of journals included those focused on environmental science (*n* = 7), sociology and political science (*n* = 6), geography, planning and development (*n* = 5), ecology (*n* = 3), atmospheric science (*n* = 2), social psychology (*n* = 2), public health, environmental and occupational health (*n* = 2), economics and econometrics (*n* = 2), and social sciences (*n* = 2). Two journals did not have a SCImago ranking and are indicated as such in Table 1.

Table 1

Database, journal title, and type included in the systematic literature review

Count	Database	Journal Title	Discipline	SCImago rank
1	Scopus	Accounting, Auditing and Accountability Journal	Accounting	Q1
1	MEDLINE	American Journal of Human Biology	Anthropology	Q1
1	Business Sources Complete	American Journal of Public Health	Public Health, Environmental and Occupational Health	Q1
1	Scopus	American Politics Research	Sociology and Political Science	Q1
1	Business Sources Complete	Asia Pacific Viewpoint	Geography, Planning and Development	Q1
1	Scopus	Annals of the American Association of Geographers	Geography, Planning and Development	Q1
1	Business Sources Complete	Australasian Accounting Business & Finance Journal	Business, Management and Accounting	Q2
1	MEDLINE	British Journal of Sociology	Sociology and Political Science	Q1
1	GreenFILE	Business Strategy and the Environment	Business and International Management	Q1
1	RePEc	Climate Policy (Earthscan)	Atmospheric Science	Q1
1	Science Direct	Climate Risk Management	Geography, Planning and Development	Q1
2	Scopus	Climatic Change	Atmospheric Science	Q1
2	Scopus	Ecology and Society	Ecology	Q1
1	Science Direct	Energy Policy	Energy (miscellaneous)	Q1
2	PsycINFO	Environment and Behavior	Environmental Science (miscellaneous)	Q1
1	Scopus	Environment, Development & Sustainability	Economics and Econometrics	Q2
1	Scopus	Environmental Communication	Environmental Science	Q1
1	Springer Nature Journals	Environmental management	Ecology	Q1
1	Scopus	Environmental Education Research	Education	Q1
1	Science Direct	Environmental Science & Policy	Geography, Planning and Development	Q1
2	Science Direct	European Journal of Social Psychology	Social Psychology	Q1
1	Business Source Complete	Global Business & Management Research	N/A	N/A
4	Science Direct	Global Environmental Change	Environmental Science	Q1
1	Business Source Complete	Global Environmental Politics	Environmental Science	Q1
1	Science Direct	Habitat International	Environmental Science	Q1
2	Scopus	International Journal of Climate Change Strategies and Management	Geography, Planning and Development	Q1
1	PsycINFO	Journal of Bioeconomics	Social Sciences	Q2

1	Scopus	International journal of environmental research and public health	Public Health, Environmental and Occupational Health	Q2
1	GreenFILE	International Journal of Environmental Studies	Ecology	Q3
5	PsycINFO	Journal of Environmental Psychology	Psychology	Q1
2	Business Source Complete	Journal of Risk Research	Social Sciences	Q1
1	Directory of Open Access Journals	Journal of Systemics, Cybernetics and Informatics	N/A	N/A
1	Scopus	Journal of Urban Health	Health (social science)	Q1
1	Scopus	Meditari Accountancy Research	Accounting	Q2
1	Scopus	Mitigation & Adaptation Strategies for Global Change	Environmental Science	Q1
1	JSTOR Journals	Organization & Environment	Environmental Science (miscellaneous)	Q1
1	Scopus	Plos Currents	Medicine (miscellaneous)	Q1
1	Scopus	PloS ONE	Agricultural and Biological Sciences (miscellaneous)	Q1
1	Business Source Complete	Policy Sciences	Public Administration	Q1
1	Springer Nature Journals	Political Behavior	Sociology and Political Science	Q1
1	Science Direct	Renewable and Sustainable Energy Reviews	Renewable Energy, Sustainability and the Environment	Q1
1	Scopus	Resources, Conservation & Recycling	Economics and Econometrics	Q1
1	Scopus	Risk Analysis	Safety, Risk, Reliability and Quality	Q1
1	Scopus	Rural Sociology	Sociology and Political Science	Q1
1	Springer Nature Journals	Sustainability Science	Sociology and Political Science	Q1
1	Scopus	Science Communication	Sociology and Political Science	Q1
1	Scopus	The Journal of Social Psychology	Social Psychology	Q2
1	Scopus	Topics in Cognitive Science	Artificial Intelligence	Q1

The systematic literature review was undertaken based on the set of critical appraisal tools adopted by Parris and Peachey (2013) to evaluate qualitative and quantitative research articles. Each article was then classified as high, medium, or low quality according to the criteria set out in Table 2.

Table 2

Classification and criteria for the assessment of the literature

Classification	Quantitative literature (QNT)	Qualitative literature (QAL)
High quality (I)	Clearly focused study, sufficient background provided, well planned, method appropriate, measures validated, applicable and adequate number of participants, data analysis sufficiently rigorous with adequate statistical methods, findings clearly stated.	The purpose stated clearly, relevant background literature reviewed, design appropriate, identified researcher's theoretical or philosophical perspective, relevant and well-described selection of participants and context, procedural rigour in data collection strategies and analysis, evidence of the four components of trustworthiness (credibility, transferability, dependability, and confirmability) results are comprehensive and well described.
Medium (II)	Study is somewhat focused, some background information is provided, method is presented but there is a lack of description of measures and participant details. Data analysis presented but lacking detail regarding the statistical methods employed. Findings are reported but lacking detail.	Study purpose contains adequate background information, some explanation of research design and philosophical perspective. Description of participants and data collection is adequately presented though some information is omitted including procedural rigour. The four components of trustworthiness are partially presented.
Low (III)	Not focused study, insufficient background provided, poorly planned, inappropriate method, invalidated measures, inapplicable and inadequate number of participants, data analysis insufficiently rigorous, within adequate statistical methods, unclear findings.	Vaguely formulated purpose, insufficient background, few or unsatisfactory descriptions of participants and context, trustworthiness inadequately addressed, lacks in description of data collection, data analysis, and results.

Source: Reproduced with permission from "A Systematic Literature Review of Servant Leadership Theory in Organizational Contexts", by D. L. Parris and J. W. Peachey, 2013, *Journal of Business Ethics*, *113*, p. 382. 2012 by "Springer Science+Business Media B.V".

The 64 articles were analysed using the quality assessment classification as described in Table 2. Twenty-five articles were qualitative, of which 16 articles were considered high quality and nine articles were medium quality. Thirty-nine articles were quantitative, 27 were high quality, and 12 were medium quality. In total, 67% ($n = 43$) of the articles were of high quality. A description

of the quality assessment of each article is presented in Appendix A, and the research methods, data analysis, population, study focus, and theory of each study is also presented.

3.3.4 Data extraction

Data extraction methods are employed in systematic reviews to minimise any potential researcher bias, and this includes documentation of all steps taken. Adopting the recommendations of Tranfield et al. (2003), a record of each article was made containing details of the information source (i.e., title, authors, journal, publication figures, SCImago rank, journal country of origin, database), abstract, the context of the study (i.e., research methods, data analysis, population), theoretical foundation, and findings (Appendix A). As shown in Table 3, the 64 selected articles were from 48 journals, involving 167 authors from 92 institutions. The largest article authorship originated from Europe, followed by North America and Oceania. Eighteen articles featured multiple authors from institutions across different countries, indicating cross-cultural collaboration. The population analysed in the articles selected predominately focused on individual behaviours (70.3%); the remainder focused on local government (14.1%) and community groups and stakeholders (15.6%). The research methods for over half of the selected articles employed a survey (59.4%), followed by the case study format (28.1%). Most selected articles (82.8%) made use of existing theoretical framework or models.

Table 3

Characteristics of the results of the systematic literature review

Category	Variables	Results	
Journals, authors, year	Journals	48	-
	Authors	167	-
	Institution	92	-
Location	Europe (including UK)	37	45.1%
	North America	21	25.6%
	Oceania (including Australia)	14	17.1%
	Asia	8	9.8%
	Africa	1	1.2%
	Central America	1	1.2%
	Total	*82*	*100%*
Population analysed	Micro level – individual behaviour	45	70.3%
	Macro level – local government	9	14.1%
	Meso level – community groups and stakeholders	10	15.6%
	Total	*64*	*100%*
Research Methods	Quantitative – survey	38	59.4%
	Qualitative – case study research (i.e., combination of interviews, content analysis, observation, focus groups)	18	28.1%
	Qualitative – interviews	5	7.8%
	Quantitative – experimental	2	3.1%
	Qualitative – content analysis	1	1.6%
	Mixed methods research (i.e., survey and interview)	1	1.6%
	Total	*64*	*100%*
Theoretical framework	Applies or considers previous framework-model	53	82.8%
	Proposes a new framework-model	2	3.1%
	No framework-model used	9	14.1%
	Total	*64*	*100%*

3.3.5 Analysis of articles

As recommended by Massaro et al. (2016), the selected articles were integrated conceptually to build new insights that contributed to the three research questions:

- RQ1. What empirical research exists in the literature that examines accountability within local government climate change response?

- RQ2. What empirical research exists that examines the social-psychological factors that influence community collective climate actions?

- RQ3. What empirical evidence links local government accountability and individual-psychological processes to explain collective actions in response to climate change?

A realistic synthesis approach (Tranfield, 2003) was employed to generate theoretical insights through capturing salient concepts that underpin each of the articles. The realistic synthesis approach is a theory-driven approach in which the underlying assumptions of an intervention are explicitly outlined. The process of a realistic synthesis approach begins with defining the scope of the review, followed by searching and appraising of evidence, then extracting and synthesising the findings, and finally conclusions are drawn (Rycroft-Malone et al, 2012). The salient concepts were drawn from each journal article concepts using both inductive (i.e., concepts were drawn out of the content of the articles) and deductive reasoning (i.e., existing literature guided the interpretation of the articles) (Armat et al., 2018). For example, the article by Bhattacharyya, Biswas and Moyeen (2020) entitled "Determinants of Pro-environmental Behaviours – A Cross Country Study of Would-be Managers" was classified as high-quality quantitative literature (i.e., QNT I) using the criteria in Table 2 (Parris & Peachey, 2013, p. 82). The authors articulated the theoretical foundation of the study and described the validity of the measures. The analysis of results comprehensively described the steps of the structural equation modelling, and findings were clearly expressed. The content of the article was analysed through inductive and deductive reasoning. This article focused on concepts that were relevant at the macro level (i.e., leadership), micro level (i.e., determinants of pro-environmental behaviours) and meso levels (i.e., citizen engagement). Table 4 articulates how inductive and deductive reasoning was used to analyse this article.

Table 4
Examples of deductive and inductive approaches when analysing journal articles

Determinants of Pro-environmental Behaviours – A Cross Country Study of Would-be Managers (Bhattacharyya, Biswas and Moyeen, 2020)	
Macro level	*Conceptual theme*
One of the mechanisms of accountability within local government climate change adaptation initiatives was the ability of the leader to demonstrate political acumen and develop relationships with stakeholders (Mees & Driessen).	Accountable leadership

Personal adoption of pro-environmental behaviours may enhance decision-making that prioritises climate change.	
Micro level	*Conceptual theme*
The pro-environmental behaviour of would-be managers was predicted by their values, moral obligation, attitudes, and subjective norms.	Predictors of environmental intentions
Meso level	*Conceptual theme*
The role of local government leaders is to cultivate trust and cooperation with the community whilst promoting climate change response.	Citizen engagement

3.4   Results

RQ1. What empirical research using primary data focuses on climate change and local government accountability?

Eighteen articles had a macro-level focus, of which 12 were classified as high-quality (Parris & Peachey, 2013). All articles adopted a qualitative research method. The articles analysed different elements of local government response to climate change, focusing on accountability mechanisms, decision-making, and community engagement. These articles were produced by 28 authors from 18 institutions and from different countries, with the majority from Australia (*n* = 6), UK (*n* = 3), Germany (*n* = 3), Netherlands (*n* = 2), and USA (*n* = 2). Qualitative research techniques were employed in all articles, of which 13 adopted a case study approach. Thirteen articles contained a theoretical framework, including multi-level governance (Bates et al., 2013; Hauge et al., 2019; Zengerling, 2018) and institutional theory (Bergsma et al., 2012; Ferdous et al., 2019), while five articles did not contain a framework. Although the majority of articles focused upon were from Australian research institutions, none of the included articles explicitly examined the mechanisms of accountability in a Victorian local government context.

Five themes were uncovered from these articles and reflect concepts derived in accountability research. *Embedding process* referred to the notion that climate change response within local government is more effective when it is integrated into business-as-usual activities – a concept that has been empirically addressed previously (Gibassier & Alcouffe, 2018; Thomson et al., 2014; Zengerling, 2018). *Accountable leadership* represents the shared findings of five

articles that emphasise the importance of leadership and is postulated as a mechanism of accountability. *Citizens as account holders* refers to the concept that local government initiatives to involve citizens are not only essential in facilitating trust and cooperation but are also important in empowering citizens to change behaviours. This concept is derived from one of the core components of public accountability in a democratic society (Mulgan, 2003). The themes entitled *institutional barriers* and *measurable and clear information* reflect findings in previous climate change research in local government populations (Nalau et al, 2015). *Institutional barriers* refers to the lack of clarity with regards to the sharing of information, role responsibility, and decision making. That is, climate action is considered minimal at a local level due to adherence to legislation from the state and federal government. Table 5 outlines each theme and the associated articles that informed that theme.

Table 5

Conclusions of macro-level themes from systematic literature review

Resultant themes	Theme Description	References
Institutional barriers/enablers	Unclear sharing of information, role responsibility, decision making; perception of shifting responsibilities from central to local governments. Action is minimal at a local level due to adherence to legislation from the state and federal government.	Bendz & Boholm (2019) (QAL II); Karim & Thiels (2017) (QAL II); Demeritt & Langdon (2004) (QAL II); Yetano et al. (2013) (QAL I); Serrao-Neumann et al. (2015) (QAL I); Akompab et al. (2013) (QAL II); Bergsma et al. (2012) (QAL I); Yi, Feiock & Berry (2017) (QAL I); Ferdous et al. (2019) (QAL I); Kumarasiri & Lodhia (2020) (QAL I); Zengerling (2018) (QAL I); Bowden et al. (2021) (QAL II)
Accountable leadership	The process of accountability can facilitate effective leadership while effective leadership can strengthen accountability mechanisms. Leaders are accountable through the relationships formed with stakeholders and by the consideration of climate risks in decision-making.	Akompab, Williams, Saniotis, Walker & Augoustinos (2013) (QAL II); Bates et al. (2013) (QAL II); Bhattacharyya et al. (2020) (QNT I); Hauge et al. (2019) (QAL I); Mees & Driseen (2018) (QAL I); Oakes et al. (2016) (QAL I); Zengerling (2018) (QAL I).
Embedding processes	Climate action is more effective when it is embedded into business-as-usual activities; if perceived as more work accountability mechanisms not likely to be implemented.	Bates et al. (2013) (QAL II); Scobie (2018) (QAL I); Mees & Driseen (2018) (QAL I); Yetano et al. (2013) (QAL I); Ferdous et al. (2019) (QAL I).

Citizens as account holders	Local government initiatives to involve citizens is not only essential in facilitating trust and cooperation but is also important in empowering citizens to change behaviours.	Bates et al. (2013) (QAL II); Karim & Thiels (2017) (QAL II); Nguyen Long et al. (2019) (QAL II); Mees & Driseen (2018) (QAL I); Peters et al. (2010) (QNT II); Yetano et al. (2013) (QAL I); Thaker et al (2018) (QNT I)
Measurable and clear information	Climate action in local government requires information that is clearly defined, transparent, measurable and can be evaluated.	Bergsma et al. (2012) (QAL I); Karim & Thiels (2017) (QAL II); Mees & Driseen (2018) (QAL I); Peters et al. (2010) (QNT II); Serrao-Neumann, Harman, Leitch & Choy (2015) (QAL I).

RQ2. What empirical research using primary data exists that examines the social-psychological factors that influence community collective climate actions?

Thirty-eight articles contained a focus on the psychological responses to climate change; and 27 articles were considered high-quality (Parris & Peachey, 2013). These articles were produced by 89 authors from 56 institutions and from different countries, with the majority from USA ($n = 15$), Germany ($n = 7$), UK ($n = 6$), and Australia ($n = 3$). All articles used the survey method (some with additional face-to-face interviews) to identify antecedents of environmental behaviours, perceptions of climate change response, as well as the psychosocial processes involved in environmental behaviours. Quantitative research techniques were employed in 35 articles, while three adopted a mixed methods approach (i.e., survey and interviews). Most articles contained a theoretical framework ($n = 35$), including social identity theory (Thaker et al., 2019; Prati et al., 2017; Bamberg et al., 2015; Rees & Bamberg, 2014; Hauge et al., 2019; Zengerling, 2018) and protection motivation theory (Bradley & Reser, 2017; Truelove et al., 2015; Kim et al., 2013).

The themes generated were based on the psychological constructs and study findings featured in the articles. The first theme identified from 15 articles was labelled *predictors of environmental intentions*, which highlights previous research identifying several factors that predict a person's willingness to act, including previous exposure, geographical attachment, the likelihood of threat, efficacy beliefs, and emotion. *Social norms* was the theme that referred to the strong identification with a social group, and behaviour following the norms of that social group

may influence an individual's intention to participate in climate action. Five articles related to the theme of *psychological adaptation* and focused on the ability of an individual to cope with and respond to the perceived threat of climate change, which in turn influences how one intends to participate, and psychological adaptation was linked with efficacy beliefs and social norms. *Collective efficacy* was the fourth theme identified from seven articles and related to the likelihood that a person will act if they recognise that their group is capable of acting. Lastly, the four articles (Adger et al., 2016; Obradovich & Guenther, 2016; Schleich et al., 2016; Sweetman & Whitmarsh, 2016), grouped as *perception of fairness*, all focused on the degree to which an individual perceives those other groups or institutions are collectively addressing climate change may bolster individual actions. A description and associated articles assigned to a theme is presented in Table 6.

Table 6

Conclusions of micro-level themes from systematic literature review

Resultant themes	Conclusion	References
Predictors of environmental intentions	Previous research has identified several factors that predict a person's willingness to act including previous exposure, geographical attachment, the likelihood of threat, efficacy beliefs and emotion.	Alvi & Khayyam (2020) (QNT II); Brügger et al. (2015) (QNT I); Bhattacharyya et al. (2020) (QNT I); Estrada et al. (2017) (QNT II); Helm et al. (2018) (QNT I); Kim, Jeong & Hwang (2013) (QNT I); Lim & Moon (2020) (QNT I); Rees et al. (2015) (QNT I); Schleich et al. (2016) (QNT I); Skurka (2021) (QNT I); Smith et al. (2012) (QNT I); Zaalberg et al. (2009) (QNT I); Frère et al. (2021).
Social norms	Strong identification with a social group and behaviour following the norms of that social group may influence an individual's intention to participate in climate action.	Ferguson et al. (2011) (QNT I); Lin & Niu (2017) (QNT II); Masson & Fritsche (2014) (QNT I); Meleady & Crisp (2017) (QNT I); Prati et al. (2017) (QNT II); Rees & Bamberg (2014) (QNT I); Smith et al. (2012) (QNT I); Tan et al. (2017) (QNT II); Truelove et al.(2015) (QNT I).
Psychological adaptation	The ability of an individual to cope with and respond to the perceived threat of climate change will influence how one intends to participate, where psychological adaptation is linked with efficacy beliefs and social norms.	Bradley & Reser (2017) (QNT I); Helm et al. (2018) (QNT I); Homburg et al. (2007) (QNT II); Kácha & Ruggeri (2019) (QNT I); Oakes et al. (2016) (QAL I).
Collective efficacy	Individual intentions to act environmentally is more likely if the individual recognises that their group has agency and is capable of effecting change.	Bostrom et al. (2019) (QNT I); Jugert et al. (2016) (QNT I); Lacroix & Gifford (2018) (QNT I); Rees & Bamberg (2014) (QNT I); Skurka (2021) (QNT I); Thaker et al. (2018) (QNT I); van Zomeren et al. (2010) (QNT II); Wang (2018) (QNT I).
Perception of fairness	The degree to which an individual perception that other groups or institutions are collectively addressing climate change may bolster individual actions.	Adger et al. (2016) (QNT I); Obradovich & Guenther (2016) (QNT I); Schleich et al. (2016) (QNT I); Sweetman & Whitmarsh (2016) (QNT I);

RQ3. To what degree is there empirical evidence linking local government accountability and individual-psychological processes to explain community collective climate actions?

Based on the evidence uncovered through this systematic literature review, no articles explicitly examined the relationship between local government accountability and individual-psychological processes to explain community collective climate actions. However, 30 articles were identified as being thematically relevant to community collective climate actions, of which 12 articles contained a macro-level focus, while 18 focused on the micro level. Twenty-four articles were grounded in a theoretical framework, including multi-level governance (Bates et al., 2013; Hauge et al., 2019; Zengerling, 2018), collective efficacy (Jugert et al., 2016; Wang, 2018) and social capital (Ireland & Frank, 2011; Peters et al., 2010). The selected articles derived from 80 authors from 47 institutions from different countries including USA ($n = 8$), Australia ($n = 7$), Germany ($n = 5$) and the UK ($n = 3$). A mix of research approaches were employed, including 14 quantitative and 16 qualitative approaches, and there were 12 case studies, 12 surveys, five interviews and one experiment.

Four themes were identified through the thematic analysis (Table 7). Firstly, *citizen engagement* was derived based on 12 articles and referred to the ability of local governments to engage with multiple stakeholders within the community in responding to climate change. Eight articles were conceptually tied to the theme of *evidence-based decision making*; they emphasised the integration of psychological research into local government decisions when engaging with the community. Third, *collective responsibility* was a conceptual amalgamation of eight articles; it focused on the collective actions of all members of the community, which can be coordinated by local government. The last theme identified through the articles was entitled *collective citizen agency*, and it reflected the notion that citizen actions can influence local government decisions.

Table 7

Conclusions of meso-level themes from systematic literature review

Result themes	Conclusion	References
Citizen engagement	Local governments can engage with multiple stakeholders within the community in responding to climate change though further research is needed.	Akompab et al. (2013) (QAL II); Bates et al. (2013) (QAL II); Bhattacharyya et al. (2020) (QNT I); Hauge, Hanssen & Flyen, (2019) (QAL I); Karim & Thiels (2017) (QAL II); Nguyen Long et al. (2019) (QAL II); Mees & Driseen (2018) (QAL I); Pollock et al (2019) (QAL II); Ready & Collings (2020) (QAL II); Smith & Mayer (2018); (QNT I); Zengerling (2018) (QAL I); Bowden et al. (2021) (QAL II)
Evidence-based decision making	Decision-makers within local government can facilitate coping strategies in responding to climate change through knowledge focusing on behavioural intention and social norms.	Bamberg et al. (2014) (QNT I); Bolsen et al. (2014) (QNT I); Hauge et al. (2019) (QAL I); Jugert et al. (2016) (QNT I); Kácha & Ruggeri (2019) (QNT I); Marshall et al. (2017) (QNT I); Oakes et al. (2016) (QAL I); Truelove et al. (2015) (QNT I); Wang (2018) (QNT I).
Collective responsibility	Climate change requires a coordinated response at all levels, and this can be achieved through collective actions, where local governments have the potential of understanding the local context.	Bamberg et al. (2014) (QNT I); Bergsma et al. (2012) (QAL I); Ireland & Frank (2011) (QAL I); Latai-Niusulu et al. (2020) (QAL II); Peters et al. (2010) (QNT II); Pollock et al (2019) (QAL II); Skurka (2021) (QNT I); Thaker et al. (2018) (QNT I); Frère et al. (2021) (QNT II).
Collective citizen agency	Citizen actions such as public forums and protests can influence the decisions made by local governments in responding to climate change.	Alvi & Khayyam (2020) (QNT II); Bates et al. (2013) (QAL II); Norgaard (2006) (QNT II); Serrao-Neumann, Harman et al. (2015) (QAL I); Wahlström et al. (2013) (QNT I); Samaddar et al. (2021) (QAL I).

3.5   Discussion of findings

This purpose of the systematic literature review was to present a research agenda based on high quality empirical evidence to address the main research question of this thesis (Tranfield et al., 2003). As mentioned, based on the literature review presented in Chapter 2, three specific research questions were presented to guide the systematic review process:

- RQ1. What empirical research exists in the literature that examines accountability within local government climate change response?

- RQ2. What empirical research exists that examines the social-psychological factors that influence community collective climate actions?

- RQ3. What empirical evidence links local government accountability and individual-psychological processes to explain collective actions in response to climate change?

The dissemination of research was categorised according to each level of analysis, that is, at the macro level, micro level or meso level. The review showed some evidence to support the research questions presented in Section 3.1, but also presented avenues for future investigation. The 64 articles selected for inclusion in the analysis presented empirical evidence and themes across the different levels of analysis. Overall, this review highlighted that some empirical and theoretical links exist between local government public accountability and individual-psychological processes to explain community collective climate actions. Specifically, evidence was found that focused on accountability within local government climate action, and five themes were identified. The psychological factors that contribute to collective climate actions also resulted in five themes. Lastly, investigation of the meso level – the interlinking level between individual behaviour and institutional actions – found few articles that explicitly examined how the two levels integrated. However, some articles were identified as sharing conceptual relevance to

community collective climate actions, and four themes were identified. Importantly, the evidence uncovered found that research is needed at all levels of analysis

Although some conclusions were drawn from this process, several limitations must be acknowledged. The search process was limited to articles that were peer-reviewed in the English language. This may have excluded several articles, given that climate change is a global issue. According to Parris and Peachey (2015) management research has minimally investigated a standardised approach to integrating qualitative and quantitative results, and the conceptual integration of the systematic literature review may have been insufficient. However, the critical appraisal tool employed provided a systematic approach to assess each article.

3.6   Chapter summary

Chapter 3 presented a systematic literature review (Tranfield et al., 2003) pertaining to the main research question of the thesis, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Three specific research questions guided the systematic literature review, which followed specific inclusion and exclusion criteria. Themes were drawn from each article and were categorised according to three levels of analysis: macro, micro and meso levels, and the conclusions drawn from this systematic review identified concepts and how they may be theoretically related. Chapter 4 presents a conceptual framework of these theoretical associations, along with several research propositions based on the evidence unpacked from the systematic literature review.

Chapter 4   Conceptual Framework and Research Propositions

4.1   Chapter overview

To explore the way in which the actions of local government and citizens together contribute to the response to climate change, the narrative literature review focussed in Chapter 2 centred on both accountability and psychology. The systematic literature review (Tranfield et al, 2003) in Chapter 3 sourced high-quality empirical evidence to address the main research question of this thesis, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? The latter review identified 64 articles, where the key findings of each article were categorised into themes at a macro level, meso level and micro level. The key themes were discussed in on Section 3.4.

According to Denyer et al. (2008), management research would benefit from the synthesis of existing research through a systematic literature review to formulate design propositions. The purpose of Chapter 4, therefore, is to present research propositions based on the themes identified in the systematic literature review. First, a conceptual framework outlines how the themes are related to explain community collective climate actions. Second, accompanying the description of this framework are relevant propositions, including synthesis of research findings in each theme. The research propositions presented require further empirical investigation (van Aken, 2009), and are addressed in subsequent chapters.

4.2   Conceptual framework

This study research proposes that community collective climate actions are a social contract and are a combination of institutional and social factors (O'Brien et al., 2009). At the macro level, local governments are held to account through their action on climate change by four key factors: 1) climate-focused leadership (Mees & Driessen, 2018; Zengerling, 2018); 2) integration of objectives throughout the organisation (Scobie, 2018); 3) information that is transparent and measurable (Serrao-Neumann et al., 2015); and 4) citizen perceptions and behaviour (Yetano et al., 2013). Underlying local government accountability equates with human

agency, which is articulated by how citizens participate in response to climate change. At the micro level, participation is determined by psychological adaptation – the capacity of an individual to cope with and respond to the risks associated with climate change. Psychological adaptation is further shaped by an individual's social identity, which may be strengthened by perceptions of fairness and collective efficacy in relation to climate change responses.

Climate change will affect all segments of society, so examining how community participation, social contracts, and accountability each play complementary roles in the delivery of services that respond to climate change is important (Wouters, et al., 2015). Preliminary research found that the expediency of community-based climate change initiatives involve intermediary organisations, such as local governments, which engage with multiple stakeholders, including citizens, community groups, business, other municipalities, and state and federal levels of government (Zengerling, 2018). Community collective climate actions exist as the intersection of local government accountability and citizen behaviour.

As shown in Figure 6, the social contract of community collective climate actions is conceptualised as a multi-tiered phenomenon. The three-level framework employed by Van Wijk et al. (2019) was used to structure the research problem. Accordingly, complex social problems such as climate change response require analysis at three levels: the macro, meso and micro levels. Specifically, local government accountability exists at a macro level and the agency of citizens to behave collectively occurs at a micro level. The connection of micro and macro level actions occur with the integration of community collective climate actions at the meso level. Community collective climate actions are reliant on citizens that not only demonstrate environmental behaviours but who also engage with local governments to enact change. Although conceptually distinct, community collective climate actions are an example of human agency (i.e., citizen beliefs that collective actions can lead to change) and social contracts (i.e., individuals will receive protection from governing institutions if certain behaviours are adhered to). The remainder

of this chapter illustrates how each level is related and a proposition is presented at each level of

analysis.

Figure 6

The social contract of community collective climate actions
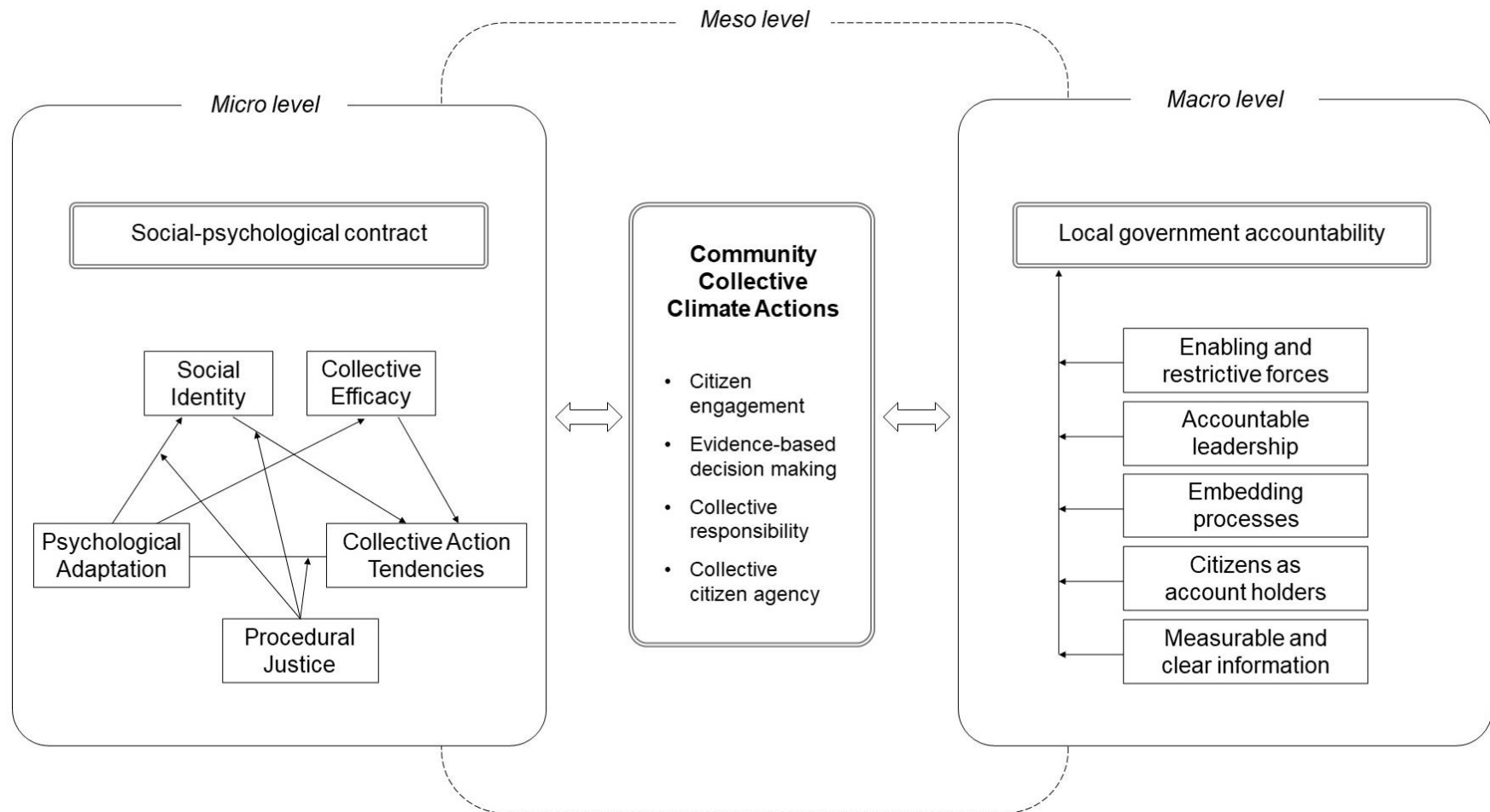
4.3   Research proposition 1: Local government accountability in community collective

climate actions

Five themes were identified from the analysis of macro-level research findings of the systematic literature review. The synthesis of these themes resulted in the following proposition:

Proposition 1: Local government accountability for climate change response

is the result of leaders who are answerable to the community and through

transparent and measurable information that is embedded in the organisation.

Research proposition 1 is a synthesis of the following five themes, and a description of each theme is presented.

Enabling and restrictive forces. The process of accountability – through a commitment to transparency, external monitoring, taxation, and self-reporting – is a means of ensuring compliance in responding to climate change at a macro level (Ferdous et al, 2019; Kumarasiri & Lodhia, 2020) though research is unclear on how actors at various levels should be held to account (Zengerling, 2018). Previous case study research has noted several institutional barriers that limit how these accountability processes are enacted in local government, including a lack of stakeholder coordination (Karim & Thiels, 2017), conflicting priorities (Bowden et al, 2021), limited information sharing amongst government employees (Bendz & Boholm, 2019; Demeritt & Langdon, 2004; Yetano et al, 2013), and a technocratic approach to decision-making (Serrao-Neumann et al, 2015).

Embedding processes. Mees and Driessen (2018) suggest that local government response to climate change is more effective when it is embedded into business-as-usual activities. However, if embedding environmental initiatives are perceived as more work to government staff then these processes may not be implemented (Scobie, 2018). Interviews conducted by Bergsma et al. (2012) with community stakeholders of local water management concluded that information on climate policy will be embedded if the information is clearly defined,

transparent, and measurable. Further, the evaluation of such information may not always be clear. For instance, Serrao-Neumann et al. (2015) conducted a case study of public participation in climate change initiatives in three Australian local governments. There were minimal structures in place to evaluate public participation, nor was there any indication of how to evaluate these initiatives. Current evidence proposes a range of accountability mechanisms to implement climate policy though the uptake of such approaches is problematic.

Accountable leadership. Greater mandates are required by political leaders (Zengerling, 2018), and the ability of decision-makers to enact climate change response is essential (Akompab et al, 2013). The process of accountability can facilitate effective leadership while effective leadership can strengthen accountability mechanisms. The capacity of leaders within local government to make decisions is a form of accountability, and there is a need to apply this leadership capacity to climate change response. Leaders that engage in advancing climate change initiatives may do so due to a mixture of self-interest and pro-social motives (Oakes, Ardoin and Lambi, 2016). Further, pro-environmental attitudes and efficacy beliefs influenced these decisions. Although several constraints exist in local government, such as adhering to governmental hierarchical control, leaders are accountable through the relationships formed with stakeholders (Hauge et al., 2019; Mees & Driessen, 2018) and by the consideration of climate risks in decision-making (Bhattacharyya et al., 2020). Leadership is an important component of accountability for climate change response within local government.

Citizens as account holders. Community engagement through partnerships with local organisations and involvement of citizens is also an integral component of the accountability process within local governments (Karim & Thiels, 2017; Yetano et al., 2013). Through these partnerships forums are created that address a range of governance issues, including embedding decisions related to climate change (Bates et al, 2013); however, more research is needed to examine how forums function as a mechanism of accountability. Local government initiatives to

involve citizens are not only essential in facilitating trust and cooperation (Nguyen Long et al, 2019; Peters et al., 2010) but are also important in empowering citizens to change behaviours.

Although empirical evidence is limited on the accountability of climate action in local governments, some conclusions have been drawn in how institutions can effectively implement climate change policy. Ferdous et al. (2019) examined the factors that influence the adoption of environmental management accounting practices in three government-owned utility organisations, and it was concluded that external pressures influenced climate action. These external factors were community expectations on environmental reporting and performance and external regulation.

Clear and measurable information. Although empirical evidence has highlighted the important role of local government in building adaptive capacity within communities (Ireland & Clausen, 2019), articulating the roles and responsibilities of local government in climate change response is less clear (Mees et al., 2016). The primary function of local government is seen by many to be to service the needs of the community and to enact rules mandated by state and federal levels of government (Ireland & Clausen, 2019; Moloney et al., 2018). Kramarz and Park (2016) provide a theoretical argument on global environmental governance and suggest that current accountability mechanisms within governance institutions focus on monitoring and enforcing existing functions and processes into existing organisational aims that do not prioritise environmental objectives. The authors state that the challenges with accountability are felt by decision makers locally.

Recently, Mees and Driessen (2018) proposed five key accountability mechanisms of local climate change adaptation and examined these through an interactive local governance arrangement (i.e., the design and implementation of a multi-functional dike). Based on interviews with key project planners, the authors emphasised the importance of having responsibilities and authority clearly articulated, checks and sanctions (e.g., performance standards and reporting), political oversight, citizen engagement, and transparency (e.g., access to information on the

decision-making process and outcomes). These mechanisms, however, were not sustained throughout the arrangement and tapered off during the project implementation phase but were remedied by the *informal* mechanisms of trust, relationship building, and the political acumen of its leader. Although this study supplies valuable insights into potential public accountability mechanisms, the case study focused on a setting where climate change response was the key driver of the arrangement and where citizens were actively involved in the process.

Research proposition 1 is investigated through key questions about accountability in Chapter 6. Mulgan (2003) devised a framework containing key dimensions of accountability and are answered via four questions. The first question – who is accountable? – seeks to identify those responsible, whether the individual actions of a leader or the collective actions of an organisation or agency. To whom, secondly, aims to identify the account holders to whom accountability is owed. Articulating for what is to be held to account is the third question, and it focuses on the duties to be carried out, which for example may be a contract or performance goals. The final question asks how the agent will be accountable and includes information that must be filtered through collaboration and discussions amongst stakeholders (Brandsma & Schillemans, 2014). It is proposed that the five themes identified through the systematic literature review will be uncovered through empirical research by asking these four questions. This investigation is presented in Chapter 6.

4.4 Research proposition 2: Social-psychological contract in community collective climate actions

Six themes were identified from the analysis of micro-level research findings of the systematic literature review. The synthesis of these themes resulted in the following proposition:

> **Proposition 2:** *Psychological adaptation determines a person's intention to engage in collective environmental behaviours though this relationship depends on social norms, collective efficacy, and procedural justice.*

Research proposition 2 is a synthesis of the following five themes discussed below.

Predictors of environmental intentions. Much of the extant psychological literature focusing on determinants of pro-environmental attitudes and behaviour have focused on the factors that influence individual-level behaviour though little research has examined the structural conditions and social context that shape such attitudes and behaviour (Bamberg et al, 2015). Truelove et al. (2015) found that efficacy beliefs, coupled with social norms, significantly predicted the behavioural intentions of a group of paddy farmers in Sri Lanka. How an individual identifies with a particular social group – through their social identity (Trepte & Loy, 2017) – has an important role in both predicting and mediating pro-environmental behaviours and attitudes (Masson & Fritsche, 2014). For instance, social identity was predicted by citizens' perceptions of the institutional policies, procedures, and practices, which in turn predicted environmental attitudes (Prati et al, 2017). Research that examines the interaction of social norms and individual behaviour may assist policymakers in enhancing individual and collective resilience to climate change (Kácha & Ruggeri, 2019; Smith et al, 2012).

Several factors influence a person's willingness to act on climate change, including proximity to and previous exposure to environmental risks (Zaalberg et al, 2009), attachment to a geographical location (Smith et al., 2012), as well as the perception that climate change is immediate and threatening (Brügger et al, 2015; Alvi & Khayyam, 2020), and the use of guilt-induced messaging in certain circumstances (Rees et al, 2015). Lim and Moon (2020) found that a sense of obligation and duty to social rules and norms is linked to support for climate change policies; policymakers would benefit from cultivating methods to improve citizens' sense of moral obligation.

The adoption of adaptive and mitigative strategies are more likely when people view climate change as a threat to their individual lives. Alvi and Khayyam (2020) surveyed 800 residents from Islamabad, Pakistan, and Dhaka, Bangladesh on their attitudes and behavioural motivations for mitigating and adapting to climate change. Most respondents had limited

knowledge of climate change, and the few who did were more likely to adopt community-based adaptative and mitigative strategies if they perceived climate change as a threat. A growing area of research has identified several factors that influence how individuals cope with and respond to the threat of climate change, as measured through efficacy beliefs (Bostrom et al, 2019; Estrada et al, 2017; Skurka, 2021). Efficacy beliefs refer to the extent to which the individual can act in response to a threat and the anticipated effectiveness of the action in reducing that threat (i.e., response efficacy). While research has examined the predictors of environmental behavioural intentions in several international contexts, less research has paid attention to local community members in the Australian state of Victoria.

Psychological adaptation. The ability to cope and respond to climate change threats has previously been explored through protection motivation theory (Kothe et al., 2019) and has been shown to predict several pro-environmental behaviours in American and Korean students (Kim et al., 2013) and Sri Lankan paddy farmers (Truelove et al., 2014). As a means of articulating psychological coping to the threats associated with climate change, psychological adaptation is a construct that was developed to describe the changes and adjustments in thinking, feeling, and general understanding in response to climate change, which includes internal psychological processes (e.g., risk appraisal, coping appraisal, responsibility attribution, and decision making) and external behavioural responses (Helm et al., 2018; Oakes et al., 2016). Bradley and Reser (2017) examined the role of psychological adaptation concerning the psychological processes that are linked with responding to climate change. Two studies were conducted via an anonymous survey with Australian participants over two time periods (2010 and 2011) to assess direct and indirect experience with climate change impacts. Within the survey of 120 items focusing on climate change belief, risk perception, previous exposure, self-efficacy, belief, and concern, seven items focused on psychological adaptation. Descriptive statistics revealed that psychological adaptation was positively correlated with self-reported tendencies to cope with climate change. In addition, regression analyses revealed that psychological adaptation was significantly predicted

by education, perceived responsibility to act, distress, and country of birth. Bradley and Reser (2017) concluded that how individuals and communities adapt to the threat of climate change will influence individual behaviour.

When an individual perceives that they can cope with a threat (i.e., psychological adaptation is high), they will intend to take protective action; whereas, if they believe that they are unable to cope with the threat (i.e., psychological adaptation is low), then maladaptive behaviour will be taken to reduce the threat. Helm et al. (2018) found that psychological adaptation was positively linked with pro-environmental behaviours aimed at mitigating the effects of climate change, despite the level of concern participants had for the environment. The authors noted that future research investigating the psychological coping strategies of climate change should investigate the structural and social-psychological boundaries that affect the types of pro-environmental behaviours performed by an individual.

Social norms. Group identification through social norms is based on a person's estimation of specific behaviours in comparison to other reference groups (e.g., friends or other Australian citizens), and intergroup comparisons may be useful in motivating people to act environmentally (Lin & Niu, 2017; Meleady & Crisp, 2017; Tan et al, 2017). Ferguson et al. (2011) conducted two experiments on the effects of intergroup comparison on willingness to perform sustainable behaviours amongst university students. In the first experiment, participants read a passage about climate change and the attitudes amongst different generations compared current students' sustainable behaviours with students from 1960 with predictions on how students might behave in 2060. Participants then completed measures of willingness to perform sustainable behaviour as a manipulation check of perceived ingroup norms. In Experiment 2, university students again compared their sustainable behaviours to past and future students, but then completed measures of sustainable beliefs willingness to perform sustainable behaviours. The researchers found that students were more willing to perform sustainable behaviours (i.e., use public transport rather than drive a car) in comparison to a previous generation of students, who

were perceived to be less sustainable (i.e., the out-group). This effect was mediated by beliefs on climate change; the authors emphasised a need to further identify how other psychological factors, including cognition and emotion, influence how these comparisons are made. Further, Masson and Fritsche (2014) found that high identification with a climate-friendly group (i.e., an environmental action group) influenced intentions to engage in pro-climate behaviours (e.g., moral obligation to buy organic foods) though perceived similarities with group members were not enough to conform to a group norm. Strong identification with the in-group and behaviour following the group norms by an individual may increase the group's capacity for collective action (Sweetman & Whitmarsh, 2016).

Collective efficacy. Although knowledge of climate change is important, individual behaviours and support for pro-climate policies can be explained through efficacy beliefs. Additionally, pro-environmental behaviours are significantly predicted by participant attitudes, perceived severity, response efficacy, and self-efficacy (Bhattacharyya et al., 2020; Kim et al, 2013). Van Zomeren et al. (2010) examined how efficacy beliefs coupled with feelings of anger on the intention to act collectively concerning environmental issues. Over two experiments, participants were asked to read a passage of text that describes the crisis of climate change, but there were two different versions of the text. The text in one group contained no emotive language concerning climate change, while the other version did contain language designed to induce fear. The authors found that the appraisal of the future threat of the consequences of climate change was linked with individual emotion (i.e., fear), which in turn influenced greater intention to engage in environmental action. Environmental actions can also be viewed collectively. While it is important for individuals to recognise climate change as a threat, it is equally important for people to know what they can do to act in response to climate change.

In addition to group identification, environmental behavioural intentions can also be predicted by the perceived collective efficacy of that group (Wang, 2018). Previous research has shown that when an individual recognises that their group has agency and is capable of effecting

change, then that individual's intention to engage in pro-environmental behaviour's increases (Jugert et al, 2016). Collective efficacy is an important determinant of both how a person engages in activist behaviours and supports government policies (Bostrom et al, 2019; Skurka, 2021; Thaker et al., 2018). Collective efficacy has been identified as an important determinant of an individual's collective climate action intention (Rees & Bamberg, 2014). How a person perceives the collective influence of their social group can have a powerful impact on how people respond to climate change.

Procedural justice. The moral judgement of fairness as it relates to the process of decision-making and the outcome of those decisions is one of the strongest predictors of willingness to engage in pro-environmental behaviour (Sweetman & Whitmarsh, 2016). Perceptions of fairness on climate action also appear to be consistent cross-culturally as well. Schleich et al. (2016) surveyed 3,400 participants from China, Germany, and the United States on how responsibilities for international climate action should be distributed. Participants in all three countries unanimously agreed that polluters should pay accordingly though there was a general lack of trust in governments. Results also suggest a lack of procedural fairness in international climate negotiations, and the authors noted a need to examine how perceptions of procedural justice impact how institutional climate change response is carried out. Trust in government also plays a role in how people support environmental policies such as taxation (Lim Moon, 2020; Thaker et al., 2018). Perceived levels of fairness and trust will also influence the degree to which individual or collective actions are taken, and citizens need to see governmental action toward climate change (Frère et al., 2021). Framing climate action as a collective responsibility, rather than an individual responsibility, may increase climate-related behaviours and attitudes amongst citizens (Obradovich & Guenther, 2016).

Citizen's willingness to act is also relative to the perception that the government is responding to climate change. A study by Adger et al. (2016) found that citizen's willingness to act in response to climate change was related to the perceived fairness of government action

though it was influenced by the political context as well as personal experience and knowledge of climate risk. The authors concluded that if citizens perceive governmental climate action as fair, then individual citizens will be more likely to act as well. Citizen perceptions of fairness are a crucial part of building a social contract of trust and reciprocity that can lead to collective climate action. Climate change research has predominantly focused on citizens' perceptions of distributive justice (i.e., fairness in the distribution of rights or resources), and, although preliminary evidence suggests a lack of procedural justice in climate action, more research is needed that examines citizens' perceptions of the fairness and transparency in climate change decision making (Schleich et al., 2016). The psychosocial responses involved in collective action may be shaped by how local government decision-making on climate change is perceived.

Collective actions. There are advantages of viewing the urgent need for action on climate change as a collective issue which can be solved through collective action – defined as a group member who behaves in the best interest of the group (Bamberg et al., 2015) – as opposed to focusing on individual behavioural change (van Zomeren et al., 2010). Collective actions are linked with egalitarian worldviews (Lacroix & Gifford, 2018), and there is preliminary evidence to suggest that perceptions of collective efficacy can increase collective action (Jugert et al., 2016). Preliminary research on collective actions postulated and tested a theoretical model using survey data and found intention to participate was significantly predicted by social identity, perceived behavioural control, and participative efficacy beliefs (Rees & Bamberg, 2014). From a governmental perspective, the adoption of social norms in its messaging is an important factor in local authorities encouraging behavioural change amongst citizens (Bhattacharyya et al., 2020).

Other factors that may influence collective actions have been proposed through research, in addition to social identity. Sweetman and Marsh (2015) examined a psychological model of collective actions which linked efficacy beliefs, injustice, and identity using a sample of undergraduate university students. Results suggested that within-group social influence and our moral sense of justice influenced pro-environmental behaviour though the authors suggested that

future research should aim to better understand the psychological processes in non-student populations. A further study by Rees and Bamberg (2014) found that individuals' collective climate action intention was predicted by perceived collective-efficacy, social identity, and group-based emotions (i.e., a guilty conscious), but most strongly by normative judgements. The authors of this study did, however, note that the behaviours described in the study did not consider the context and focused on intention rather than actual behaviours. There is a gap in the literature concerning the role of individual self-concept with how it relates to the appraisal and coping responses concerning participation in community-based collective climate change response. This proposition builds on previous research and address how collective action tendencies are influenced by perceived social identity, procedural justice, and collective efficacy, but also to examine how this relationship is accounted for by individual appraisals of climate change (van Zomeren et al., 2010) through the construct of psychological adaptation. The association of these factors are examined through a series of hypotheses.

4.4.1 Hypotheses

Individual climate behaviours are a social-psychological contract, where the intention to engage in community collective climate actions is a combination of 1) the ability to cope with and respond to climate change through psychological adaptation, 2) identification with a group's social norms, 3) the perception that an individual's social group is capable of action, and 4) the perception that the institutional actions taken are fair and transparent. Social norms contribute to how an individual appraises, copes with, and acts in response to an environmental threat (Truelove et al, 2015), which in turn may result in collective actions (Masson & Fritsche, 2014; Rees & Bamberg, 2014). Further, perceptions of fairness as it pertains to climate change response is a strong predictor of pro-environmental behavioural intention (Sweetman & Whitmarsh, 2016). There is also a need to examine the practical and social-psychological constraints that influence individuals' engagement in pro-environmental behaviours (Helm et al.,

2018), as well as combining science-based information and norms in theorising on collective action (Bolsen et al., 2014).

A critical contextual influence of collective actions is the roles of perceived fairness and appraisals of governmental intervention. Although previous research has examined injustice as a predictor of collective actions (van Zomeren et al., 2008), little is known about how perceptions of fairness strengthen or lessen the relationship between individual motivations and identity on collective actions (Sweetman & Marsh, 2016). Further, Thomas et al. (2020) have noted that the relationship between injustice and collective actions has been previously researched with a focus on economic injustice and recommend research on other forms of injustice. According to Schleich et al. (2016), there is a need to evaluate different forms of justice, particularly how citizens perceive fairness and transparency in climate change decision making. Several relationships exist between the concepts described in the proposition, and six hypotheses are presented to explore each of the relationships (Figure 7). These hypotheses are tested in Chapter 7: Quantitative Results.

Figure 7
Social-psychological contract and hypotheses of relationships
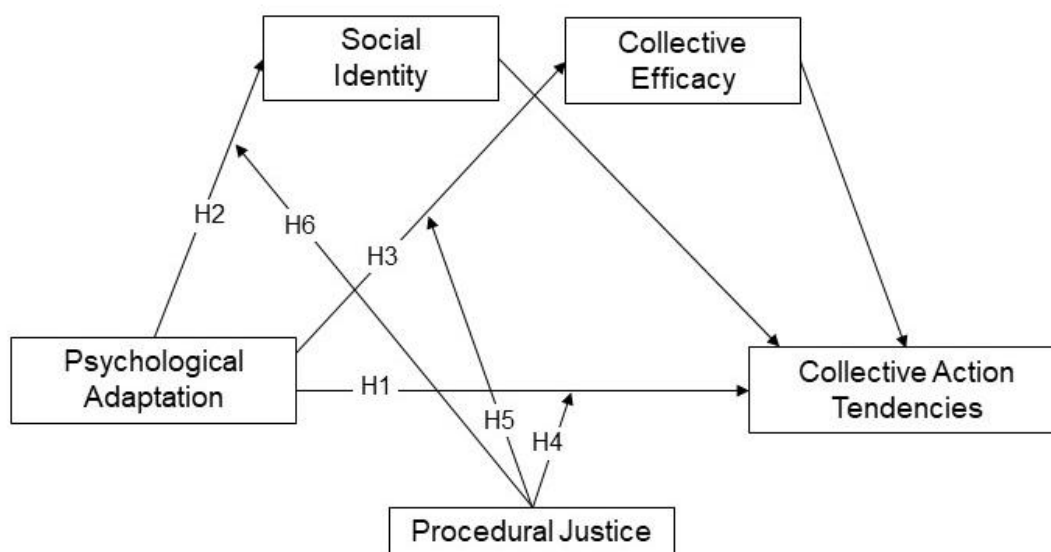
Although psychological adaptation is linked with pro-environmental behaviours (Bradley & Reser, 2017), minimal research to date has examined the relationship between psychological adaptation and collective actions. Pro-environmental behaviours refer to self-focused behaviours, such as recycling (Bamberg & Moser, 2007), while collective actions refer to group-focused civic behaviours, such as joining a campaign (Sweetman & Whitmarsh, 2004). Although both concepts share commonalities in terms of large-scale societal impact, collective actions focus explicitly on actions that relate to the greater good – a key tenet of collective actions (Ostrom, 2016). Participation in collective environmental activities can have a positive impact on mental health, strengthen social ties, and provide a buffer against climate-induced anxiety (Clayton, 2019), and a high level of psychological adaptation should be positively correlated with collective actions tendencies.

Hypothesis 1: Psychological adaptation is related positively to collective action tendencies

The mediating and moderating parameters related to psychological adaptation is not well understood and there is a need to examine the social-psychological processes involved in coping with the effects of climate change (Reser et al, 2012). Whereas a person's ability to positively cope with climate change would arguably align with their capacity to engage in collective actions, the sense of belongingness and feelings of empowerment derived from being associated with a particular group could be an important influence (Bamberg et al, 2018) in community-based initiatives (Bamberg et al., 2015). According to Fritsche et al. (2018), little empirical evidence exists about the effects of social identity and collective efficacy on the role of environmental appraisals (e.g., ideologically motivated scepticism) on collective actions.

Hypothesis 2: Social identity mediates the relationship between psychological adaptation and collective action tendencies and greater psychological adaptation is likely related to higher social identification, which in turn, is related to influences higher collective action tendencies.

Political and environmental activism through collective actions has its own set of challenges, and the individual may feel a sense of hopelessness because of minimal societal change through their actions (Bamberg et al., 2018). Psychological adaptation provides a buffer against these negative feelings and is positively associated with collective actions. In addition, social identification and collective efficacy further explain these associations. Potentially, these internal psychosocial processes counteract the feelings of frustration and helplessness from a lack of systemic action in response to climate change and motivate the individual to engage in collective actions.

Hypothesis 3: Collective efficacy mediates the positive relationship between psychological adaptation and collective action tendencies, such that a higher degree of psychological adaptation is associated with enhanced collective efficacy and in turn leads to increased collective action tendencies.

Local governments have an important role in galvanising climate action within the community, and there is a growing and symbiotic relationship between public institutions and citizens in responding to climate change (Mees et al., 2019). The important role of local governments in the collective actions of communities was considered through the lens of procedural justice. If citizens perceive the decisions regarding climate change within local government as fair and transparent, there is a greater likelihood that they will respond to the effects of climate change more positively and engage in collective actions.

Hypothesis 4: the relationship between psychological adaptation and collection action tendencies are stronger for those reporting higher procedural justice.

This perception of fairness influences the degree to which a person believes their group can act collectively in response to climate change. The relationships between psychological adaptation and collective action tendencies working through the influence of both social identity and collective efficacy are stronger for those reporting a higher level of procedural justice.

Hypothesis 5: The mediated pathways through collective efficacy between psychological adaptation and collective action tendencies are conditional on/moderated by the level of procedural justice that citizens perceive authorities demonstrate.

Hypothesis 6: The mediated pathways via social identity between psychological adaptation and collective action tendencies are conditional on or moderated by the level of perceived procedural justice among citizens about local government climate action.

4.5   Research proposition 3: Community collective climate actions

Four themes were identified from the analysis of meso-level research findings of the systematic literature review. The synthesis of these themes resulted in the following proposition:

Proposition 3: *Community collective climate actions involve a demonstration of accountability in local government and citizen psychosocial responses to climate change.*

Research proposition 3 is a synthesis of the following four themes.

Citizen engagement. Local governments can engage with multiple stakeholders within the community in responding to climate change though decision-makers are faced with many challenges. The collective participation of the community has the potential to influence the

decisions made within the council in responding to climate change though the effectiveness of community influence is varied (Norgaard, 2006; Pollock et al., 2019). Serrao-Neumann et al. (2015) suggest public engagement in responding to climate change can be increased through deliberation with citizens that goes beyond the provision of information and includes evaluating the quality of engagement with citizens. A case study by Samaddar et al. (2021) found that community participation in climate change adaptation initiatives was considered more successful when tangible outcomes were provided to citizens.

An integral component of local action is the role of leaders within public administration settings who can build relationships with stakeholders (Mees & Driessen, 2018) but also prioritise environmental outcomes (Bhattacharyya et al., 2020). For example, a heatwave policy in the city of Adelaide was enabled by leadership and political commitment that created the structures, systems, and resources required to develop adaptation strategies with multiple stakeholders in the community (Akompab et al., 2013). Hauge et al. (2019) found that networks that collaborate across different tiers of government can promote learning and improve the level of citizen engagement on community environmental issues. However, organisational commitment is necessary, as are managerial sign-off and a bureaucratic chain of command.

Evidence-based decision making. Decision-makers will benefit from insights on how citizens respond to climate change from a psychological perspective (Bandura, 2018; Hauge et al., 2019; Kácha & Ruggeri, 2019). At the micro level, people are more likely to engage in collective action when there is a perception that they can contribute, relative to the contributions of other citizens and government (Bamberg et al., 2014; Jugert et al., 2016; Truelove et al., 2015; Wang, 2018). For example, experimental evidence that examined institutional initiatives to facilitate climate change adaptation suggests a higher degree of citizenship behaviours will occur when citizens perceive that local councils are adopting a community-focused approach to governing as opposed to a centralised, top-down approach (Marshall et al, 2017). It is highly advantageous, therefore, for decision-makers within local government to facilitate coping

strategies in responding to climate change (Oakes et al., 2016) through knowledge focusing on behavioural intentions and social norms (Bolsen et al., 2014).

   Collective responsibility. Climate change requires a coordinated response at all levels, and this can be achieved through collective actions, and through these, local governments have the potential of understanding the local context. Information that is localised and context-specific may provide the necessary scope for decision-makers, which in turn can facilitate trust-building in working with multiple stakeholders in managing current and future climate risks (Smith & Mayer, 2018). Organisational barriers limit the level of collective action between local government and citizens, and the relationship between citizens and elected officials can shape local climate actions (Karim & Thiels, 2017; Nguyen Long et al., 2019). Case study research in Western Australia found that although interactions between local councils and the wider community existed on a range of topics, including response to climate change, this was impeded by structural barriers, such as resource restraint and limited federal government support (Bates et al., 2013). Although collective climate actions at the community level can be coordinated by local government representatives, these actions may be more effective if there is evidence of responsibility, transparency, assessment, and participation when interacting with multiple stakeholders (Zengerling, 2018). Latai-Niusulu et al. (2020), however, emphasise the importance of researching how local decision-makers engage residents in responding to climate change and to integrate and measure citizen involvement in collective action.

   Institutional leadership is essential in responding to climate change, as are the contributions of individuals within the community – where trust and cooperation between actors in the state and civil society are mandatory (Bhattacharyya et al., 2020; Thaker et al., 2018). However, it has been argued that many Western democracies collectively ignore action on climate change to support economic self-interest (Norgaard, 2006). In addition to a lack of accountability mechanisms within all levels of government, Bergsma et al. (2012) noted an institutional shift in many Western democracies toward climate change response as an individual responsibility (Frère

et al., 2021). The authors emphasise the importance of management approaches within local governments that consider the social implications of its decision making. Rather than displacing responsibilities to non-state actors, climate change requires a coordinated response at all levels, and this can be achieved through community participation (Ireland & Frank, 2011; Ready & Collings, 2020; Pollock et al., 2019).

Collective citizen agency. Citizen behaviours, such as public forums and protests, can influence the decisions made by local governments in responding to climate change. Collective action on climate change may be more successful if viewed as a problem requiring contributions from all levels of society. Räsänen et al. (2016) conducted a systematic literature review of how various processes affect human vulnerability to climate change. Based on 125 articles that included case study modelling analysis, results showed that the social context of climate change vulnerability is a growing research area. The authors conclude that future climate change research should examine the interactions of systems and processes through triangulating mixed research methods.

Collective citizen agency may also take the form of protests for justice on climate change by citizens, which may contribute to how climate change is viewed as a collective issue (Skurka, 2021; Wahlström et al, 2013). Forums, as previously mentioned, provide citizens with the opportunity to hold their local representatives to account though further research is required to examine how the input from forums are governed and embedded into existing organisational processes (Bates et al., 2013; Bowden et al., 2021). There is, however, a lack of clarity with how community actions contribute to the global response to climate change (Alvi & Khayyam, 2020). Community participation is essential for action on climate change and is the link between citizen and government level responses (Hauge et al., 2019). The actions of citizens will influence decision-makers, but it is also the responsibility of local institutions to create a sense of agency amongst the community that individuals can respond to climate change.

Community collective climate actions are the intersection of macro level and micro level responses to climate change. Research proposition 3 suggests that psychological processes inform how citizens respond to climate change, who in turn apply pressure to local governments to act on climate change. Further, local government intervention on climate change shapes individual perceptions and the decisions to act. This proposition is explored through the integration of the macro and micro research findings in Chapter 8.

4.6 Chapter summary

The purpose of this chapter was to conceptualise how the findings from the research articles uncovered from the systematic literature review were related. A conceptual framework was presented that displayed these associations. Community collective climate actions may be more likely to occur when accountability in local governments is demonstrated internally, through transparent information, embedded organisational processes and climate-focused leadership, and externally, through citizen actions, which is viewed through a social-psychological lens. Accompanying this framework were three research propositions.

Proposition 1 stated that local government accountability for climate change response is the result of leaders who are answerable to the community and through transparent and measurable information that is embedded in the organisation. The macro-level research proposition was investigated through qualitative research and presented in Chapter 6. Proposition 2 purports that psychological adaptation determines a person's intention to engage in collective environmental behaviours though this relationship depends on social norms, collective efficacy, and procedural justice. Lastly, proposition 3 stated that community collective climate actions involve a demonstration of accountability in local government and citizen psychosocial responses to climate change. The micro-level research proposition was examined through a series of hypotheses and quantitatively analysed in Chapter 7. The meso-level research proposition was explored through the integration of empirical findings from the qualitative and quantitative studies

in Chapter 8. The next chapter presents the methodology for how these propositions were investigated.

Chapter 5   Methodology

5.1   Chapter overview

The previous chapter presented the process and findings of the systematic literature review, culminating in three theoretical propositions and a conceptual framework. Chapter 5 describes the research methods undertaken to address the theoretical propositions. Firstly, the rationale for selecting a pragmatic research methodology is outlined, followed by the description of the multilevel mixed methods research design (Headley & Plano Clark, 2019). Next, the qualitative research methods are presented, and they include a description of the sampling strategy, data collection, and analytical approach. The quantitative research methods are then described, and the sampling strategy, data collection, and overview of the data analysis are also presented. The integration research methods are presented, which involved presenting both sets of data separately through a process labelled *integrating through narrative* (Fetters et al., 2013). Lastly, a description of the ethical considerations of the thesis.

5.2   Research strategy

The main research question asked, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Climate change is an issue that has no clearly defined solutions where new consequences and problems are forever emerging (Head, 2019). Given the intractable nature of responding to climate change, research in this area warrants interdisciplinary enquiry (Whitmarsh et al, 2011) and divergent philosophical perspectives (Nightingale, 2016). Much is unknown on the role of local communities in responding to climate change, and the preceding chapter postulated several theoretical propositions of collective action at multiple levels. Following a systematic review of the literature, a conceptual framework was provided that linked the perspectives of accountability and psychology. Three theoretical propositions were developed based on this process:

- ***Proposition 1:*** *Local government accountability for climate change response is the result of leaders who are answerable to the community and through transparent and measurable information that is embedded in the organisation.*

- ***Proposition 2:*** *Psychological adaptation determines a person's intention to engage in collective environmental behaviours though this relationship depends on social norms, collective efficacy and procedural justice.*

- ***Proposition 3:*** *Community collective climate actions involve a demonstration of accountability in local government and citizen psychosocial responses to climate change.*

According to Johnson and Onwuegbuzie (2004), a research paradigm refers to the "set of beliefs, values, and assumptions that a community of researchers has in common regarding the nature and conduct of research" (p. 24). Qualitative research is epistemologically founded in constructivism, where the emphasis is placed on individual understanding of viewpoints, whereas the positivist paradigm underlies quantitative methods, which seeks to define objective reality through a positivist ontology. However, Mertens (2015) argues that researching the complexities of climate change response would benefit from a mixed methods approach to examine the relationship between institutions and communities.

Neither qualitative nor quantitative methods alone are satisfactory to address the three research propositions; therefore, a multilevel mixed method approach is proposed. Headley and Clark (2019) stipulate that multilevel mixed method research should be able to generate multiple inferences that would not be uncovered through traditional research approaches. Further, the aim of a multilevel mixed methods approach is to generate empirical evidence by examining the overarching structure, the individual components within the system, and the processes that link

the levels within the theoretical model. The social contract of community collective climate actions which was conceptualised in chapter 4 (see Figure 7).

A key component of mixed methods research is methodological pluralism, which involves drawing on divergent sets of data (Johnson & Onwuegbuzie, 2004). For instance, qualitative research can provide an interpretive perspective by integrating the views of its subjects, which can supplement or subsequently be tested through an objective perspective through quantitative research (Harrits, 2011). Christ (2011) developed a worldview matrix that summarises the ontology, epistemology, axiology, and methodology of five research paradigms (i.e., post-positivism, constructivism, pragmatism, critical realism and transformative-action) (see Table 8).

Table 8

Worldview matrix

Worldview	Postpositivism	Constructivism	Pragmatism	Critical realism	Transformative action
Ontology: (Reality is what 'exists' and says in which it can be represented).	Etic-outsider singular reality exists although imperfectly represented in terms of probabilities.	Emic co-construction of meaning. Each person's reality is different. No absolute truths.	Multiple forms of reality. Follows a Deweyan 'What works' action-oriented view of reality.	Different levels of reality exist ranging from the objective that is independent of human understanding to subjective truths that we understand and grasp in the process of meaning-making.	Inequalities exist. Exposing power structures and bringing voice of the oppressed to light can lead to social change.
Epistemology: (Theory of knowledge) constructed using various sources of data. Analysis depends on research question, data source and purpose of the study.	Researcher distances self from 'subjects' to gain an 'accurate' 'valid' and 'reliable' representation.	Co-construction of knowledge about events occurs as a result of closeness: researcher and participants work together to create knowledge.	Etic and emic perceptions can co-exist in a single study. Each strand forms knowledge that can be compared and combined increasing the credibility of the study's findings.	There are levels of objective truths that can be discerned but finding absolute truths about the social phenomenon is impossible.	Exposing inequalities and representing the voice of the oppressed to the masses broadens social awareness. Participants are collaborators.
Axiology: (Values in research). How the role of values influences the way research is conducted.	Researcher attempts to be unbiased and not introduce own values/prior experiences about conducting and analyzing data.	Researcher and participants recognize bias and negotiate their shared interpretations and their views about the value of the research process.	Multiple stances: Values brought to the forefront and recognized as influencing the research process.	Researchers' worldview influences how knowledge is produced, differentiated, stratified, and changed into meanings and representative realities inferred from multiple sources of data.	Oppression exists in the world and the role of research should be to work toward increasing social justice.
Methodology: How the processes of research are used.	Deductive approach: Test and verify *a priori* theories. Determine significant difference among groups or strength in relationships among variables.	Inductive approach: Researcher uses constructivist grounded data analysis approaches to building patterns, themes, and general concepts.	Mixed approach: Various forms of qualitative and quantitative data are blended to create a representative model.	Construction and interpretation of 'subjective' and 'objective' data, processes are called 'abduction' and 'retroduction' that are used to formulate 'conceptualizations.	Participatory and action oriented research is designed to enhance individual, social, and societal well-being.

Note. Reproduced from Christ (2013, p. 112).

Addressing the research propositions involved the synthesis of qualitative research conducted at an institutional level (i.e., macro level) and the quantitative analysis of individual-level data (i.e., micro level) and, although philosophical worldviews differ, a pragmatist perspective argues that qualitative and quantitative methods are compatible (Molina-Azorin & Cameron, 2010). As outlined in Table 8, the pragmatist view typifies knowledge as being the relationship between action and consequences, which can provide the philosophical support for mixed methods research (Biesta, 2015). Different research propositions were asked at different levels and require divergent philosophical perspectives, and a pragmatist perspective is the most appropriate methodology.

5.3   The rationale for mixed methods research

The focus of this thesis was the integration of empirical evidence from accountability and psychology research to gain new insights into community-based climate change response. A major tenet of interdisciplinary research is the undertaking of a study from two or more distinct disciplines, utilising the skills and perspectives of each discipline at multiple stages throughout the research. The triangulation of different types of data from divergent disciplines and across different levels can generate new insights into climate change research (Nightingale, 2016). This research employed both mixed methods and interdisciplinary research.

An advantage of mixed methods research is the ability to draw on the strengths of two methodological paradigms to answer research questions that might not be addressed using a single approach. Additionally, the knowledge generated from combining quantitative and qualitative research can more completely contribute to theory and practice (Johnson & Onwuegbuzie, 2004). The benefits of utilising mixed methods research include a richer insight into collective actions on climate change and, as a result, may generate more questions for future studies (Caruth, 2013).

5.4   Mixed methods design approaches

Responding to climate change requires new insights through drawing on multiple disciplines and perspectives within the community (Ney & Werwij, 2015). According to Nightingale (2016), a hybrid of methodologies is necessary for designing research that can illustrate new insights. The aim of the thesis was on both understanding social phenomena (i.e., local government accountability) and predicting relationships of known constructs (i.e., psychosocial responses that lead to behaviour), and the aim is to identify theoretical and empirical links from multiple perspectives.

According to Biesta (2015), mixed methods research is designed by combining the observations made in each study to answer the research question and achieved via either triangulation, sequential design, concurrent design, or a combination of these. Headley and Clark (2019) outline several design conventions necessary in a multilevel mixed methods approach. Firstly, both the qualitative and quantitative components explain some aspect of the multilevel system under investigation. Secondly, the samples used represent the intended population and contribute to the overarching multilevel purpose. Thirdly, the data collected generates evidence across multiple levels that contribute to the overarching conceptual model. Finally, the qualitative and quantitative data uncovered contribute to *meta-inferences* of the overall system. Table 9 outlines the design features of multilevel mixed methods that were adopted in the thesis.

Table 9

Defining features of a multilevel mixed methods research design

Design feature	Specification
1. Theoretical grounding	• Incorporates a theory about a multilevel system with assumptions about the system as a whole (structure), the components of the system (levels), and processes that contribute to the maintenance or evolution of the system (mechanisms)
2. Mixed methods research design	• Includes at least two strands of inquiry (qualitative and quantitative), each of which investigates structure, level(s), and/or mechanism(s) • Integrates the strands to generate meta-inferences that expand upon the inferences drawn from the strand analyses alone
3. Sampling strategy	• Involves more than one level of the system
4. Data collection	• Generates evidence about more than one level and/or between level mechanisms
5. Data analysis	• Generates within- or between-level inferences for each strand • Generates findings sufficient to support across-level meta-inferences during integration
6. Integration	• Supports across-level meta-inferences about more than one aspect of the system: 1. Characteristics of structure 2. Characteristics of levels 3. Nature of between-level mechanisms

Note. Reproduced from Headley & Clark (2019, p. 113).

The research aimed to provide empirical support for a multilevel conceptual framework of community-level collective response to climate change (Figure 7). Qualitative and quantitative approaches were employed to focus on the different levels of the framework (Creswell et al., 2003). The macro-level analysis focused on public accountability within local government institutions and was examined via an exploratory study. The micro-level analysis focused on examining existing variables that contribute to individual intention to participate in collective actions. Community collective climate actions was explored as the interlinking level and was comprised of the conceptual interactions of the results from local government and individual behaviour.

Integration of each level occurred in the research design stage, the interaction stage, and through the drawing of meta-inferences (Yin, 2006). For instance, although the interview questions focused on primarily public accountability within local government, some questions related to the drivers for citizen actions as well as how psychological evidence may be integrated into local government decision-making. Additionally, the psychological survey included questions

related to the processes of local government. The multiple inferences drawn from each level were then analysed in terms of interactions observed (Creswell et al., 2003; Headley & Plano Clark, 2019). Meta-inferences were then drawn from the findings of both studies and were integrated simultaneously after both investigations (Moseholm & Fetters, 2017). Figure 8 offers a visualisation of this multilevel mixed methods design.

Figure 8

Multilevel mixed methods design flowchart
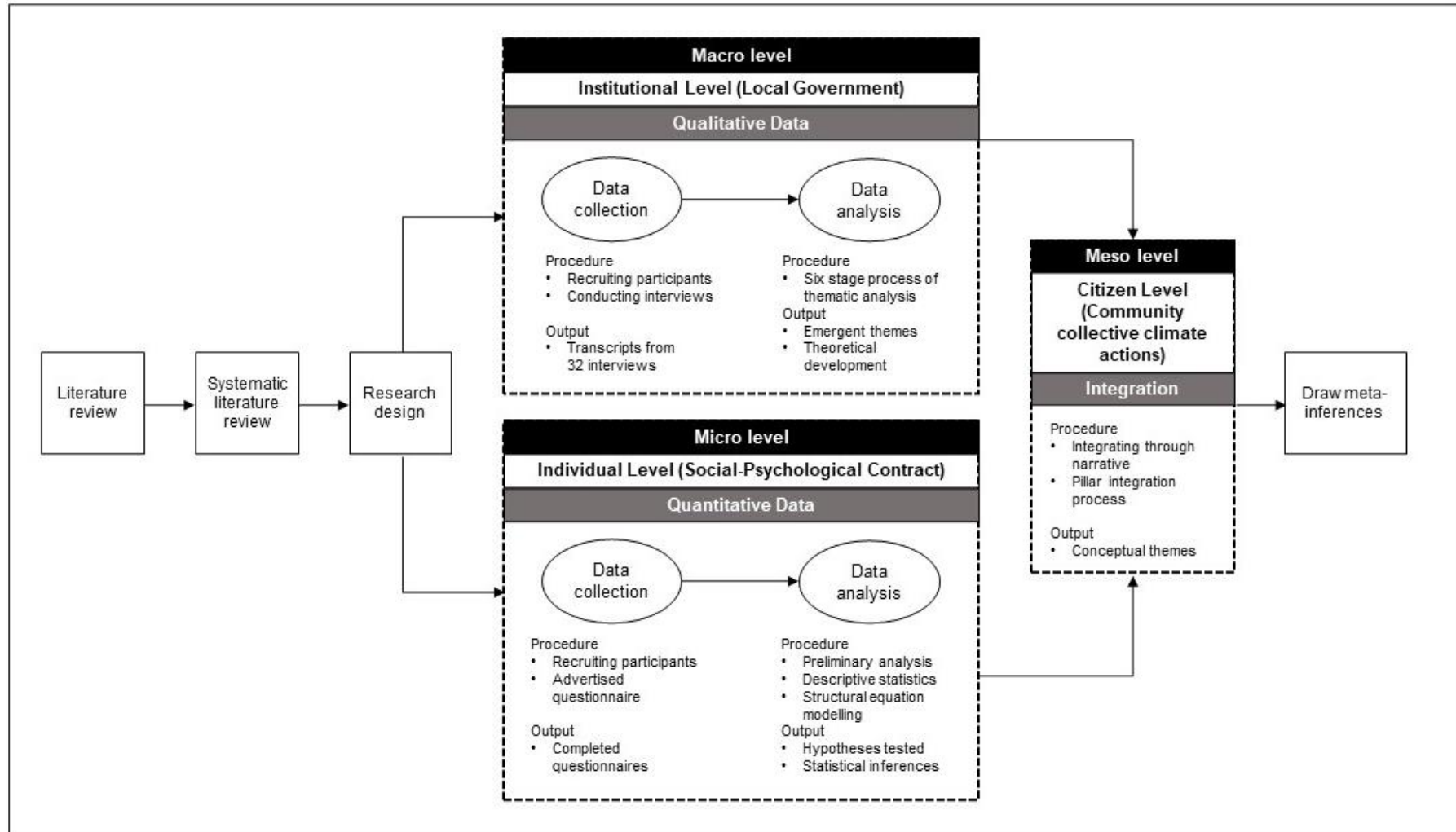
5.5   Research approaches

The preceding chapter conceptualised collective climate actions as theoretically grounded in human agency and social contracts, which are linked through a public accountability lens and a social-psychological lens. A concurrent triangulation design was adopted to define relationships (Castro, Kellison, Boyd & Kopak, 2010) and confirm empirical support for the multilevel conceptual framework proposed in Chapter 4. The concurrent design is characterized by the simultaneous (or nearly so) collection and analysis of both quantitative and qualitative data (Creswell et al., 2003). According to Byrman, Becker and Sempik, (2008), qualitative and quantitative research criteria most appropriate for social policy research involving mixed methods includes validity, reliability, replicability, and generalisability. A description of the qualitative research criteria is in Section 5.5.1, while the quantitative research criteria is detailed in Section 5.5.2. The remainder of this chapter outlines the sampling strategy, data collection, and data analysis for the qualitative, quantitative, and integration research methods. Table 10 summarises this information.

Table 10

Multilevel mixed methods design process

Design feature	Type	Specification
1. Theoretical grounding	Theory:	Human agency (Bandura, 2018) and social contracts (O'Brien et al., 2009).
	Structure:	The social contract of community-level collective response to climate change.
	Levels:	Local government accountability; collective participation; individual intention to partake in collective actions.
	Mechanisms:	Social-psychological and accountability processes.
2. Mixed methods research design	Design:	Convergent mixed methods design (Youndas et al., 2019).
	Qualitative	What is the local government's role in response to climate change through an accountability lens?
	Quantitative:	To what extent are community collective climate actions influenced by factors of a social-psychological contract?
	Integration:	What empirical evidence from local government accountability and a social-psychological contract of citizen climate action tendencies contribute to a theoretical model of community-level collective response to climate change?
3. Qualitative research methods	Sampling strategy:	Convenience sampling technique.
	Data collection:	Semi-structured interviews focused on local government actions on climate change. Collation of council strategy documents pertaining to climate change.
	Data analysis:	Discourse analysis, content analysis.
4. Quantitative research methods	Sampling strategy:	Virtual snowball sampling technique.
	Data collection:	The questionnaire focused on collective action intentions.
	Data analysis:	Structural equation modelling.
5. Integration research analysis	Structure:	Visual display of community collective climate actions as a three-level phenomenon.
	Level:	Emergent qualitative themes of climate change response facilitated by council reports, staff opinions, community perspectives.
	Mechanisms:	Multilevel joint displays/discussions of council reports, staff opinions, community perspectives.

5.5.1 Qualitative research methods

The focus of analysis at the macro level is to offer a preliminary investigation of how the response to climate change within local government is articulated within the context of public accountability, via the four questions of accountability (Mulgan, 2003). The investigation employed in this thesis is in response to calls to keep climate change accounting research *interesting* and *different* (Milne & Gubnic, 2011) with a need to examine the organisational processes of accountability (Bebbington & Larrinaga, 2017) and the roles and responsibilities of stakeholders

in absence of climate change regulation (Roberts et al., 2021). As accountability is an evolving concept (de Fine Licht, 2020; Mulgan, 2000), a qualitative approach is necessary to provide a deeper understanding of the nexus between response to climate change and accountability within local government (Lehman & Kuruppu, 2017; Thomson, 2014). Further, climate change response is a complex phenomenon and warrants an investigation that considers the *individual situated accounts* of this phenomena in different social contexts, and a localist perspective was adopted (Qu & Dumay, 2011). Previous research that has conducted similar studies with local municipalities used the case study method (Booth & Cox, 2012; Nguyen Long et al., 2019; Verdon-Kidd, Kiem, & Austin, 2015). Multiple cases were investigated to enhance generalisability of research findings and to deepen understanding of local government accountability (Miles & Huberman, 1994), where each local council served as a single case.

This investigation adopted a case study approach based on discourse analysis and content analysis, where each local council represented a single case. How accountability was understood and communicated within local councils was investigated through the content (i.e., content analysis) and process (i.e., discourse analysis) (Tesch, 2013). More than one methodological approach (i.e., document analysis and interviews) is advantageous in social and environmental accounting research as a way of providing more robust empirical evidence (Mata, Fialho & Eugénio, 2018). Additionally, a range of stakeholders other than key decision-makers and managers were selected to participate in this project (Hackley, 2019), reflecting calls by Parker (2008) to include multiple voices as a way of expanding the process of social and environmental accounting research. Furthermore, this research focused attention on stakeholders with varying levels of seniority (i.e., both senior and junior level public servants) to deepen understanding of hierarchical accountability interactions (Bovens et al., 2014). Employees from different areas provided opinions about how the response to climate action is embedded throughout the organisation.

Considerations of how individuals within organisations *make sense* of climate action can help deepen an understanding of how organisations enact these initiatives (Perey, 2015). Discourse analysis is the examination of spoken and written text, that is, interpreting the meaning that underpins the social context (Mogasghoa, 2014) and has been used previously in management (Ellis & Rod, 2014), accounting (Ahmed & Hossain, 2016), and climate change research (Leipold, Feindt, Winkel & Keller, 2019). This approach thematically described how the employees made sense of the context surrounding the local government climate change response within each case study. According to Ahmed and Hossain (2016), discourse analysis is an inductive approach grounded in social constructivism in which individual sensemaking is the focus of the research.

A content analysis of the climate change documents of each council was undertaken to better understand the exemplars of accountability defined by the interview respondents. Content analysis is a commonly employed practice for interpreting the texts of different documents in sustainability reporting in accounting research (Dissanayake, Tilt & Qian, 2021). According to Bellucci, Simoni, Acuti and Manetti (2019), adopting more than one methodology (i.e., content analysis and semi-structured interviews) can provide context to the phenomena of study and enhance the validity of theoretical propositions in qualitative research. The purpose of the content analysis, therefore, was to illustrate the conception of accountability developed in the council interviews.

5.5.1.1 Sampling strategy

Due to the exploratory nature of the qualitative research, a convenience sampling technique was used to recruit participants (Anderson, 2010). Currently, there are 79 local government areas in Victoria, Australia (State Government of Victoria, 2018). Representatives from 25 local government areas were approached to participate in the research (Appendix D). The information communicated included the research aims, noting that the project would examine what it means for local government areas in Victoria to be accountable for climate

change and to examine the organisational structure of local government areas and the processes involved in community engagement (Appendix E). Six councils agreed to participate in the study; de-identified demographic information based on region (State Government of Victoria, 2018), area type (i.e, metropolitan or regional) and 2018 population data (Australian Bureau of Statistics, 2019) are presented in Table 11.

Table 11
Demographic data for local government cases

	Code	Population Range	Region	Area type
Case No. 1	LC 1	Less than 50,000	Eastern Victoria	Regional
Case No. 2	LC 2	100,000 – 150,000	South-Eastern Metropolitan	Metropolitan
Case No. 3	LC 3	100,000 – 150,000	Southern Metropolitan	Metropolitan
Case No. 4	LC 4	100,000 – 150,000	Southern Metropolitan	Metropolitan
Case No. 5	LC 5	150,000 – 200,000	South-Eastern Metropolitan	Metropolitan
Case No. 6	LC 6	100,000 – 150,000	Northern Victoria	Regional

Following informed consent (Appendix H), interviews were conducted in-person or by telephone, were recorded electronically, and were 30 to 60 minutes in duration. Between November 2017 and February 2018 individual and group interviews were conducted with 33 participants from six councils, totalling 1,477 minutes of recorded audio. Respondents ranged in level of seniority and from varying departments (see Table 12). The level of seniority was categorised as per the council organisational chart; *executives* referred to respondents at the apex of the organisational structure, and *officer*-level employees had no direct reports as per the organisational structure. Similarly, respondents' role focus was grouped according to its description within the organisational structure (e.g., planning, strategy, and performance, etc).

Table 12

Case study demographics

	Duration (minutes)	Number
Interviewees		
Executive	210	5
Management	528	9
Coordinator	303	8
Officer	436	11
Departmental group		
Natural environment	518	12
Planning	320	8
Strategy and performance	277	5
Infrastructure and Built environment	212	4
Corporate	125	3
Administration	25	1

5.5.1.2 Data collection

From a localist perspective, the interview process is a social situation set up by the researcher whereby the context surrounding this social interaction is an important consideration in conducting the interview. Specifically, interviewees may participate in research as a means of self-promotion or to further a political agenda, and this must be considered when analysing interview responses. Lastly, the interview is comprised of multiple discourses between the interviewer and respondent, and this perspective examines the context of these discourses (Qu & Dumay, 2011).

Interviews were semi-structured and are a method useful to elicit detailed responses for the broad themes that cover complex social phenomena (Fowler, 2014). Several types of questions were employed, including direct, indirect, probing, interpreting, and follow-up questions (Appendix J). Examples of interview questions included:

- Describe the ways, if any, in which climate change initiatives are embedded within the council (Thomson et al., 2014)?

- How do citizens hold your council to account in response to climate change (Bernauer et al., 2016)?

- What accountability mechanisms does your council have concerning response to climate change (Mees & Driessen, 2018)?

- In what ways would behavioural science influence how you engage the community in preparing for future climate impacts (Grimmelikhuijsen et al., 2017)?

- What are the mechanisms linking accountability with individual level consequences and organizational performance?

- Are there any mechanisms in place that link individual performance to organisational objectives concerning climate change response?

Interview recordings were transcribed manually, and each interview was assigned a de-identified code. Demographic information of each interview respondent was noted, including the role within the council and the council case number. Efforts were made to ensure the accuracy of data transcription, to ensure the *voices* of the interview participants were detailed. As Tucker (2021) explains, the interpretation of the data must provide a sense of the phenomena under investigation, and the data transcription was checked several times for accuracy. This involved replaying the audio to match the written words, and this underwent several checks to ensure accuracy.

In addition to individual employee's perceptions of public accountability, publicly available local council documents were collated. Organisational reports have previously been analysed in environmental and sustainability accounting research to better understand the processes of stakeholder engagement (Haji & Anifowose, 2016; Naynar et al, 2018; Bellucci et al, 2019). The inspection of documents about climate change response also enabled the examination of accountability mechanisms within formal local government documents (Mees et al., 2018). The documents from each participating council selected for analysis included annual reports and environmental or sustainability reports that contained the term *climate change* between the period 2015-2019. This date range was chosen as this was the period that the councils were implementing their climate change strategies, and, hence, analysis of if and how reporting

changed in this period is critical for assessing how accountability changed. Other documents, such as council plans and strategy, were not included as these documents did not include an evaluative component that is necessary for demonstrating accountability (Bergsteiner & Avery, 2010). Each council website had a specified section on climate change though terms such as *sustainability* or *environment* were also used. Reports were retrieved when these search terms were entered into the council website.

Although the reports were publicly available, any identifiable information was removed to maintain the privacy of the interview respondents of each of the local councils. Confidentiality of the research participants was paramount; therefore, any identifiable information from the interview and council reports was removed (Walford, 2006). Quotations used in Chapter 6 were de-identified, so that only the thematic content remained. Each council case was given a pseudonym, for example, *LC 1* represented one local council case. The phrase *sensitive content removed* was inserted where the identifiable text was. Images containing identifiable text in the council reports was hidden by a black square shape in Microsoft Word. As outlined in Table 13, a total of 29 documents were included in the analysis.

Table 13
Local government annual reports and environmental reports

	Code	No. Annual Reports	No. Environmental Reports
Case No. 1	LC 1	4	0
Case No. 2	LC 2	4	0
Case No. 3	LC 3	4	0
Case No. 4	LC 4	4	1
Case No. 5	LC 5	4	0
Case No. 6	LC 6	4	4

5.5.1.3 Overview of data analysis

The investigation of accountability within local government climate change response adopted a case study approach. Case study research involves analysing and collecting data from multiple sources (Yin, 2006). This involved interviews with council staff and reviewing council strategy documents related to climate change response. Following the collection of data, interview

transcripts and council documents were inputted into the Nvivo computerised data management program. Chapter 6 details how the data was analysed in detail, however, an overview of the approaches undertaken are described below.

The interview responses were examined using the principles of discourse analysis; the text was coded using both inductive (i.e., themes derived by the content of the data) and deductive (i.e., concepts of accountability were used to interpret the data) approaches (Armat et al., 2018). A content analysis of council annual reports and strategy documents was undertaken to identify the variations with council staff opinions and to examine the content via an accountability lens. The four questions of accountability (Mulgan, 2000) and associated themes developed from the interviews served as a framework to identify mechanisms of accountability in the local council documents.

Miles and Huberman (1994) provide several recommendations for ensuring acceptable standards for the analysis and interpretation of qualitative data: objectivity, reliability, internal validity, external validity, and utilisation. First, objectivity refers to the minimisation of researcher bias. Second, reliability refers to the consistency of qualitative research methods. This includes employing clear and unambiguous data collection protocols and peer review to ensure agreement on the analysis. Third, internal validity refers to the accuracy and credibility of the analysis, whether the findings accurately reflect the unit of analysis. Fourth, external validity focuses on how the findings are transferrable to different contexts or reflective of existing theory. Lastly, utilisation refers to the purposefulness of the research findings and the contributions to existing theory and discipline. The theoretical and methodological approaches used to inform the research were accurately described, and efforts were made to cross-check the data analysis with previous research findings.

5.5.1.3.1 *Discourse analysis of interviews*

The focus of this analysis was to identify the discourses with how individual employees draw meaning from the social context surrounding accountability of local government climate

change response; it was also to identify how council documents' presentation of climate change information was framed within the context of accountability (Hackley, 2019). Discourse is a combination of both people's generalisations of languages and the ways in which people apply what they already know about the language to create and interpret new discourse (Johnstone, 2017). According to Gill (2000), discourse analysis is grounded in the notion that knowledge is socially constructed, and focuses on the understanding of the world through social interactions. Discourse analysis contains four themes. First, discourse analysis focuses on the content and organization of all forms of talk and text including conversations, interviews and any kind of written text. texts.Second, discourse analysis views language as both constructive and constructed, and discourse is manufactured from pre-existing phenomena. Moreover, Gill (2000) asserts that this phenomena can be interpreted in a multitude of ways by the reader, and that all social experiences are constructed forms of language. Third, all discourse is viewed as the simultaneous action and interpretation of social practice. Specifically, this refers to the contextual elements of social interactions when interpreting constructed forms of text or language. Lastly, discourse analysis organizes texts and talk into one unifying version of a social interpretation. The aim of discourse analysis, therefore, is to recontextualize an understanding of a social phenomenon. In the current context, that is local government climate change response through the lens of accountability.

The purpose of employing discourse analyse was to capture the meaning and context of accountability from the perceptions of local council staff (Haji & Hossain, 2016). Through this approach, the focus was on searching for themes with the context of the four questions of accountability. Following the selection of relevant text, a theme was applied. To ensure this process was reliable, a sample of the text was also reviewed and coded by two other researchers so that agreement of the themes was made. As detailed in Chapter 6, a codebook was developed to guide this process, which also ensured the analysis maintained internal validity (Miles & Huberman, 1994).

5.5.1.3.2 Content analysis of council documents

Content analysis was employed to evaluate the council documents. This technique was chosen as it is a commonly used technique in business and accounting research to analyse written communication such as annual reports (Bellucci et al., 2019; Corazza et al, 2020). The first step in content analysis is what Miles and Huberman (1994) refer to as the immersion stage, where the researcher becomes familiar with the content and notices patterns in the data. The coding book that was developed guided this process.

The content analysis focused on the presence of words and phrases rather than a frequency count as the interpretation of accountability in council documents was emphasised due to the exploratory nature of the qualitative investigation (Ahmed & Hossain, 2016). Examples of target words or phrases included *climate change*, *sustainability*, and *environment.* The target words were then extracted with a specified amount of text immediately preceding and following them, which was either the whole sentence or paragraph (Tesch, 1990). The selected texts were then grouped according to the coding rule. Following this analysis, statistics were produced, including frequencies of words and phrases, total word count, and the number of pages in each report (Corazza et al., 2020).

According to Steenkamp and Northcote (2008), content analysis in accounting research involves making inferences about the messages conveyed in the written texts of accounting disclosures. To ensure consistency, transparency, and methodological rigour of the analysis, Steenkamp and Northcote (2008) provide several recommendations on how to manage the challenges associated with content analysis, First, the authors suggest a protocol for recording units and adopting a previously used category matrix. Second, the researcher must determine how to manage repetitive words or phrases and to consider the context during the coding process. Third, Steenkamp and Northcote (2008) acknowledge that content analysis inferences and interpretations are an inherently subjective process and recommend the use of illustrative examples to ensure that the interpretation is transparent and contestable. Steenkamp and

Northcote (2008) also suggest that the researcher explicitly outlines how many items are coded and the process through which a code is applied to an item. The coding matrix developed to analyse the council staff interviews also guided the content analysis of documents; the coding matrix stipulated what words and phrases to capture, how to categorise them, and the rationale for selecting the content.

5.5.2   Quantitative research methods

The non-experimental research design was correlational and measured the associations amongst the variables identified in the social-psychological contract (i.e., social identity, procedural justice, collective efficacy, psychological adaptation, and collective action tendencies). Quantitative research is appropriate for examining the relationships amongst these constructs as inferential statistics enable conclusions to be drawn of the population (Wellington & Szczerbinski, 2007). The following section outlines the methods of the quantitative investigation, and the analysis is presented in Chapter 6.

5.5.2.1   *Sampling strategy*

The data was collected from residents aged over 18 years in Victoria, Australia. A virtual snowball sampling technique was used to recruit participants via the social media platform Facebook, as interested participants were able to share the questionnaire amongst their social networks (Balter & Brunet, 2011). Previous behavioural science research has highlighted the benefits of using Facebook to recruit participants due to the size and reach of the social media platform as the data produced is often more convenient, accurate, and cost-effective compared with other recruitment methods. The large samples that are drawn from Facebook also minimise the problem of sampling error (Kosinski et al, 2015).

5.5.2.2   *Data collection*

Demographic variables were based on previous research that examined climate change beliefs and risk perceptions (Poortinga et al, 2019; Kellstedt et al, 2008). These variables are gender, age range, level of education, geographic location, political affiliation, household income,

and if participants had completed a survey about climate change in the past 2 years (Reser et al., 2012). Participant postal code was included as a means of identifying the locality, municipality, and region in Victoria, Australia (State Government of Victoria, 2018). The social-psychological contract on community collective climate actions is composed of constructs identified in previous social-psychological models of collective action (Sweetman & Marsh, 2016) and psychological adaptation (Bradley & Reser, 2017). The five scales all demonstrated acceptable reliability as per the Cronbach's alpha (Santos, 1999) and are described below.

- **Psychological adaptation (Bradley & Reser, 2017):** This ten-item measure is designed to measure self-reported changes in how respondents are thinking, feeling, understanding, and acting in response to the threat of climate change (Cronbachs's alpha 0.88). Example items include, "I tend to think differently these days about what is acceptable and sustainable and not acceptable for consumer products and packaging, and consumption in general". Participants rate their extent of agreement to items on a 5-point Likert scale from 1 strongly disagree/not at all to 5 strongly agree/a great deal. Scores are summed (possible range 10 – 60), with higher scores indicating a greater level of psychological adaptation.

- **Social Identification:** 127 erspe identification was measured with 4-items that were originally developed by Doosje et al. (1995) and has subsequently been used in health and organisational contexts measures (Steffens et al, 2017). In line with the findings of Van Zomeren et al. (2008) that political identity is more predictive of collective action, the items were adapted to the context of community-based identification (Bamberg et al., 2015). Participants rate their extent of agreement to items on a 7-point Likert scale from 1 strongly disagree to 7 strongly agree. Scores are summed (possible range 4 – 24), with higher scores indicating a greater level of social identification. The Cronbach alpha coefficient was .89.

- **Collective efficacy (Adapted; Jugert et al., 2016):** This utilised seven items to measure perceived collective efficacy amongst community members in responding to climate change (Cronbachs's alpha 0.98). The original items were written in German and translated using Google Translate into English. Participants were asked to rate on a 7-point Likert-type scale their agreement on each statement. Scores are summed (possible range 7 – 49), with higher scores indicating a greater level of perceived collective efficacy.

- **Procedural justice scale (Colquitt, 2001):** This seven-item measure forms a larger part of the well-validated organisational justice scale and was adapted to the context of local government action on climate change. Specifically, participants were asked to rate on a 5-point Likert-type scale the extent to which the procedure of climate change decisions within the local government was perceived as fair, for example, To what extent have you been able to express your views and feelings on this procedure? Scores are summed (possible range 7 – 42), with higher scores indicating a greater level of procedural justice. Cronbach alpha coefficient was .88.

- **Collective action tendencies:** This uses five items that examined political pro-environment actions (Sweetman & Whitmarsh, 2004) and was derived originally from research that examined collective action tendencies, which were piloted and tested by Van Zomeren et al. (2004). The five items demonstrated good reliability (α = .90). Responses required an answer on a 7-point Likert-type scale (e.g., 1 = not at all, 7 = very much), where a higher score (i.e., range from 5 to 35) indicated higher collective action tendencies. Responses were amended to reflect the local context, and the Cronbach alpha coefficient was .93.

The data were collected from citizens aged over 18 years that resided in Victoria, Australia who completed the questionnaire. The questionnaire was created via the digital survey platform Qualtrics and included (a) participant information which outlined the purpose of the study (Appendix F), (b) a consent form (Appendix I), (c) survey items, (d) an 'open forum' section at the

end of the survey for participants to provide feedback, and I the option for participants to include an email address to receive a summary report of the findings (Appendix K). The design and layout of the questionnaire were based on existing conventions in social science research (Wellington & Szczerbinski, 2007) and recommendations within the Qualtrics platform. A link to the questionnaire was piloted to a small convenience sample for accuracy and usability. The link to the Qualtrics questionnaire was then included on a Facebook webpage, which asked for people to complete the survey (Appendix G). The webpage was advertised using the Ad Centre functionality in Facebook directly to the pages of people within the state of Victoria who were aged over 18 years.

To complete the questionnaire, participants had to click on the Qualtrics link within the Facebook webpage. To minimise non-response bias, participants were required to complete all survey items before proceeding to the next page of the survey. The forced-choice format was employed to encourage an actual response from participants, rather than a 'don't know' option (Lavrakas, 2008). Omitting a 'don't know' option can also increase an educated guess from responses, which can improve the validity of surveys regarding public knowledge on scientific and political information (Tourangeau et al, 2016). The Facebook webpage was active from 23rd March to 23rd May 2020. Eight hundred and ninety-eight questionnaires were received from the Qualtrics online platform; however, 262 questionnaires were discarded due to incompletion or disengaged, resulting in a response rate of 71% and 636 useable survey responses. Although most participants provided a Victorian postcode (i.e., a four-digit number between 3000 and 3999), 28 respondents were excluded from the analysis as a non-Victorian postcode was provided. The final number of useable responses was 608.

Demographic information of the participants is outlined in Table 14. Analysis of the descriptive statistics revealed that approximately two-thirds of respondents were female (63.8%), and participant age was distributed across age groups with the largest representations being from 55 to 64 years (21.2%) and 18 to 24 years (20.9%). A majority of respondents (56.9%) had some

level of tertiary education, represented by 29.4% with an undergraduate degree and 27.5% with postgraduate qualifications. A large proportion of respondents (72.9%) resided within 25 kilometres of the central business district, where the most common resident type was suburban (38.1%) followed by country town (25.8%), and almost half of the respondents (43.8%) had lived less than 10 years in their current residence. Close to half of all respondents indicated an affiliation to the Greens political party (46.8%). Household income before tax was mostly evenly distributed across the income brackets though a quarter of respondents (25.8%) indicated an annual household income of less than $40,000. A third of respondents (33.8%) had completed a survey on climate change in the past 2 years.

Table 14

Survey participant demographics

Variable	Participant details (n = 608)	Frequency	%
Gender	Male	210	34.5
	Female	388	63.8
	Other	10	1.7
Age Range	18 – 24 years	127	20.9
	25 – 34 years	87	14.3
	35 – 44 years	76	12.4
	45 – 54 years	75	12.3
	55 – 64 years	129	21.2
	65 – 74 years	99	16.4
	75 and older	15	2.5
Education level	Year 10 or less	15	2.5
	Year 11	13	2.2
	Year 12	94	15.4
	College certificate or diploma	97	15.9
	Trade qualification/apprenticeship	33	5.5
	Undergraduate degree	179	29.4
	Postgraduate degree	169	27.9
	Other	8	1.3
Current residence	Urban	103	16.7
	Suburban	228	37.5
	Country town	156	25.7
	Rural	64	10.6
	Rural residential	57	9.5
Distance from CBD	0-25kms	448	74.0
	26-50kms	104	16.9
	51-100kms	45	7.3
	101-250kms	8	1.3
	250kms and over	3	.5
Length of time in residence	0 – 10 years	267	43.9
	11 – 20 years	157	25.4
	21 – 30 years	97	15.9
	31 – 40 years	52	8.6
	41 – 50 years	19	3.2
	50 + years	18	3.0
Political party affiliation	Liberal	49	8.0
	Labor	109	17.9
	National Party	10	1.7
	Greens	285	47.1
	One Nation	22	3.5
	Independent	50	8.3
	Other	83	13.6
Household income (before tax)	$40,000 or less	155	25.5
	$40,001 - $60,000	98	16.3
	$60,001 - $80,000	93	15.1
	$80,001 - $100,000	84	13.9
	$100,001 - $150,000	99	16.1
	$150,001 - $200,000	40	6.6
	Greater than $200,000	39	6.5
Participation in a similar survey in the past 2 years	Yes	208	33.8
	No	400	66.2

Participants were also asked to include their postcode as a means of identifying the locality, municipality, and region in Victoria, Australia (State Government of Victoria, 2018). Crosstabs were produced to categorise the locality and municipality according to region; it was observed that 349 responses were from metropolitan areas and 259 were regional (Table 15).

Table 15

Survey participants by area

Area type	Region	Frequency	% within region	% within area
Metropolitan	Greater Melbourne	12	3.5	2
	Inner Melbourne	47	13.6	7.8
	Melbourne Metropolitan	142	40.8	23.4
	Outer Metropolitan	148	42.2	24.2
		349	*100*	*57.4*
Regional	Barwon Southwest	65	24.9	10.6
	Gippsland	70	27.2	11.6
	Grampians	24	9.3	4
	Hume	39	14.8	6.3
	Loddon Mallee	61	23.7	10.1
		259	*100*	*42.6*
Total		608	-	100

5.5.3 Integration research methods

In line with multilevel mixed methods design, integration techniques were employed to generate meta-inferences using empirical evidence from the qualitative and quantitative studies at the different levels (i.e., macro level and micro level). Appropriate analytical techniques were applied to provide greater conceptual clarity of the overall structure at each level and the mechanisms between the levels (Plano Clark & Sanders, 2015). The findings from each level were then used to generate meta-inferences of community-level collective response to climate change from local government accountability and a social-psychological contract of citizen climate action tendencies.

Integration techniques for multilevel mixed methods research suggest a range of approaches, including data transformation, discussion, and joint displays (Headley et al., 2019). The current investigation adopted a contiguous approach of presenting both sets of data separately through a process labelled integrating through narrative (Fetters et al., 2013). Within

the context of the overarching research question, concepts from the qualitative findings and quantitative findings were organised and structured according to the macro level (i.e., local government accountability), the meso level (i.e., civic participation, social norms), or micro level (i.e., psychological adaptation, individual perception) (see Figure 7). These findings were presented via joint display and were structured according to a four-stage pillar integration process: listing, matching, checking, and pillar building (Johnson et al, (2017). Each pillar represented a narrative theme. Chapter 7 outlines the integration research process and developed inferences of community collective climate actions.

5.6   Methodological limitations

The methodological approaches employed were associated with limitations. While qualitative research may have limitations in terms of generalisability, the focus of the thesis was to develop a deeper understanding of accountability behaviours in the context of climate change. Qualitative research was appropriate given the exploratory nature of this part of the research. Furthermore, surveys can be limited due to a lack of validity, prone to biases (e.g., social desirability), and can limit contextual understanding (Fowler, 2014). However, design factors, drawing on Podsakoff et al. (2003), were incorporated to reduce method bias and improve reliability (outlined in Chapter 6). The survey was advertised through the website Facebook and, although approximately 50% of Australians log on to Facebook daily (Social Media Statistics Australia – January 2021), responses may be prone to self-selection bias (Albright & Crow, 2019). Although Facebook allows collecting a large sample, the results of the study only reflect people that use Facebook and who self-selected to voluntarily take part. A survey was appropriate as it provides an objective measure of collective actions that may be replicated in other councils in Australia.

5.7   Ethical considerations

Although there will always be an element of risk to researching with human participants, any potential ethical risks were managed per the Australian code for the responsible conduct of

research (Australian Government, 2018). Though not possible to maintain anonymity, information obtained from research participants was de-identified by utilising pseudonyms for participants and the research location (Walford, 2006). In troubleshooting issues of confidentiality, research participants were asked what information they wanted to include, to minimize any potential misrepresentation on their part. Although difficult to determine, the impact of the global Coronavirus pandemic may impact the types of responses provided by surveys, such as cognitive biases (Kunreuther & Slovic, 2021). These cognitive biases may involve how an individual perceives the likelihood of risk, and reports showed that during the data collection of the survey responses the level of anxiety of surrounding the pandemic was high. This heightened anxiety may have influenced how people responded to survey questions.

5.7.1 University ethics approval

Ethical approval was obtained from the Victoria University Human Research Ethics Committee (VUHREC; Appendix B) for both the qualitative and quantitative phases of the research (Ethics approval number: HRE17-188 on 09/10/2017, see Appendix C). The VUHREC assessed the research based on its design, methodology, participant recruitment, the language and content of the interview protocol, and the survey questionnaire. Consent from participants was collected, and participants acknowledged that their participation was voluntary and that they could withdraw from the study at any time (Appendix H; Appendix I). The participants were also given the contact information of the researcher and his primary supervisor to report any issues relating to the research.

5.8 Chapter summary

This chapter presented an overview of the multilevel mixed methods research design (Headley & Plano Clark, 2019). The benefits of utilising mixed methods research include a richer insight into climate change, which may generate more questions for future studies (Caruth, 2013). A pragmatic philosophical worldview guided the research (Molina-Azorin & Cameron, 2010) and is appropriate for generating new insights across different disciplines into climate change research

(Nightingale, 2016). A qualitative research method for exploring accountability has many advantages, including the ability to provide a deeper level of analysis and understanding of the psycho-social aspects in policy settings (Leung, 2015). The advantages of examining the relationships amongst the psychological constructs are to be able to make inferences on a population (Wellington & Szczerbinski, 2007), confirm predictions, and predict future behaviours (Abu-Alhaija, 2019).

The concurrent research design was then described, followed by the outline of qualitative (i.e., public accountability within local government institutions), quantitative (i.e., the psychological processes that contribute to participate in collective actions), and integrative research methods (i.e., conceptual interactions of the qualitative and quantitative data). The sampling strategy, data collection, and data analysis for the different levels of analysis were described for each of the levels of analysis. The Australian Code for the Responsible Conduct of Research (2018), incorporating ethical considerations, was followed for this investigation. The results from the qualitative study are presented in the following chapter.

Chapter 6   Qualitative Study

6.1   Chapter overview

The previous chapter outlined the research methods of the thesis and described the sampling strategy, data collection, and overview of the data analysis on each level (i.e., institutional, individual, and dual). Chapter 6 focuses on the qualitative analysis of the local government response to climate change through an accountability lens and follows a case study approach. The analysis was based on the interview transcripts with council managers and other employees and council reports (i.e., annual reports and environmental reports; see Section 4.5.1 for the description of the sampling strategy and data collection). The interview data was analysed through discourse analysis and presented via the four questions of accountability – *who*, *for what*, *to whom* and *how* (Mulgan, 2003). The selected council reports were investigating using the process of content analysis to better understand the exemplars of accountability defined by the interview respondents.

6.2   Data analysis

A key focus of the qualitative study was on interpreting the processes of accountability in the local government response to climate change. The case study approach (Yin, 1984) was employed to investigate accountability within local councils. Six cases were the focus of the qualitative study, where each local council represented a single case. The data that were analysed included the interview transcripts and strategy and environment reports from each council. Although the number of respondents varied between councils, a range of council staff participated in the research. Respondents were from different areas of the organization and represented different levels of seniority, to reflect different perspectives within the council (Bovens et a, 2014; Hackley, 2019; Parker, 2008). The purpose of the analysis was to examine the structure, function, and variation of the text (Hackley, 2019) through the lens of accountability. The data collected was analysed according to the four questions of accountability, as articulated

by Mulgan (2003). These questions were – *who is (are) accountable*, *accountable for what*, *accountable to whom* and *how are they accountable?*

The qualitative data analysis contained two phases. In phase one, the interviews with council staff were analysed as per the process of discourse analysis. First, the text was analysed for structural regularities through a reflexive practice of reading and re-reading to identify the purpose of the text. Second, the text was analysed by examining how the message was communicated and its underlying meaning. Third, the text was analysed for any variations in meaning, to construct a social narrative of the phenomenon. The benefit of interviewing council staff from different areas of the organization was that it enabled variations of how accountability was articulated. Hackley (2019) emphasizes the importance of analysing the ethnographic context of text.. The text of these reports was scanned for content that focused on climate change response (including references to environment and sustainability) and reviewed within the context of accountability. This included evidence of the phrase *accountable* or text that describes answerability or oversight as it relates to climate change response.

Phase two examined the council reports using content analysis. The content analysis focused on the presence of words and phrases rather than an explicit frequency count, and the interpretation of accountability in council reports was emphasised, due to the exploratory nature of the qualitative investigation (Ahmed & Hossain, 2016). Examples of target words or phrases included *climate change*, *sustainability*, and *environment.* The target words were then obtained with a particular amount of text immediately before and after the target word. This was either the whole sentence or paragraph (Tesch, 1990). Statistics were included to illustrate frequencies of words and phrases following the analysis and coding of the text (Corazza et al., 2020). The selected text was then coded and is described next.

6.2.1   Coding the text

Coding text involves a degree of sensemaking, and DeCuir-Gunby et al. (2011) stipulate that a codebook should be developed to analyse the data, which is often done iteratively. This

codebook was articulated through a systematic six-stage process and is useful to demonstrate

rigour for both inductive and deductive theme development (Fereday

& Muir-Cochrane, 2006):

- **Code manual development:** This involved deductively assigning a code label name with

    an associated description based on prior research. Any text that included information on

    climate change or the environment was considered for coding. The codes developed

    during this phase were predominantly based on existing analytical frameworks that

    focused on accountability (Mees & Driessen, 2018; Mulgan, 2003). Table 16 provides

    examples of the theory-driven codes.

Table 16

Example of theory-driven codes with labels and descriptions

Code 1	
Label	Citizens as accountholders
Definition	In a democratic society, citizens have authority over local government decision-making, where local governments must be answerable to their constituents (Mulgan, 2003).
Description	An explanation of how local governments specifically address the authority of citizens.
Code 2	
Label	Roles and responsibilities
Definition	Regarding the response to climate change, there are clearly defined roles that outline specified authorities within the local council (Gupta & van Asselt, 2019)
Description	Job roles focusing on response to climate change are specifically articulated with an explanation of who is accountable for job tasks and what these tasks look like.

- **Reliability testing:** Once labelled, codes were tested for reliability by the researcher and

    two supervisors. This was achieved by each author reviewing data samples and assigning

    a code to the text. The coded data of each of the authors was then compared, and further

    revisions of the codes were undertaken to ensure the data contained consistent codes

    (DeCuir-Gunby et al., 2011).

- **Identification of initial themes and data summation:** Each transcript was then summarised, which involved outlining the key points insights that respondents expressed. This summation of information provided the initial sensemaking by the researcher and allowed notes of potential themes in the raw data to be made.

- **Applying codes to the text:** This involved clustering codes that shared some unifying feature so that a meaningful pattern was formed; this approach is based on the template analytic technique by Crabtree and Miller (1999). The codes were inputted as nodes in the NVivo computerised data management program, and segments of text were then assigned the codes. For example, many respondents noted that local councils were mostly accountable to their ratepayers, where these responses were based on a deductive code labelled *citizen as an account holder*. However, during the coding of the transcripts, inductive codes were applied as new themes were observed within the data. For example, *ratepayer wealth* (i.e., affluent residents tended to be engaged with their local councils) was evident from some respondents when asked to elaborate how local councils were accountable to ratepayers. Ratepayer wealth was an extension of the citizen as *accountholder* though it was its unique theme.

- **Identification of themes and connection of codes:** During this stage, codes were grouped based on similarities and differences to form themes. There were clear conceptual links between some codes, and they were linked accordingly. In some instances, some of the respondents' interview data were assigned to multiple codes.

- **Corroborating and confirming the coded themes:** Themes were further refined and clustered into succinct phrases to describe the meaning that underpinned the theme. For example, the theme of service delivery was an amalgamation of smaller similar themes, including community education, behaviour change, and waste management as the commonality was the council offering services to the community.

A codebook was developed to organize the themes uncovered in the discourse analysis (Hackley, 2019) and content analysis (Dissanayake et al., 2021). The development of the codebook employed a structured approach to assigning codes (Fereday & Muir-Cochrane, 2006). A total of 18 themes were developed, and these were categorised according to the four questions of accountability (Mulgan, 2000). Figure 9 outlines a theoretical definition of each of the themes, as well as the rule used to code the text.

Figure 9

Codebook of themes, including theoretical definitions and coding rules

Theme	Theoretical definition	Coding Rule
Who is (are) accountable?	Identifies those responsible, whether that is the individual actions of a leader, or through the collective actions of an organisation or agency (Mulgan, 2000; Bovens, 2007).	Reference to either an individual or organisation as answerable to climate change response.
Unclear roles and responsibilities	Related to the role clarity and responsibilities associated with climate change and, although local council is hierarchically structured, it is considered only an environmental issue.	Description of a level of response to climate change but responsibilities may not necessarily be described.
Leadership	Commitment to sustainability initiatives from councillors heavily influences climate change response, though the efficacy of this leadership is contiguous with community needs	Description of climate change response that is described by leaders in the text.
Third-party stakeholders	External specialists or experts guide the decision-making	Reference to external stakeholders in articulating how local council is responding to climate change.

Theme	Theoretical definition	Coding Rule
Accountable to whom?	Identification of the account holders to whom accountability is owed (Mulgan, 2000; Bovens, 2007).	Reference to individuals or groups that will benefit from the actions of the individual or organisation.
External accountholders	Given the obligations to its citizens and enforcing legislation from state and federal government, the focus of local councils is on service delivery. The scope of these services in the context of climate action is limited and reactive.	Description of stakeholders that are external to the organisation that are considered in decisions pertaining to local council response to climate change
Internal accountholders	Local government exist in a hierarchical chain of command, where accountability is demonstrated in navigating this political structure and to be seen to be doing something.	References internal stakeholders that benefit from climate actions; including the bureaucratic processes and governmental approval for completing projects.
Aspirational goals	The capacity for local government response to climate change is unclear. Climate change response appears to be largely understood as referring to emissions reduction. The scope of local council in climate change response is largely defined by the finances from ratepayers where environmental issues are considered peripheral to other issues.	Articulation of the goals taken by the local council in response to climate change but may lack sufficient detail in how the goals will be executed.

Figure 9

Codebook of themes, including theoretical definitions and coding rules (cont.)

Theme	Theoretical definition	Coding Rule
Accountable for what?	Articulating for what is to be held to account focuses on the duties to be carried out, which for example may be a contract or performance goals (Mulgan, 2000; Bovens, 2007).	The content describes the services, material goods, items, actions, or duties provided to the beneficiaries by the individual or organisation.
Varying level of output	Articulating what councils were accountable for in terms of response to climate change is not clear due to an overload of service commitments and/or limitations.	The text describes what council is doing in terms of climate change response but the level of detail and/or terminology may not be detailed.
Community demands	Decisions made in relation to climate change response is grounded in appeasing community demands.	Description of council actions to climate change that are driven by community concerns or demands.
Council strategy	Local government climate change strategy outlines the obligations set out by the local council to the community it represents.	Explanation of what is involved within council plans that is focused on climate change response.
Advocacy	The capacity to act on climate change within local government is through advocating stakeholders, the community and other tiers of government.	Reference to the efforts are made within the council to advocate for climate change response.

Theme	Theoretical definition	Coding Rule
How are they accountable?	Demonstration of accountability includes accurate information that must be filtered through collaboration and discussions amongst stakeholders (Brandsma & Schillemans, 2014).	The text refers to the processes of how the services, material goods, items, actions, or duties are provided to the beneficiaries by the individual or organisation.
Reporting	Council documents include information on performance in relation to climate change response. Information mainly focuses on mitigative actions such as carbon emissions reduction.	Evidence of the reporting on climate change response, but not limited to emissions reductions.
Strategic objectives	How council strategy objectives were being met was a clear account of how the council is progressing towards its obligations.	The text describes how the actions are aligned with council objectives.
Community collaboration	Local council will aim to work with the community, though this may not be done in a consistent or rigorous way.	Description of how council consults with or educates the community and/or receives feedback on climate action.
Reactive decision-making	Even though climate change response requires longer-term strategic focus, local councils focus on reacting to immediate concerns.	The text will articulate how local government decision-makers responds to issues related to climate change.
Embedding climate action	Climate change response is managed throughout the council and not considered only an environmental issue.	The content will provide evidence of how climate change response is integrated throughout the rest of the council.

6.2.2 Validity and reliability

The codebook and subsequent themes were assessed for quality with approaches analogous with qualitative research and included evaluating for validity and reliability (Kihn & Ihantola, 2015). According to Ali and Yusof (2011), enhancing validity and reliability in social and environmental accounting research can be achieved through several strategies. These strategies include adopting more than one qualitative method (e.g., analysis of reports and interviews); demographic information of respondents; a description of how themes were generated; and existing theory that supports or refutes the findings. Accordingly, these strategies were employed in the current investigation.

Ibiamke and Ajekwe (2017) provided an outline of strategies to ensure validity and reliability in management accounting research so that the "research findings are rigorous, relevant and trustworthy" (p. 157). Validity approaches involve trustworthiness, transferability, confirmability. Trustworthiness focuses on whether the study examined what was planned and can be achieved through triangulation of different sources and types of respondents. The qualitative analysis was based on more than one source, including council staff interviews and council reports (Bellucci et al., 2019), and incorporated a range of stakeholders other than key decision-makers and managers to provide divergent viewpoints (Hackley, 2019).

Transferability refers to the degree to which the findings can be generalized and can be addressed by a detailed description of how the data was collected. The protocol of the sampling strategy was detailed in Section 5.5.1 Qualitative Research Methods. Information was provided in sufficient detail for the process to be replicated. Confirmability reflects the researcher's understanding of the source data by a detailed description of the process used to analyse the data. Confirmability in the present study can be seen in the development of the coding rule, which was grounded in existing theory and *emerged* from the data.

Ibiamke and Ajekwe (2017) articulate the strategies to ensure reliability in qualitative research, which are auditability and dependability. Auditability refers to a clear account of the

steps in the data analysis. Dependability refers to an account of how the research was conducted systematically. Based on these criteria, the research was conducted in a reliable manner, reflected by the steps in the discourse analysis (Hackley, 2019), content analysis (Dissanayake et al., 2021), and the development of the codebook (DeCuir-Gunby et al., 2011), as well as the process described in the Qualitative Research Methods, Section 4.6.1, in the previous chapter.

6.3 Results from council interviews

The themes identified in the codebook are presented, along with descriptions of each theme as reflected in the interview transcripts. Quotations are provided to illustrate the theme, where de-identified demographic information of interview participants accompanied each quotation. Some themes were uncovered from the discourse analysis that did not fit in to the codebook and are presented in Section 6.3.5.

6.3.1 Who is (are) accountable?

6.3.1.1 *Unclear roles and responsibilities*

The councillors and directors are the chief decision-makers and are ultimately accountable for actions of local government. All the case study sites follow a similar hierarchical structure, with the elected councillors and directors in charge of decision making. However, the responsibilities associated with response to climate change were mostly relegated to the environment teams as well as through collaboration with external agencies and consultants on specific projects. The role of local government in the global response to climate change is less clear:

> Several hundred community members clearly rated environment as extremely
> important, which is tough for councils because we are only local, advocating for
> environmental outcomes and whatever else, dealing with climate change… we
> all know that if you're all a part of the puzzle and it all feeds up to fix the problem.
> We're 110,000 people out of 7 billion. We've got 17 km of Australian foreshore
> out of 33000 kilometres… really are we going to change it? Together as the

association of the Bayside Municipalities we will. Together of Victorian councils
we will, and together as Australian citizens we will. (Respondent 5)

The local council's focus on delivering services to the community impacts how roles and responsibilities for climate change response are assigned within the council's organisational structure. For some councils, respondents found it difficult to identify who was responsible for climate change response, how it is being achieved, or what the mandates were. For those interviewed, there was a general perception that the environment and/or planning department is responsible for any *sustainability* issue, where it was not a shared responsibility. One council, on the other hand, had integrated environmental initiatives into its business-as-usual practices, and this had resulted in greater action on climate change. For councils where responsibilities for climate change response were more clearly articulated, there appeared to be greater direction from the organisation's leadership structure. For councils where responsibilities were not as clear, however, there appeared to be the ambiguity of responsibilities further up the hierarchy:

There's a few departments that are probably more responsible than others. I'm a part of the parks and open space team. You've got teams like sustainable environment, healthy lifestyles, and every other department has a role to play. The finance team should have a role to play because that is important to them as well. At the upper level of government, I'm not really sure who is in charge of how to manage climate change. Everyone is aware of it as an issue. Haven't heard of a manager of climate change as such, but I'd be going to the manager of strategy and environment. There's four directors within council who run the four big teams. That executive group would have a strategy in place and then it would go down the chain, the directors, managers, team leaders would all have to submit their budgets on how they will address the strategies on which how do we deal with climate change. It is a governance issue, a lot of people care a lot and have the technical skills, but how does that filter into a good decision. (Respondent 20)

Several respondents noted that environmental initiatives were viewed as an additional action to the primary function of service delivery and most staff were too busy to undertake additional tasks. To a large extent, this limited capacity has been influenced by organisational restructures within each council but also because there is the perception of a conservative organisational culture resistant to innovation and change. One respondent noted that their council's sustainability strategy was underpinned by changing the attitudes and behaviours of the council employees though they recognised the barriers to achieving this. There was also the perception that council employees did not have the appropriate skill set needed to carry out tasks, and this was viewed as a performance and capability issue. Discussing how staff key performance indicators were linked to climate change response, one respondent noted:

> The drivers of employee engagement from millions of people around the world and that's what we're measuring. A lot of people do homemade studies, but this is actually based on research. We've got three strands where they look at employee engagement, climate change is not one of them, there's things like relationship with the leader. There is things like my understanding of the strategy and strategic direction which is tenuously linked to climate change because part of our strategic direction actually goes to that. It's not directly linked. The way I talk about my role is that I set the organisational strategy then I create the levers to align performance with the strategy. I do this. I also have a role in all the policy and strategy development across the organisation and the review of it to make sure it aligns with the council plan. I've obviously got the leadership piece and then culture piece and then I have other sorts of areas. We do regular service reviews to prove that we're adding value to provide opportunities for improvement in those services, so linking to the environment. One of the one's that we recently completed was our waste services review and the recommendation for that was

sending food waste through our green bin so that it doesn't go through to landfill,

and I have a whole other piece around innovation and process improvement. It's

a strategy and all the levers to alignment. (Respondent 29)

This theme reflects the issues associated with assigning responsibilities for collective outcomes (Mulgan, 2003). In a public administration setting, the difficulties in assigning responsibilities have previously been described as the *problem of many hands,* that is, inability to implement policy effectively due to the contributions of different individuals (Black, 2008; Thompson, 2014).

6.3.1.2 *Leadership*

Respondents noted that commitment to environmental initiatives from councillors can influence how much a council focuses on responses to climate change, and this was more common in jurisdictions whose citizens and councils advocated for a greater emphasis on environmental initiatives. The commitment of its leaders was viewed by some respondents as generally symbolic and informed the strategic direction of the council. However, environmental issues were not a priority for the councillors in some councils, so less emphasis was placed on response to climate change.

Commitment to sustainability initiatives from councillors heavily influenced climate change response, particularly in the context of hierarchical governance structures. The political ideology of the councillors tended to influence the leadership direction, and some respondents noted that Greens voting councillors pushed issues to do with climate change. Although organisational-wide commitment is necessary to achieve council actions, the commitments of its leaders are generally symbolic and can set the tone of the council in what it achieves – the councillors are the political face of the council. However, respondents noted that local councils were highly risk-averse, and this resulted in short-term and reactive decision making. One respondent spoke of the challenges of managing risks within the council:

My concern about that is what risk are you trying to avoid. From a climate

change area, there's a long-term risk-averse, there's a body of evidence that

suggests we need to do something about it now rather than wait until it's

imminent. I'm not sure risk aversion plays a part in our lack of response. To me,

I'm not sure the things that carbon neutrality goal, energy efficiency stuff

because there's not a lot of risk in that, I think. I think part of maybe where this

comes in is that we're not out there stridently pushing our community with a stick

to become more environmentally aware and is that because we're worried about

the reaction we might get, maybe. The issue about risk-averse cultures is their

often take risks that they haven't thought through. They've thought through it

conceptually, but they're taking big risks they just haven't in their mind that's not

the risk they're worried about, and climate change is a good example of it.

(Respondent 28)

Several respondents noted the importance of accountability being demonstrated by its

leaders, which involved taking a stand on an issue and not being swayed by opposition or

populism. For some respondents, an accountable leader documented their actions and

achievements though this documentation was not always evident. Although respondents spoke

of the necessity in holding a political position and to not be swayed by short-term and reactive

decision-making for effective leadership, the opposite was true:

We tend to focus on the loud minority so the squeaky wheels and what that does

it creates a lot of noise, and it means that you don't get that long-term focus.

Because we are all just reacting to things. (Respondent 11)

Many respondents noted that local councils are structured in such a way that decisions

are based on meeting immediate community demands and this is problematic in the realm of the

long-term nature of climate change:

If something peaks and it's suddenly an issue and gets all the attention, but if it's

a long-term chronic problem those are the hardest ones to tackle because they

need long-term solutions, long-term planning, the funding can get cut when the

government changes. Every 3 years these long-term projects can get de-funded

and re-funded. Something like climate change you'll need a 50-year plan to tackle

it. (Respondent 20)

Despite this, the commitments of councillors in formalised documents, such as council plans and annual reports, imply that the councillors will be held accountable for their actions by the public. Even though some of the environmental actions were viewed as tokenistic, some respondents stated that these were at the very least a move in a positive direction. However, effective leadership on long-term and systemic issues like climate change are severely compromised by this political landscape. It was also observed that respondents who were not in leadership positions (i.e., classified as officer or coordinator) expressed general dissatisfaction with how managers and councillors addressed issues on climate change.

6.3.1.3 Third-party stakeholders

Collaborative working groups and advisory committees were also evident in most councils and include representatives such as councillors, council staff, and community members. On occasions where a response to climate change was evident, local councils tended to collaborate with external partners, such as contractors and other councils, where guidance from state and federal levels of government – or even the councillors within the council – was absent. The use of third-party consultants was often seen as a better alternative than using internal staff from the perspective of decision-makers as it gave credence to the process:

My team uses consultants, technical experts, I'm the one accountable for the

output, not them. I think it gives people the flexibility to use people when you need

to, a different expert for a slightly different thing. You'd get better outcomes,

current knowledge. (Respondent 36)

Outsourcing to third-party consultants and contractors may also be a result of minimising expenditure given the resource constraint that councils experience. However, as Eckersley and Ferry (2020) suggest, the contracting of services may undermine the accountability relationship between the public and political institutions. The use of third-party stakeholders within local councils may make identifying who is accountable less clear though the contractors are used most likely out of necessity due to limited resources and a desire by decision-makers to be seen 'doing something'. While local councils are best situated to manage climate change response at a grassroots level, there are severe limitations with what councils can achieve with minimal resources.

I'm actually the fleet manager as well, so I manage the fleet and reduction in the number of vehicles in the fleet. I've got some targets that I have to meet from a management perspective, but I guess from a purely finance perspective, it's making sure the long-term financial plan accommodates those strategies to deal with climate change, or a business case is presented to council to say if this is the impact you want to have, this is what it's going to cost. A decision is then made about whether council wants to invest that money to get a climate change outcome. You're in a rate-capped environment which is going to put a lot of pressure on metropolitan councils in the medium to longer term, even more so for rural councils So as that revenue becomes more scarce and tough decisions are going to be made about services that are to be delivered. What the capital program looks like, and that capital program includes projects that are specifically aligned to climate change, can we continue to fund it. That's a real issue that local government will have to deal with. (Respondent 26)

Climate change response within the local council representatives that were interviewed was evident but varied considerably. Third-party stakeholders are used to manage the limited

resources and to deliver services to the public. A lack of clarity surrounding roles and responsibilities, as well as outsourcing to third-party consultants limits a clear articulation of who within council is accountable for climate change.

6.3.2 Accountable to whom?

6.3.2.1 External accountholders

Local councils are under the scrutiny of the public, which one respondent noted is an implied example of accountability. Nearly all respondents noted that the primary aim of local councils is to service the needs of the community, and a large percentage of revenue is collected through rates paid by each resident. Local councils, therefore, are highly indebted to meeting community demands. Much of the community plan is derived through community consultation, which informs the direction that the council will take for the next 3 or 4 years.

Given the obligations to its citizens, the focus of local councils is on service delivery. Though, given the budget constraints, the capacity for service delivery within local councils is restrictive. Some respondents noted that their council's plans were highly ambitious and set out to be all things to all people:

We try and do too much across a whole range of areas, and we don't have the

resources to deliver on that, so we over-promise and under-deliver. Because the

nature of the business is so diverse, you tend to get pulled in multiple directions.

(Respondent 28)

Despite the best of intentions, local councils have limited capacity to meet every demand of the community. Respondents noted that many residents did not engage with the council and presumed that this was the case due to a lack of awareness of the role of a local council, which focused on basic service delivery, such as rates, road maintenance and waste collection. Initiatives that are a response to climate change, therefore, are generally viewed as less important in comparison to immediate concerns by both the public and decision-makers.

Respondents spoke of the challenges of meeting community demands when a pragmatic approach is used to decide which projects are undertaken. For example, councillors at one council may only choose the five most pressing concerns by the community and base projects around that, and action on climate change was not one of them. For another council, community members rated the environment as the top issue for the area and, as a response, several initiatives were undertaken, such as tree planting and restricting overdevelopment. Despite this, one respondent noted the contradictions in meeting community expectations: *"Environment is always an interesting one, people want to look after the environment and have lots of lovely trees, but they want to be able to park their car outside their house and shopping centre"* (Respondent 29).

While local councils tended to mirror the community expectations as set out through the consultation process, several respondents noted that the community was generally apathetic toward large and complex issues like climate change: *"The voters want immediate, the here and now and I think to some extent the community they just assume the council can deal with climate change"* (Respondent 11).

Respondents noted that their respective communities tended to focus on environmental issues, such as protecting natural reserves and open spaces, but seldom addressed macro-level issues. One exception to this was noted when the community experiences a natural disaster such as bush fires and, in this situation, the community demands action.

Despite this, respondents described a small pocket of residents in each of the communities who advocated strongly for action on climate change, which was not always effective in changing decisions amongst councillors. Some of those residents volunteer their time with the councils on environmental projects, and their contributions have had mixed success. Respondents also noted that councillor decisions were influenced by the socioeconomic status of the residents though residents with a higher level of affluence tended to have a greater capacity to engage with the council*: "There are small groups with the community who, when they can get*

themselves organised, can make life difficult for the council by involving the media in certain campaigns around what council is or is not doing" (Respondent 28).

As opposed to reacting to community demands, there was evidence of proactive environmental initiatives on the part of the local council. Most councils provided, to varying degrees, programs that focus on environmental education and behaviour change. Respondents noted that in their programs, more familiar language that is subject-specific and tangible (e.g., reducing electricity bills) is often used in favour of the term *climate change*.

The purpose of local councils is to service the demands of its citizens, and there are restrictions on what services can be delivered, even though some respondents noted that councils were not always clear on how this is achieved, especially when there was an overpromise of services. The actions that are necessary for effective climate change response, however, are not generally aligned with the immediacy of community demand. Despite evidence of engagement with segments of the population, respondents commented that climate change is rarely mentioned by residents. Accordingly, a minimal focus is placed on climate change response.

6.3.2.2 Internal account holders

Local councils exist in a political landscape and, as such, are constrained by election cycles, governmental bureaucracy, and a hierarchical leadership structure. To successfully navigate this landscape, council representatives must adhere to the hierarchical structures of government and its regulatory obligations but also demonstrate the actions laid out by the councillors to their constituents. The direction that is set by the councillors outlines the actions to be taken during their political term within the local council, and some respondents noted that the political ideologies of the councillors were an influence. As in any political environment, these actions are designed to legitimise the councillors' political stewardship even though the efficacy of such actions is questionable.

Within this political context exists a hierarchical chain of command, where several actions are mandated from higher levels of the organisational hierarchy and approval or sign-off is

required. A great deal of legislative requirements exists within local councils though mandates concerning climate change response are less clear:

> I think with [the] planning [department]'we're very much bound by the state
> government though and for a long time they were holding off on policies relating
> to climate change but now again t'at's changing so some councils do have climate
> change policies and hopefully'we'll get one of them soon too. We tried really hard
> with the state government, and they were saying'we'll hold off and they would do
> their own state policy and we 'on't anything to conflict with it and then they did
> eventually let us go ahead with it. So, there is a bit of push-back from them for
> what we can and 'an't put in the planning scheme. (Respondent 13)

Some respondents noted that, while the hierarchical structure restricted what can and cannot be done, a few local councils still pursued climate change response initiatives. Some respondents from the environment departments had developed strategies for environmental initiatives even when there was no mandate by the senior leadership team or councillors, particularly when no approval or sign-off was needed.

An example of political acumen that was evident from several respondents was the importance of undertaking initiatives that were labelled as contributing toward climate change response. Environmental initiativ–s - which are often included under the term *sustainability* – are undertaken partly for councils to be seen doing something even though the actions may not result in substantive change. Respondents noted that environmental projects which can be visible to residents were generally approved, such as attaching solar panels to buildings, and reflects the decisions made by the CEO:

> The projects that go into our capital works that are around putting solar panels
> on the roof, or incorporating environment and sustainable development into policy,
> into council buildings. There are major initiatives published in our council plans.

If we 'on't achieve them, the CEO is held responsible. He do'sn't get his bonus if

we 'on't all achieve all our initiatives. (Respondent 11)

Collaborative working groups and advisory committees are also highly visible and were evident in most councils and include representatives such as councillors, council staff, and community members. On occasions where climate change response was evident, local councils tended to collaborate with external partners, such as contractors and other councils, in the absence of guidance from the upper echelons of government.

The political landscape has a large impact on the level of climate change response within the council. Based on the interview responses, it became apparent that local councils exist within a hierarchical structure where there is an emphasis on creating the impression of acting on issues. At the same time, there was a tendency for local councils to partner with external agencies whilst overlooking the expertise of their staff who were at a lower level of the hierarchy. The ability to work within these political parameters has resulted in climate change response, albeit in a limited capacity. Within local councils, the CEO is the person responsible for decisions made related to climate change.

6.3.2.3 Aspirational goals

In general, respondents had commented on the issues in identifying the parameters with which local councils should be addressing climate change, acknowledging that councils are limited with what can be achieved. Respondents were unable to clearly articulate the scope of how local government should be tackling climate change, and for that reason, accountability appeared to be lacking. A variety of factors contributed to the emergence of this theme, including financial constraints through the funding councils receive from the public and, also, the belief by respondents that councils should maintain the status quo and focus on providing nothing more than basic services to the community. More generally, it appeared that climate change was viewed as a topic that was simply too complex and large to deal with in any substantive way at a

grassroots level. Some respondents, however, noted that despite the enormity of climate change, some things can still be done:

> From my position, getting the councillors as representatives, they need to understand [climate change] better, understand the impacts but also what they could be doing. So, clarity with the job role, but also what are things that we can do. I think people think sometimes the issue is too big for them to think about. Climate change is an issue but how do you link it from a really big conceptual issue which certain people don't believe in it and make it relevant to them, so they can engage in it. (Respondent 21)

Respondents also struggled to articulate what was involved in responding to climate change. Aside from a few subject matter experts in the environment and planning department, climate change response is generally understood as referring to emissions reductions, and there is a minimal connection made to other aspects such as building adaptive capacity. Issues that were viewed as environmental were often viewed as separate issues and relegated to the environment department. Several respondents noted that local councils have a culture of risk aversion and there is a degree of caution with implementing strategies in general, and this is particularly true for complex issues like climate change. Further, the parameters of the local council's role in climate change response were unclear:

> I would say they're grappling with some other challenges that they're facing as a higher priority than global but also that bit about how does that little bit, we do make a difference on a global scale. I think everyone struggles with that. If this council took a leadership role the incremental change that could have on other local governments across Australia. I think for this council they have more financial resources but they're viewing other higher priority responsibilities to our community than climate change. We have a councillor who's a Greens' member, and I think she does a really good job at keeping that conversation at the forefront.

I'm not sure it would be much at the forefront if she wasn't there. (Respondent 18)

The scope of what councils can do in responding to climate change is linked with the terminology that is used. *Climate change* is a term that is often used within the umbrella term *sustainability* and, even though some of the projects that are enacted are indirectly related to climate change, the term *climate change* is only featured in generally high-level strategic reports. The terminology used differs between councils and even within each council:

The problem that we find in councils in Victoria, is that different councils have different perspectives when it comes to sustainability. Some councils, for them, sustainability is about reducing carbon emissions. That doesn't matter what the cost is, we just want to reduce our emissions. Other councils just want to have lower running costs. There are others that are in between, so there are no real formula, so just reading my notes, just by looking at the definition of sustainability in regards to the United Nations with how they define it, there's a social aspect of it but when you go and read in Australia which is the NSESD, that social aspect is sort of lost within. It's a bit of a grey area where you're going to target so there's no real right or wrong. If you look at it historically going with the Rio Summit years ago, it was decided at that point that the only way to make a big impact is if local government stepped in as they had the relationship between government and the people and that's why we've got the triple bottom line that we still use today. However, there's not a really defined aspect of where councils should be looking at because if you look at Australia's NSESD, the definition is blurred. (Respondent 17)

Some respondents have noted that they have had more success with projects in which familiar and local terminology is used as opposed to *climate change*. For example, one council refers to *energy efficiency*, while another refers to its *energy strategy*. However, one respondent

noted that some of the sustainability initiatives that its council was undertaking did not consider them to be any adequate responses to climate change. *Climate change* is a term that is seldom used by councils, which suggests that it is a concept that is perceived as irrelevant at a grassroots level. This also suggests that there may be a lack of understanding of climate change response as it is commonly linked with sustainability and, even though the two concepts do share commonalities, they are distinct. Response to climate change is viewed differently, and there may be a reluctance from decision-makers to use the term given the politicised nature of climate change:

> Th're's a current climate change strategy although'it's called energy efficiency. The new climate strategy has a little more to do with adaptation space but still 'on't be depth in strategy. I suppose this council has been the greenest council in a whi–e - I use that term in inverted comm–s - that'we've had in a while. Previously, like the reason that it was an energy strategy was that they d'dn't like the word climate change. They wou'dn't put up a strategy with the word climate change in it. So even in those 5 years t'ey've had such a shift, so, but then it feels like there still needs to be a focus on the mitigation space. We can transition over to the adaptation element. In having said that though, we are doing a lot of work in the adaptation space, particularly with the coastal, as you mentioned before, so we are with the association of Bayside municipality, so this little front of (sensitive content removed) to try and, because we recognise that'we're having to face those issues now and I suppose more forward thinking in that coastal element than in the rest of the municipality. Th're's a lot of people sheltered from th–t - that coastal element is really given them the full brunt. So t'at's kind of the main overarching climate change and then there will be little bits and pieces that come along the way. (Respondent 12)

The scope of the local council's role in responding to climate change is further shaped by financial constraints. Local councils predominantly receive their funding through capped rates whereby local councils must demonstrate fiscal responsibility to their ratepayers. Any money that is spent on projects must be approved by councillors and is heavily scrutinised. There was also scepticism from respondents that few environmental initiatives would be discussed and approved by councillors formally due to the difficulty in demonstrating clear financial benefits. Developing a clear business case, therefore, was critical for a project when the financial cost is involved:

> We don't see our primary focus of being an environmental outcome, environmental outcomes are the outcomes of something else, so economic, social, so all of our buildings have to be fit for purpose; they need to meet the need of our users and at the same time we minimise the best we can in sustainability. (Respondent 5)

Some respondents noted that financial constraints provided the parameters with which councils can achieve outcomes though financial constraints appeared to inhibit climate change response. Due to these limitations, respondents noted that the role of local councils in responding to climate change is in advocating for action in the upper tiers of governments, but also with ratepayers and private enterprises. Several respondents had spoken of initiatives working on specific environmental projects with the community, as well as with local businesses and other councils.

Analysis of the themes from the interviews suggests that local councils appear to have only a surface-level understanding of climate change response, and, as a result, the scope is poorly defined. Although there was some variability between departments and councils, climate change response appears to be largely understood as referring to emissions reduction. The scope of the local council in climate change response is largely defined by the finances from ratepayers where environmental issues are considered peripheral to other issues.

6.3.3   Accountable for what?

6.3.3.1   Varying level of output

The enormity of climate change has created challenges for local governments in terms of articulating what accountability looks like. While there were differences in the level of response to climate change between the councils, respondents mentioned that local governments were constrained by unclear guidance from state and federal levels of government, minimal funding and were overburdened by service delivery demands:

> I think we are good at developing plans, of doing stuff,'we're good at that,
>
> but'we're not necessarily good at matching the resource to the plan and the
>
> measures of the outcome in a sort of coherent way. The risk is that we've got a
>
> plan for this this this this this, but we don't have the resources to deliver those
>
> plans, so we don't narrow down the focus in the first instance of the key things
>
> that we're going to deliver and as a result of that we're trying to be all things to all
>
> people and underdeliver on the expectations on the lot of them. (Respondent 28)

Articulating what councils were accountable for in terms of response to climate change was less clear due to an overload of service commitments. Respondents noted that the demands of the community dictate the decisions made, and other issues often taken precedence over council's response to climate change.

6.3.3.2   Community demands

Decisions made in relation to climate change response are grounded in appeasing community demands. The content in the interview transcripts referred to the decisions about climate change response that was based on ensuring community demands were met. One respondent noted that there is a tendency to avoid making decisions that may be perceived as being unpopular by the community, which has affected response to climate change:

There are members of the community, they're affluent, they have time on their

hands, their retired early, they're articulate, they're educated so when the world

was learning about this 20, 30 years ago they were probably part of it… I'm just

looking at one or two streets over there… they'll hold you to account if a tree

goes… We carefully manage our street trees but that's why pay their rates to

entrust us to spend $6 million a year looking after our 52,000 trees.'It's a complex

thing to respond to because if you say to them,'we'll put up rates 20% and'we're

going to do this and that,'we'll be carbon neutral as a municipality by 2020, t'ey're

not going to want to do that. (Respondent 24)

Respondents explained that the demands of the community dictate the decisions made, and other issues often take precedence over the coun'il's response to climate change. The demographic of community members also shapes the decisions made by local council. This theme reflects research that highlights how the citizens can demand accountability from public officials and institutions (Alonso et al., 2019; Bovens et al., 2014).

6.3.3.3 Council strategy

Most respondents had stated that there was a formal report outlining the environmental strategy of the council though some of these documents at the time of the interviews were still in development or being updated. The strategy reports outline the obligations set out by the local council to the community it represents. This report was the coun'il's way of providing information regarding decisions on its strategic direction in a specified period, as well as outlining the actions that will be taken to address these decisions. The development of the council strategy involves community consultation, which impacts the degree to which a council will include information on climate change:

In the case of our current strategy development, the consultation hasn't been

as rich as one would hope, I think the internal consultation has been quite good

but the person leading it has facilitated a couple of group sessions, but it's opt-

it. We don't drag people and demand their input; we give them the opportunity

to provide their input. That way you get people who are interested and

sometimes you might provide people who provide insights that are really

valuable, who might not necessarily be interested in the subject area. The risk

with that is you're anticipating what they will say rather than knowing what they

will say, and you may not accommodate all their needs in what you're doing.

Sustainability strategy is really about getting people to change and the best way

to get people to change is to bring them on the journey in my view. If you don't

bring them on the journey after the fact, all you'll get is criticism and resistance,

so we are exposed to that in our strategy development internally and externally.

(Respondent 36)

Although the strategy report was considered essential in driving actions throughout the

councils, the level of detail as it pertained specifically to climate change varied between the

councils. According to respondents, the strategy documents tended to report on the financial costs

of services while the environmental outcomes received less attention:

If the financial issue were the key driver, we wouldn't do the 99% of what we do

because we lose money on all of it. My role from a financial perspective is damage

minimisation. From a financial point of view, it's the lack of money that drives us,

not the pursuit of it. It's a different sort of mindset. We work within a relatively

fixed amount of resources and it's about how does this best get supplied for public

value on environmental, social or cultural. The financials are more like the

handbrake. The lack of financial capacity means that we have to make choices.

We make choices if there's three or four projects, one of which will cost four times

the rest of the others, well that's probably going to struggle to get up but that's

because there has to fit in to an overall pool. From a triple bottom line perspective,

a lot of our efforts are on the social perspective, most of what we do is probably

about trying to achieve, improve social outcomes for the community. I'd argue

that is what drives most of our decision making the financials are like the fence in

which it can operate, the boundaries in which you can achieve that. The

environment is probably a secondary consideration. (Respondent 28)

Local council response to climate change is acknowledged as an important issue though economic issues tend to overshadow environmental concerns of the community. This notion reflects previous findings that have shown that financial imperatives outweigh action on climate change (Milne & Grubnic, 2011; Tang & Demeritt, 2018).

6.3.3.4 Advocacy

Respondents commented that the role of the local council in responding to climate change is in advocating for action in the upper tiers of governments, ratepayers, and private enterprises. Within these parameters, however, some action on climate change was occurring:

I think in issues like this and our power is limited to actually achieve, we can limit

our emissions and we can do some things about the way we deliver services,

that's quite a constrained thing. The thing that we can do is advocate; this

becomes an advocacy role, and these issues are important to our community.

We don't see other levels of government responding to these and we harness

some of the energy of the community to produce a different sort of outcome. It

happens quite a bit already, it happens quite a lot. Some councils are more

proactive around how they do this. Councils are more politically active than others.

The issues vary but that sort of dynamic is quite common. You go into rural or

regional areas of (sensitive content removed) and they're pushing a whole range

of issues that are not roads, rates, and rubbish. They're pursuing some serious

social issues that are particular to their communities and their interest. That's

always happened; it will always happen. Could we do it better, yes. Does it create

some issues in terms of other levels of government, because they're the

controlling environment as well. I think we are all big and brave enough to have

those conversations. (Respondent 28)

Respondents noted the limitations with what actions on climate change local councils can undertake. Because of this, local councils are able to advocate with state and federal governments, as well as community stakeholders (Henderson, 2018).

6.3.4 How are they accountable?

6.3.4.1 Reporting

Each council reports on its performance through the actions that are outlined in the council plan. Several respondents noted that reporting on the progress of actions was a clear account of how the council was progressing towards its obligations and was particularly useful for articulating financial objectives. Although all councils reported on its carbon emissions, reporting on other aspects of environmental performance was less clearly defined. For instance, one respondent noted the struggle in quantifying an action that focused on climate change adaptation:

I had one last quarter, research and report on the ways the agricultural sector can

adapt to climate change. I didn't know what to do with this and I spoke with a few

people in the organisation that had ties with people that work in local

manufacturing and farming and just made some pretty rudimentary comment on

it about that we were aware that local animal livestock industries were insulating

their sheds to keep animals more comfortable as an adaptation measure. Then I

marked 50% complete and whatever the date was and that was that. I don't know

what the solution is. (Respondent 22)

Most respondents had stated that there was a formal document outlining the environmental and sustainability strategy of the council though some of these reports at the time of the interviews were still in development or being updated. This report was the council's way of providing information regarding decisions on its strategic direction in a specified period, as well as outlining the actions that will be taken to address these decisions. Although this report was

considered essential in driving actions throughout the councils, the level of detail as it pertained specifically to climate change was minimal and mostly focused on mitigative actions, such as carbon emissions reduction. However, some respondents noted that climate change was on the periphery of actions written in the council plans though it was not always explicitly stated. Respondents noted, however, that a lack of transparency resulted in a lack of action as there were few clearly articulated goals. How information as it pertained to climate change is communicated through these reports, albeit briefly, tended to influence how these actions were undertaken:

> I guess some of those high-level documents in the past when t'ey're addressing climate change or wh're've got an environment strategy, t'at's been nested in just a small unit of responsibility, and'it's how it gets taken up by the broader organisation. (Respondent 19)

Many respondents noted that the targets that each council set itself appeared to be highly aspirational and focused on achieving carbon neutrality or emissions reduction targets though councils were struggling to reach these self-imposed targets. Councils may be struggling to reach these targets due to a lack of regulation surrounding actions that respond to climate change (Keskitalo et al., 2016). Respondents noted that these goals were tied to the organisational vision as set out in the council plan. While the overarching strategy doesn't go into detail, it is up to the leadership team within each council to implement these goals. For instance, one council had taken specific actions that were aligned to its strategic objectives: *"We're putting solar panels on the roof because it's an action in the environment sustainability framework which is aimed at achieving carbon neutrality by 2020"* (Respondent 31)

Another respondent, however, noted that it has been problematic in leaving the responsibilities to the individual managers, as climate change tended to be viewed as less of a priority.

Some respondents provided details on how its council was capturing information on carbon emissions, and for some this was a key performance indicator. Although all councils reported on its carbon emissions, reporting on other aspects of climate change response, such as adaptation, was observed less frequently. Councils tended to report more generally on environmental or sustainability factors, where very few specifically addressed climate change. For example, the outcomes of behaviour change programs were reported in some councils. However, most respondents had stated that the methods used to measure climate change response either lacked operational specification or was non-existent, and it was difficult to determine if the actions were beneficial. As a result, accountability was difficult to identify: *"We're probably haven't been as good as we should have been in reporting our progress to things like carbon neutrality and those sorts of things so I'm not sure that we've been that good at holding ourselves to account"* *(Respondent 28).*

Some respondents also noted the vagueness in the metrics for reporting on environmental or sustainability actions. It was noted by several respondents that the measurement of outcomes was seldom done effectively within councils, where this was especially salient for climate change response. This may in part be due to minimal reporting regulations placed on councils. Although some councils can act, there was no legal mandate to do any of it. Some respondents noted that the self-imposed carbon neutrality goals were mainly due to demonstrating to the community that climate change response was being addressed even though there was no legal mandate to do so.

6.3.4.2   Strategic objectives

Each council reports on its performance through the actions that are outlined in the council plan. Several respondents noted that reporting on the progress of actions was a clear account of how the council is progressing towards its obligations and was particularly useful for articulating financial objectives. Environmental objectives, however, were not always clearly articulated in the

council plan. This was particularly problematic for one council where environmental reporting mechanisms were not evident in the council plan and as such reporting on environmental initiatives was minimal. Another council had incorporated sea-level rise into its planning scheme for 2050 and 2100 though one respondent noted that this was the only indicator of accountability within that council.

The level of information about strategy implementation varied between councils. The councils that had focused on embedding climate change into the rest of the organisation tended to have more clearly defined strategic direction. However, some respondents stated that more emphasis was placed on strategy development, rather than implementation: *"We're good at developing or adopting the new strategy policy, so we spend a lot of time to develop the shiny bright thing then we'll tailor off with how we implement it or avoid that thing" (Respondent 31)*

This sentiment was shared by several respondents, and the strategic objectives from the council plan tended to get lost in translation further down the hierarchy. Some senior-level respondents held the assumption that all employees understood and were working toward the strategic direction though it was also acknowledged that the strategy reports are largely ignored. It was also unclear whether councils had measures in evaluating the effectiveness of its strategic objectives though this varied between the different cases. Some respondents provided a factual account of their council's current evaluation measures, while a few respondents acknowledged that the evaluation techniques were not that effective. Although it varied between councils, climate change response is outlined in high-level strategy reports though this was not always explicit. Climate change response, however, is generally poorly executed in terms of strategy implementation in most councils, and the level of the information reported is not consistent between the councils.

6.3.4.3   Community collaboration

Much of the strategy that guides the council objectives is derived through community engagement and education, which informs the direction that the council will take. There was evidence of public forums in all councils where citizens are given the option to engage with the council though the topic of climate change was seldom addressed: *"The experience is you get cross-examined in public, and you get held to account … If something is happening,'we're building a new road, for example,'it's very likely a councillor or active member of the public will query them"* *(Respondent 31).*

According to Mulgan (2003), however, community consultation is at the discretion of those choosing to consult and is not the same as accountability, which involves an obligation to respond to citizen demands.

6.3.4.4   Reactive decision-making

Although respondents spoke of the necessity of holding a political position and not being swayed by short-term and reactive decision-making for effective leadership, the opposite was more evident. Stated on multiple occasions was that many of the decisions made within the local government were based on managing public perception. Respondents suggested that actions perceived to be in response to climate change (e.g., solar panels on government buildings) were partly based on demonstrating action to the community:

> If you get something adopted and it becomes common practice, then just endorsing the policy and reviewing it as need be. Sometimes the hardest part is just getting over that first hurdle and obviously the timing of the development, getting endorsement, reading the politics. The group that were calling the shots at the time politically, it was an added bonus to get an environmental benefit. Cost efficiency would have been the biggest driver. Lifesaving (sensitive content removed) gave grants to put solar panels on all of their buildings which, I scratch

my head, why would you put solar panels on these buildings. There's no one

there during the day during winter. They only use it at night. They only really use

it in summer and it's a very short period but the rest of year, the payback period

is not there. These buildings are often empty and old. They probably got a grant

from the State Government and thought it would be a good idea to get solar

panels. Any lifesaving club could apply, but is that the right decision? It might also

be what's visible and what can be seen, publicly. Solar panels are highly visible,

and the people can see where there money is being spent. People associate that

with saving money. (Respondent 12)

Many respondents reported that local councils are structured in such a way that decisions

are based on meeting immediate community demands, which is problematic in the realm of the

long-term nature of climate change. Despite the foregoing observations, the commitments made

by councillors and stated informal reports, such as council plans and annual reports, imply that

the councillors will be held accountable for their actions by the public. However, effective

leadership on long-term and systemic issues like climate change are compromised by the short-

term political cycles.

6.3.4.5 Embedding response to climate change

While responsibilities concerning response to climate change were not always clearly

defined, several respondents noted that the level of collaboration amongst staff within the

organisation was related to innovative approaches aimed at addressing sustainability initiatives.

Also evident was that there was more collaboration in some councils, and this was due to building

relationships through effective communication and an ability to demonstrate political stewardship

through negotiation and strategic influence. For instance, this involved the environmental team

working with other teams to reduce waste and enact behavioural change amongst staff. Another

key factor was having adequate infrastructure and systems to enable collaboration. For one

council, this involved embedding *climate change thinking* into the council's business as usual

activities: *"We have introduced climate change thinking and mitigation as a business-as-usual thinking, in the same way, people think about occupational health and safety" (Respondent 1).*

Another council had embedded sustainability considerations into its procurement process, noting the importance of tailored approaches:

> We intend that sustainable practices will just become commonplace, so the building people when building are considering the materials they use in their designs that are chosen. The finance and procurement policies are encouraged to choose the sustainable options in our purchasing decisions. (Respondent 34)

These findings reflect previous literature that highlights the importance of embedding response to climate change across the whole organisation (Thomson et al., 2014). While there are examples of innovative ways of addressing climate change through internal collaboration within each council, there were several observations of a silo culture that inhibited innovation:

> We have a very passive culture, which is typical of local government, so we sit where we're conventional, where we follow the rules, we sit where we don't take too many risks. Very conservative, but if we want to be adaptable and innovative and lead change, it's almost contrary to what our culture is. (Respondent 17)

For the most part, any actions that need to be completed relating to climate change are dealt with by the environment department even though this is not always clearly articulated in the strategic plan. The capacity for service delivery within local councils is restrictive, and initiatives that are a response to climate change are generally viewed as less important in comparison to immediate concerns by both the public and decision-makers.

Some respondents noted, however, that silos are unavoidable in large organisations, so there is a need to segment responsibilities. For the most part, any actions that need to be completed that relate to climate change are dealt with by the environment department even though this is not always clearly articulated in the strategic plan:

The environment sustainability framework is a shared responsibility across the organisation, so it's not only my staff delivering actions in the environmental sustainability framework. That's part of our challenge, within the council organisation is how that actually plays out because some people see well that's the environmental sustainability framework, that's the environment sustainability team; the mindset of some people in the organisation can be a siloed approach. My title doesn't have an environment in it, so I don't have to do any of this. (Respondent 29)

Based on the respondent's comments, it appears that the greater the level of communication results in the greater emphasis placed on actions on climate change. However, there appeared to be a legacy of a siloed culture within local councils where there is a lack of communication between organisational divisions and subsequent attempts at innovation are stagnant.

6.3.5   Additional themes

6.3.5.1   *Planning for the future*

It was noted from several interview respondents the use of future tense, suggesting that the actions on climate change discussed will happen in the future. For instance, the usage of *need* and *should* occurred frequently, which suggests these are the personal views of the respondents on what they would like to see happen in the future. By focusing on what needs to happen, the interview respondents emphasise what is currently not happening within their council. For one respondent, the lack of council action was partly due to restrictions of the state government planning scheme:

I think for us ideally it would all be in the planning scheme because if you take away the argument if'it's in the scheme. Because'it's policy,'it's not a choice, there is a policy you adhere to. So, the more that we can get in the scheme from any

of these policies the better. And I think like that even from a building code all kind of that stuff. There needs to be so much change because the way'we're building new buildings they a'en't as efficient and resilient as they should be, ah, but we 'an't do that. So, we can only really do with what is already there. (Respondent 13)

The use of language that focuses on what may happen in the future may reflect the current actions of the council, which may also reflect the short-term focus of decisions within council. A focus on what *could* happen in the future may also reflect the barriers faced within the council to increasing action toward climate change.

6.3.5.2   Geographical context

Respondents noted that the actions taken by council reflected the surrounding environment and population. Respondents from coastal councils noted the risks from coastal erosion and how this may impact assets along the foreshore. The decisions made, therefore, reflect the geographical context:

What makes us unique? Our natural assets makes us unique so we've 10 km of coastline as some of that coastline at least around (sensitive content removed) retains existing vegetation whereas if you drive around (sensitive content removed) and other areas they've lost a lot of that because people are from developments because you see green lawns and we've got those unique bits of banksia habitat along there that I think is wonderful and it may provide better protection against sea level rise by having that banksia protected as well which I think is a positive. We've very susceptible because our catchment because a lot of our rainfall which falls in this city; the majority of it will end up in (sensitive content removed) creek. We're really susceptible to future flooding and inundation and the creek cannot basically go into (sensitive content removed) so all of what falls into (sensitive content removed) but also all of the

stormwater pollution all things that we could without street all heading towards

(sensitive content removed). (Respondent 11)

Similarly, respondents from non-coastal areas spoke of the dangers associated with heatwaves and bushfires. One council that had taken considerable steps in responding to climate change noted that its economy relies heavily on tourism and will be affected greatly by the impacts of climate change.

6.4   Content analysis of council reports

The selected council strategy and annual reports were examined for evidence of accountability as stipulated by the coding rule matrix (Figure 9; page153). Meaning-orientated content analysis was adopted to facilitate this process, which is a technique that considers words surrounding the textual content (Edgar et al, 2018). Units of analysis included sentences, paragraphs, tables, graphs or charts, and consideration was given to the underlying meaning of the content while choosing them as a basis for coding. Each unit was then split to extract an individual piece of information that matched with the coding matrix; specifically, how the selected text addressed the four questions of accountability. Using the coding matrix to scan for phrases and words related to the four questions of accountability, statements in each report were selected as units of analysis. The unit of analysis was tabulated for each theme. Some themes that were identified in the interviews were not observed in the council reports. Observed through the lens of public accountability, it was noted that council reports tended to address the *how* and *for what*.

Table 17 presents a breakdown of themes and units of analysis of each theme as observed in the reports. Overall, the reports included in this analysis predominantly focused on *how they (local councils) are accountable* with 290 units of analysis, followed by *accountable for what* with 172 units of analysis. One hundred and forty-four units of analysis related to *accountable to* whom, while 20 units of analysis focused on *who is (are) accountable.* The word *accountability* was seldom found in any of the reports, and the content analysis identified words and phrases that reflected the coding rules. Frequencies of the most common words per theme

are presented in Table 17, and the table illustrates the messages conveyed that related to accountability in the written text. It is noteworthy that the phrases *climate change*, *community*, and *emissions* were generally the most commonly occurring words and phrases in each theme though the meaning changed depending on the context. This suggests that the written communication in the council reports emphasise how actions in response to climate change are serving the community.

Table 17

Frequency of words per theme and units of analysis in the content analysis

Theme (Units of analysis)	Commonly recurring words in a theme	Frequency of word within the theme
Who is (are) accountable? (20)		
Third-party stakeholders (19)	Environment	12
	One Planet	10
	Community	9
	Strategy	9
Leadership (10)	Council	6
	Scan	4
	Climate change	3
	Leadership	3
Unclear roles and responsibilities (0)	-	-
Accountable to whom? (164)		
Aspirational goals (85)	Council	48
	Emissions	41
	Community	39
	Energy	38
	City	37
Internal accountholders (50)	Council	28
	Community	19
	Environment	14
	Government	13
External accountholders (29)	Community	28
	Council	27
	Energy	19
	Project	18
Accountable for what? (172)		
Varying level of output (91)	Council	84
	Emissions	70
	Energy	48
	Community	47
Council strategy (39)	Council	29
	Community	26
	Sustainable	25
	Climate change	22
Advocacy (23)	Energy	14
	Council	13
	Climate change	11
	Emissions	9
Community demands (19)	Community	22
	Council	11
	Engagement	6
	Performance	5
How are they accountable? (290)		
Reporting (116)	Emissions	181
	Council	113
	Energy	93
	Waste	76
Community collaboration (80)	Community	50
	Council	31
	Energy	23
	Waste	19
Strategic objectives (75)	Council	73
	Community	48
	Emissions	39
	Per cent	37

Embedding response to climate change (24)	Climate change	12
	Sustainable	11
	Design	8
	Council	8
Reactive decision-making (0)	-	-

6.4.1 Who is (are) accountable?

Adopting Mulgan's question of *who is (are) accountable* for climate change response in local government, the content analysis found minimal reference in the text with 20 units of analysis identified (Table 17). The coding rule stipulated that the text must reference either an individual or organisation as answerable to climate change response. Although it may be implied that the councils themselves are wholly accountable, this was not explicitly stated in the text. Additionally, the analysis found no evidence in support of the theme concerning unclear roles and responsibilities. No text described a lack of role clarity and responsibilities associated with climate change.

6.4.1.1 Third-party stakeholders

This theme refers to external specialists or experts that guide the decision-making concerning climate change response. Most council reports made minimal reference to partnerships or external consultants that specifically addressed climate change response though there was some descriptive evidence of collaborations with community concerning climate change:

Council leads the (sensitive content removed) Network, which stimulates community ideas for tackling climate change. In 2015/16, attendance at (sensitive content removed) Network meetings increased, with 337 attendees across five events and hundreds on event waiting lists. (sensitive content removed) Network participants have been surveyed to better understand the impact of (sensitive content removed) Network on their (sensitive content removed) Network behaviour, with 79 per cent indicating they were likely to take action after attending (sensitive

content removed) Network events. Fifty one free energy audits were provided to the community by the Council's Greenhouse Programs Officer. (2015-2016 Annual Report, LC 4)

This example refers to how the council is working with a community network. Inspection of further units of analysis contained sections of text in which collaborations or partnerships guided the decisions about climate change response. For example, the One Planet Living (2020) framework was cited on several occasions within the reports for one council, and this framework helped inform that council's strategy. This framework is a part of an international collaboration of private and public organisations that collaborate and share knowledge and resources that focus on sustainable development and working with the community.

6.4.1.2 Leadership

Inspection of the units of analysis found 10 references to leadership on climate change by the local council. However, there was little detail in the text outlining exactly how leadership was being undertaken. In one annual report, for example, a strategic goal of the council was to "demonstrate leadership in sustaining the rich biological diversity of the region that sustains healthy ecosystems" (2018 Environmental Report, LC4). The status of community plan actions of the year were then outlined, including progress on waste management projects, tree planting programs, a feasibility study on hydro energy storage, and conducting a feasibility study on solar projects. Another council stated there was a *climate emergency* during a council meeting:

> Our region is already experiencing the impacts of climate change. In the future, we can expect increased flooding of coastal properties and public facilities, storm damage to infrastructure, beach erosion, decreased water quality and security of water supply, reduced summer outdoor activities and hotter urban spaces. Council declared a Climate Emergency at the Council Meeting. (2015-2016 Annual Report, LC 4).

According to Chou (2020), the act of declaring a climate emergency by council is a demonstration of leadership, although this gesture may be more symbolic. For this annual report, there was no information on exactly how the council was acting on this climate emergency declaration. In another council report *leading the way* was a key goal of the environmental sustainability framework, and it stated that the council was operating as a model of sustainability. In some of the reports, the content infrequently made note of the CEOs within the councils that were advocating for action on climate change.

6.4.2 Accountable to whom?

Using the coding matrix to analyse the council reports, 164 units of analysis were found that addressed the theme of *accountable to whom.* Although the word accountable was not mentioned, textual evidence of the account holders to whom accountability is owed (Bovens, 2008) was selected. A review of the reports indicates that local councils are accountable to the community. However, the content that specifically addresses climate change response varied between the councils.

6.4.2.1 Aspirational goals

According to the codebook, this theme focuses on the assumption that local government response to climate change is unclear. Climate change response appears to be largely understood as referring to emissions reduction. The scope of local council in climate change response is largely defined by the finances from ratepayers, and environmental issues are considered peripheral to other issues. A scan of the text identified 85 units of analysis that stated the goals taken by council in response to climate change, though the level of detail in explaining how these goals would be achieved varied. Specifically, only text that only provided superficial information that articulated these goals.

Review of the council reports found that most councils acknowledged the importance of responding to climate change though the level of detail with how this was being addressed varied

significantly between councils. For one council, the sustainability goals were articulated by bullet

point statements:

> GOAL 4 : A sustainable natural environment
>
> We will be a leader in environmental management and will be a greener, more sustainable city.
>
> Through this goal, our priorities over the four years of the plan will be:
> - working with the community and our partners to achieve positive environmental outcomes for the (sensitive content removed) community through education and sharing information
> - protecting and enhancing foreshore, natural reserves and open spaces for the enjoyment of our community
> - minimising the environmental impacts of Council operations by reducing waste, and improving water and energy efficiencies
> - protecting and enhancing vegetation (increase indigenous plant usage) on private and public land
> - responding to climate change and mitigating its effects.
> (2015-2016 Annual Report, LC 6.)

The goals described in this example were only briefly detailed, and there was no indication

of how the actions described would specifically help the council become a "greener, most

sustainable city". Many councils had stipulated an emissions reduction target and would detail

how this would be achieved in the reports from 2015 through to 2019. Most of the councils had

set an emissions target for 2020, but inspection of annual reports acknowledged that these goals

might not be achieved within the given period.

Further, there were statements of how an action plan or working group would be

established to respond to climate change:

> The shift to renewable energy through this project will help participating local
>
> governments meet their greenhouse gas emissions reduction targets and
>
> demonstrate their commitment to addressing climate change. It is expected the
>
> project will deliver greenhouse emissions reductions equivalent to 32,000
>
> households. The final outcome of the project is expected to be announced in
>
> March 2020. (2018-2019 Environmental Report, LC 6)

In addition to the annual report, two councils contained a separate environmental report. Because of this, there was much more content focused on the environmental goals of the council. The 2018-2019 environmental report of one council contained a 20-year goal, namely that the community is "connected to healthy regional landscapes, working together to prosper equitably within the capacity of the earth's resources". This report then outlined nine specific 20-year goals aligned to a different measure according to the One Planet Living framework. While the goals outlined in this report contained more information on the actions taken to meet the goal, no text articulated *how* the actions addressed that goal. The culture and community goal, for example, was to create a "strong culture of community involvement in improving environmental sustainability in the region". The specific actions were

- Support the development and implementation of community plans
- Partner to encourage opportunities that enable community access and inclusion:
    - Complete the annual actions of the Reconciliation Plan including supporting NAIDOC and Reconciliation Week, cultural awareness training for employees and developing organisational protocols
    - Work closely with stakeholders to deliver library services to the community that promote learning, literacy and engagement at all life stages
- Expand our range of celebrations of cultural diversity in public spaces
- Incorporate Indigenous knowledge into native vegetation management.
  (2017-2018 Annual Report, LC 1)

In this example, the progress of each goal was detailed, including meetings with community groups, training programs, feasibility projects, and the completion of strategy reports. The costing of these programs was also presented. These descriptions appeared to articulate how the council would address that specified goal.

6.4.2.2   Internal account holders

The theme of internal accountholders refers to the processes that shape a hierarchical chain of command, where accountability is demonstrated in navigating this political process. Inspection of the reports identified 50 units of analysis that described internal stakeholders,

bureaucratic processes, or governmental approval necessary on projects related to climate change. All council reports referred to a reporting framework mandated by the state government:

The Planning and Accountability Framework is found in Part 6 of the Local Government Act 1989 (the Act). The Act requires councils to prepare the following planning and reporting documents:

- A Council Plan within six months after each general election or by 30 June, whichever is later
- A strategic resource plan for a period of at least four years and include this in the Council Plan
- A budget for each financial year
- An annual report in respect of each financial year.
  (2017-2018 Annual Report, LC 2)

The content described council compliance with environmental regulations and legislation that stipulated service performance indicators on waste collection. These indicators were satisfaction, service standard, service cost, and waste diversion. The mandates placed upon councils did not always specify climate change response, rather that certain actions were done to comply with environmental obligations. Other units of analysis showed various council action plans and strategies. In one report, a sustainability action plan was endorsed by council, which implies an obligation to meet the goals of the plan.

6.4.2.3 External account holders

External account holders refers to the stakeholders that drive decisions pertaining to local council response to climate change. The units of analysis included content that explicitly addressed these stakeholders, which predominately focused on community members. A total of 29 units of analysis were identified. All the council reports referred to the community consultation process, including public forums and council meetings. However, less focus was made to community consultation that specifically addressed climate change response. One council did refer to how community members help shape decisions in its annual report:

An opportunity for community members to have their say on the development of

three important regional draft strategies: (sensitive content removed) Discussion

Paper, the (sensitive content removed) Climate Change Adaptation and Mitigation

Plan, and the (sensitive content removed) Sustainable Agriculture Strategy.

(2015-2016 Annual Report, LC 6)

This content was listed under *community capacity building* and was featured as part of

38 other initiatives that the council was engaged in with the community. Of the 38 initiatives,

only one referred to climate change, which totalled nine units. Minimal reference was made in

the council reports to external stakeholders who are considered in decisions about local council

response to climate change. Although several sections of the text referred to community

consultation and the benefit of actions to the community, there were only minimal references to

how community input influenced council decision-making. Further, there was minimal discussion

regarding how the local council climate change response was facilitated by the community.

6.4.3   Accountable for what?

Inspection of the reports revealed content that described the services, material goods,

items, actions, or duties provided to the beneficiaries by the individual or organisation concerning

climate change response. Specifically, 172 units of analysis addressed the theme *accountable*

for what, which focused on the output produced by the council. The interpretation of the document

text draws to attention that local councils are accountable for articulating actions on climate

change and is mainly focused on emissions reduction, advocacy, and community engagement.

6.4.3.1   *Varying level of output*

Varying level of output referred to the actions carried out by local council in response to

climate change, where 92 units of analysis were identified. The output as described in the text,

however, lacked detail or contained inconsistent terminology. All analysed reports referred to

climate change response undertaken by the council though this varied in detail and did not always

use the same terminology. For instance, the term *climate change* was not apparent in all the

annual reports for one council, and other terms, such as *environmental sustainability*, were used.

Overall, the use of the term *climate change* differed in frequency between councils (Table 18).

Table 18
Frequency of the term climate change in council reports

Council	No. of reports	Frequency of the term *climate change*
LC 1	4	10
LC 2	4	8
LC 3	4	12
LC 4	5	136
LC 5	4	0
LC 6	8	41

In the annual report of one council, the sustainability and growth strategic objective entailed that the council will "continue to plan for the built environment that complements our landscape, lifestyle and climate" (2017-2018 Annual Report, LC 3). The text then outlined the status of major initiatives that aligned with this objective, including the review of strategy reports and plans, advocacy with stakeholders, and policy implementation. The performance measures that were aligned to this strategic objective included the type of service, a description of the service, and the breakdown of cost (Table 19).

Table 19

Sample performance measure of climate change objectives (2015-2016 Annual Report, LC 1)

Service	Description
Waste Services	This service manages waste services contracts, landfill planning, development, operations, rehabilitation and aftercare; waste services statutory reporting; waste management enforcement and education; and waste management planning.
Precinct Planning	This service develops master plans and strategies for open space, playgrounds and recreation facilities to meet current and future needs of the community.
Land Use Planning	This service prepares and assesses planning scheme amendments and strategies, and provides strategic land use advice to Council, the community and developers.
Building Services	This service provides building advice; issues building permits and notices; audits building permits; and investigates compliance and breaches of the Building Act 1993
Enforcement	This service is responsible for investigation of compliance with and breaches of the Planning and Environment Act 1987.
Statutory Planning	This service assesses and issues planning permits, amendments and extensions of time; provides planning advice; and representing (sensitive content removed) where necessary.
Infrastructure Delivery	This service undertakes design, tendering, contract management and supervision of various works within Council's capital works program. The service also approves and supervises private development activities such as subdivisions and infrastructure associated with unit developments.
Plant and Depot Operations	This service delivers plant and vehicle management services to the (sensitive content removed) and manages workshop operations.
Road Maintenance	This service conducts ongoing maintenance of the Council's roads, drains and footpaths.
Park Maintenance	This service maintains the Council's open space including parks, playgrounds, gardens, reserves, foreshores and sporting ovals.
Building Maintenance	This service carries out maintenance of Council-owned buildings; conducts safety audits on Council-owned buildings; and undertakes asbestos risk assessments and removal.
Asset Management	This service conducts capital works planning for Council's main civil infrastructure assets in an integrated and prioritised manner in order to optimise their strategic value and service potential; collects infrastructure data to drive decision making; and maintains and develops asset management systems and processes.
Geographic Information Systems	This service maintains Council's Geographic Information Systems to provide geographic relationship trends and information to facilitate sound strategic planning for future development.

In addition to the above services, performance indicators of statutory planning, waste management, and roads are detailed. In this example, several services are outlined and are grouped under sustainability and growth though there was no explicit reference to climate change. For this annual report, climate change was referenced three times in total in the report. Climate change was referenced in the "Natural Environment" strategic direction, which specified:

This service is responsible for climate change and sustainability initiatives, energy efficiency programs, carbon accounting, Council's street lighting program, community energy initiatives, delivery of the Climate Change Plan, and sustainability education. (2015-2016 Annual Report, LC 1)

From this description, this council focused on initiatives that involved community, such as education, as well as carbon accounting programs. Inspection of further council reports found descriptions of the outputs, such as emissions reductions, solar panel installation, elimination of single-use plastic bags, community education and advocacy. In some instances, the description of these activities stated how these actions were aligned with council strategy. A monetary value was assigned to the output of projects and programs that related to sustainability and climate change.

6.4.3.2   Council strategy

The council plan or strategy outlined what actions toward climate change are taken, and 39 units of analysis were found that described the strategy toward climate change. Explanation of what is involved within council plans that is focused on climate change response. Most councils included content that specifically reported how its actions in response to climate change or sustainability initiatives were included in the council strategy. Some councils did, however, include a greater level of detail on these actions. One council specified how the actions that were taken were aligned with its strategic goals: *"Council's strong commitment to sustainability has been further demonstrated during 2017/18 through the development of a new Sustainability Strategy … We have smart solutions for a sustainable future. (2017-2018 Annual Report, LC 4)*

This council also explicitly detailed the progress of each of its environmental objectives and then linked this back to the overarching council strategy. For another council where the term *climate change* was not referenced, one of the strategic goals was *our sustainable green environment with accessible open spaces.* The services that were delivered as part of the

strategic goal were bin collection and waste services, environment management and education, foreshore management and maintenance, planning and improving open space, maintaining open space, and sports and recreation. Performance measures that were aligned to the council plan included:

- Beach foreshore cleansing contract compliance
- Missed bins – domestic garbage, recycling and green waste
- Open space mowing contract compliance
- Community satisfaction: environmental sustainability
- Community satisfaction: recreational facilities
- Community satisfaction: the appearance of public areas
- Street and park trees planted for the financial year.
  (2017-2018 Annual Report, LC 5)

Regarding the community satisfaction with environmental sustainability, the report stated that "satisfaction with environmental sustainability increased slightly in 2017/18. Council continues to prioritise sustainability in a range of ways, including reducing energy usage through the energy efficient streetlights program as well as reducing the use of paper as we transition to online forms and documents". Although climate change was not referenced, this text constituted the council strategy on climate change response for that year.

6.4.3.3 Advocacy

Advocacy referred to the text that described the actions by the council to promote and educate climate change with stakeholders and the community, where 23 units of analysis were found. Inspection of the content showed that part of the role of councils in climate change response is through advocacy with the community it represents. This was identified by content that described *advocating* or *influencing* other councils, sections of the communities, and the state government for action:

We advocated to (sensitive content removed) to include flood mitigation and reduce pollution of the catchment as part of the (sensitive content removed) redevelopment. We will continue to strengthen the relationship with our neighbouring council and identify further opportunities to collaborate.

(2016-2017 Annual Report, LC 4)

There was no reference to the outcome of the advocacy in the above example. Further, the environmental report in one council noted the limitations of climate change response by the council itself and stated what was within the scope of the council to act.

6.4.3.4 Community demands

Inspection of the reports identified 19 units of analysis that articulated actions toward climate change driven by community demands. In one council, the CEO stated that

Our communities are experiencing first-hand the effects of climate change with significant coastal erosion occurring across (sensitive content removed) over the past financial year. Our actions reflect the concerns voiced by our communities and we recognise all levels of government, community, businesses, and industry must work together to address this significant and global challenge. (2018-2019 Annual Report, LC 1)

This report did not elaborate on how the council specifically address the concerns from the community on climate change. Community demands were acknowledged in guiding decisions related to climate change response though this was not always explicitly stated in the text. One council included results of a community satisfaction survey where environmental sustainability was one of the indicators. Another council described the community feedback process and the content related to climate change response. A further council indicated the many options the community must provide feedback in the decision-making process but did not elaborate on how this was achieved.

6.4.4 How are they accountable?

The interpretation of the report text identified 290 units of analysis that illustrated how local councils are accountable for climate change response. The selected text referred to the processes of how the services, material goods, items, actions, or duties are provided to the beneficiaries by

the individual or organisation. This was evident in the annual reports for each council though the level of detail varied. Two councils also had additional reports that specifically addressed the environmental strategy and, as a result, there was more information that described the actions taken. The theme of *reactive decision-making* that was found in the council interviews was not evident in the content analysis of council reports.

6.4.4.1 Reporting

Each council reports on its performance through the actions that are outlined in the council plan although the terminology used or level of detail is not uniform between councils. In each council, there was evidence of the reporting on climate change response, and 116 units of analysis were found, but this was not limited to emissions reductions. Councils provided graphical information, charts, or tables on performance measures of sustainable, natural environment, or climate change objectives though this varied in detail. One council reported on its sustainable natural environment goal by outlining strategic indicators and the progress toward that indicator. This council also provided charts outlining comparisons for the past 5 years of energy consumption, greenhouse gas emissions, water consumption, and waste and recycling (Figure 10).

Figure 10

Sample reporting of climate change performance measures (2015-2016 Annual Report, LC 3)

Energy consumption

The following graph shows Council operations energy use by source from 2011/2012 to 2015/2016.

Council's total energy consumption has decreased.

Fleet energy use has decreased compared to the last two years.

Total Energy Use by fuel type (GJ)

Council operations 2011/2012–2015/2016

- Natural Gas
- Electricity (Victorian Grid)
- Fuel

Greenhouse gas emissions

The following graph shows greenhouse gas emissions generated from Council operations from 2011/2012 to 2015/2016. This includes fuel for fleet, waste, paper purchase, electricity and gas consumption and emissions resulting from Council's water supply. Emissions have reduced compared to the previous year; reductions were seen in fleet fuel consuption and electricity consumption.

Annual emissions (tonnes CO_2e) – Council-owned and operated and street lights 2011/2012–2015/2016

Water consumption

The following graph shows annual water consumption by Council operations (buildings and open space) from 2012 to 2016. It shows an increase in water consumption compared to previous years. This could be because of ground resurfacing, or increased irrigation demands on sportsfields due to increasing use of grounds.

Total annual water consumption

2011/2012 – 2015/2016 (kL)

Waste and recycling

█████ average ecological foot print is 8.3 hectares per person, which is well over the worldwide average of 2.2 hectares. Waste management initiatives that divert waste from landfill positively impact the reduction of █████ ecological footprint and impact on climate change. The following graph shows the total waste and recycling rates for █████ from 2011 to 2016.

Total waste and recycling rates

- Domestic Waste
- Recycling
- Green Waste

The units of analysis identified other types of reporting in addition to emissions and waste usage, including community engagement and advocacy projects. Examples of projects included the construction of a harvesting and irrigation system, installation of solar panels on council buildings, LED lighting replacement, and education programs. Council reports largely report on the services and projects the council delivers to the community, but the focus on climate change response is peripheral to other objectives. The level of reporting, however, differed between councils and, as previously mentioned, reflected how often the term *climate change* was used in the report. Some councils provided only a factual account (e.g., monetary amount, percentage of project completed), whereas other councils included this information but included some interpretation or evaluation of what the information reported meant.

6.4.4.2   Strategic objectives

All reports contained information on how the actions were aligned with the council plan though content specifically related to climate change was varied. A total of 75 units of analysis were observed relating to strategic objectives. The council reports that were analysed detailed how the actions taken were aligned to the strategic objectives for each council. The text would detail how various strategic goals were implemented and the progress to date (through the reporting). The implementation of council strategy contributes to how councils are accountable though this varies as some councils focus more on climate change response. For example, most councils had some form of an emissions target as this was a part of the council strategy though it was less clear with how this was to be achieved.

6.4.4.3   Community engagement

The interpretation of the report text found 80 units of analysis that described how the council consults with or educates the community and/or receives feedback on climate change. The text described how some of the councils collaborate in environmental groups and oversees partnerships with businesses and community groups to educate and advocate sustainable choices. In one council, a specific goal focused on working "in partnership with other Councils

towards achieving zero emissions" (2015-2016 Annual Report, LC 6) and its actions are outlined

in Table 20.

Table 20

Sample actions of community engagement (2017-2018 Annual Report, LC 6)

Council Plan action	Progress	Comments
Show leadership and partner with the community to develop a transition pathway to 100% renewable energy.	Completed	Incorporated within the implementation of the Environment Strategy and four-year action plan, which has been adopted by Council.
Increase the number of businesses that take up environmental upgrade agreements.	Completed	No businesses have taken up agreements, program has been temporarily halted.
Rehabilitate the previous landfill site at (sensitive content removed).	Completed	Discussions continue with the Environment Protection Authority to determine the required standards of rehabilitation.
Rehabilitate the previous landfill site at (sensitive content removed).	In progress	The Environment Protection Authority issued a (sensitive content removed) Action Plan to be completed in coming months and works in 2018/2019.
Review and refresh environmental education materials to ensure that they are relevant and useable.	Completed	Ongoing role to ensure material is relevant.
Encourage and support participation in the Resource (sensitive content removed) Program.	Completed	Ongoing role for the City to support.

In this example, no details were provided of how the council partnered with the community,

and it was reported as completed. In other councils, community consultation occurred through

environmental education, such as sustainable consumer practices and behaviour change

programs to increase recycling or to adopt solar power. The text also describes how councils

engage with environmental government departments and energy providers. One council also

described how it supported the community in various community rallies in support of climate

change.

6.4.4.4 Embedding response to climate change

Analysis of the council reports revealed that the integration of climate change response

throughout the rest of the council was partially evident in only three of the councils, based on 24

units of analysis. In the reports of these councils, there were descriptions of promoting sustainable

purchasing for all council operations and sustainable design and building practices. Specifically,

one council stated that "the Building and Property team has collaborated across the organisation and the community to scope and deliver approved Council projects as planned" (2016-2017 Annual Report, LC 2). Another council specifically addressed how climate change response has been embedded in the council:

> It is a credit to the City that sustainability has permeated into corporate documents that sit outside the sustainability team. For example, the (sensitive content removed) Strategy and the (sensitive content removed) Strategy all include actions that will drive sustainability, alongside liveability.
>
> (2018 Environmental Report, LC4)

Analysis of this report identified several instances where embedding response to climate change was specifically addressed. It was reported that sustainability initiatives were integrated into the council's procurement, fleet, and investment policies and practices.

6.5   Discussion of findings

The qualitative analysis aimed to examine how the response to climate change within local government is articulated within the context of public accountability, following on from calls to examine how local governments are answerable on responding to climate change (Gupta & van Asselt, 2019). Inductive and deductive approaches were used to analyse the content of interview transcripts and council reports (Armat et al., 2018). Response to climate change within local government is a highly complex phenomenon; the level of accountability observed is influenced externally by community demands and political cycles, and internally through a hierarchical chain of command, collaboration amongst council workers, and the political interests of its leaders.

The results of the qualitative analyses were presented through the four questions of accountability developed by Mulgan (2003). The first question asked *who* is accountable. Climate change is acknowledged as important in local government though responsibilities are not clearly

articulated within local government. Leaders with a personal interest in climate change response and external consultants are informally responsible. The second question asked to define accountability to *whom*, and Mulgan (2003) suggests this includes multiple forums or stakeholders. The results suggests that local governments are held to account for climate change response by the short-term needs of the community though limited resources restrict how much climate change response is prioritised. Nevertheless, some of the local governments that were investigated took more noticeable initiative on climate change response through the articulation of aspirational goals. Further, local governments were also accountable to governmental bureaucracy, including election cycles of all tiers of government (i.e., local, state, and federal), and implementing state and federal policies. The third question asks to define *what* is to be held to account, and by what *standards*. The role of local government is to meet community demands, to advocate other tiers of government for climate change, and to implement council strategy. It is unclear how local-level actions fit within state and federal government actions. The final question asked how they are accountable. Information about climate change response in local government is facilitated through embedding organisational strategy though the standard of information varied with unclear targets due to the short-term reactive decision making to appease community demands. This information is summarised and presented in Table 21.

Table 21

Summary of themes of the four questions of accountability

Accountability question	Summary of theme
Who is (are) accountable?	*Climate change is acknowledged as important though it is unclear who is responsible within local government. Leaders with a personal interest in climate change response and external consultants are informally responsible.*
Accountable to whom?	*Local governments are held to account for climate change response by the short-term needs of the community and governmental bureaucracy (i.e., election cycles, a hierarchical chain of command) and are demonstrated by aspirational goals.*
Accountable for what?	*The role of local government is to meet community demands, to advocate other tiers of government for climate change and to implement council strategy. It is unclear how local-level actions fit within state and federal government actions.*
How are they accountable?	*Information about climate change response in local government is facilitated through embedding organisational strategy with vague targets set by short-term reactive decision making to appease community demands.*

Within the realm of the local government, the councillors and chief executive officer are the individuals that are ultimately responsible for the actions taken. The Australian context of the current investigation has also shown that response to climate change exists in a political context of uncertainty with little to no regulatory framework to guide this process. Consequently, the scope with which local government can respond to climate change is fuzzy, and the role of councils in working with the wider community in advocating for more action is acknowledged: *"The collective actions of state and federal governments, residents, businesses and industry are required to drive down emissions" (2018 Environmental Report, LC 4).*

For most of the councils that were investigated, information on climate change response is predominately shared through its strategy reports. Most councils were found to be reporting on carbon emissions and taking steps to reduce their carbon footprint. While there was no mandate to do this by upper tiers of government, this reflected self-imposed objectives from the council's strategic planning reports. Aside from emissions reporting, the degree to which information on climate change response was embedded within council objectives varied considerably and was determined by many factors that drove action or inaction.

The objectives set out by most council strategies articulate what councils will focus on concerning climate change. Several respondents spoke of the detailed process involved in developing these strategic reports, however, the development of a strategy is not a milestone, rather it is the starting point toward fulfilling council objectives. Several councils noted that the emissions targets that were set were more aspirational than they were realistic, and there was considerable ambiguity surrounding how these actions were implemented, measured, and evaluated. The execution of strategy can be problematic, particularly when the measurable outcomes are poorly defined. This was also conflated by the notion that climate change is traditionally dealt with by the environment department, whose scope was limited in the degree to which actions were integrated throughout the council.

Despite the best efforts of individuals within each council, a pervasive siloed culture exists within local councils that has limited how climate change response is integrated within the wider organisational processes. Nevertheless, one council had taken significant steps to embed *climate change thinking* throughout its organisation and, in turn, with both mitigation and adaptation approaches. This was in part due to the financial dependence this region has on its natural resources for the tourism industry, but also because of strong advocacy from within the community. Another council has integrated sustainability principles into its procurement processes. It is important to acknowledge that any responses to climate change exist in a world that is focused on financial imperatives. Some councils have found that environmental projects have more success when they have been able to demonstrate clear financial outcomes as the primary benefit, while environmental or social outcomes are viewed as an *additional* benefit.

Local councils are, by and large, held to account by the community and this is reflected in how citizens are involved with the development of council strategy. Citizens rate the environment as an important issue though this is often on the periphery of immediate concerns within the community. Councils will often focus on short-term wins that demonstrate action to the community. Minimal action by local councils may also reflect a lack of understanding of what constitutes climate change response, which in turn is partly influenced by unclear parameters that enable action. It was acknowledged that the self-imposed targets set by the council were more aspirational than achievable.

Evidence of themes was not consistent across the six councils, where reporting of climate change response was more frequent in councils in which interview respondents noted there was more active leadership and where climate change response was embedded throughout the council. This was evidenced by the fact that the term *climate change* was referenced in certain councils frequently. It should be noted that in the councils where the term *climate change* was minimally used, other terms were used, such as waste management, energy management, emissions reductions, environment, or sustainability. This suggests that although climate change

was not explicitly mentioned in council reports, actions were still being taken in response to climate change. The framing of climate change response, therefore, is important in interpreting council reports (Williams, 2015). The language used to describe climate change response is not consistent across all councils, as reflected in the differences in reporting (Ruiz-Campillo et al, 2021).

A general theme observed from the analysis of reports and interviews with council representatives is that there appears not to be a shared understanding of climate change response shared amongst the different councils. Several respondents noted the lack of leadership in responding to climate change from the federal government restricted what was achieved at the local level due to the hierarchical structure of local government. Consequently, there was the perception that due to this limitation local councils were 'going it alone' by consulting with communities and other councils to respond to climate change.

Accountability is a concept that has both relational and evaluative components that require external oversight. The findings indicate that the council acknowledges community oversight into decision-making; however, it is less clear exactly how community demands influence the decisions about climate change response. Councils claim to engage with communities through feedback, forums, and council meetings, but it is the councillors who ultimately get to determine the strategic agenda of each council. In some councils, climate change response was not as frequently acknowledged a concern as other issues by citizens. The current form of community consultation is about ascertaining the greatest needs of the community at the discretion of those choosing to consult, which according to Mulgan (2003) is not the same as accountability that involves an obligation to respond to citizen demands. For some councils where climate change response was considered a higher priority (i.e., greater community demand for action), there was an emphasis to embed 'climate change thinking' throughout the organization. Climate change response within local councils, therefore, reflects both external influences (i.e., stakeholder and

community demand for action) and internal influences (i.e., leadership, embedding roles, and responsibilities).

6.6   Chapter summary

This chapter presented the qualitative analysis of the climate change response of the six local government cases, which included interview transcripts with council managers and other employees and council reports (i.e., annual reports and environmental reports). The qualitative data analysis contained two phases. In phase one, the interviews with council staff were analysed as per the process of discourse analysis, while in phase two the council reports were analysed through content analysis. A coding rule was developed, and the text was analysed according to the four questions of accountability: *who*, *for what*, *to whom* and *how* (Mulgan, 2003). The findings of both analyses were presented. Chapter 7 presents the quantitative analysis of the responses from the psychological survey.

Chapter 7   Quantitative Data Analysis

7.1   Chapter overview

The previous chapter investigated the concept of accountability within local government response to community climate action at the macro level, which was undertaken using a qualitative research approach. The micro level of analysis is the focus of Chapter 7 and was achieved by developing a quantitative study of the psychological processes that contribute to collective actions of community climate change response. The first part of this chapter provides a summary of the hypotheses. Community participants provided data through response to an online survey. The data from the survey were analysed using structural equation modelling with the software AMOS Version 26 (Blunch, 2013; Kline, 2010). Preliminary analyses included data cleaning, screening, correlations, as well as the techniques of exploratory factor analysis and item parcelling. Next, the measurement model outlined the processes of confirmatory factor analysis and testing for common method bias. Finally, the structural model is presented concerning the six hypotheses. A discussion of findings along with key inferences of the supported hypotheses concludes the chapter.

7.2   Hypotheses

The justification for this investigation was presented in Chapters 2 and 3, which reviewed the literature and presented the thesis conceptual model. The qualitative study addressed the macro level of the conceptual model in Chapter 5. The quantitative study as noted in Chapter 3 examined the micro level of the conceptual model, that is, the psychological processes and contextual factors that contribute to collective actions in response to climate change. Chapter 4 described the sampling strategy and data collection of the quantitative study, including demographic information of the participants. This chapter presents the data analysis of the six hypotheses formulated from the proposition presented in Chapter 3. The hypotheses tested are as follows:

- **H1:** Psychological adaptation is related positively to collective action tendencies.

- **H2:** Social identity mediates the relationship between psychological adaptation and collective action tendencies.

- **H3:** Collective efficacy mediates the positive relationship between psychological adaptation and collective action tendencies.

- **H4:** The relationship between psychological adaptation and collective action tendencies are stronger for those reporting higher procedural justice.

- **H5:** The mediated pathways through collective efficacy between psychological adaptation and collective action tendencies are conditional on/moderated by the level of procedural justice.

- **H6:** The mediated pathways via social identity between psychological adaptation and collective action tendencies are conditional on the level of procedural justice.

Figure 7 presented the hypotheses to demonstrate the relationships to be tested in the quantitative study.

7.3   Preliminary analysis

The data used in the analysis were derived from responses to the questionnaire developed and justified through evidence presented in Chapter 4. The survey included nine demographic items and 33 items drawn from five established and psychometrically supported measures

7.3.1   Participants

Analysis of the demographic variables revealed an overrepresentation of Greens' supporters in the political affiliation category, where political affiliation is linked with climate change attitudes and beliefs (Ziegler, 2017). People who voted Greens in the 2018 Victorian State election represented 10.7% of the total votes (Victorian Electoral Commission, 2018); however, 47.1% identified as Greens' voters in the survey. To ensure the dataset is representative of the population (i.e., all Victorian residents), a dummy variable was created for political group membership (i.e., Greens and non-Greens' supporters).

7.3.2 Data cleaning and screening

Data screening was assessed through inspection of the descriptive statistics output for all items of the five constructs (i.e., social identity, psychological adaptation, collective efficacy, procedural justice, and collective action tendencies) in the program Statistical Package of the Social Sciences Version 26 (SPSS). There were 608 completed questionnaires (i.e., identified as having completed all questions collected through the Qualtrics software platform). Chapter 4 discussed the method used to manage missing data.

Examination of boxplots for each item showed several clusters of outliers from specific respondents, and five cases were removed, which was justifiable due to the large sample size (Aguinis et al, 2013), resulting in 603 responses. Tests of normality for all constructs were significant, as indicated by the Kolmogorov-Smirnov statistic. Normal distribution was examined through examination of histograms, skewness, and kurtosis. Indicators of the independent variable (i.e., psychological adaptation social identity), moderator (i.e., collective efficacy), and mediator (i.e.,) were negatively skewed; indicators of the second moderator (i.e., procedural justice) were positively skewed, and indicators of the dependent variable were bimodal. To deal with issues of skewness and kurtosis, square root transformations were undertaken as recommended by Kline (2010), and this improved the normal distributions to acceptable levels.

Observations of the transformed scores from the histogram, stem and leaf plot, normal probability plot, and boxplot indicated the scores were normally distributed (Pallant 2016). Inspection of the deviation from linearity scores and scatterplots indicated no heteroscedasticity. The assumption of multicollinearity and singularity was not violated, as indicated by a variance inflation factor score of less than three for each of the variables (O'Brien, 2007).

7.3.3 Correlations

A bivariate Pearson's product-movement correlatiıl(r) was employed to assess the size and direction of relationships amongst the variables. This included the independent variable (i.e., psychological adaptation; M = 15.65, SD = 3.51), dependent variable (i.e., collective action

tendencies; M = 8.37, SD = 2.62), mediators (i.e., social identity [M = 6.55, SD = 1.38] and collective efficacy [M = 10.93, SD = 3.31]), moderator (i.e., procedural justice; M = 9.85, SD = 1.94). The control demographic variables were also included in the correlation, which were region (M = 3.45, SD = 1.11), political group membership (M = 3.45, SD = 1.11), age range (M = 3.58, SD = 1.87), gender (M = 1.67, SD = .50), education (M = 5.26, SD = 1.68), and household income (M = 3.25, SD = 1.88). The correlations were employed to determine the strength of the relationship between the demographic variables and factors. Table 22 shows, means, standard deviations, and correlations for each of the factors and demographic variables.

Table 22

Means, standard deviations, and correlation matrix of variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1.67	.50	-										
2. Age group	3.58	1.87	-.11**	-									
3. Education	5.26	1.68	-.04	.21**	-								
4. Household income	3.25	1.88	-.11**	-.07	.16**	-							
5. Group membership	1.53	.50	-.22**	.25**	-.05	.01	-						
6. Region	1.43	.49	-.01	.26**	-.03	-.12**	.13**	-					
7. Psychological adaptation	15.65	3.51	-.38**	.25**	-.04	.02	.47**	.05	(.88)				
8. Collective action tendencies	8.37	2.62	-.31**	.18**	-.15**	-.01	.51**	.04	.73**	(.93)			
9. Social identity	6.55	1.38	.06	-.13**	-.09*	-.10*	.04	-.11**	.12**	.13**	(.89)		
10. Collective efficacy	10.93	3.31	-.29**	.30**	-.03	.04	.39**	.00	.72**	.67**	.12**	(.98)	
11. Procedural justice	9.85	1.94	.10*	-.05	.00	.02	-.21**	-.02	-.31**	-.34**	-.29**	-.29**	(.88)

*Note. N = 603. *p < .05; **p < .01. Reliability coefficients for scales shown in parenthesis.*

Interpretation of the correlations focuses only on significant relationships using the conventions prescribed by Cohen (1988). Inspection of the relationship between the independent variable and other variables indicated a strong positive correlation between Psychological Adaptation and Collective Action Tendencies ($r = .73$, $p < .01$) as well as Psychological Adaptation and Collective Efficacy ($r = .72$, $p < .01$), a small positive correlation between Psychological Adaptation and Social Identity ($r = .12$, $p < .01$), and a medium negative correlation was observed between Psychological Adaptation and Procedural Justice ($r = -.31$, $p < .01$). Psychological Adaptation also correlated with control variables, including a small correlation with age group ($r = .25$, $p < .01$), and a medium correlation with region ($r = .47$, $p < .01$).

Collective Action Tendencies correlated with all variables except for household income and region; strong associations were noted with Psychological Adaptation, Collective Efficacy ($r = .67$, $p < .01$) and group membership ($r = .51$, $p < .01$), small negative associations with age group ($r = .18$, $p < .01$), a small negative association with education ($r = -.15$, $p < .01$) and medium negative associations with Procedural Justice ($r = -.34$, $p < .01$) and gender ($r = -.31$, $p < .01$). Correlations were observed between Social Identity and other variables, namely a small relationship with Collective Efficacy ($r = .12$, $p < .01$), small negative relationships with household income ($r = -.10$, $p < .05$), age group ($r = -.13$, $p < .01$), education ($r = -.09$, $p < .05$) and region ($r = -.11$, $p < .01$), as well as a medium negative association with Procedural Justice ($r = -.29$, $p < .01$). Collective Efficacy was correlated with three control variables: a medium positive relationship with age group ($r = .30$, $p < .01$) and with group membership ($r = .39$, $p < .01$), and a medium negative association with gender ($r = -.29$, $p < .01$). Procedural Justice negatively correlated moderately with group membership ($r = -.21$, $p < .01$).

The correlations reported suggest associations amongst the five variables in the model that are both positive and negative, with some stronger than others. These variables also significantly correlated with some of the control variables, most notably age group, gender, and group membership. Minimal or no significant correlations were observed with the other variables

– region, education, and income – and it was decided to omit these three variables as controls in the structural model.

7.3.3.1   Exploratory factor analysis

As recommended by Podsakoff et al. (2003), exploratory factor analysis was employed to determine the correlation amongst the variables. Thirty-three variables from the five constructs – psychological adaptation, social identity, collective efficacy, procedural justice, and collective action tendencies – were factor analysed utilising a maximum likelihood method with varimax rotation to examine the factor loadings of each item with its associated constructs (Fabrigar & Wegener, 2012). Initial eigenvalues indicated five factors greater than a value of one, which explained 70.32% of the variance; however, an inspection of the rotated factor matrix and communalities showed that three items from the Psychological Adaptation construct had poor factor loadings and low communalities (i.e., *"Increasingly I find myself less likely to attend to media reports, articles and discussions about the nature or impacts of climate change"*; *"I have seriously thought about alternative places to live because of the increasingly evident impacts of climate change"*; and *"I have often discussed my thoughts and feelings about climate change with others over the past several years"*) and were discarded.

The analysis was re-run with the remaining 30 items, and five factors were identified that explained 74.2% of the variance. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy score was .948 – above the recommended value of .6 – and Bartlett's test was significant. Communalities for all items were over the accepted limit of .4, confirming that the items shared common variance with other items. Inspection of the rotated factor matrix indicated no cross-loadings where all items correctly loaded onto the five factors (Appendix L). The correlations in the factor correlation matrix were within the acceptable range. Inspection of the mean inter-item correlations for each sub-scale ranged from .41 to .72, indicating an adequate relationship amongst the constructs (Tabachnick & Fiddell, 2013).

7.3.4 Item parcelling

As the purpose of the current analysis was to test the underlying structure of the interrelationships among multiple theoretical constructs, composite measures of the latent variables were created to assess the fit of measurement and structural models (Landis et al, 2000). The latent variables for psychological adaptation, collective efficacy, procedural justice, and collective action tendencies were each represented by three parcels; parcels were achieved using the factorial algorithm method of sequentially placing items to the three parcels from highest to lowest factor loadings identified in the exploratory factor analysis (Matsunaga, 2008; Appendix M). Item parcels were used to reduce the parameters to be estimated, provide more stable estimates, reduce the risk of violating normality assumptions, and to provide more parsimonious models to be interpreted (Hau & Marsh, 2004). Social identity was excluded by the item parcelling approach as there were only four items.

7.4 Measurement model

A confirmatory factor analysis was undertaken to test the relationships between the measures and the respective constructs (Kline, 2010). Initial model fit was excellent; however, tests for validity and reliability, as well as common method variance were undertaken. A validity analysis revealed that the composite reliability values for each factor were above the acceptable threshold level of .7. The values for the average variance extracted were above the threshold of .5, indicating convergent validity (Hair et al, 2010). The requirements of convergent, discriminant, and face validity were satisfied (Table 15).

Table 23

Validity analysis

	R	VE	SV	MaxR(H)	1.	2.	3.	4.	5.
1. Collective Efficacy	0.97	0.92	0.59	0.98	**0.960**				
2. Procedural Justice	0.90	0.75	0.15	0.91	-0.32***	**0.87**			
3. Psychological Adaptation	0.93	0.82	0.63	0.96	0.77***	-0.31***	**0.91**		
4. Collective Action Tendencies	0.89	0.73	0.63	0.94	0.73***	-0.39***	0.79***	**0.86**	
5. Social Identity	0.90	0.69	0.11	0.91	0.14**	-0.33***	0.09*	0.15***	**0.83**

Note. *p < .05; **p < .01; ***p < .001. *Reliability coefficients for scales shown in bold.*

Common method bias was assessed using Harman's single-factor test and a common latent factor method as the specific bias test broke the model (Podsakoff et al., 2003). Using Harman's single factor method (Fuller et al, 2016) all items were constrained to one factor and resulted in 43.35% of the variance. Inspection of the common latent factor indicated that there was 0.8% shared variance. A further test of common method bias was conducted which involved a full collinearity test of the five factors, which showed that variance inflation factor scores ranged from 1.02 to 2.12; these were all less than the prescribed cut-off of 3.3 (Kock, 2015). These analyses revealed that common method bias could be excluded.

The baseline five-factor model (i.e., psychological adaptation [3 parcels], social identity [4 items], procedural justice [3 parcels], collective efficacy [3 parcels], and collective action tendencies [3 parcels]) yielded a good fit for the data (χ^2= 186.91, *df* = 94; Table 24), where a significant p-value is expected for models exceeding 12 observed variables and a sample size greater than 250 (Hair et al, 2010).

Table 24

Final measurement model fit

Measure	Observed	Threshold*
Comparative Fit Index (CFI)	.99	> .92
Tucker-Lewis Index (TLI)	.99	> .92
Root Mean Square Error of Approximation (RMSEA)	.04	< .07
SRMR	.03	< .08

Hair et al. (2010)

7.5   Structural model

The direct and indirect effects contained in the six hypotheses were assessed via the structural model. As an initial step, multivariate assumptions were examined and were found to be not violated as evidenced by no influential outliers using Cook's distance as well as there being no variation inflation factor scores greater than the threshold of 10 (O'Brien, 2007).

7.5.1   Tests of hypotheses

A direct effects model tested H1 (psychological adaptation → collective action tendencies; Appendix N), $\chi 2 = 44.59.20$, $df = 16$, $p = .000$; CFI = .99, TLI = .99, RMSEA = .05, SRMR = .04, and confirmed that psychological adaptation was significantly related to collective action tendencies ($\beta = 0.71$, 95% CI [0.65, 0.76], $p = 0.01$).

To investigate H2 and H3, mediation paths were added to the structural model to account for direct and indirect effects, $\chi 2 = 207.20$, $df = 82$, $p = .000$; CFI = .99, TLI = .98, RMSEA = .05, SRMR = .05 (Appendix O). As suggested by Preacher and Hayes (2008), mediation effects (i.e., H2 and H3) were calculated with 95% bias-corrected CIs (1,000 bootstrap samples). Bootstrapping of specific indirect effects was employed to identify unique indirect effects for the mediation of every variable in the model (Gaskin et al, 2020). The positive association between psychological adaptation and collective action tendencies was still evident ($\beta = 0.50$, 95% CI [0.41, 0.59], $p = 0.01$); the mediated pathway of social identity was non-significant ($\beta = 0.01$, $p = 0.08$), and collective efficacy was significant with a medium effect size ($\beta = 0.22$, $d = 0.3$, 95% CI [0.16, 0.31], $p = 0.001$; Figure 12).

Figure 11
Standardised beta weights for the structural model with mediators between the IV and DV
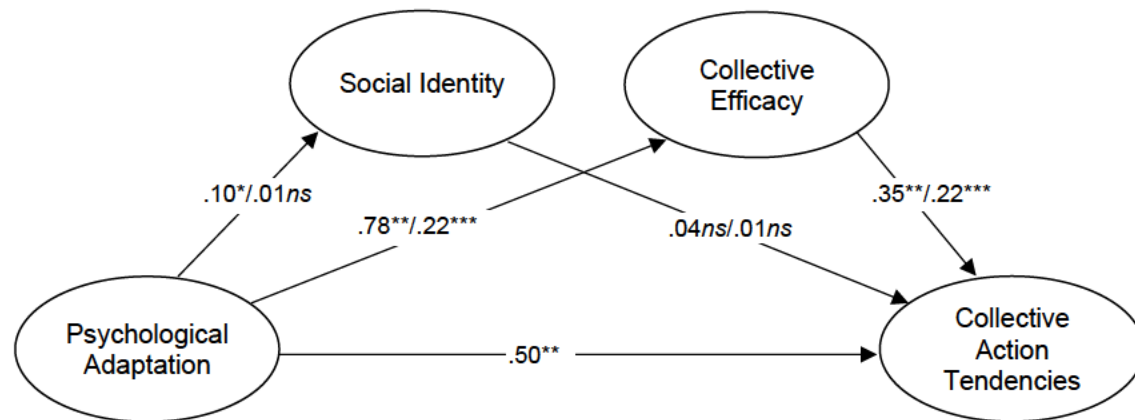
Note. * *p* < .05; ** *p* < .01; *** *p* < .001

Moderation effects (i.e., H4 through to H6) were examined through the observed variable (i.e., procedural justice) and the interaction term (i.e., procedural justice multiplied by psychological adaptation). The interaction term was created by employing the residual centring approach, where the products of procedural justice and psychological adaptation were each regressed onto their respective indicators. The residuals from these analyses were used as indicators for the interaction latent variable, and a significant path to the outcome variables signifies a moderation effect (Steinmetz et al, 2011). The procedural justice interaction term and the observed variable with three parcels were then added to the direct and indirect effects mediation model. Initially, a poor model fit was observed though with the removal of four of the interaction term variables, acceptable model fit was achieved ($\chi2$ = 536.59, *df* = 209, *p* = .000; CFI = .97, TLI = .97, RMSEA = .05, SRMR = .03; Appendix P).

The direct relationship between psychological adaptation and collective action tendencies was not significantly affected by the procedural justice interaction term (β = .01, *p* = .93), thus H4 was not supported. Similarly, procedural justice did not moderate the indirect relationship between psychological adaptation and social identity (β = .06, *p* = .18). However, procedural justice significantly moderated the indirect relationship between psychological adaptation and collective

efficacy (β = -.12, 95% CI [-0.17, -0.06], p < .001): procedural justice dampened the positive relationship between psychological adaptation and collective efficacy (Figure 12). Although a significant interaction was observed, this finding partially supported H6 as it was predicted that procedural justice would strengthen psychological adaptation and collective efficacy.

Figure 12
The influence of procedural justice on the relationship between psychological adaptation and collective efficacy
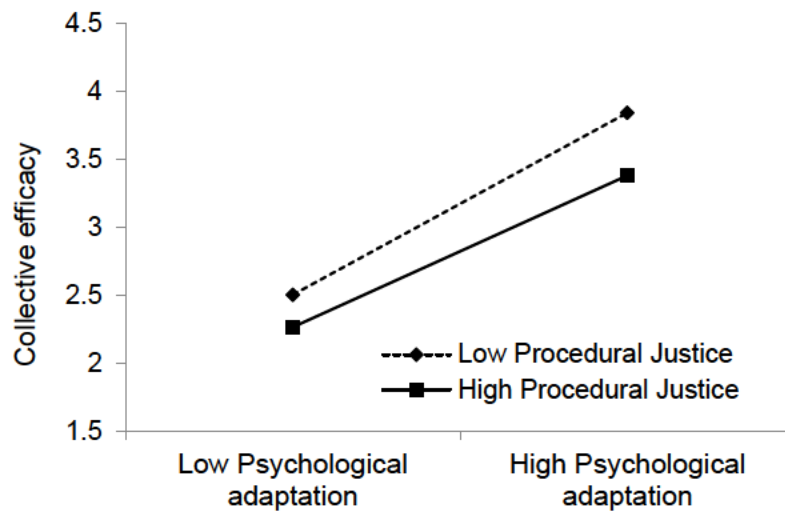
7.6 Discussion of findings

The structural model assessed the direct and indirect effects contained in the six hypotheses. As shown in Table 17, two hypotheses were supported, and one was partially supported. An interpretation of the outcome of each hypothesis is provided in Table 25.

Table 25

Summary of results of hypothesis testing

Hypothesis	Interpretation of findings	Outcome
Hypothesis 1: Psychological adaptation is related positively to collective action tendencies	The ability to cope with and respond to climate change was positively related to collective focused political pro-environmental actions.	*Supported*
Hypothesis 2: Social identity mediates the relationship between psychological adaptation and collective action tendencies	Identification with social group did not influence the relationship between psychological adaptation and collective focused political pro-environmental actions.	*Not supported*
Hypothesis 3: Collective efficacy mediates the positive relationship between psychological adaptation and collective action tendencies	Perceived collective efficacy influenced the relationship between psychological adaptation and collective focused political pro-environmental actions.	*Supported*
Hypothesis 4: The relationship between psychological adaptation and collection action tendencies are stronger for those reporting higher procedural justice.	Procedural justice perceptions did not positively change the direct relationship between a person's ability to psychologically cope with climate change and collective focused political pro-environmental actions.	*Not supported*
Hypothesis 5: The mediated pathways through collective efficacy between psychological adaptation and collective action tendencies are conditional on/moderated by the level of procedural justice.	An increased ability to cope with climate change was linked with the belief that climate action can be collectively achieved, and this effect was stronger for people with low beliefs that decisions about climate change within local government are fair and transparent.	*Partially Supported*
Hypothesis 6: The mediated pathways via social identity between psychological adaptation and collective action tendencies will be conditional on the level of procedural justice	Procedural justice did not positively change the relationship between a person's ability to psychologically cope with climate change and their social identity.	*Not supported*

The tendency to engage in collective actions occurred when individuals recognised the value of their actions, and also through how these beliefs are shared amongst groups of people (Bandura, 2000). Extending previous studies of collective actions (Bamberg et al., 2015; Jugert et al., 2016; Sweetman & Whitmarsh, 2016), this research aimed to examine how social identity and collective efficacy contribute to the relationship between psychological adaptation and collective action tendencies in a community sample. Further, procedural justice was tested as a moderator in these direct and indirect relationships, which yielded mixed results.

Consistent with predictions that the ability to cope with and respond to climate change is positively associated with collective environmental activities (Clayton et al., 2019), the results showed that psychological adaptation was positively associated with collection action tendencies. In addition, this direct relationship was mediated by collective efficacy, but not by social norms. This finding suggests that identification with a group is not as important as belief in the individual's capacity to enact change in psychological appraisal of engaging in collective actions.

Results suggest a relationship in the contextual role of procedural justice on psychological adaptation between collective efficacy, when procedural justice was low, the positive association between psychological adaptation and collective efficacy became more pronounced. An increased capacity to cope with climate change is linked with the belief that climate action can be collectively achieved, but this is more so for people with low perceptions that decisions regarding climate change within local government are fair and transparent. Contrary to what was hypothesised, procedural justice does not positively account for the relationship between individual ability to psychologically cope with climate change and social identity. These findings partially support previous studies on the role of procedural justice in that *injustice* is a driver for environmental activism (Sweetman & Marsh, 2015; van Zomeren et al., 2008) where politically focused collective action tendencies was the focus.

Although the sample size was large, the survey was advertised through Facebook, and the results are only representative of people with access to the internet and who use this social media platform. Although roughly 60% of all Australians use Facebook regularly (Social Media Statistics Australia, February 1 2020), Of note, almost half of respondents' political preferences were for the Greens party, which was not representative of the proportion of Greens voters in state and federal elections in Australia (Victorian Electoral Commission, 2018). Participation, therefore, may have been attributed partly to self-selection bias based on pre-conceived beliefs on climate change (Albright & Crow, 2019). To remedy potential issues associated with self-

selection bias, political group membership was statistically controlled for, and the strength in the relationship amongst the variables was still significant.

The test of hypotheses confirmed and extended previously identified relationships among psychological adaptation, social norms, collective efficacy, collective action tendencies, and procedural justice. This investigation pointed to the direct and indirect relationship between psychological adaptation and collective action tendencies, as well as the mediated association via collective efficacy. However, procedural justice lessened the effect on the positive relationship between psychological adaptation and collective efficacy, as opposed to the predicted positive effect. A positive psychological appraisal of climate change will influence the degree to which an individual engages in collective actions; however, such an effect depends on the degree to which the individual believes the group can act or has agency. Further, a low appraisal of the fairness and transparency of climate change decisions within local government strengthened this relationship.

7.7   Chapter summary

The purpose of this chapter was to present the data analysis of survey responses from community participants to address the six hypotheses. The data from the survey were analysed using structural equation modelling, where a measurement model and structural model were presented according to the six hypotheses. Two hypotheses were supported, while a further hypothesis was partially supported. Inferences were drawn from the findings and discussed. The next chapter focuses on the discussion of the findings of the quantitative and qualitative studies and presents this through conceptual integration.

Chapter 8   Discussion

8.1   Chapter overview

Community-based interventions can be particularly beneficial in responding to climate change though questions remain with how to involve citizens in the decisions in local government (Scott & Moloney, 2021; Van den Berg & Coenen, 2012; Göpfert et al., 2020). Community-level climate change response is also an under-researched phenomenon, particular into how the social dimensions of climate change intersect with a macro-level response (Brondizio et al., 2009; Groulx et al., 2017; Huang & Shen, 2020; Jacquet et al., 2014). Chapter 6 examined local government climate change response through an accountability lens, while Chapter 7 investigated the psychological processes that contribute to collective action tendencies. This chapter draws on the empirical findings from these two investigations to articulate what empirical evidence contributes to a community-level collective response to climate change.

The qualitative and quantitative datasets from the investigations (i.e., council annual reports, council staff interview transcripts, and community perspectives) were examined for theoretical associations (Younas et al, 2019). The associations were then integrated through a pillar integration process and presented via joint display (Creswell & Plano Clark, 2011; Johnson et al., 2017; Plano Clark & Sanders, 2015) through an interdisciplinary lens (Dumay & Guthrie, 2019; Aboelela et al., 2007; Nightingale, 2016). Community collective climate actions were then discussed as a narrative based on the theoretical associations (Bazeley, 2018; Fetter et al., 2013).

8.2   Integration of qualitative and quantitative datasets

Community collective climate actions are theorised as the intersection of macro and micro-level responses to climate change in a community setting. Psychological adaptation informs how citizens collectively respond to climate change, who in turn apply pressure on local governments to act on climate change. Further, local government actions on climate change shape individual behaviours and the decisions to act. Collective actions on climate change are successful in the local context when accountability in local governments is demonstrated internally – through

transparent information, embedded organisational processes, and climate-focused leadership – and externally – through citizen participation, which is viewed through a social-psychological lens. The merging of these two datasets contributes to the literature by creating a nuanced understanding of community collective climate actions (Younas et al., 2019).

Collective climate actions within communities are theorised to occur through collaboration between citizens and local governments. Specifically, local governments can work with citizens and businesses to encourage actions, and, conversely, citizens can influence the decisions made within local government. This mixed methods research had explored public accountability within local government at the macro level (Chapter 5) and collective climate actions from a social-psychological lens at a micro level (Chapter 6). Each of these studies was analysed and conclusions were drawn. The aim of this chapterwas to integrate the findings from the two empirical studies and conceptualise community collective climate actions through the disciplines of accountability and psychology from a macro level and micro level.

8.2.1 Conceptual integration

The purpose of conceptual integration is to generate theoretical concepts (Eastwood et al., 2014) and is based on a pragmatic worldview that assumes multiple forms of reality (Christ, 2013). Integrating the results of the two studies is conceptually challenging as the data were drawn from two different populations at different levels. Divergent findings were produced because each study focused on a different level of analysis even though both focused on community level climate intervention. Interpreting how these results are similar and different through a narrative account enabled a unique theoretical frame (Bazeley,2018).

Conceptual propositions based on the empirical findings in the macro-level and micro-level studies were compared. According to Uprichard and Dawney (2015), combining qualitative data and quantitative data is ontologically *messy*, and the authors suggest acknowledging this *messiness.* By doing so, the researcher can look for commonalities within the empirical findings and generate new perspectives on a central phenomenon (Ulmer, 2016). The conceptual

similarities and differences within and between the social-psychological processes of human behaviour and organisational processes within local government institutions were compiled.

The integration of quantitative and qualitative studies adopted a simultaneous bidirectional analytic approach (Moseholm & Fetters, 2017). That is, an iterative switching between both the quantitative and qualitative findings was employed, and the results were merged into a conceptualisation of community collective climate actions. Key findings from each of the qualitative and quantitative studies were described (Fetters et al., 2013). The results of the psychological survey and case study results were given equal weighting during the interpretation, which was combined and presented through a joint display (Guetterman et al, 2015; Lamprecht & Guetterman, 2019; Younas et al., 2019).

The macro-level propositions were analysed via the four questions of accountability – who, for what, to whom and how (Mulgan, 2003) – in the context of local government response to climate change. The analysis found *who* is accountable for climate change were leaders that had personal interest in climate change and external consultants though roles and responsibilities were not clearly defined. Regarding accountability to *whom*, the results found that local governments were held to account by the short-term needs of the community though this was shaped by resource restraints and aspirational environmental goals. In addressing accountability for *what*, the results found that this took the form of advocacy, implementing council strategy, and meeting community demands. The final question asked *how* local government was accountable, and the analysis determined that climate change information was embedded throughout each council though the level of information and targets varied in each council due to short-term reactive decision making. A description of each type of accountability was presented in Table 21 (page 200).

The micro-level propositions theorised collective actions in response to climate change as a social-psychological contract (see Chapter 7). Specifically, it was proposed that community collective climate actions were influenced by perceived social identity, procedural justice, and

collective efficacy, but also that these factors were accounted for by individual appraisals of climate change (van Zomeren et al., 2010) through the construct of psychological adaptation. Data were collected through 603 survey responses from citizens who resided in Victoria, Australia. Six hypotheses were proposed, and quantitative data analysis supported three of these hypotheses (Table 17, Section 7.6).

Results from the quantitative analysis revealed that a positive psychological appraisal of climate change influenced the degree to which an individual engages in collective actions, but this depended on the degree to which the individual believes their identified group can act. Specifically, collective efficacy partly explains why a person's ability to cope may be related to responses to climate change, which was positively related with collective focused political pro-environmental actions. This relationship was dampened by perceptions of fairness and transparency of local government actions on climate change, such that limitations in perceived procedural justice resulted in greater collective action tendencies. In other words, an increased ability to cope with climate change was linked with the belief that climate action can be collectively achieved, but this was more so for people with low beliefs that decisions about climate change within the local government were fair and transparent. Results from the quantitative study indicated that politically focused collective climate actions were influenced by the ability of individuals to psychologically appraise the impacts of climate change and collective efficacy, but that the perceived fairness of local government action also partly influenced these relationships.

8.2.2   Joint display of findings

Both sets of research findings were merged through comparing the qualitative themes and the quantitative constructs (Lamprecht & Guetterman, 2019). The conceptual integration was presented through the joint display (Figure 13). This is a common method for presenting multi-level mixed methods research as a means of juxtaposing different datasets to generate new perspectives (Creswell & Plano Clark, 2011; Plano Clark & Sanders, 2015). A meaningful narrative of the qualitative and quantitative findings was *connected* through a joint display and

generalised themes presented (Guetterman et al, 2015; Younas et al., 2019). The joint display was developed by a four-stage pillar integration process.

8.2.2.1   Pillar integration process

The joint display is a visual representation of how the qualitative and quantitative data integrate and was produced using the four-stage pillar integration process developed by Johnson et al. (2017). This process was developed to enhance the methodological rigour of mixed methods integrative techniques and to minimise observer bias. Stage one is the *listing* stage and involves recording quantitative data (i.e., abstracted into themes) in one column and qualitative data (i.e., summation of themes) in a separate column, either horizontally or vertically. The macro-level column was presented horizontally and contained the abstracted themes from the qualitative study (i.e., themes that were grouped according to the four questions of accountability; Table 18; see Chapter 5). The micro level column was featured vertically and contained conceptual abstractions of the supported hypotheses of the quantitative study (Table 17).

Stage two involved *matching* the content in each of the columns. Patterns or any relational qualities were identified and categorised whereby the macro-level inferences were structured according to the four questions of accountability (Table 18; refer to Chapter 5 for a description of how the themes were categorised). The micro-level inferences were structured as per the hypotheses in the quantitative study (Table 17; refer to Chapter 6 for a further description of the interpretation of findings), and the interpretations of findings of the three supported hypotheses were selected as three individual categories, respectively.

Stage three refers to the *checking* of the content for the accuracy of the matches. Part of this process included reviewing the findings from the qualitative and quantitative studies to ensure the abstracted findings have been appropriately summarised. An important component of this step is for the researcher to step back and reflect on emerging patterns of the lists in each column. Given the purpose of this process was to generate a theory of climate change response at the community level, the categories that were included accurately reflected the findings of the

individual investigations. Although conceptually distinct, the findings of each dataset were compared in the context of community collective climate actions (Uprichard & Dawney, 2015). In total, there were three categories in the column of micro-level inferences and four categories in the column of macro-level inferences.

The final stage, *pillar building*, involved the creation of a pillar – the conceptual integration of each category from the vertical and horizontal columns. That is, the content of both columns was examined to the concept of community collective climate actions, that is, how each level influenced the other. Specifically, the intersection of categories in each column was examined and inferences were made both deductively and inductively (Armat et al., 2018). The existing literature of community participation guided the pillar building stage, which included assessing for descriptions of citizen input into decision making, examples of mutual collaboration and minimal divergence of top-down and bottom-up processes (Bellucci et al., 2019; Fox, 2015; Jacquet et al., 2014; Mees et al., 2019; Webber et al., 2017). For example, the synthesis of content from the macro-level category 1 and micro-level category 2 resulted in the concept that decisions pertaining to climate change require ownership and collective belief. In total, 12 pillars were created that synthesised the evidence presented from micro and macro levels in the context of how communities take part in climate action. Following this process, Johnson, et al. (2017) recommend that the researcher weave together each pillar into a meaningful narrative. The integration of concepts at the macro level and micro level are presented in Figure 13.

Figure 13

Joint display of meta-inferences to define community collective climate actions

	Macro-level			
	1. Unclear responsibilities in local government climate action, though leaders with personal and external consultants take responsibility	**2. Local governments are held to account for climate change response by the short-term needs of the community and governmental bureaucracy**	**3. Local governments implement climate strategy, meet community demands and advocate**	**4. Climate information embedded through organisational strategy, though this is impacted by vague targets and short-term reactive decision**
Micro-level **1. Psychological adaptation is positively associated with collective action tendencies**	•Decisions related to climate action depend on an individual's coping ability and knowledge. • Personal responsibility influences the degree to which decisions on climate action are made	• Responding to immediate concerns is at odds the long-term thinking required for coping with the effects of climate change.	• Ownership over climate change decisions related to climate actions may compensate for a lack of clarity on the effects of specific actions taken. • Local government can work with the community to enhance the ability to cope with climate change.	• Responding to the effects of climate change requires long-term planning and effort, where psychological adaptation may play a role in sustaining the long-term focus. • Collective actions amongst citizens should have a singular and narrow focus.
2. Collective efficacy influences the positive relationship between psychological appraisal and collective action tendencies	• Climate change decisions require ownership and collective belief, which may offset the uncertainty surrounding responsibilities.	• Local governments can work with communities to enhance collective beliefs amongst citizens. • Collective beliefs in the capacity to cope with climate change may influence how citizens vote	• Citizen demand for climate action is not considered an immediate community demand • Efficacy beliefs amongst decision makers as well as community members may enhance how local government engage with other tiers of government and other stakeholders.	• Citizens' politically focused collective climate actions may influence decisions on specific projects within local government and may be enhanced by collective efficacy beliefs.
3. Procedural justice dampens the effect collective efficacy has on psychological adaptation and collective action tendencies	• Unclear responsibilities at all levels of government drive politically focused collective climate actions •Injustice influences individual responsibilities.	• Community based actions on climate change are derived from meeting immediate demands and apathy in substantive responses.	• There is a lack of clarity over responsibilities on climate action , though efficacy beliefs may offset this. • Climate actions at the local level are minimal and, as a result, there is an apathetic attitude.	• Local governments have several competing priorities and a short-term focus which' affects the type of climate information shared and reported. If this information is perceived to not be fair and transparent, citizens may engage in collective actions but more so if collective belief is present.

8.2.2.2 *Narrative weaving*

The previous section identified the pillars that integrated the narrative accounts of qualitative and quantitative findings. The integration of the qualitative and quantitative findings adopted a narrative approach where conceptual propositions were described. The purpose of this approach is to give a narrative account of these associations built from the interrelationships of the different data sources (Bazeley, 2018).

The creation of meta-themes employed a process known as *narrative weaving* to thematically connect the concepts from the qualitative and quantitative research and make inferences toward a central phenomenon – community collective climate actions (Fetter et al., 2013; Uprichard & Dawney, 2016). This approach is also recommended by Headley and Clark (2019) when exploring the boundaries of a multilevel theory. The weaving technique was adopted to enhance the quality of data integration and explain the meta-inferences presented (Younas et al., 2019).

The associations between qualitative and quantitative findings were identified through examining how the pieces of information aligned or diverged (Uprichard & Dawney, 2016), and a narrative account was formed. These associations were then described according to conceptual themes whereby Fetters et al. (2013) recommend that the narrative be presented on a theme-by-theme basis. Four meta-themes were uncovered through a review of the *pillars*, and each meta-theme is presented as a theoretical proposition and outlined below.

8.2.2.2.1 *Long-term effects of climate change into short-term focus*

Several pillars made mention to the current challenges in climate action in the dichotomy between short-term and long-term focussed decisions. The impacts of climate change are gradual, which require a long-term transition to sustainable energy usage as well as changing attitudes and behaviours of systems, government, and individual citizens (Brondizio et al., 2009; Groulx et al., 2017). Several barriers exist that limit the degree to which local governments can respond to climate change, and they have previously been studied (Mees, 2017). Local governments are

also beholden by state and federal government policies (Chou, 2020), which limit their level of authority. The nature of the political cycles (i.e., 3-year terms) may also limit long-term decision making. Although local governments acknowledge the importance of climate action to varying degrees, the long-term planning needed for sustained change is usurped by short-term issues that require immediate action.

Climate change is acknowledged as an important issue within local government though the level of action varies between different municipalities and even within each council. The scientific consensus on climate change may be clear (Scavenius & Lindberg, 2016); however, the same level of agreement does not appear to exist with all citizens as evidenced by the results of the psychological survey. Some citizens want to see climate action, but the limited resources and powers within local government mean this issue is not prioritised.

Local governments have several competing priorities and a short-term focus that affects the type of climate information shared and reported. If this information is perceived to not be fair and transparent, citizens may engage in collective actions. However, this depends on the level of psychological adaptation and collective efficacy. Specifically, the ability to cope with and respond to climate change coupled with the belief that climate change response can be achieved collectively has a role to play with how an individual engages with the community.

Responding to the effects of climate change requires long-term planning and effort, and psychological adaptation and collective efficacy may play a role in sustaining the long-term focus. Community collective climate actions, therefore, may be more efficacious with a focus on short-term actions that contribute to the longer-term impacts of climate change. Climate change response that is short-term focused and achievable within the current local government structure, coupled with an effort to enhance individual psychological appraisals of climate change may contribute to community collective climate actions.

8.2.2.2.2 Ownership

Another theme noted from the pillars was the focus on taking ownership of community collective climate actions. The theme of ownership was uncovered through the content that referred to individual psychological coping (i.e., psychological adaptation), personal responsibility, the belief in collective action, and the clarification of responsibilities. These three concepts all refer to individual actions with an emphasis on how these actions may be articulated. Conversely, a great deal of uncertainty exists in terms of the actionable steps required, and there is still a misunderstanding on the information that is disseminated.

Ownership over decisions related to community collective climate actions may compensate for a lack of clarity on the effects of specific actions taken. The findings of the quantitative study identified that a perceived lack of action taken by local government galvanised some citizens to act, while some citizens surveyed undertook personal actions due to a sense of morality. This relates to previous research that shows personal investment enhances the degree to which citizens engage with and take accountability for the management of public assets (Dwyer et al., 2015; Ogentho et al., 2021). Ownership, that is, a sense of responsibility and personal investment, may offset climate inaction within the community.

Ownership also relates to the notion that the community has a part to play in climate change response. The belief that the community can act in response to climate change is an important component of how citizens participate. A high level of collective efficacy may influence how citizens engage with other citizens on climate change, which reflects extensive research citing the importance of efficacy beliefs on collective environmental actions (van Zomeren et al., 2010). Efficacy beliefs amongst decision-makers as well as community members may enhance how local government engage with other tiers of government and other stakeholders, but also how local government representatives are elected. Conceptually, a sense of ownership within the community may galvanize action amongst citizens and local councils.

8.2.2.2.3 Uncertainty on climate change response

There appears to be a degree of uncertainty with how communities should respond to the impacts of climate change. The notion of uncertainty was derived from the pillars that described limited agreement on the impacts of climate change by survey respondents, but also through the perceptions of unclear roles and responsibilities within local government. Uncertainty surrounds the type of information that is shared within the community. Climate change responses appears to be synonymous with macro-level emissions reductions, and this is reflected in local council annual reports

Climate change response at the local level involves several initiatives, including reducing greenhouse emissions, waste management services, road maintenance, and behaviour change programs. These interventions, however, are minimal, and as a result there is an apathetic attitude from citizens and from employees within local government. There is no community consensus on the climate change response, where the actions taken may only be tokenistic and not result in substantive change. The term *climate change* has multiple interpretations, and there is a lack of consensus on how or what response may look like to members of the community. This was evidenced by the language used to describe climate change, which varied considerably between the different councils.

Uncertainty remains with how individuals and local governments act in response to climate change; however, efficacy beliefs may lessen this uncertainty. Local governments make assertions of how climate change response is undertaken though the evidence to support these assertions is less clear. On the other hand, evidence of inaction, which results from uncertainty, may galvanize citizens to act through the role of procedural justice. Further, a segment of the community advocate for action on climate change and has some impact on the decisions made within local councils.

8.2.2.2.4 What does climate action mean for me?

Despite the focus on community collective climate actions, a prominent theme uncovered through the examination of pillars centred on personal responsibility and self-interest. Climate change is a broad and all-encompassing concept and can be difficult for individuals to grasp. As previously mentioned, this uncertainty may be offset by taking greater ownership. An extension of this sense of ownership centres on the notion of articulating the impacts of climate change on individual circumstances. A key question, therefore, in community collective climate actions asks, what do these actions mean for me?

Although a sense of community plays an important role in working on collective action problems (Ostrom, 2016), personal investment in climate change may result in increased responsibilities. An integral component of community participation involves a bilateral collaboration amongst citizens and government (Jacquet et al., 2014). Local governments are grappling with a host of issues that restrict climate change response (Scott & Moloney, 2021). The findings from the qualitative study highlighted the challenges in involving citizens on climate change response within local government. However, initiatives with clear outcomes that involved the community, such as advocacy for specific environmental or land issues, had greater success.

The quantitative study showed the role of appraising the threat of climate change to galvanize individuals to take collective action. Collective efficacy was also found to have a positive influence on the actions. Taken together, this suggests that community response to climate change may be more effective when citizens are provided with transparent information on climate change and are also told that their actions are consequential. By focusing on specific climate change interventions that have clear outcomes, community response to climate change may be increased.

8.3 Discussion of findings

Community collective climate actions were theorised as the intersection between citizen and local government actions. Four overarching themes were narratively drawn from a joint

display of theoretical pillars (Johnson et al., 2017; Younas et al., 2019). These pillars were a conceptual integration of micro-level and macro-level findings whereby the content was abstracted and described (Fetter et al., 2013; Uprichard & Dawney, 2016). The macro-level findings were drawn from the qualitative analysis of council documents and employee interviews. The micro-level findings were descriptions of the quantitative analysis of the psychological survey. The integration process highlighted four overarching themes that contributed to an understanding of community collective climate actions.

The first meta-theme focused on the need for short-term solutions within the parameters of the long-term effects of climate change. Current systems of government in Australia operate within a short-term political framework, which can impede longer-term planning. Despite these restrictions, some local governments globally have declared a climate emergency (Chou, 2020). This entails raising citizen awareness and influencing future planning in cities (Ruiz-Campillo et al., 2021). The findings developed in this theme highlight the notion that action is more likely to be taken when there is a sense of immediacy to a problem. While the short-term nature of Australian politics is unlikely to change, decision-makers may have greater success with developing strategies that have a short-term focus on the community. Climate action may also be taken by a local government if there is enough public support (Yeganeh et al., 2020).

The second theme emphasised the importance of ownership of community collective climate actions. Ownership refers to enhancing the responsibilities of citizens and local government. Not only would greater responsibilities enhance citizen agency, but it may also lead to more substantive actions at a macro level. However, there appears to be limited community consensus on climate action. This reflects previous research that has emphasised the difficulty of articulating individual and collective responsibilities on climate action (Newell et al., 2015). Climate change requires the collective actions of institutions and citizens (Ostrom, 2016) though there continues to be confusion with holding those responsible for climate change to account (Byskov,

2019). A sense of ownership within the community may result in a greater response to climate change impacts (Jacquet et al., 2014).

Thirdly, uncertainty was acknowledged as a barrier for future community collective climate actions, but this uncertainty may also present opportunities. There appears to be disagreement within the community on climate change and its impacts. Consequently, the targets set by local governments and actions taken by the local government are perceived as tokenistic and designed to legitimise council strategies. Uncertainty toward climate action also presents opportunities for collaboration between citizens and local governments (Jacquet et al., 2014). According to Aleksovska et al. (2019), citizens can be involved in local government decisions related to climate change, and this ranges from passive reception to joint ownership. Community uncertainty may afford opportunities to collaborate and to develop innovative strategies that are specific to the community needs.

Lastly, the theme of self-interest was prominent even when the focus of the analysis was on collective action. According to Ostrom (2003), collective actions emphasise forgoing short-term self-interest in favour of the needs of the collective. However, reputation is a key component of collective actions, which includes preserving an individual's self-image. Efficacy beliefs are also an integral component of how individuals engage in community initiatives (Alonso et al., 2019; Bhattacharyya et al., 2020), and the quantitative research study identified the contributing factor that collective efficacy has on collective action tendencies. The findings of this final theme highlighted the importance of articulating how the community can benefit from actions in response to climate change. A clearer understanding of the benefits of climate action may also influence the belief that the individual or group can act.

Community participation is still an opaque phenomenon, despite considerable research in this domain (McEvoy et al., 2019). Community collective climate actions were viewed as an amalgamation of collective action tendencies amongst individual citizens and the perspectives of local council employees through an accountability lens. A *community* was defined as a collective

of individuals that share a geographic location and are shaped by government systems and processes (Edelenbos et al, 2018). Community-based interventions may not be a panacea in responding to the complexity associated with climate action; however, the processes involved in grassroots initiatives may inform how climate risk is managed at different levels in society (Fischer, 2021; Reyes-Garcia et al., 2016).

Several research and policy gaps concerning climate action currently exist: a lack of identifying and engaging with diverse resources and a lack of systematic attention to the processes and impacts of a gradually changing climate (Head, 2019). Climate change is a shared social issue that requires a coordinated response at all levels of society; however, determining responsibilities is complex and multifaceted. The collective effort required in responding to climate change may also be at the expense of individual moral responsibility (Dursun et al., 2019; Lim & Moon, 2020; Vanderheiden, 2011). The propositions developed highlighted the responsibility dichotomy, that is, whether climate change responses is attributed to the individual, to an 'other' (i.e., big business, greater polluting nations, etc.), or was a collective responsibility (Fleishman, 1980; Hoff, 2018; Nalau et al., 2015; Newell et al., 2015).

Community collective climate actions encompass systems, processes, and behaviours at multiple levels and require incentives that promote self-interest, as well as the *collective good* (Ostrom, 2016). People need to see the benefits of their contributions to the collective good, because this awareness enhances efficacy and builds a sense of agency. By extension, public agencies may be more inclined to engage more with climate actions when there is a sense that the contributions of individual employees are meaningful. Self-interest is not necessarily at odds with collective goals, and a range of approaches will assist with community climate actions. The propositions developed from the integration of micro-level and macro-level findings offer opportunities to explore the processes that contribute to this phenomenon in greater detail in future research.

8.4   Chapter summary

The purpose of this chapter was to synthesise the concepts developed from the empirical evidence identified at the macro and micro level using approaches analogous with multi-level mixed methods research. Insights were produced from public accountability and psychological perspectives to generate theoretical propositions regarding community-level collective actions in response to climate change. Future research is necessary to explore these propositions; however, the themes developed through the integration of findings contributed to the current literature on collective actions in response to climate change. Chapter 9 concludes the thesis and address the main research question, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change?

Chapter 9: Conclusions and Implications

9.1   Chapter overview

The previous chapter integrated the qualitative and quantitative studies and resulted in theoretical insights into community participation. The focus of this research has been on identifying the theoretical and empirical links between local government public accountability and individual psychological processes to influence community climate actions. The purpose of the final chapter of this thesis is to summarise the evidence about the research problem. The evidence is summarised as per the three propositions developed in Chapter 4 Conceptual Framework and Research Propositions, where contributions are drawn. The theoretical and practical implications of the research are then explored. The limitations and areas for future research are then presented and the implication of the research is explored.

9.2   Conclusions about the research question

The central research question was, How do the various facets of accountability in local governments affect the psychological determinants of collective actions to address climate change? Collective community climate actions were articulated as the collective actions of citizens and local government, and local governments are instrumental in overseeing localized climate change response (Ireland & Clausen, 2019; Manuamorn et al., 2020; van den Berg & Coenen, 2012). Citizens demand accountability from public institutions with regards to climate change response (Haarstad, 2020; Hickey & King, 2016; Australian Broadcasting Corporation, 2021) though the public may not be clear about how the local government responds to climate change (Crawley et al., 2020).

The Australian Government currently has committed to reducing its greenhouse emissions to 26 to 28% below 2005 levels by 2030 (Climate Change Authority, 2015). However, current action from all tiers of government is considered inadequate (Colvin & Jotzo, 2021; Hughes et al., 2021; Pearce et al., 2018). Australia is the world's third-highest emitter of greenhouse gases per capita at 16.18 tonnes (Ritchie & Roser, 2017), and the uptake of renewable energy is slow in

many Australian states (Climate Council, 2018). The Australian State of Victoria would benefit from an increase in climate change response due to the expected population growth (Australian Bureau of Statistics, 2017) and projected coastal flooding (Climate Council, 2017). There are also financial and legal risks associated with inadequate climate change response (Climate Council, 2019; Schuijers & Young, 202; Warren-Myer et al., 2020). The findings developed through this research have shown that there is an acknowledgement that climate change carries significant societal risk, but institutional barriers and uncertainty limit climate change response.

The existing literature was appraised via a systematic literature review to identify research gaps and to examine the quality of research evidence (Massaro et al., 2016; Parris & Peachey, 2012; Tranfield et al., 2003). Berrang-Ford et al. (2015) recommend that climate change research would benefit from the integration of research from different disciplines, and the methodological rigour associated with a systematic literature review would enable this process. Conceptual themes were developed at each level of analysis: the macro level (i.e., local government accountability), the micro level (i.e., psychosocial processes, behavioural intentions), and the meso level (i.e., community participation). These conceptual themes resulted in a theoretical proposition at each level of analysis.

A multilevel mixed methods research design (Headley & Plano Clark, 2019) was implemented to address the theoretical propositions developed from the systematic literature review. An interdisciplinary investigation examining accountability and psychological perspectives was undertaken to explore this phenomenon within and between each level (Räsänen et al., 2016; Van Wijk et al., 2019). The Australian State of Victoria was the focus of data collection because Victoria is experiencing barriers to climate change response, including population growth (Australian Bureau of Statistics, 2017) and minimal uptake in renewable energy (Climate Council, 2018). A pragmatic perspective that incorporated both qualitative and quantitative approaches (Molina-Azorin & Cameron, 2010) was employed to address the propositions. Conclusions about each proposition are presented next.

9.2.1 Proposition 1

Proposition 1: Local government accountability for climate change response is the result of leaders who are answerable to the community and through transparent and measurable information that is embedded in the organisation.

The analysis identified that climate change response within local government is a highly contextual phenomenon, and the four questions of accountability elucidated the accountability mechanisms within local councils. The first question – *who is accountable* – sought to identify those responsible, whether that is the individual actions of a leader, or through the organisation. The results indicated that the councillors and chief executive officer were the individuals responsible for the actions taken within the council; however, the articulation of responsibilities throughout the councils were less clear. Leaders with a personal interest in climate change response and external consultants were informally responsible though no formal mechanisms reflected that. *To whom*, aimed to identify the account holders to whom accountability is owed. Local governments were held to account for climate actions externally by a range of community needs and internally through governmental bureaucracy (i.e., election cycles, a hierarchical chain of command). Resource constraints limited how community demands were addressed, and only a small proportion of residents advocated for climate actions.

Articulating *for what* is to be held to account was the third question and focused on the duties to be carried out, which for example may be a contract or performance goals. Council interviews and documents revealed that the role of local government was to meet community demands, to advocate other tiers of government for climate change, and to implement council strategy. The final question asked *how* the agent (i.e., local councils) was accountable, and this includes the dissemination of accurate information through collaboration and discussions amongst stakeholders (Brandsma & Schillemans, 2014). The analysis indicated that climate change information was mostly shared through its strategy documents; however, a framework

had not been developed to guide how information was communicated, and emissions reduction targets within each council were self-directed.

Despite existing research highlighting issues associated with the breadth and accuracy of emissions reporting (Ahmad & Hossain, 2019; Milne & Grubnic, 2011), most councils were reporting on carbon emissions and taking steps to reduce their carbon footprint. Aside from emissions reporting, the degree to which information on response to climate change was embedded within council objectives varied considerably and was determined by many factors that drove action or inaction (e.g., a siloed culture). The current findings support existing research emphasising the importance of embedding climate actions throughout the organisation (Gibassier & Alcouffe, 2018).

Accountability is both evaluative and relational (Overman et al., 2020), and this investigation provided context to the climate change information that was presented in local council documents. The findings presented also highlighted inconsistency across councils on localized climate actions. This may reflect previous empirical evidence that has shown a need for a regulatory framework to guide climate change response at the local level and to articulate how localised actions fit into state and national policy agendas (Climate Council of Australia, 2021; Ireland & Clausen, 2019; Menzies, 2020).

9.2.2 Proposition 2

Proposition 2: Psychological adaptation determines a person's intention to engage in collective environmental behaviours though this relationship depends on social norms, collective efficacy, and procedural justice.

The evidence suggests that the ability to cope with and respond to the threat of climate change was positively linked to engaging in collective actions. Identification with one's social group did not contribute to the relationship between psychological adaptation and collective focused political pro-environmental actions. However, the belief that climate action can be collectively achieved partially explained the positive relationship between psychological

adaptation and collective action tendencies. The belief that collective action can be achieved was a contributing factor to how the psychological appraisal of the impacts of climate change determined how a person intends to engage in collective actions. Lastly, an increased ability to cope with climate change was linked with the belief that climate action can be collectively achieved, but this was more so for people with low beliefs that decisions about climate change within the local government were fair and transparent.

These findings supported previous evidence that the intention to take political-focused collective actions is partly influenced by how an individual copes with and appraises the threat of climate change (Bradley & Reser, 2017; Fritsche et al., 2018). The relationship between psychological adaptation and political-focused collective actions, such as environmental protests or campaigns (Sweetman & Whitmarsh, 2015), was also explained by collective efficacy (Jugert et al., 2016; Rees & Bamberg, 2014). The strength of these associations was further contextualised through the concept of procedural justice, which was modified from the original survey items to appraise local government decisions regarding climate change.

9.2.3 Proposition 3

Proposition 3: Community collective climate actions involve a demonstration of accountability in local government and citizen psychosocial responses to climate change.

The evidence to support the conceptualisation of community climate actions were derived from two sources: 1) results of the qualitative analysis of local council interviews and documents and 2) results of the quantitative analysis from the psychological survey. Descriptions of these data sources were then presented via joint display following a four-step pillar integration process (Johnson et al., 2017; Younas et al., 2019). A narrative account of the integrated data sources produced four meta-themes.

The first meta-theme focused on the need for short-term local government solutions that complement the long-term effects of climate change. A clearer articulation of the scope of

responsibilities of both citizen and local government is required within the parameters of short-term political cycles in Victoria. The second meta-theme, ownership, referred to enhancing the responsibilities of citizens and local government through enhancing agency. The third meta-theme focused on uncertainty within the community, whilst acknowledging that uncertainty was a barrier but also an opportunity for the community. The last meta-theme centred on articulating what climate actions mean from a self-interest perspective.

The summation of these meta-themes indicated that collective community climate actions are a combination of self-interest, collective agency, and ownership. From a theoretical perspective, the integration analysis provided insight into how institutional and citizen level actions relate to community climate actions. This analysis contributed to the literature by providing a narrative account of divergent strands of evidence from multiple levels (Uprichard & Dawney, 2015).

9.3   Contributions of the research

The conceptualisation of collective community climate actions through the integration of accountability and psychological perspectives contributed to existing climate change research, which has stressed the importance of adopting interdisciplinary research to generate insights at multiple levels of analysis (Aboelela et al., 2007; Nightingale, 2016; Slawinksi et al., 2017). The evidence presented contributed to an understanding of community climate actions through examining the interrelationships of governing institutions and citizens (Groulx et al., 2019). The Victorian context highlighted the current challenges facing local governments and communities in responding to climate change.

The relationship between local government and its citizens is a social contract whereby expectations exist between community members regarding climate action (Adger et al., 2018). The collective actions of all community members also depend on the influence of human agency (O'Brien et al., 2009), that is, the shared beliefs that can lead to action (Bandura, 2000). The social contract surrounding climate actions is not a homogenous belief at an institutional level or

for individual citizens. This social contract was explored through local government accountability but also the actions of citizens.

Accountability was partly determined by the effectiveness of policy implementation through localised language within local councils. This reflects previous research that highlighted the lack of uniformity between councils with how climate change information is communicated (Ruiz-Campillo et al., 2021). Local government authority to enact substantive climate action is limited (Chou, 2020), despite previous research highlighting the important role of local councils to manage assets and engage with residents in the community that directly relate to the long-term impacts of climate change (Mukheibir et al., 2013; Moloney et al., 2018). A lack of specific and transparent information in response to climate change, in addition to resource constraints and no required mandates, suggests that local councils are unable – or unwilling – to hold their institutions accountable in terms of demonstrable action on climate change, aside from tokenistic and self-sustaining actions that manage the councils' public reputations. The findings supported previous research regarding a inadequate coordination with implementing climate policy and reciprocal citizen engagement (Head, 2018; Scott & Moloney, 2021). These results suggested that local governments are accountable to their constituents through advocacy and engagement with the wider community though how this was achieved varied considerablThe evidence uncovered in this thesis put forth the notion that local government accountability may be underpinned by psychological insights on collective actions within the community. According to Steccolini (2019), the public aspect of account-giving may benefit from interdisciplinary research that is explained by psychological and social mechanisms. This thesis provided an interdisciplinary description of community climate action through a consideration of human dimensions that shape institutional accountability (Dumay & Guthrie, 2019). Existing research has highlighted the benefits of psychological insights into public administration research (Grimmelikhuijsen, Jilke, Olsen & Tummers, 2016; Kácha & Ruggeri, 2019), as well as climate change research (Nielsen et al.,

2021). Incorporating both psychological and accountability perspectives contextualized community climate actions as a multilevel phenomenon (Ostrom, 2016).

Micro-level analysis of community climate actions focused on the psychological processes the underpin individual behaviour. The psychological literature has previously examined collective actions using social-psychological models focusing on social identity, collective efficacy, and injustice (Thomas et al., 2020). However, the role of individual motivations (Sweetman & Marsh, 2016), as well as other contextual factors that contribute to collective actions, had been under-researched (Bamberg et al., 2015). The psychosocial contract of collective actions and subsequent hypotheses presented in this thesis sought to address this shortfall.

Although previous studies have emphasised the role of psychological adaptation on individual environmental behavioural intentions (Bradley & Reser, 2017; Helm et al., 2018), the findings of this study contribute new understanding by specifically focusing on how psychological adaptation relates to environmental collective actions. The investigation also sought to extend existing research on collective actions by examining the structural and social-psychological boundaries that affect environmental behaviours (Helm et al., 2018). This development was achieved through the lens of procedural justice as an appraisal of local government decisions on climate change.

The findings presented in the quantitative study highlighted the link between psychological adaptation and collective action tendencies, that is, a higher ability to cope with and appraise the impacts of climate change was positively associated with a higher likelihood of engaging in politically focused collective climate actions. This finding extended previous research that focused on the benefits of psychological adaptation to individual behaviours (Bradley & Reser, 2017) but brought forth how psychological adaptation relates to collective actions. Collective efficacy also played a role in explaining this association and reflected previous research that has identified the link between collective efficacy and collective actions (Jugert et al., 2016; Rees & Bamberg, 2014). The strength of these associations was further contextualised through the concept of procedural

justice, which was modified from the original survey items to appraise local government decisions regarding climate change. Contrary to what was predicted, procedural justice had a diminishing effect on the positive relationship between psychological adaptation and collective efficacy.

While existing social-psychological models of collective actions have identified the important role of fairness and justice perceptions (Sweetman & Marsh, 2015; van Zomeren et al., 2008), the psychosocial contract of collective actions (Figure 7, Chapter 4) was unique as perceptions of justice were presented as a contextualising influence (Clayton et al., 2016). This investigation also elucidates how human behaviour interacts within social systems (DeMarrais & Earle, 2017; McLaughlin & Dietz, 2008; Otto et al., 2020) through the psychological appraisal of local government decision-making. The findings presented in the quantitative study contribute to an understanding of the psychological factors that explain and consider how groups are mobilised to act collectively. The results contribute to the literature by examining collective actions amongst a general population; prior studies have tended to examine collective actions within groups engaged in environmental activism (Bamberg et al., 2018; Fritsche et al., 2018; Thomas et al., 2020).

9.4   Contributions to theory

Community climate actions were conceived as a social contract. Specifically, this phenomenon was theorised as local government accountability processes interlinked with the psychological processes that underlie citizen actions. The phenomenon of community climate actions was explored at the macro, meso and micro levels and was grounded in an interdisciplinary lens (Moloney et al., 2018; Slawinksi et al., 2017). The analysis at multiple levels reflects the political dimensions, differential responsibilities, and psychological perspectives associated with climate change (Basak, 2017; McLaughlin & Dietz, 2008 Scoville-Simonds et al., 2020).

Collective climate actions undertaken by a community are an agreement between citizens and political institutions. This agreement is a bidirectional relationship of trust, reputation, and

reciprocity. Citizen expectations are tied with the capacity of local governments to fulfil these expectations (Ostrom, 2003). The current evidence suggests that although a collective response of both citizens and political institutions is required for effective climate action, considerable contention exists from citizens and institutions on the appropriate response (Head, 2019). The social contract on climate actions is unclear and must be made explicit (Adger et al., 2018). This was investigated at the institutional level through public accountability and at the citizen level through the psychological processes of social norms, procedural justice, and collective action tendencies.

The findings presented applied the theoretical conceptions of accountability to climate actions in local governments. Previous accountability literature has examined reporting of climate change information in local governments (Gibassier & Alcouffe, 2018; Hossain, 2018; Linnenluecke et al., 2013; Sciulli, 2011), while the current findings contribute to current knowledge by utilising primary data to synthesise the mechanisms of accountability (Overman et al., 2020). The results of the systematic literature review identified that primary data focusing on this phenomenon was minimal. Through the lens of the four questions of accountability (Mulgan, 2003), the case study of six local councils investigated the evaluative, relational, and contextual components of account giving (Akpanuko & Asogwa, 2013; Bergsteiner & Avery, 2010; Brandsma & Schillemans, 2014; Lerner & Tetlock, 1999). The current findings also contribute to the accountability literature by exploring the nuances surrounding the hybridisation of environment and accountability objectives (Hestad et al., 2020; Thomson et al., 2014).

The social contract between citizens and government help shape the norms that guide human behaviours which are conducive to climate actions. The quantitative study postulated that collective climate actions were determined by several psychological factors, including psychological adaptation, social identity, collective efficacy, and procedural justice. The results found that collective action tendencies were positively related to psychological adaptation and extended the application of protection motivation theory to group-based behaviours. Social

identity was not found to influence this relationship, through the application of social identity theory in the context of collective actions in this model.

The evidence drawn from the analysis of survey participants suggests that belief in one's group to act influences the likelihood to engage in collective actions. This finding extends the application of human agency theory, in that disbelief in local government processes influenced collective actions, as did the ability to cope with the threat of climate change. Within the context of community climate actions, citizens are active agents under the right conditions, that is, from accountable institutions and collective self-determination (Ross et al., 2016).

The findings from the micro-level and macro-level investigations were triangulated narratively (Fetters et al., 2013) whereby meta-themes concerning community participation were generated and new insights into climate change research were developed (Nightingale, 2016). Results from the systematic literature review purported that community participation was the intersection of institutional level and individual responses to climate change. It was theorised that climate actions would result from the collective actions of both levels; however, the investigation did not uncover this. The meta-themes generated from the triangulation of data identified that community climate actions require incentives that promote both individual and collective goals. Theoretically, this connects to the *social trap* of climate change, in which collective actions are stalled through the inability of smaller factors to integrate (Smith & Mayer, 2018). This is also referred to as a *wicked* public policy issue due to the inherent complexity in linking systems and actors at multiple levels (van Wijk et al., 2018).

Ostrom (2016) theorised that solutions to collective action problems can be addressed through a multilevel approach at all tiers of government, including the actions of individual citizens. A multilevel conceptual framework was developed that focused on how local governments interact with individual citizens to collectively address climate change. Climate change research underemphasises the institutional and social dimensions of climate change (Moloney et al., 2018), and a multilevel theoretical model was developed to address these social processes at a micro

and macro level (Beugelsdijk, 2009). The theoretical and empirical link between local government accountability and individual psychological processes that influence community climate actions was the focus of the thesis. The conception of community climate actions was explored as a multilevel phenomenon grounded in an interdisciplinary lens (Moloney et al., 2018; Slawinksi et al., 2017). The conceptual framework presented reflects the political dimensions, differential responsibilities, and agentic perspectives associated with climate change across multiple dimensions (McLaughlin & Dietz, 2008; Scoville-Simonds et al., 2020).

9.5   Contributions to policy and practice

Local-level response, while not the main contributor to global mitigation and adaptation strategy, has an important role to play in climate change response (Ostrom, 2016). The local government oversees a range of assets and services and are the tier of government capable of engaging in grassroots interventions in response to climate change (Reyes-Garcia et al., 2016; van den Berg & Coenan, 2012). The findings corroborate previous evidence (Mees, 2019) that local government climate change response is determined by state and federal legislation, but also by community demands.

The narrative integration of qualitative and quantitative study suggests that collective community climate actions are a combination of self-interest, collective agency, and ownership. An emphasis on these factors could enhance community level climate change response. The impacts of climate change on local government should be disseminated with discussion of how it will impact individuals and teams within the organisation. An ability to influence the wider organisation to change behaviours, therefore, is important in enhancing personal investment (Mees & Driessen, 2018). Policymakers may wish to focus on the personal benefits of undertaking environmental initiatives for both citizens and decisionmakers within local government, but also the specific and tangible benefits to the wider community. For example, tree planting can assist local government achieve emissions targets (Moodie, 2021), but can also provide psychological benefits to individuals, such as stress reduction (Whitburn et al, 2018).

The findings have reaffirmed previous research that has emphasised the importance of citizen involvement in creating council strategy (Belluci et al., 2015; Bovens et al., 2014; Marino & Presti, 2019). Bovens (2006) notes that public accountability occurs when citizens pose questions to the government and where administrators justify and explain their intentions. The qualitative study found that only small groups of citizens were actively engaged in this process in relation to climate change response. The findings from the psychological survey noted that collective efficacy partly underpins the relationship between psychological adaptation and collective action tendencies. To increase citizen participation in the account-giving process, policymakers and advocacy groups might emphasise the benefits of collective efficacy in community-based climate change interventions. This finding reflects recent research by Villamayor-Tomas and García-López (2018) that highlights the importance of mobilising a collective identity when acting in response to climate change at a grassroots level.

The integration of psychological processes and accountability mechanisms across different levels presented in this thesis has highlighted the purposefulness of adopting psychological insights to guide decision making and policy implementation (Beshi & Kaur, 2020; Overman et al., 2020). Insights from psychological science yield the capacity to enhance public administration performance (Kácha & Ruggeri, 2019) and public policymaking about climate change (Van der Linden et al., 2015). A greater inclusion of psychological science in public policy development may lead to policy that has a more nuanced consideration of the psychological responses to climate change.

The findings of the qualitative study showed that local government officials reported community consultation on issues to do with climate change though the level of information focusing on climate change varied between councils. The results of the psychological survey suggest a generalised lack of perceived fairness and transparency of local government decisions on climate change. This may also be due to a lack of public awareness of climate change interventions within local government. Nevertheless, there is a discrepancy between survey

respondents and staff opinions of the transparency of climate change information in local government. These findings may assist policymakers to engage with the community by improving citizen perceptions of fairness and transparency, but also to better articulate the roles and responsibilities of action toward climate change. This may be one approach to improving the mechanisms of accountability in local government. As Mulgan (2003) suggests, however, community consultation is discretionary, and public officials are not obliged to respond to citizen demands. Information pertaining to climate change may need to be clearer when consulting with the community, or the consultation process may require greater specification of processes and responsibilities. These findings also point to how local government involves its citizens and that it is an opportunity to develop collaboration (Aleksovska et al., 2019; Hoff, 2018).

According to Stevenson (2021), there are no easy solutions to addressing climate change, and the processes of accountability may benefit how climate policy is implemented. The results of the qualitative study found that accountability within local governments is determined by state and federal government legislation and by the needs of the community. Additionally, it was found that there was still disagreement on how to articulate roles and responsibilities (Byskov, 2019). Policymakers, therefore, should focus on how climate change policy is implemented across different sectors and levels of government, as well as in different communities due to the variability of climate impacts (Arneth et al., 2019). The evidence presented also shows how local government decision-makers respond to collective action problems, such as climate change as well as the ongoing COVID-19 pandemic, where the collective actions of citizens can hold public institutions to account (Kennedy et al., 2021).

The capacity of local government and citizens to respond to climate change as single entities is minimal but can be more effective through collective action. An important component of collective action identified from the results is advocating the wider community through the efforts of citizens and local governments (Gulliver et al., 2019; van Zomeren, Postmes & Spears, 2008). The findings suggest that local government has the capacity to drive climate change

initiatives in the wider community and with state and federal governments. Community groups and local government should look to the important role of how advocacy can drive local climate change interventions based on the empirical evidence uncovered (Henderson, 2018). Further, the role of collective efficacy identified in the quantitative study can assist advocacy groups in mobilising citizens to act in response to climate change through a speaking to a person's sense of collective identity (Ross et al., 2016).

Lastly, the findings identified a lack of consensus concerning the term *climate change* within the community. As a concept, climate change may be suited for high-level documents and planning, but further down the hierarchy within local government, simpler language may be warranted in the implementation of the strategy (Williams, 2015). The analysis of Victorian local councils identified a lack of clarity on responsibilities and limited consensus on terms used to describe climate change response. For instance, analysis of council documents identified a host of terms (e.g., *sustainability*, *energy efficiency*, and *energy strategy*). These findings suggest that there is not a uniform understanding of climate change and its impacts at a local level. This speaks to the importance of framing the effects of climate change that is relevant to policy in a local context (Beaudry et al., 2020). This should be considered by policymakers when engaging with the community and within local government.

9.6   Limitations

The findings developed through this thesis contributed to the furthering of knowledge related to community-based climate change response. However, these findings must be considered within the context of the limitations associated with the research. The mixed methods design utilised both qualitative and quantitative approaches and was grounded in a philosophical worldview of pragmatism. Ontologically, a pragmatic worldview acknowledges multiple forms of reality, and each strand of research is compared to increase the credibility of the study findings and blended to form a representative model (Christ, 2013). The integration of different datasets resulted in theoretical inferences, which were not generalisable and only reflect the findings

uncovered in this thesis. The integration did, however, generate several theoretical insights that should be pursued in future research, and this is explored in Section 9.7 of this chapter.

The results should also be considered in the context of how the research participants were recruited. Convenience sampling was employed to recruit employees within each of the councils. The findings developed were only representative of the employees who agreed to participate. The participants within the councils were mostly from environmental or planning teams, which may not have been representative of each of the organisations that participated. In a similar vein, the participants of the quantitative study may not have been representative of the greater Victorian population due to issues associated with the virtual snowballing technique. Participants were recruited through the social media platform Facebook, and although the sample size was large, the responses were only reflective of Facebook users. In addition, approximately half of the participants identified as Greens' supporters, which was not representative of actual level of Greens' supporters in Victoria (Victorian Electoral Commission, 2018).

The quantitative study found that psychological adaptation was positively associated with a higher likelihood of engaging in politically focused collective climate actions. Although social identity was found not to contribute to this relationship, collective efficacy partially explained the positive relationship between psychological adaptation and collective action tendencies. One limitation of this study assumed that psychological adaptation promoted social identity and collective efficacy, where the opposite direction may also have been likely. Previous research suggests that connection to a strong community—comparable to a blend of social identity and collective efficacy—instils a sense that individuals can access resources (Long & Perkins, 2007; Ntontis et al, 2021; Rees & Bamberg, 2014). Consequently, these individuals feel they can access the resources they need to adjust their lives in response to climate change. Thus, psychological adaptation could be a consequence, rather than a cause, of social identity and collective efficacy.

Recruitment for both the qualitative and quantitative studies may have partly been a result of self-selection bias, where those that participated held preconceived beliefs on climate change

(Albright & Crow, 2019). Although efforts were made to statistically control for the skewed political group membership, researchers may wish to include information on participants' beliefs on climate change and their level of political engagement. The results of the survey found that individuals are sceptical about climate change, where social identity might actually diminish collective action. These individuals might tend to project their beliefs onto the community and thus assume the community will not act to diminish climate change. Therefore, if the sample was limited to individuals who believe in climate change, the effect of social identity might become more pronounced. The survey questions also assumed a particular point of view on climate change – that it was real, and this belief was shared by everyone – where future psychological studies should assess for the parti'ipant's acceptance of the science surrounding climate change.

Lastly, the impact of the global pandemic, COVID-19, may have impacted the responses in the survey. The pandemic is projected to affect people's mental health, including anxiety and stress disorders (Taylor, 2020). Consequently, the psychological distress resulting from COVID-19 may have influenced how participants responded, particularly when psychological adaptation measured the ability to cope with climate change. Participants may have been experiencing symptoms of psychological distress because of the pandemic, and this may have influenced the responses in the survey. However, the variability within the large sample size that was collected may have reduced the statistical variance in the results produced.

9.7   Concluding remarks and directions for further research

The findings generated within this thesis have extended previous research related to climate action from accountability and psychology disciplines while also presenting a novel approach with how these disciplines are integrated. The integration of the qualitative and quantitative research from multiple scales identified four meta-themes that centred on community participation – the term used to describe collective actions at a community level. The meta-themes were generated through the process of narrative weaving and presented in joint display (Fetter et al., 2013; Uprichard & Dawney, 2016). Although this approach was employed to enhance the

quality of data integration and examine the boundaries of a multilevel theory (Headley & Clark, 2019; Younas et al., 2019), the organisation of themes and content may have been enhanced through alternate methods. Future researchers that integrate mixed-methods research and organise text through content analysis or thematic analysis may employ alternate methods of integration techniques such as latent semantic analysis, which uses statistical computations to extract the contextual usage of words (Hutchison, Daigle & George, (2018).

The first meta-theme identified a need for creating short-term solutions that contribute to the longer-term impacts of climate change whereby this topic would benefit from a public policy analysis across local, regional, and national scales (Ostrom, 2016). Ownership, the second meta-theme, focused on articulating the individual and collective responsibilities at a local level. Previous psychological research has investigated individual's willingness to perform certain environmental behaviours (Adger et al., 2016; Alvi & Khayyam, 2020; Brügger, 2015; Buchanan & Russo, 2015; Smith et al., 2012; Zaalberg et al., 2009), as well as the attribution of responsibilities for climate change (Lam, 2014). Future studies should focus on responsibility attribution at a community level and individual willingness to engage in climate-related actions. For example, an accountability lens may contribute to this concept by examining what financial resources an individual may be willing to contribute to community climate action. The lack of identifiable responsibilities within local governments also highlighted an accountability deficit concerning climate actions (Gupta & van Asselt, 2019; Haarstard, 2020). The evaluative and relational components of the accountability relationship were further explored through this investigation. Future researchers may seek to examine individual perceptions of accountability in a public sector setting (Overman et al., 2020).

The notion of ownership also brings up the question of what the civic duties of communities are in responding to climate change. The intersection of political institutions and individual behaviour presented in the current thesis highlights the importance of examining the power structures that shape individual behaviours (Atkinson et al., 2017; Groulx et al., 2017; Jacquet et

al., 2014; McLaughlin & Dietz, 2008). A recent meta-analysis found that public support for climate action was a highly influential factor for local governments to adopt climate policy (Yeganeh et al., 2020). There is still no uniform approach with how to involve citizens in climate action though a concerted effort must be made with evaluating the effectiveness of such initiatives (Schroeter et al, 2016). The current findings also highlight a lack of common understanding of the responsibilities associated with involving the public in climate action (Hügel & Davies, 2020). The concept of ownership will benefit from research that explores how local governments work with the community to plan, implement, and monitor climate change initiatives (Wamsler et al., 2020).

The current thesis also identified that uncertainty currently exists within community response to climate change. However, this uncertainty allows innovation in future research and policy development (Ney & Verwij, 2015). As the findings exemplify, a multilevel analytical approach may be one research method to explore how the uncertainty in climate policy implementation is addressed at a community level (Morrison et al., 2017; Van Wijk et al., 2018). The current findings explored the contextual elements associated with climate change response through multiple scales (Adger et al., 2003). Future research should build upon the current findings to generate theoretical insights from multiple disciplines that result in uncertainty avoidance and short-termism (Slawinski et al., 2017; Tye and Altamirano, 2017).

From a psychological perspective, the anxiety associated with feelings of uncertainty surrounding climate change may be offset by psychological adaptation (Bradley & Reser, 2017; Clayton, 2020). Decision-makers could benefit from the psychological insights associated with how citizens deal with the uncertainty of climate change, which can impact how climate change messages are framed to get a more receptive response from the community (Chou, 2020; Ruiz-Campillo et al., 2021; Williams, 2015). Future research may also address the anxiety felt by the impacts of COVID-19 in the impact of collectively organised grassroots climate actions (Dryhurst et al., 2020).

The findings from the quantitative study draw attention to the role of local governments in collective actions toward climate change. Despite the potentially influential role of local governments in encouraging collective actions amongst citizens at the grassroots level (Mees et al., 2019), the findings suggest a low degree of perceived fairness and transparency from respondents when it comes to decisions made concerning climate change. This observation might be because respondents attributed responsibilities to the federal government, despite the usefulness of grassroots level action (Villamayor-Tomas & García-López, 2018). These findings may also reflect the confusion of how responsibilities are articulated between different tiers of government in Australia (Chatfield & Reddick, 2018). Further, the results may signify generalised apathy or a sense of powerlessness toward government action on climate change (Lertzman, 2017; Schmitt et al, 2020). Future researchers may wish to clarify respondents' attribution of relative responsibilities regarding climate change (Lam, 2014) and also the current level of political engagement. Lastly, future research should recruit participants from multiple sources to enhance representativeness and to minimise the effects of self-selection bias.

Collective community climate actions result from citizens and institutions that work together. It was evident that although a collective response is required, individuals must be made aware of their contributions to climate change response as well. However, this is not always clear (Bergsma et al., 2012; Obradovich & Guenther, 2016), and the research question presented has acknowledged the inherent complexity associated with climate change response within local communities. This includes the articulation of responsibilities within organisations but also at an individual level, and how these individual responsibilities at multiple scales translate to actions that benefit the *greater good* (Ostrom, 2016). The conceptualisation of this phenomenon was further developed through this interdisciplinary investigation (Wohlgezogen et al., 2020), and policymakers and academics should aim to explore this notion in future research.

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Appendices

Appendix A: Systematic literature review codebook

Authors	Year	Title	Journal	Citations No.	Research methods	Data analysis	Population	Study focus	Theory	Country	SCImago rank	Journal type	Results	Quality assessment
Demeritt, D. L., D.	2004	The UK Climate Change Programme and communication with local authorities	Global Environmental Change	71	Survey	MITITAB	Local government	Accountability	Accountability	UK	Q1	Environmental Science		QAL 2
Norgaard, K. M.	2006	WE DON'T REALLY WANT TO KNOW: Environmental Justice and Socially Organized Denial of Global Warming in Norway	Organization & Environment	219	Interview	Thematic analysis	Citizens	Individual perceptions	Denial	Norway	Q1	Environmental Science (miscellaneous)	collectively ignoring climate change maintains Norwegian economic interests	QAL 2
Homburg, A. S., Andreas; Wagner, Ulrich	2007	Coping With Global Environmental Problems: Development and First Validation of Scales	Environment and Behavior	68	Scale development	Principle components analysis	Students	Psychological adaptation	Lazarus' coping approach		Q1	Environmental Science (miscellaneous)	"A set of scales designed to measure coping with global environmental problems	QNT 2
Zaalberg, R. M., Cees; Meijnders, Anneloes; McCalley, Teddy	2009	Prevention, adaptation, and threat denial: Flooding experiences in the Netherlands	Risk Analysis	136	Survey	MANCOVA	Citizens	Psychological adaptation	Cognitive/affective appraisal	Netherlands	Q1	Safety, Risk, Reliability and Quality	- scale structure was invariant for well-educated and for less-well-educated participant	QNT 1
Peters, M. F., Shane; Sinclair, Philip	2010	Mobilising community action towards a low-carbon future: Opportunities and challenges for local government in the UK	Energy Policy	87	Interviews	Thematic analysis	Citizens	Community participation	Community engagement	UK	Q1	Energy (miscellaneous)	- problem solving, expressive coping, denial of guilt, relativization, self-protection & pleasure, (suggestions to exclude - resignation & wishful thinking)"	QNT 2
van Zomeren, M. S., Russell; Leach, Colin Wayne	2010	Experimental evidence for a dual pathway model analysis of	Journal of Environmental Psychology	89	survey	ANOVA	Citizens	Psychological adaptation	Cognitive/affective appraisal	USA	Q1	Psychology	"The extent to which residents had been exposed to flooding in the past was a key factor in motivating	QNT 2

Author	Year	Title	Journal	N	Method	Analysis	Sample		Theory	Country	Q	Discipline	Findings	Type
		coping with the climate crisis											residents to effectively cope with future flooding	
Ferguson, M. A. B., N. R.; Reynolds, K. J.	2011	The effect of intergroup comparison on willingness to perform sustainable behavior	Journal of Environmental Psychology	49	Survey	ANOVA	Students	Social norms	Social identity theory	USA	Q1	Psychology	- victims were more motivated totake adaptive actions than preventive actions.	QNT 1
Ireland, P. T., Frank	2011	The role of collective action in enhancing communities' adaptive capacity to environmental risk: an exploration of two case studies from Asia	Plos Currents	30	Interviews	Thematic analysis	Local government	Community participation	Citizen participation	Australia	Q1	Medicine (miscellaneous)	- subjective experiences (i.e., negative affect and socialsupport) not only predict adaptation via cognitiveappraisals, but form an indispensable part of the me-diating process explaining mean differences in be-havioral intentions and threat denial between victimsand nonvictims	QAL 1
Bergsma, E. G., Joyeeta; Jong, Pieter	2012	Does individual responsibility increase the adaptive capacity of society? The case of local water management in the Netherlands	Resources, Conservation & Recycling	26	Case study	Conceptual framework	Local government	Accountability	Accountability	Netherlands	Q1	Economics and Econometrics	- subjective experiences, via their effecton cognitive appraisals, not only predict adaptationand prevention, but also explain the differences inconstruct means for adaptation and prevention be-tween victims and nonvictims.	QAL 1
Smith, J. W. A., Dorothy H.; Moore, Roger L.	2012	Social Capital, Place Meanings, and Perceived Resilience to Climate Change	Rural Sociology	54	Survey	ANOVA	Citizens	Individual perceptions	Resilience	USA	Q1	Sociology and Political Science	- cognitive appraisals as intervening psychological variables for the experience-coping link	QNT 1
Akompab, D. B., Peng; Williams, Susan; Saniotis, Arthur; Walker, Iain; Augoustinos, Martha	2013	Engaging stakeholders in an adaptation process: governance and institutional arrangements in heat-health policy development in Adelaide, Australia	Mitigation & Adaptation Strategies for Global Change	14	Interviews	Thematic analysis	Local government	Accountability	Participatory governance	Australia	Q1	Environmental Science	- sub-jective experiences (i.e., negative affect and socialsupport) not only predict adaptation via cognitiveappraisals, but form an indispensable part of the me-diating process explaining mean differences in be-havioral intentions and threat denial between victimsand nonvictims"	QAL 2
Royo, A. Y. S. Basilio, Acerete	2013	E-participation and Climate Change in Europe: An analysis of local government practices	Journal of Systemics, Cybernetics and Informatics, Vol 11, Iss 7, Pp 21-27 (2013)	5	Content analysis	Mann-Whitney test		Accountability	Citizen participation	Spain	-	-	Governments are essential with building agency within communities. Collection action at institutional context (how rigid or flexible government is), homogenous decision making and distribution of benefits of mgmt. Social component of collective	QAL 1

Author	Year	Title	Journal	#	Method	Analysis	Sample	Variable	Theory	Country	Q	Discipline	Findings	Type
													action is difficult to measure. Building trust and cooperation between actors in the state and civil society is essential. Bottom-up decision making provides more agency to individuals.	
Bates Lorraine, E. G., Melissa; Leonard, Rosemary; Walker, Iain	2013	The Influence of Forums and Multilevel Governance on the Climate Adaptation Practices of Australian Organizations	Ecology and Society	18	Interviews	Thematic analysis	Local government	Accountability	Multi-level governance	Australia	Q1	Ecology	"The presumed psychological power of fear and group efficacy to increase individuals' environmental action intentions is real and important	QAL 2
Kim, S. J., Se-Hoon; Hwang, Yoori	2013	Predictors of Pro-Environmental Behaviors of American and Korean Students: The Application of the Theory of Reasoned Action and Protection Motivation Theory	Science Communication	74	Survey	Hierarchical regression	Students	Psychological adaptation	Theory of reasoned action	USA	Q1	Sociology and Political Science	- individuals can indeed cope by regulating their emotions (e.g., fear), which are based on specific appraisal of the situation (e g., the negative future consequences of the climate crisis)	QNT 1
Wahlström, M. W., Wennerhag, M.; Rootes, Christopher	2013	Framing "The Climate Issue": Patterns of Participation and Prognostic Frames among Climate Summit Protesters	Global Environmental Politics	44	Survey	Logistic regressions	Citizens	Community participation	Citizen participation	Denmark	Q1	Environmental Science	- Group efficacy is more important than self-efficacy in responding to climate change (collective action)"	QNT 1
Bolsen, T. L., Thomas J.; Shapiro, Matthew A.	2014	Doing What Others Do: Norms, Science, and Collective Action on Global Warming	American Politics Research	42	Survey	Linear regression	Citizens	`	Framing theory	USA	Q1	Sociology and Political Science	"the effects of intergroup comparison on willingness to perform sustainable behavior	QNT 1
Masson, T. F., Immo	2014	Adherence to climate change-related ingroup norms: Do dimensions of group identification matter?	European Journal of Social Psychology	37	Survey	multiple regression analysis	Students	Social norms	Social identity theory	Germany	Q1	Social Psychology	- Participants who compared to past students reported more willingness to perform sustainable behavior than those who compared to future students	QNT 1
Rees, J. H. B., Sebastian	2014	Climate protection needs societal change: Determinants of intention to	European Journal of Social Psychology	89	survey	Structural equation modeling	Students	Social norms	Social identity theory	Germany	Q1	Social Psychology	- in-groups are perceived as more or less so as a function of the comparative context"	QNT 1

Authors	Year	Title	Journal	#	Method	Analysis	Population	Theme	Concept	Country	Q	Field	Findings	Type	#
		participate in collective climate action													
Bamberg, S., Rees, J.; Seebauer, Sebastian	2015	Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives	Journal of Environmental Psychology	66	Survey	Structural equation modeling analysis	Citizens	Social norms	Social identity theory	Germany	Q1	Psychology	"The role of collective action in building adaptive capacity, paying particular attention to the role of social networks	QNT	1
Brügger, A. M., Thomas A.; Dessai, Suraje	2015	Hand in hand: Public endorsement of climate change mitigation and adaptation	PLoS ONE	26	Survey	Correlations	Citizens	Individual perceptions	Public endorsement	UK/Switzerland	Q1	Agricultural and Biological Sciences (miscellaneous)	1. collective action plays a significant role in enhancing adaptive capacity and hence should be more strongly considered in the development of climate change adaptation strategies	QNT	1
Rees, J. K., Sabine; Bamberg, Sebastian	2015	Guilty conscience: motivating pro-environmental behavior by inducing negative moral emotions	Climatic Change	35	Survey	ANOVA	Students	Social norms	Cognitive/affective appraisal	USA	Q1	Atmospheric Science	2. social networks are a particularly important component of collective action for the building of adaptive capacity	QNT	1
Serrao-Neumann, S. H., Ben; Leitch, Anne; Low Choy, Darryl	2015	Public engagement and climate adaptation: insights from three local governments in Australia	Journal of Environmental Planning and Management	27	Interviews	Thematic analysis	Citizens	Community participation	Community engagement	Australia	Q1	Environmental Science	3. the mandate, capacity, and structure of local government agencies can influence the effectiveness of collective action, both positively and negatively.	QAL	1
Truelove, H. B., Carrico, A. R. & Thabrew, L.	2015	A socio-psychological model for analyzing climate change adaptation: A case study of Sri Lankan paddy farmers	Global Environmental Change	59		Principal components analyses	Citizens	Social norms	Protection motivation theory	USA	Q1	Environmental Science		QAL	1
Adger, W. N. Q., Tara; Lorenzoni, Irene; Murphy, Conor	2016	Sharing the Pain: Perceptions of Fairness Affect Private and Public Response to Hazards	Annals of the American Association of Geographers	27	Survey - in-person	Spearman's nonparametric correlation	Citizens	Individual perceptions	Perceived fairness	UK	Q1	Geography, Planning and Development	urgent need for further consideration of the different forms of collective action within community-based disaster risk management and climate change adaptation."	QNT	1
Jugert, P. G., Katharine H.; Barth, Markus; Büchner, Ronja;	2016	Collective efficacy increases pro-environmental	Journal of Environmental Psychology	46	Survey	ANOVA	Students	Social norms	Collective efficacy	Germany	Q1	Psychology	"The institutional shift to individual responsibility affects the adaptive capacity of society to deal with the impacts of climate change	QNT	1

Authors	Year	Title	Journal	#	Method	Analysis	Sample	Focus	Theory	Country	Quartile	Field	Gap	Code
Eisentraut, Sarah; Fritsche, Immo		intentions through increasing self-efficacy												
Oakes, L. E. A., Nicole M.; Lambin, Eric F.	2016	I know, therefore I adapt Complexities of individual adaptation to climate-induced forest dieback in Alaska	Ecology and Society	6	Interviews	Thematic analysis	Local government	Individual perceptions	Place attachment	USA	Q1	Ecology	- lack of clearly defined responsibilities and accountability procedures	QAL 1
Obradovich, N. G., Scott	2016	Collective responsibility amplifies mitigation behaviors	Climatic Change	21	Interviews & survey	ANOVA	Citizens	Social norms	Framing theory	USA	Q1	Atmospheric Science	- scattered and not easily accessible information to individuals	QNT 1
Schleich, J. D., Elisabeth; Schwirplies, Claudia; Ziegler, Andreas	2016	Citizens' perceptions of justice in international climate policy: an empirical analysis	Climate Policy (Earthscan)	32	Survey	ANOVA	Citizens	Individual perceptions	Policy support	China	Q1	Atmospheric Science	- an overlap in municipal and individual responsibility	QNT 1
Sweetman, J. W., Lorraine E.	2016	Climate justice: High-status ingroup social models increase pro-environmental action through making actions seem more moral	Topics in Cognitive Science	16	Survey	Moderated mediation analysis	Students	Social norms	Social identity theory	UK	Q1	Artificial Intelligence	- Differences in social context that call for context-specific management approaches pose challenges to increasing the adaptive capacity	QNT 1
Bradley, G. L. R., Joseph P.	2017	Adaptation processes in the context of climate change: A social and environmental psychology perspective	Journal of Bioeconomics	25	Survey	Correlations	Citizens	Psychological adaptation	Protection motivation theory	Australia	Q2	Social Sciences	- Study Uses a 'hard' concept (individual responsibility) in a 'soft' social science approach"	QNT 2
Chee Hui, T. R., T.; Yeap, Jasmine A. L.; Ooi, Say Keat	2017	Examining Residents' Receptiveness towards E-waste Recycling in Penang, Malaysia	Global Business & Management Research	1	Survey	Partial least squares analysis	Citizens	Social norms	Theory of reasoned action	Malaysia	-	-	"individual resilience is com-posed of an awareness of localized risks created because of climate change,a willingness to learn about, and plan for, the potential impacts of alteredenvironmental conditions, and general appraisals of personal adaptive capacities.	QNT 2
Estrada, M. S., P. W.; Silva-Send, N.; Boudrias, M. A.	2017	The Role of Social Influences on Pro-Environment	Journal of Urban Health	22	Survey		Citizens	Social norms	Model of social influence	USA	Q1	Health (social science)	- focusing solely on the individual as the acting agent being affected by climate change.	QNT 2

Author	Year	Title	Journal	N	Method	Analysis	Sample	Concept	Theory	Country	Q	Field	Key finding	Type
		Behaviors in the San Diego Region												
Karim, M. R. T., Andreas	2017	Role of community based local institution for climate change adaptation in the Teesta riverine area of Bangladesh	Climate Risk Management	31	Interviews & survey		Community	Community participation	Partnerships	Bangladesh	Q1	Geography, Planning and Development	- individuals' social psychological dependencies on the local environment influences their perceived resilience to changing climatic conditions`	QAL 1
Marshall, G. R. H., Donald W.; East, Miriam J.	2017	Can community-based governance strengthen citizenship in support of climate change adaptation? Testing insights from Self-Determination Theory	Environmental Science & Policy	19	Experiment	ANOVA	Citizens	Community participation	Citizen participation	Australia	Q1	Geography, Planning and Development	- By gaining a clearer understanding of how social capital and place-based social-psychological dependencies affect indi-viduals' perceived ability to adapt to changing environmental condi-tions, community leaders and policymakers at various levels of authoritywill be better equipped to help foster a sustainable ecological and social future."	QNT 1
Meleady, R. C., Richard J.	2017	Redefining climate change inaction as temporal intergroup bias: Temporally adapted interventions for reducing prejudice may help elicit environmental protection	Journal of Environmental Psychology	17	Survey	ANOVA	Students	Social norms	Social identity theory	UK	Q1	Psychology	"Level of leadership and political commitment that was demonstrated in this multi-stakeholder process	QNT 1
Prati, G. A., Cinzia; Pietrantoni, Luca	2017	The interplay among environmental attitudes, pro-environmental behavior, social identity, and pro-environmental institutional climate. A longitudinal study	Environmental Education Research	48	Survey	Longitudinal analysis	Students	Social norms	Social identity theory	Italy	Q1	Education	- institutional arrangements provide the enabling environment, the structures, systems and resources that would facilitate the development of adaptation strategies"	QNT 2
Yi, H. F., Richard C.; Berry, Frances S.	2017	Overcoming collective action barriers to energy sustainability: A longitudinal	Renewable and Sustainable Energy Reviews	25	Case study	Generalized Estimation Equations	Local government	Community participation	Institutional collective action		Q1	Renewable Energy, Sustainability and the Environment	"eEectronic tools may increase citizen participation in government decision-making and stop the decline of trust in political institutions	QAL 1

Author	Year	Title	Journal	N	Method	Analysis	Sample	Variable 1	Variable 2	Country	Quartile	Field	Findings	Type
		study of climate protection accord adoption by local governments												
Helm, S. V. P., Amanda; Barnett, Melissa A.; Curran, Melissa A.; Craig, Zelieann R.	2018	Differentiating environmental concern in the context of psychological adaption to climate change	Global Environmental Change	71	Survey	Confirmatory factor analyses	Citizens	Psychological adaptation	Social-cognitive theory	USA	Q1	Environmental Science	- Aim: if e-participation in climate change was being used only to inform citizens about policies and practices (transparency) or also to promote debate and active participation (interactivity).	QNT 1
Lacroix, K. G., Robert	2018	Psychological barriers to energy conservation behavior: The role of worldviews and climate change risk perception	Environment and Behavior	52	Survey	ANOVA	Citizens	Individual perceptions	Perceived risk	Canada	Q1	Environmental Science (miscellaneous)	- e-participation are higher in those areas just giving information than in the areas related to interactivity	QNT 1
Lin, S. T. N., Han-Jen	2018	Green consumption: Environmental knowledge, environmental consciousness, social norms, and purchasing behavior	Business Strategy and the Environment	-	Survey	Structural equation modeling analysis	Students	Social norms	Climate change belief	Taiwan	Q1	Business and International Management	- when this information requires a greater effort for the local government, the level of disclosure decreases	QNT 2
Mees, H. D., P.	2018	A framework for assessing the accountability of local governance arrangements for adaptation to climate change	Journal of Environmental Planning and Management	21	Case study	Interviews	Local government	Accountability	Accountability	Netherlands	Q1	Environmental Science	"	QAL 1
Scobie, M.	2018	Accountability in climate change governance and Caribbean SIDS	Environment, Development & Sustainability	20	Case study	Thematic analysis	Local government	Accountability	Participatory governance		Q2	Economics and Econometrics	"Organizations can embed themselves in multilevel governance frameworks that inform, structure, and facilitate strategic development, planning, and action	QAL 1
Smith, E. K. M., Adam	2018	A social trap for the climate? Collective action, trust and climate change risk perception in 35 countries	Global Environmental Change	74	Survey	Multi-level binary logistic regression models	Citizens	Individual perceptions	Perceived risk	New Zealand	Q1	Environmental Science	- Forums constitute an additional level of governance that influences decision making.	QNT 1
Wang, X.	2018	The role of attitudinal motivations and collective	The Journal of Social Psychology	9	Survey	structural equation modeling analysis	Citizens	Social norms	Collective efficacy	China	Q2	Social Psychology	- patterns of relationships within these multilevel governance frameworks are examined	QNT 1

efficacy on Chinese consumers' intentions to engage in personal behaviors to mitigate climate change

Author	Year	Title	Journal		Method		Setting	Concept	Theory	Country	Quartile	Field	Findings	Code
Zengerling, C.	2018	Action on climate change mitigation in German and Chinese cities – A search for emerging patterns of accountability	Habitat International	6	Case study	Literature review	Local government	Accountability	Multi-level governance	Germany	Q1	Environmental Science	- forums appear to play a key role in the everyday business of organizations by enhancing their ability to plan and address a range of issues, including those associated with climate change	QAL 1
Mohammad Imtiaz, Ferdous: Carol, A. Adams: Gordon, Boyce	2019	Institutional drivers of environmental management accounting adoption in public sector water organisations	Accounting, Auditing & Accountability Journal	11	Case study	Content Analysis	Local government	Accountability	Institutional theory	UK	Q1	Accounting	- forums constitute a level of governance deeply embedded in organizational practice that influences both their capacity and motivation to undertake climate adaptation.	QAL 1
Pollock, Miranda Joy: Wennerstrom, Ashley: True, Gala: Everett, Ashley: Sugarman, Olivia: Haywood, Catherine: Johnson, Arthur: Meyers, Diana: Sato, Jennifer: Wells, Kenneth B.: Arevian, Armen C.: Massimi, Michael: Berry, Jasmine: Riefberg, Leah: Onyewuenyi, Nkechi: Springgate, Benjamin	2019	Preparedness and Community Resilience in Disaster-Prone Areas: Cross-Sectoral Collaborations in South Louisiana, 2018	American Journal of Public Health	6	Case study	Interviews	Local government	Community participation	N/A	USA	Q1	Public Healthy, Environmental and Occupational Health	- research investigating the rules that govern forums and the structural properties of the networks in which they are embedded is required"	QAL 2
Thaker, Jagadish: Howe, Peter: Leiserowitz, Anthony:	2019	Perceived Collective Efficacy and Trust in	Environmental Communication	9	Survey	logistic multilevel modelling	Citizens	Individual perceptions	Social cognitive theory	UK	Q1	Environmental Science	"prevention attitudes and subjective norms were positive predictors of pro-environmental behaviors	QNT 1

Maibach, Edward		Government Influence Public Engagement with Climate Change-Related Water Conservation Policies												
Åshild Lappegard, Hauge: Gro Sandkjær, Hanssen: Cecilie, Flyen	2019	Multilevel networks for climate change adaptation – what works?	International Journal of Climate Change Strategies and Management	9	Case study	Interviews	Local government	Accountability	multilevel governance	UK	Q1	Geography, Planning and Development	- perceived severity and self-efficacy were positive predictors of pro-environmental behaviors (PMT)	QAL 1
Bendz, Anna: Boholm, Åsa	2019	Drinking water risk management: local government collaboration in West Sweden	Journal of Risk Research	3	Case study	Interviews	Local government	Accountability	N/A	UK	Q1	Social Sciences	- self-efficacy and perceived severity were strong predictors of pro-environmental behaviors"	QAL 2
Kácha, Ondřej: Ruggeri, Kai	2019	Nudging intrinsic motivation in environmental risk and social policy	Journal of Risk Research	8	Survey	Correlations	Citizens	Individual perceptions	Motivation	UK	Q1	Social Sciences	The different types of political demands made by climate protesters include life politics frames stress-ing the contribution of individual actions to social change, demands for con-crete policy changes directed towards existing political institutions, and more radical demands for changes in the economic system or the distribution of wealth and power between the global South and North; local mobilizing context influences collective action framing	QNT 1
Nguyen Long, Le Anh: Foster, Megan: Arnold, Gwen	2019	The impact of stakeholder engagement on local policy decision making	Policy Sciences	6	Case study	Interviews	Local government	Accountability	Collaborative governance	Netherlands	Q1	Public Administration	"Attitudes about global warming, support for policies that would reduce carbon emissions, and behavioral intentions to take voluntary action are strongly affected by norm- and science-based interventions	QAL 2
Bostrom, Ann: Hayes, Adam L.: Crosman, Katherine M.	2019	Efficacy, Action, and Support for Reducing Climate Change Risks	Risk analysis : an official publication of the Society for Risk Analysis	17	Survey	SEM	Citizens	Social norms	Social cognitive theory	UK	Q1	Safety, Risk, Reliability and Quality	- norm-based treatments can to some extent directly shape beliefs, policy support, intentions, and actions	QNT 2
Ready, Elspeth: Collings, Peter	2020	All the problems in the community are multifaceted and related to each other: Inuit concerns in an	American journal of human biology : the official journal of the Human Biology Council	2	Case study	Interviews	Citizens	Community participation	N/A	USA	Q1	Anthropology	- challenges in properly measuring beliefs and willingness to act (future research should explore how the politicization of science, which necessarily involves the par-tisan communication of scientific information, influences	QNT 2

Authors	Year	Title	Journal		Method	Technique	Actor	Theme	Theory	Country	Quartile	Discipline	Finding	Type
		era of climate change											public attitudes toward global warming)	
Latai-Niusulu, Anita: Nel, Etienne: Binns, Tony	2020	Positionality and protocol in field research: Undertaking community-based investigations in Samoa	Asia Pacific Viewpoint		Case study	Interviews	Citizens	Community participation		UK	Q1	Geography, Planning and Development	- focus on the combination of norm- and science-based information into theorizing about collective action"	QAL 2
Bhattacharyya, Asit: Biswas, Kumar: Moyeen, Abdul	2020	Determinants of Pro-environmental Behaviours - A Cross Country Study of Would-be Managers	Australasian Accounting Business & Finance Journal		Survey	SEM	Citizens	Individual perceptions	Value attitude theory	Australia	Q2	Business, Management and Accounting	"group norms influence intentions to engage in pro-climate behaviour and that identificationwith the group moderates the norm effects	QNT 1
Shahzad, Alvi: Umer, Khayyam	2020	Mitigating and adapting to climate change: attitudinal and behavioural challenges in South Asia	International Journal of Climate Change Strategies and Management		Survey	Logistic regressions	Citizens	Individual perceptions	Motivation	UK	Q1	Geography, Planning and Development	- self-investment but not self-definition would moderate the norm-intention relation	QNT 2
Lim, Jae Young: Moon, Kuk-Kyoung	2020	Examining the Moderation Effect of Political Trust on the Linkage between Civic Morality and Support for Environmental Taxation	International journal of environmental research and public health	0	Survey	Linear Regression	Citizens	Social norms	Social norms	USA	Q2	Public Health, Environmental and Occupational Health	- group members whowere highly self-invested in the group (but did not necessarily perceive themselves as similar to other group members) adheredmore strongly to climate-related ingroup norms than less self-invested group members	QNT 1
Jayanthi, Kumarasiri: Sumit, Lodhia	2020	The Australian carbon tax: corporate perceptions, responses and motivations	Meditari Accountancy Research		Case study	Interviews	Local government	Accountability	legitimacy theory	UK	Q2	Accounting	- perceived similarity amonggroup members (i.e. self-definition) did not positively contribute to respondents'decision to conform to a group norm	QAL 1
Bowden, Vanessa: Nyberg, Daniel: Wright, Christopher	2021	I don't think anybody really knows: Constructing reflexive ignorance in climate change adaptation	The British journal of sociology	0	Case study	Content Analysis	Local government	Accountability	Reflexive modernization	UK	Q1	Sociology and Political Science	- those people who were highlyself-invested in a social identity adopted climate friendlyingroup norms as a guide for their own everyday behaviourintentions, whereas merely cognitive self-definition as agroup member was not sufficient to increase normative pro-climate action"	QAL 1
Samaddar, Subhajyoti: Oteng-Ababio, Martin: Dayour, Frederick:	2021	Successful Community Participation in Climate Change Adaptation	Environmental management		Case study	Interviews	Citizens	Community participation	Participation	Germany	Q1	Ecology	"determinants of individuals'collective climate action intention	QAL 1

Authors	Year	Title	Journal		Method	Analysis	Population	Theme	Theory	Country	Quartile	Field	Finding	Code
Ayaribila, Akudugu; Obeng, Francis K.; Ziem, Romanus; Yokomatsu, Muneta		Programs: on Whose Terms?												
Frère, Séverine; Marega, Oumar; Hellequin, Anne-Peggy; Flanquart, Hervé; Calvo-Mendieta, Iratxe; Berry, Baptiste; Cornet, Sophie	2021	Individual responsibility and climate action: some lessons from a perception survey administered in Hauts-de-France	International Journal of Environmental Studies		Survey	Correlations	Citizens	Individual perceptions	Principle of responsibility	UK	Q3	Ecology	- participants'(N = 538) intention to take part in a neighborhood-basedclimate protection initiative was predictedvia all of the model constructs (social identity, perceived collective efficacy, and group-based emotions) but most stronglyso by the perceived participation norm	QNT 2
Skurka, Chris	2021	Will It Teach Them a Lesson? Validating a Measure of Retributive Efficacy in Social Issue Activism	Political Behavior	0	Survey	Factor analysis	Citizens	Individual perceptions	Self-efficacy theory	USA	Q1	Social and Polical Science	- motional motivationto engage in collective climate action was based on group-based guilty conscience	QNT 1
Demeritt, D. L., D.	2004	The UK Climate Change Programme and communication with local authorities	Global Environmental Change	71	Survey	MITITAB	Local government	Accountability	Accountability	UK	Q1	Environmental Science	- Future: systematically study theimpact of participation in a community-based collective actionon individual self-concept and behavio"	QAL 2
Norgaard, K. M.	2006	WE DON'T REALLY WANT TO KNOW: Environmental Justice and Socially Organized Denial of Global Warming in Norway	Organization & Environment	219	Interview	Thematic analysis	Citizens	Individual perceptions	Denial	Norway	Q1	Environmental Science (miscellaneous)	"No systematic research on collective climate action. By reviewing theoretical perspectives and models explaining collective protest	QAL 2
Homburg, A. S., Andreas; Wagner, Ulrich	2007	Coping With Global Environmental Problems: Development and First Validation of Scales	Environment and Behavior	68	Scale development	Principle components analysis	Students	Psychological adaptation	Lazarus' coping approach		Q1	Environmental Science (miscellaneous)	- Social identity, perceived behavioral control, and participative efficacy beliefs consistently predicted substantial amounts of variance in participation intention."	QNT 2
Zaalberg, R. M., Cees; Meijnders, Anneloes; McCalley, Teddy	2009	Prevention, adaptation, and threat denial: Flooding experiences in the Netherlands	Risk Analysis	136	Survey	MANCOVA	Citizens	Psychological adaptation	Cognitive/affective appraisal	Netherlands	Q1	Safety, Risk, Reliability and Quality	"People who believe that climate change is real and dangerous, who have positive attitudes about protecting the environment and the climate, and who perceive	QNT 1

Authors	Year	Title	Journal	#	Method	Analysis	Participants	Concept 1	Concept 2	Country	Q	Field	Findings	Code
Peters, M. F., Shane; Sinclair, Philip	2010	Mobilising community action towards a low-carbon future: Opportunities and challenges for local government in the UK	Energy Policy	87	Interviews	Thematic analysis	Citizens	Community participation	Community engagement	UK	Q1	Energy (miscellaneous)	climate change as a risk, are willing to respond to climate change. - public endorsement of mitigation and adaptation are strongly linked to each other and that the two response strategies are endorsed for similar reasons	QNT 2
van Zomeren, M. S., Russell; Leach, Colin Wayne	2010	Experimental evidence for a dual pathway model analysis of coping with the climate crisis	Journal of Environmental Psychology	89	survey	ANOVA	Citizens	Psychological adaptation	Cognitive/affective appraisal	USA	Q1	Psychology	- distant risk perceptions better predicted people's willingness to support mitigation and adaptation policies rather than proximal risk perceptions"	QNT 2
Ferguson, M. A. B., N. R.; Reynolds, K. J.	2011	The effect of intergroup comparison on willingness to perform sustainable behavior	Journal of Environmental Psychology	49	Survey	ANOVA	Students	Social norms	Social identity theory	USA	Q1	Psychology	"impact of moral emotions on environmental attitudes and behavior (group-based guilt)	QNT 1
Ireland, P. T., Frank	2011	The role of collective action in enhancing communities' adaptive capacity to environmental risk: an exploration of two case studies from Asia	Plos Currents	30	Interviews	Thematic analysis	Local government	Community participation	Citizen participation	Australia	Q1	Medicine (miscellaneous)	- a guilty conscience mediated the experimental manipulation's effect on behavioral intentions as well as on actual behavior.	QAL 1
Bergsma, E. G., Joyeeta; Jong, Pieter	2012	Does individual responsibility increase the adaptive capacity of society? The case of local water management in the Netherlands	Resources, Conservation & Recycling	26	Case study	Conceptual framework	Local government	Accountability	Accountability	Netherlands	Q1	Economics and Econometrics	- confrontation with human-caused environmental damages led to a guilty conscience which predicted environmentally friendly behavior intentions and actual behaviour	QAL 1
Smith, J. W. A., Dorothy H.; Moore, Roger L.	2012	Social Capital, Place Meanings, and Perceived Resilience to Climate Change	Rural Sociology	54	Survey	ANOVA	Citizens	Individual perceptions	Resilience	USA	Q1	Sociology and Political Science	- given the right circumstances, moral emotions can motivate pro-environmental behavior"	QNT 1
Akompab, D. B., Peng; Williams, Susan; Saniotis, Arthur; Walker,	2013	Engaging stakeholders in an adaptation process:	Mitigation & Adaptation Strategies for Global Change	14	Interviews	Thematic analysis	Local government	Accountability	Participatory governance	Australia	Q1	Environmental Science	"Public participation in decision making is a central component (Planning context); there are three critical factors that can influence	QAL 2

Author	Year	Title	Journal	N	Method	Analysis	Sample	Theme	Framework	Country	Quartile	Field	Findings	Code
Iain; Augoustinos, Martha		governance and institutional arrangements in heat-health policy development in Adelaide, Australia											the level of public participation in the context of climate change adaptation:	
Royo, A. Y. S. Basilio, Acerete	2013	E-participation and Climate Change in Europe: An analysis of local government practices	Journal of Systemics, Cybernetics and Informatics, Vol 11, Iss 7, Pp 21-27 (2013)	5	Content analysis	Mann-Whitney test		Accountability	Citizen participation	Spain	-	-	- the technocratic approach to decision making (reaching the information and consultation levels in public participation is sufficient to deal with the climate change risks)	QAL 1
Bates Lorraine, E. G., Melissa; Leonard, Rosemary; Walker, Iain	2013	The Influence of Forums and Multilevel Governance on the Climate Adaptation Practices of Australian Organizations	Ecology and Society	18	Interviews	Thematic analysis	Local government	Accountability	Multi-level governance	Australia	Q1	Ecology	- absent high order government support (mandated character of participation does not necessarily translate to stronger forms of public participation; top-down and tokenistic character of public participation is further compounded when empowerment is also impeded by current legislation)	QAL 2
Kim, S. J., Se-Hoon; Hwang, Yoori	2013	Predictors of Pro-Environmental Behaviors of American and Korean Students: The Application of the Theory of Reasoned Action and Protection Motivation Theory	Science Communication	74	Survey	Hierarchical regression	Students	Psychological adaptation	Theory of reasoned action	USA	Q1	Sociology and Political Science	- the lack of evaluation mechanisms for public participation (no indication as to how best to evaluate these initiatives, nor are there structures that facilitate such evaluation)"	QNT 1
Wahlström, M. W., Wennerhag, M.; Rootes, Christopher	2013	Framing "The Climate Issue": Patterns of Participation and Prognostic Frames among Climate Summit Protesters	Global Environmental Politics	44	Survey	Logistic regressions	Citizens	Community participation	Citizen participation	Denmark	Q1	Environmental Science	"Efficacy beliefs strongest predictor of behavioural intentions; descriptive norms related to intentions	QNT 1
Bolsen, T. L., Thomas J.; Shapiro, Matthew A.	2014	Doing What Others Do: Norms, Science, and Collective Action on Global Warming	American Politics Research	42	Survey	Linear regression	Citizens	`	Framing theory	USA	Q1	Sociology and Political Science	- no indication that the relationship between community identification and behavior intention was dependent on perceptions of the number of fellow villagers who were performing the behavior in our analysis, our investigation was limited by the fact that we did not ask about perceived social norms	QNT 1

Masson, T. F., Immo	2014	Adherence to climate change-related ingroup norms: Do dimensions of group identification matter?	European Journal of Social Psychology	37	Survey	multiple regression analysis	Students	Social norms	Social identity theory	Germany	Q1	Social Psychology	- behavior-specific efficacy beliefs were stronger predictors of intentions than demographic variables and other psychological variables, such as risk perceptions and village identification	QNT	1
Rees, J. H. B., Sebastian	2014	Climate protection needs societal change: Determinants of intention to participate in collective climate action	European Journal of Social Psychology	89	survey	Structural equation modeling	Students	Social norms	Social identity theory	Germany	Q1	Social Psychology	- targeting efficacy related beliefs in this way might help to increase the successful adoption of adaptive behaviors	QNT	1
Bamberg, S., Rees, J.; Seebauer, Sebastian	2015	Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives	Journal of Environmental Psychology	66	Survey	Structural equation modeling analysis	Citizens	Social norms	Social identity theory	Germany	Q1	Psychology		QNT	1
Brügger, A. M., Thomas A.; Dessai, Suraje	2015	Hand in hand: Public endorsement of climate change mitigation and adaptation	PLoS ONE	26	Survey	Correlations	Citizens	Individual perceptions	Public endorsement	UK/Switzerland	Q1	Agricultural and Biological Sciences (miscellaneous)	"	QNT	1
Rees, J. K., Sabine; Bamberg, Sebastian	2015	Guilty conscience: motivating pro-environmental behavior by inducing negative moral emotions	Climatic Change	35	Survey	ANOVA	Students	Social norms	Cognitive/affective appraisal	USA	Q1	Atmospheric Science	"Willingness by individuals to act is related to elements of distributional and procedural fairness, mediated by politi-cal context and personal experience and knowledge of risk	QNT	1
Serrao-Neumann, S. H., Ben; Leitch, Anne; Low Choy, Darryl	2015	Public engagement and climate adaptation: insights from three local governments in Australia	Journal of Environmental Planning and Management	27	Interviews	Thematic analysis	Citizens	Community participation	Community engagement	Australia	Q1	Environmental Science	- The differences between perceptions of fairness are explained by social and political contexts	QAL	1
Truelove, H. B., Carrico, A. R. & Thabrew, L.	2015	A socio-psychological model for analyzing climate change adaptation: A case study of Sri	Global Environmental Change	59		Principal components analyses	Citizens	Social norms	Protection motivation theory	USA	Q1	Environmental Science	- Perceptions of fairness are critical to individual action when there is a relationship of trust between citizens and states	QAL	1

Author	Year	Title	Journal	#	Method	Analysis	Population	Theme	Concept	Country	Q	Field	Findings	Type
Adger, W. N. Q., Tara; Lorenzoni, Irene; Murphy, Conor	2016	Lankan paddy farmers Sharing the Pain: Perceptions of Fairness Affect Private and Public Response to Hazards	Annals of the American Association of Geographers	27	Survey - in-person	Spearman's nonparametric correlation	Citizens	Individual perceptions	Perceived fairness	UK	Q1	Geography, Planning and Development	- Policymakers need to be aware of the human dimensions	QNT 1
Jugert, P. G., Katharine H.; Barth, Markus; Büchner, Ronja; Eisentraut, Sarah; Fritsche, Immo	2016	Collective efficacy increases pro-environmental intentions through increasing self-efficacy	Journal of Environmental Psychology	46	Survey	ANOVA	Students	Social norms	Collective efficacy	Germany	Q1	Psychology	- The relationship of trust between authorities and those at risk of flooding in the two countries is mani-fested in how responsibilities for care, warning, and recovery are acted on	QNT 1
Oakes, L. E. A., Nicole M.; Lambin, Eric F.	2016	I know, therefore I adapt Complexities of individual adaptation to climate-induced forest dieback in Alaska	Ecology and Society	6	Interviews	Thematic analysis	Local government	Individual perceptions	Place attachment	USA	Q1	Ecology	- Our findings suggest that fair process by public authorities encour-ages householders to take action themselves—it is through such sociocognitive processes that the social contract is negotiated at the household level and in the longer term might be reflected in a willingness to accept a more devolved model of responsibility around risk management"	QAL 1
Obradovich, N. G., Scott	2016	Collective responsibility amplifies mitigation behaviors	Climatic Change	21	Interviews & survey	ANOVA	Citizens	Social norms	Framing theory	USA	Q1	Atmospheric Science	"Collective efficacy manipulations increased pro-environmental intentions indirectly	QNT 1
Schleich, J. D., Elisabeth; Schwirplies, Claudia; Ziegler, Andreas	2016	Citizens' perceptions of justice in international climate policy: an empirical analysis	Climate Policy (Earthscan)	32	Survey	ANOVA	Citizens	Individual perceptions	Policy support	China	Q1	Atmospheric Science	- Shows importance of social identity processes with regard to individual environmental behavior	QNT 1
Sweetman, J. W., Lorraine E.	2016	Climate justice: High-status ingroup social models increase pro-environmental action through making actions seem more moral	Topics in Cognitive Science	16	Survey	Moderated mediation analysis	Students	Social norms	Social identity theory	UK	Q1	Artificial Intelligence	- collective efficacy manipulations can increase pro-environmental intentions by increasing the perception that one's group—and, through this, the self—is capable of effecting change	QNT 1
Bradley, G. L. R., Joseph P.	2017	Adaptation processes in the context of climate change:	Journal of Bioeconomics	25	Survey	Correlations	Citizens	Psychological adaptation	Protection motivation theory	Australia	Q2	Social Sciences	- personal control can be derived from group sources	QNT 2

Authors	Year	Title	Journal	Cit.	Method	Analysis	Sample	Theme	Theory	Country	Q	Field	Findings	Type
Chee Hui, T. R., T.; Yeap, Jasmine A. L.; Ooi, Say Keat	2017	A social and environmental psychology perspective Examining Residents' Receptiveness towards E-waste Recycling in Penang, Malaysia	Global Business & Management Research	1	Survey	Partial least squares analysis	Citizens	Social norms	Theory of reasoned action	Malaysia	-	-	- manipulation of collective efficacy raises pro-environmental intentions through greater perceived self-efficacy only when people consider individual action basically effective for coping with large-scale crises	QNT 2
Estrada, M. S., P. W.; Silva-Send, N.; Boudrias, M. A.	2017	The Role of Social Influences on Pro-Environment Behaviors in the San Diego Region	Journal of Urban Health	22	Survey		Citizens	Social norms	Model of social influence	USA	Q1	Health (social science)	- individual perceptions of control, which include agent-means relations and therefore self-efficacy are influenced by collective control	QNT 2
Karim, M. R. T., Andreas	2017	Role of community based local institution for climate change adaptation in the Teesta riverine area of Bangladesh	Climate Risk Management	31	Interviews & survey		Community	Community participation	Partnerships	Bangladesh	Q1	Geography, Planning and Development	" - The relational outcomes are The informal institutional changes through which local community adopt technological adaptation measures	QAL 1
Marshall, G. R. H., Donald W.; East, Miriam J.	2017	Can community-based governance strengthen citizenship in support of climate change adaptation? Testing insights from Self-Determination Theory	Environmental Science & Policy	19	Experiment	ANOVA	Citizens	Community participation	Citizen participation	Australia	Q1	Geography, Planning and Development	- participatory group action was The initial step to make local people aware of climate change risk and build up capability to disaster management through networking with local government and vulnerable communities, as well as sit down in one platform for collective decision making	QNT 1
Meleady, R. C., Richard J.	2017	Redefining climate change inaction as temporal intergroup bias: Temporally adapted interventions for reducing prejudice may help elicit environmental protection	Journal of Environmental Psychology	17	Survey	ANOVA	Students	Social norms	Social identity theory	UK	Q1	Psychology	- lack of coordination problems among local government, NGO, civil partners and vulnerable communities in working together"	QNT 1
Prati, G. A., Cinzia; Pietrantoni, Luca	2017	The interplay among environmental	Environmental Education Research	48	Survey	Longitudinal analysis	Students	Social norms	Social identity theory	Italy	Q1	Education	"Community-based governance can strengthen individual's autonomous motivations to	QNT 2

		attitudes, pro-environmental behavior, social identity, and pro-environmental institutional climate. A longitudinal study											contribute towards climate change adaptation initiatives	
Yi, H. F., Richard C.; Berry, Frances S.	2017	Overcoming collective action barriers to energy sustainability: A longitudinal study of climate protection accord adoption by local governments	Renewable and Sustainable Energy Reviews	25	Case study	Generalized Estimation Equations	Local government	Community participation	Institutional collective action		Q1	Renewable Energy, Sustainability and the Environment	- whether community-based governance would increase behavioural support, in the form of donation behaviour, for a climate change adaptation trust fund	QAL 1
Helm, S. V. P., Amanda; Barnett, Melissa A.; Curran, Melissa A.; Craig, Zelieann R.	2018	Differentiating environmental concern in the context of psychological adaption to climate change	Global Environmental Change	71	Survey	Confirmatory factor analyses	Citizens	Psychological adaptation	Social-cognitive theory	USA	Q1	Environmental Science	- This style of governance can thereby lead to less crowding out of environmental citizenship than a governmental approach	QNT 1
Lacroix, K. G., Robert	2018	Psychological barriers to energy conservation behavior: The role of worldviews and climate change risk perception	Environment and Behavior	52	Survey	ANOVA	Citizens	Individual perceptions	Perceived risk	Canada	Q1	Environmental Science (miscellaneous)	- community-based scenario produced significantly higher levels of perceived autonomy support within the study's participants	QNT 1
Lin, S. T. N., Han-Jen	2018	Green consumption: Environmental knowledge, environmental consciousness, social norms, and purchasing behavior	Business Strategy and the Environment	-	Survey	Structural equation modeling analysis	Students	Social norms	Climate change belief	Taiwan	Q1	Business and International Management	- community-based governance may be an effective strategy for strengthening citizenship, in institutional initiatives to facilitate climate change adaptation."	QNT 2
Mees, H. D., P.	2018	A framework for assessing the accountability of local governance arrangements for adaptation to climate change	Journal of Environmental Planning and Management	21	Case study	Interviews	Local government	Accountability	Accountability	Netherlands	Q1	Environmental Science	"Perceiving future generations as an outgroup may explain inaction on climate change	QAL 1

Author	Year	Title	Journal	Citations	Methodology	Analysis	Sector	Concept 1	Concept 2	Country	Quartile	Field	Finding	Type
Scobie, M.	2018	Accountability in climate change governance and Caribbean SIDS	Environment, Development & Sustainability	20	Case study	Thematic analysis	Local government	Accountability	Participatory governance		Q2	Economics and Econometrics	- the framing of climate change is inherently intergroup in nature and suggest a reason for inaction on climate change is the perception of future generations as an outgroup	QAL 1
Smith, E. K. M., Adam	2018	A social trap for the climate? Collective action, trust and climate change risk perception in 35 countries	Global Environmental Change	74	Survey	Multi-level binary logistic regression models	Citizens	Individual perceptions	Perceived risk	New Zealand	Q1	Environmental Science	- we may be able to more effectively encourage people to engage in sustainable behavior on behalf of future generations if we first overcome an ingroup-favoring bias	QNT 1
Wang, X.	2018	The role of attitudinal motivations and collective efficacy on Chinese consumers' intentions to engage in personal behaviors to mitigate climate change	The Journal of Social Psychology	9	Survey	structural equation modeling analysis	Citizens	Social norms	Collective efficacy	China	Q2	Social Psychology	"	QNT 1
Zengerling, C.	2018	Action on climate change mitigation in German and Chinese cities – A search for emerging patterns of accountability	Habitat International	6	Case study	Literature review	Local government	Accountability	Multi-level governance	Germany	Q1	Environmental Science	"pro-environmental institutional climate perceptions predicts social identity that, inturn, predicts environmental attitude	QAL 1
Mohammad Imtiaz, Ferdous: Carol, A. Adams: Gordon, Boyce	2019	Institutional drivers of environmental management accounting adoption in public sector water organisations	Accounting, Auditing & Accountability Journal	11	Case study	Content Analysis	Local government	Accountability	Institutional theory	UK	Q1	Accounting	"importance of forging relationships and	QAL 1
Pollock, Miranda Joy: Wennerstrom, Ashley: True, Gala: Everett, Ashley: Sugarman, Olivia: Haywood, Catherine: Johnson, Arthur: Meyers, Diana:	2019	Preparedness and Community Resilience in Disaster-Prone Areas: Cross-Sectoral Collaborations in South Louisiana, 2018	American Journal of Public Health	6	Case study	Interviews	Local government	Community participation	N/A	USA	Q1	Public Healthy, Environmerntal and Occupational Health	building trust through diverse cross-sector collaborations and partnerships before disasters.	QAL 2

Authors	Year	Title	Journal	N	Method	Analysis	Population	Concept	Theory	Country	Quartile	Field	Finding	Type
Sato, Jennifer: Wells, Kenneth B.: Arevian, Armen C.: Massimi, Michael: Berry, Jasmine: Riefberg, Leah: Onyewuenyi, Nkechi: Springgate, Benjamin														
Thaker, Jagadish Howe, Peter: Leiserowitz, Anthony: Maibach, Edward	2019	Perceived Collective Efficacy and Trust in Government Influence Public Engagement with Climate Change-Related Water Conservation Policies	Environmental Communication	9	Survey	logistic multilevel modelling	Citizens	Individual perceptions	Social cognitive theory	UK	Q1	Environmental Science	Such collaborations and partnerships were shown to tailor disaster response to	QNT 1
Åshild Lappegard, Hauge: Gro Sandkjær, Hanssen: Cecilie, Flyen	2019	Multilevel networks for climate change adaptation – what works?	International Journal of Climate Change Strategies and Management	9	Case study	Interviews	Local government	Accountability	multilevel governance	UK	Q1	Geography, Planning and Development	the needs of particular communities and populations as well as address key challenges	QAL 1
Bendz, Anna: Boholm, Åsa	2019	Drinking water risk management: local government collaboration in West Sweden	Journal of Risk Research	3	Case study	Interviews	Local government	Accountability	N/A	UK	Q1	Social Sciences		QAL 2
Kácha, Ondřej: Ruggeri, Kai	2019	Nudging intrinsic motivation in environmental risk and social policy	Journal of Risk Research	8	Survey	Correlations	Citizens	Individual perceptions	Motivation	UK	Q1	Social Sciences		QNT 1
Nguyen Long, Le Anh: Foster, Megan: Arnold, Gwen	2019	The impact of stakeholder engagement on local policy decision making	Policy Sciences	6	Case study	Interviews	Local government	Accountability	Collaborative governance	Netherlands	Q1	Public Administration		QAL 2
Bostrom, Ann: Hayes, Adam L.: Crosman, Katherine M.	2019	Efficacy, Action, and Support for Reducing Climate Change Risks	Risk analysis : an official publication of the Society for Risk Analysis	17	Survey	SEM	Citizens	Social norms	Social cognitive theory	UK	Q1	Safety, Risk, Reliability and Quality		QNT 2
Ready, Elspeth: Collings, Peter	2020	All the problems in the	American journal of human	2	Case study	Interviews	Citizens	Community participation	N/A	USA	Q1	Anthropology		QNT 2

Author	Year	Title	Journal		Method	Analysis	Actor	Theme	Theory	Country	Q	Field	Quote	Class
		community are multifaceted and related to each other: Inuit concerns in an era of climate change	biology : the official journal of the Human Biology Council											
Latai-Niusulu, Anita: Nel, Etienne: Binns, Tony	2020	Positionality and protocol in field research: Undertaking community-based investigations in Samoa	Asia Pacific Viewpoint		Case study	Interviews	Citizens	Community participation		UK	Q1	Geography, Planning and Development		QAL 2
Bhattacharyya, Asit: Biswas, Kumar: Moyeen, Abdul	2020	Determinants of Pro-environmental Behaviours - A Cross Country Study of Would-be Managers	Australasian Accounting Business & Finance Journal		Survey	SEM	Citizens	Individual perceptions	Value attitude theory	Australia	Q2	Business, Management and Accounting		QNT 1
Shahzad, Alvi: Umer, Khayyam	2020	Mitigating and adapting to climate change: attitudinal and behavioural challenges in South Asia	International Journal of Climate Change Strategies and Management		Survey	Logistic regressions	Citizens	Individual perceptions	Motivation	UK	Q1	Geography, Planning and Development		QNT 2
Lim, Jae Young: Moon, Kuk-Kyoung	2020	Examining the Moderation Effect of Political Trust on the Linkage between Civic Morality and Support for Environmental Taxation	International journal of environmental research and public health	0	Survey	Linear Regression	Citizens	Social norms	Social norms	USA	Q2	Public Health, Environmental and Occupational Health		QNT 1
Jayanthi, Kumarasiri: Sumit, Lodhia	2020	The Australian carbon tax: corporate perceptions, responses and motivations	Meditari Accountancy Research		Case study	Interviews	Local government	Accountability	legitimacy theory	UK	Q2	Accounting	"the Carbon Tax was a very effective mechanism in driving emission management	QAL 1
Bowden, Vanessa: Nyberg, Daniel: Wright, Christopher	2021	I don't think anybody really knows: Constructing reflexive ignorance in climate change adaptation	The British journal of sociology	0	Case study	Content Analysis	Local government	Accountability	Reflexive modernization	UK	Q1	Sociology and Political Science	actions, despite the general perception that any deficiencies associated with such a price mechanism could	QAL 1
Samaddar, Subhajyoti:	2021	Successful Community	Environmental management		Case study	Interviews	Citizens	Community participation	Participation	Germany	Q1	Ecology		QAL 1

Author	Year	Title	Journal	Method	Analysis	Population	Focus	Theory	Country	Quartile	Field	Type
Oteng-Ababio, Martin: Dayour, Frederick: Ayaribila, Akudugu: Obeng, Francis K.: Ziem, Romanus: Yokomatsu, Muneta		Participation in Climate Change Adaptation Programs: on Whose Terms?										
Frère, Séverine: Marega, Oumar: Hellequin, Anne-Peggy: Flanquart, Hervé: Calvo-Mendieta, Iratxe: Berry, Baptiste: Cornet, Sophie	2021	Individual responsibility and climate action: some lessons from a perception survey administered in Hauts-de-France	International Journal of Environmental Studies	Survey	Correlations	Citizens	Individual perceptions	Principle of responsibility	UK	Q3	Ecology	QNT 2
Skurka, Chris	2021	Will It Teach Them a Lesson? Validating a Measure of Retributive Efficacy in Social Issue Activism	Political Behavior 0	Survey	Factor analysis	Citizens	Individual perceptions	Self-efficacy theory	USA	Q1	Social and Polical Science	QNT 1

Appendix B: Ethics approval email

Dear ASPR NICK SCIULLI,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE17-188
» Chief Investigator: ASPR NICK SCIULLI » Other Investigators: PROF ELISABETH WILSON-EVERED, MR Brett Lee Quayle » Application Title: Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement » Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 09/10/2017.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at:.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee
Phone: 9919 4781 or 9919 4461
Email: researchethics@vu.edu.au

Appendix C: Human ethics application

Application ID :	HRE17-188
Application Title :	Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement
Date of Submission :	26/09/2017
Primary Investigator :	ASPR NICK SCIULLI (Chief Investigator)
Other Personnel :	PROF ELISABETH WILSON-EVERED (Associate Investigator)
	MR Brett Lee Quayle (Student)

Introduction

Important Information

Form Version: V.16-02. Last Updated: 6.7.2016.

IMPORTANT INFORMATION FOR ALL APPLICANTS:

- Applicants are advised to follow the guidelines provided on the **Human Research Ethics website** prior to submitting this application.

- Ensure all questions are appropriately answered in plain language with correct spelling and grammar.

- All applications must be sighted and approved by all members of the research team and any relevant parties. Applications will not be reviewed without appropriate authorisation.

- To avoid unnecessary delays, please ensure application is submitted in full by the submission deadline for the relevant HREC.

You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.

Contact:

Ethics Secretary
For help and further information regarding ethical conduct, refer to the Human Research Ethics website: *http://research.vu.edu.au/hrec.php* or contact the Secretary for the Human Research Ethics Committee, Office for Research.
Phone: 9919 4781 or 9919 4461
Email: researchethics@vu.edu.au

Quest Service Desk
For technical help, refer to the Quest website: *http://research.vu.edu.au/quest.php* or contact a member of the Quest team.
Phone: 9919 4278
Email: quest.servicedesk@vu.edu.au

External Resources

- NHMRC: National Statement on Ethical Conduct in Human Research
- NHMRC: Human Research Ethics Handbook
- NHMRC: Australian Code for the Responsible Conduct of Research

Quest Guide

Quick Tips for Using Quest

Need Help? For help and instructions, we strongly recommend that you download the full Quest Online Ethics Guide (.pdf). Your questions may also be answered in the FAQ page on the Quest Website.

- **Answer All Questions:**

   Most questions are mandatory and must be completed before the application can be submitted. These questions are marked with a red asterisk (*)

- **Access Help and Tips:**

   The help icon, found next to questions and at the top of each page, will provide you with detailed advice on ethical content.

- **Remember to Save:**

   Use the floppy disk icon (and the green tick in some sections) regularly to avoid losing any answers. Each page will save automatically when you click *Next* or *Back*.

- **Print or Save a Copy of Your Application:**

   You can use the report icon at any stage to generate a printer friendly version of the form. Select HTML to print to screen. To save as a .pdf file to your computer select PDF then save a copy from the pop up screen. *(Don't forget to save a copy before you submit!)*

- **Submit Application:**

   When you have completed your application, click on the *Action* tab in the left-hand column and click *Submit Application*. The system will then convert the form to read-only and send it to the Ethics Secretary for review.

   You will receive an email confirmation at submission. Double check that your application has been submitted by viewing the application status in the *My Applications* page.

Responding to comments (if your application is returned)

There may be stages throughout the application process in which the Ethics Secretary will instruct you to amend your application form. These amendments will be communicated to you via 'Comments' within the eForm.

1. **Generate a List of All Comments:**

   Click the ▢ report icon, select *Comments Report* from the Document drop-down field and click *OK*. This list will show all comments created in your application and which page they are applicable to. Click *Cancel* to return to the application form.

2. **Revise your Answers:**

   Open the page which shows a 🚩Red Flag icon red flag; these denote an Action Comment which you are required to respond to. Revise the relevant question(s) in your application form as required. Remember to click 💾 save!

3. **Respond to Action Comments:**

   AFTER you have revised your answers, you must provide a response to each Action Comment explaining to the Committee how you have addressed their communication. Open the ▢ Page Comments window and click ▢ New Comment to enter your response into the textbox. Click the ✔ green tick to save your text.

4. **Mark Comments as Responded:**

   Once you have revised your answers AND finished responding to all comments, reopen ▢ Page Comments window, use the checkbox to select the *Action Comments* and click *Mark Selected Comments as Responded*. The colour of the flag will change to 🚩Yellow Flag icon yellow and the page will become Read Only.

   Important: DO NOT mark the comments as 'Responded' until you are completely satisfied with your revised answers - you will lose access to edit the page and the comments.

5. **Submit Revised Application:**

   Once you have addressed all of the Red Flags, open the *Action* tab and click *Submit Revised Application*. The system will then send the form to the Ethics Secretary for review. Remember to save a copy of your application by clicking the ▢ Report icon and generating a PDF or printer-friendly version.

[Office Use Only - Administration]

Application ID - *Assign HRE # using "Manage Applications"*

HRE17-188

Clearance Purpose

Research

For Review:

Assigned Ethics Committee

Low Risk Human Research Ethics Committee

Risk Level *(Enter 'High' or 'Low' or 'Neg')*

low

Students involved in conduct of project? *(Enter 'Yes' or 'No')*

yes

Date Accepted by Ethics Secretary

27/09/2017

For Finalisation:

Date Approved

09/10/2017

Approved Start Date for Project

09/10/2017

Approved End Date for Project

31/03/2021

[Office Use Only - Risk Assessment]
NEGLIGIBLE RISK INDICATORS
Applicant has responded YES to:

4.5. Does the research <u>only</u> include the collection of anonymous and non-sensitive data (e.g. online survey, observational data) that poses no foreseeable risks or discomfort to participants? *Any foreseeable risk must be no more than inconvenience.*

HIGH RISK INDICATORS
Applicant has responded YES to:

POSSIBLE HIGH RISK INDICATORS
Applicant has responded YES to:

LOW RISK INDICATOR
If no statements appear under the headings above, the applicant has not responded yes to any negligible or high risk indicators.

SECTION 1 - PROJECT OVERVIEW

General Details

1.1. **Ethics Category***

> Human

1.2. **Project Title***

> Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement

1.3. **Project Summary** (Include brief details of aims, methods and significance of the project in plain language. Maximum of 2000 characters)*

> This project is an examination of local government climate change strategy in Victoria's coastal regions from multiple perspectives: local government accountability and the underlying psychological responses to climate change from the general public. Australia is vulnerable to the effects of climate change, and there is an expectation that an effective climate change strategy can be facilitated at a local level with the support of local government. Where there are environmental, social and economic benefits to acting on climate change, current Australian initiatives are considered inadequate to address climate impacts; this has been described as a `wicked` public policy issue. There is a need for further climate change research to investigate the decision-making processes that contribute to accountability, and its considerations of the psychological adjustments amongst the public to a changing climate. A mixed-methods design will investigate accountability by conducting several case studies (i.e., one case equates to one local council) where evidence will be acquired from multiple sources such as documentation, archival records, interviews, direct observation and participant observation. A survey composited of highly reliable scales from previous measures will examine psychological adaptation and will be distributed to all residents within the local council regions. This interdisciplinary research aims to uncover solutions to the wicked question of accountability for climate change which will assist both policymakers and government leaders to be equipped to adapt and lead initiatives addressing the impacts of a changing climate along Australia's coastal regions. This project is theoretically significant as it has the potential to offer an interdisciplinary insight in to the context within which effective climate change strategy is achieved.

1.4. **Primary College or Institute for Application***

> COLLEGE OF BUSINESS

Timeline and Funding

1.5. **Period for which ethical approval is sought.** *Note: ethical approval is automatically granted for a period of 2 years from the project commencement date.*
Project commencement date:*
◉ Immediately upon receiving ethical approval
○ Other date

1.6. **Date the data collection is expected to be completed:***

> 31/03/2021

1.7. **How will the research be funded?***
☐ External grant
☐ VU grant or funding
☐ Sponsor
☐ Other
☑ Unfunded

If the research is unfunded, indicate how the project can proceed.*

> College of Business currently provides a budget of 2800 dollars for HDR student research.

1.8. **Is the research a collaborative effort with another organisation?***
○ Yes
◉ No

SECTION 2 - PROJECT INVESTIGATORS

Investigators

2.1. **Please list all <u>investigators</u> associated with this project.**
The research team is the group of investigators accountable for the conduct of the project. Include details of the Primary Chief Investigator (primary contact for application), as well as all other Chief Investigators and Associate Investigators. *Student details will be requested separately.* Other staff (e.g. technicians) may perform tasks within the project although they are not necessarily investigators. They should be listed as "Other Staff" if appropriate.*

1	ID	E5000112
	Surname	SCIULLI
	Given Name	NICK
	Full Name	ASPR NICK SCIULLI
	College	COLLEGE OF BUSINESS
	Email	nick.sciulli@vu.edu.au
	Role	Chief Investigator
	Primary CI	Yes
	Phone	9919 4424
	Mobile	0488 555 477
	Qualifications	PhD (RMIT University, Australia) MEc (University of New England, Australia) BEc (La Trobe University, Australia) CPA
2	ID	E5101829
	Surname	WILSON-EVERED
	Given Name	ELISABETH
	Full Name	PROF ELISABETH WILSON-EVERED
	College	COLLEGE OF BUSINESS
	Email	Elisabeth.Wilson-Evered@vu.edu.au
	Role	Associate Investigator
	Phone	99199264
	Mobile	0402385647
	Qualifications	PhD (OB; Leadership and Innovation)(Monash) M.Org Psych (QLD) MA -Prelim (Psychology) (Melbourne) BA (Psychology) (Victoria University of Wellington) Grad Cert in Higher Education (Monash) Dip in Project Management

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.
Once an Investigator record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the <u>Request to Add Personnel to Research Database form</u> *found on the Quest website.*

Student Investigators

2.2. **Will any students be involved in the conduct of this project?***
◉ Yes
○ No

2.2.a. **If YES, is the project:***
◉ A STUDENT PROJECT for the degree in which the student is enrolled?
○ A STAFF PROJECT that involves a student(s) undertaking some part of the project?
○ Other

2.2.a.i. **If the research is a STUDENT PROJECT, at what level?***

PhD

* Has this project been approved by the Postgraduate Research Committee? (ie. during confirmation of candidature process)
◉ Yes
○ No

2.2.b. **Please list all student investigators involved in this project.**
Ensure the primary supervisor (not the student), has been marked as the Chief Investigator and primary contact for the application in Q.2.1.

1	ID	S4518058
	Surname	Quayle
	Given Name	Brett
	Full Name	MR Brett Lee Quayle
	College	COLLEGE OF BUSINESS
	Email	brett.quayle1@live.vu.edu.au
	Role	Student
	Phone	0414677709
	Mobile	0414677709
	Qualifications	Brett Quayle is a registered psychologist with a Masters in Organisational Psychology, with experience in research, consulting and program evaluation.

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.
Once a student's record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the Request to Add Personnel to Research Database form found on the Quest website.

2.2.c. **What arrangements are in place for the supervision of student(s) when undertaking project activities?***

> Supervision meetings with the student investigator and the primary and secondary supervisor is conducted on a needs basis. Primary communication is conducted electronically (i.e. email, phone, skype) and is mutually agreed upon by all investigators, which occurs on a weekly basis. Regular fortnightly meetings were conducted on the development of the proposal and up to confirmation of candidature. Whilst writing work is the focus, email and shared documents is the preferred approach.

Involvement of Other Individuals/Organisations

2.3. **Will any individuals who are not members of the research team be involved in the conduct of this project?** (e.g., medical personnel involved in procedures, research contractors, teachers) *
- ○ Yes
- ● No

SECTION 3 - NATURE OF THE PROJECT

Type of Project

3.1.a. **Is the project a pilot study?***
- ○ Yes
- ● No

3.1.b. **Is the project a part of a larger study?***
- ○ Yes
- ● No

3.1.c. **Is the project a quality assurance or evaluation project (e.g., related to teaching, health-care provision)?***
- ○ Yes
- ● No

3.1.d. **Does the research involve a clinical trial (of a substance, device, psychological or physical intervention)?***
- ○ Yes
- ● No

3.1.e. **Does the research involve the use of therapeutic/intervention techniques or procedures (non-clinical trial)?***
- ○ Yes
- ● No

Target Population

3.2.a. **Does the research focus on Australian Indigenous (Aboriginal and/or Torres Strait Islander) populations?***
- ○ Yes
- ● No

3.2.b. **Does the research involve participants under the age of 18 years?***
- ○ Yes
- ● No

3.2.c. Does the research involve participants who are highly dependent on medical care?*
  ○ Yes
  ◉ No

3.2.d. Does the research involve participants who have a cognitive impairment, intellectual disability or mental illness? *
  ○ Yes
  ◉ No

3.2.e. Does the research involve participants in other countries?*
  ○ Yes
  ◉ No

3.2.f. Does the research involve pregnant women (with a research focus on the pregnancy) and/or the foetus (in utero or ex utero) or foetal tissue?*
  ○ Yes
  ◉ No

3.2.g. Does the research involve participants who are likely to be highly vulnerable due to any other reasons?*
  ○ Yes
  ◉ No

Intrusiveness of Project

3.3.a. Does the research use physically intrusive techniques?*
  ○ Yes
  ◉ No

3.3.b. Does the research cause discomfort in participants beyond normal levels of inconvenience?*
  ○ Yes
  ◉ No

3.3.c. Does the research collect potentially sensitive data? (e.g., related to a sensitive topic or vulnerable group; personal health/medical information; sensitive organisational strategies)*
  ○ Yes
  ◉ No

3.3.d. Does the research involve deception of participants?*
  ○ Yes
  ◉ No

3.3.e. Does the research involve limited disclosure of information to participants?
  ○ Yes
  ◉ No

3.3.f. Does the research involve covert observation of participants?*
  ○ Yes
  ◉ No

3.3.g. Does the research produce information that, if inadvertently made public, would be harmful to participants?*
  ○ Yes
  ◉ No

3.3.h. Does the research involve accessing student academic records?*
  ○ Yes
  ◉ No

3.3.i. Does the research involve human genetic or stem cell research?
  ○ Yes
  ◉ No

3.3.j. Does the research involve the use of ionising radiation?*
  ○ Yes
  ◉ No

3.3.k. Does the research involve the collection of human tissue or fluids?*
  ○ Yes
  ◉ No

3.3.l. Does the research involve any uploading, downloading or publishing on the internet?*
  ○ Yes
  ◉ No

3.3.m. Does the research seek disclosure of information relating to illegal activities or is the research likely to lead to disclosure of information relating to illegal activities?*
  ○ Yes
  ◉ No

3.3.n. Does the research involve procedures that may expose participants to civil, criminal or other legal proceedings?*
  ○ Yes
  ◉ No

3.3.o. **Does the research involve gaining access to medical/health related personal information from records of a Commonwealth or State department/agency or private health service provider?***

    ○ Yes
    ◉ No

3.3.p. **Does the research involve gaining access to personal information (not medical/health) from the records of a Commonwealth or State department/agency or private organisation?***

    ○ Yes
    ◉ No

SECTION 4 - PROJECT DESCRIPTION

General Information

Note: All fields have a maximum of 4000 characters (unless otherwise specified) in plain text only.
If supporting documentation needs to be provided for the following questions (images, graphs etc), please upload as referenced appendices in Section 11 - "Required Attachments" below.

4.1. **Aims of the project.** Provide a concise statement of the aims of the project (maximum 2000 characters in plain language).*

> This project is an examination of local government climate change strategy in Victoria's coastal regions from multiple perspectives: government accountability and the underlying psychological responses to climate change from the general public.
>
> The aims of the project are to:
> 1. Describe how Local Governments demonstrate accountability in climate change
> 2. Examine the role of local residents' risk perceptions and environmental action in decision making; that is their psychological adaptation to climate change
> 3. To develop a framework on shared responsibility and climate change strategy which embraces local government decision making and implementation considerations of social context as well as individual and collective estimates of community psychological adaptation to climate change.
>
> To achieve the above aims, this project will examine local government accountability through conducting case studies at local government offices via semi-structured interviews; further, psychological adaptation will be estimated through a survey with members of the general population. Together, this project will contribute new knowledge on how Victorian local government engages with the community in preparing for climate impacts and the adaptive readiness of the community.

4.2. **Briefly describe the relevant background and rationale for the project in plain language.***

> Victoria's coastal regions are vulnerable to the effects of climate change, where there is an expectation that effective climate change strategy can be facilitated at a local level with the support of local government. Where there are environmental, social and economic benefits to acting on climate change, current Australian initiatives are considered inadequate to address climate impacts; this has been described as a `wicked' public policy issue. There is a need for further climate change research to investigate the decision-making processes and engagement strategies that contribute to accountability, and its considerations of the psychological adjustments amongst the public to a changing climate.

4.3. **Methodology and procedures**
Include specific details relating to any measures, interventions, techniques, and/or equipment used in the research.
Provide step-by-step details of the procedures with particular reference to what participants will be asked to do.
Provide details separately for different phases or conditions of the research or, where appropriate, different participant groups.*

> A mixed method research approach will be adopted for this project and will occur in phases with different participant groups.
>
> Note: Phase 1 has been completed
>
> Phase 1 will employ a case study methodology to examine accountability and community engagement in the context of climate change. Local councils in Victoria will be approached to take part in the study, where individual representatives within the council will be approached to discuss the council's current environmental initiatives through a 30-45 minute semi-structured interview (Appendix C). Interviews will be recorded using recording software from a password protected personal computer. Representatives may include employers that work within sustainability or in the leadership team. Additional information of the council's climate change initiatives will be sourced from publically available documentation for each council (e.g. archival records). Five councils will be examined to offer sufficient insight into local government accountability and to provide substantive comparisons between the councils. Several strategies will be used (e.g., canvassing, cold calling, network referrals) to select councils willing to participate in this research, where there will be considerations based on its availability, willingness to participate and the level of current action currently been implemented (i.e. whether the council is currently engaging in climate initiatives).
>
> Phase 2 will consist of a psychological survey that examines collective environmental behaviours of residents. The survey includes the following measures: social identity scale; procedural justice scale; collective efficacy scale; psychological adaptation; and, collective tendencies. The survey also asks for non-identifiable demographic information. Following informed consent and ethical approval protocols, surveys will be administered electronically via university approved survey platforms and, if required, paper based surveys will be produced to reach members of the community without access to electronic resources. Participants will be recruited through flyers in community precincts, local council offices and community groups and electronically (e.g., social networking websites).The student investigator will also ask councils if it is possible to advertise the survey on its website as a means of recruiting participants in the local government area. Survey participants will not be provided with any incentive to participate.
>
> Phase 3 will involve the analysis and interpretation of all the results; where an de-identified analysis of findings will be made available to the participants in the research.

Use this textbox if additional room is required for Question 4.3.

>

This question is not answered.

Data Collection

4.4. **Indicate all types of data to be collected.***
- ☑ Questionnaire / survey responses*
- ☑ Individual interview responses*
- ☐ Other data
- ☐ Group interview or focus group responses*
- ☐ Participant observations
- ☐ Blood or tissue samples
- ☐ Physiological measures
- ☐ Biomechanical measures
- ☐ Accessed health / medical records or data
- ☐ Accessed student academic records or data
- ☐ Archival data

* Attach copies of questionnaires to this application in Section 11 - "Required Attachments" below.

* Attach copies of interview schedules to this application in Section 11 - "Required Attachments" below.

4.5. **Does the research <u>only</u> include the collection of anonymous and non-sensitive data (e.g. online survey, observational data) that poses no foreseeable risks or discomfort to participants?** *Any foreseeable risk must be no more than inconvenience.**
- ⦿ Yes
- ○ No

4.6. **Does the research <u>only</u> include the use of non-identifiable and non-sensitive data from an existing database? (e.g., data mining).**
*Such data should pose no foreseeable risks or discomfort to individuals whose information is contained in the database, or to individuals/organisations responsible for the database.**
- ○ Yes
- ⦿ No

4.7. **Does the research involve photographing or video recording of participants?***
- ○ Yes
- ⦿ No

4.8. **Who will be collecting the data?** (give details for all types of data collected and all persons involved)*

> The student researcher will collect all data

4.9. **Where will the data be collected?** (give details for all types of data collected and all locations)*

> Survey data will be collected electronically and, if paper based surveys are used, via mail or in-person.
> Interview data will be collected through either face to face from local government offices, telephone, or video conferencing.

4.10. **How will the data be analysed?** (give details for all types of data collected)*

> Phase 1 will include data analysis techniques such as data coding, thematic analysis, and developing categories of the ideas and concepts derived from the data (Merriam, 2014). For example, a professional software package such as NVivo will be used for this process.
>
> Prior to data collection in Phase 2, an exploratory factor analysis (Giles, 2013) will be implemented to firstly ascertain the underlying factors based on the psychometric measures as a means of exploring collective engagement (i.e., environmental perceptions, psychological adaptation, collective identity, and environmental action). Once data collection is completed in Phase 2, the data will be analysed using Statistical Package for the Social Sciences (SPSS). To test the relationships between the different constructs, a hierarchical moderated regression approach will also be utilised in the data analysis (Giles, 2013).
>
> A third and final phase of the study will involve the interpretation and explanation of the quantitative and qualitative results, which will result in the development of a shared mental map of climate change responsibility, as guided by a cognitive mapping process of elicitation and representation (Bossche et al, 2010). Phase 3 will also implement a process of triangulation (Torrance, 2012) to integrate the qualitative and quantitative data pertaining to responsibility to develop an understanding of shared responsibility (i.e., linking the quantitative responses on attribution of responsibility and qualitative responses on sustainable accountability. This will form the basis of the project's discussion section, where implications and future directions will be outlined (Ivankova et al, 2006).

4.11. **Who will have access to the data collected?** (give details of all persons who will have access to the data)*

> The Student Researcher (Brett Quayle), Chief Investigator (Associate Professor Nick Sciulli) and Associate Supervisor and Investigator (Professor Elisabeth Wilson-Evered). Each supervisor brings unique skills and experience to bear on the project. A/Prof Sciulli's expertise is in the area of researching accountability and local government using qualitative methods and Prof Wilson-Evered expertise will be applied in terms of psychological research and quantitative methods.

4.12. **Will individuals or organisations external to the research team have access to any data collected?***
- ○ Yes
- ⦿ No

SECTION 5 - PARTICIPANTS

Participant Group Details

5.1. **Provide details of all distinct participant groups below.**
Please be as precise as possible, if specific details have not been determined you must indicate that they are approximate.

Group 1
Details of specific participant population:*

> Interviews will be conducted with council representatives/employees, from the leadership team or who work within the environmental/sustainability area.

Number of participants: *

> 20

Age range of participants:*

> 18 and above

Source of participants:*

> There are 21 local government areas that exist along Victoria's coastline (Victoria Coastal Council, 2012), in which all will be contacted to participate in the research; where within each government site interviews will be conducted with organisational representatives/employees. Several case studies (i.e., one case equates to one council) will be employed until theoretical saturation is reached (Yin, 1994). Of these 21 local government areas, a variety of cases will be selected; namely councils that are currently active in climate change initiatives, and councils where minimal action is currently being undertaken. Such an approach will afford a breadth of findings to compare differences amongst local government areas along Victoria's coastline.

Record details for additional group? (Group 2)*
⦿ Yes
◯ No

Group 2
Details of specific participant population:*

> All residents of the public aged 18 and over that reside in coastal regions in Victoria will be the population that will be approached to participate. Residents that do not reside in a coastal region (as determined by the postcode that is entered into the survey) will be disqualified from participating in the research.

Number of participants: *

> 1500

Age range of participants:*

> 18 and above

Source of participants:*

> All ratepayers currently residing in any of the 21 local government areas will be targeted to participate in the survey. Participants will be determined by their postcode as the first question in the survey, where other participants will be excluded.

Record details for additional group? (Group 3)*
◯ Yes
⦿ No

Participant Selection

5.2. **Provide a rationale for the sample size.***

> As suggested by Klien (2011), the minimum sample size required to attain a level of power = .80 for studies that employ regression or structural equation modelling (i.e., the anticipated statistical analysis for quantitative portion of this study) in its analysis should be 1465 (for a close-fit test) and 1220 (for a not-close-fit test). A confirmatory factor analysis will also be undertaken, where it has been suggested that a minimum of sample of 300 is needed to attain a power level of at least .80

5.3. **Does the project include any specific participant selection and/or exclusion criteria beyond those described above in Question 5.1?***
◯ Yes
⦿ No

5.4. **Will there be a formal screening process for participants in the project?** (e.g. medical/mental/health screening)*
◯ Yes
⦿ No

5.5. **Does the research involve participants who have specific cultural needs or sensitivities?** (e.g., in relation to the provision of informed consent, language, procedural details)*
◯ Yes
⦿ No

5.6.a. **Does the research involve a participant population whose principal language is not English?***
◯ Yes
⦿ No

5.6.b. Will documentation about the research (e.g., Information to Participants form and Consent form, questionnaires) be translated into a language other than English?*

   ○ Yes
   ● No

SECTION 6 - RECRUITMENT OF PARTICIPANTS

Recruitment and Informed Consent

6.1. Will individuals other than members of the research team be involved in the recruitment of participants?*

   ○ Yes
   ● No

6.2. How will potential participants be approached and informed about the research and how will they notify the investigators of their interest in participating?
Attach copies of the "Information to Participants Involved in Research" form and any flyers or other advertising material to be used in the research in Section 11 - "Required Attachments" below.

> Group 1: Local councils will be contacted via telephone, in-person or through email with a request to participate in the research. Potential participants will be given an email outlining the aims of the research.
>
> Group 2: Potential participants (members of the general public) will be approached through flyers in community precincts, local council offices and community groups and electronically (e.g., social networking websites) with information of the research. Participants will be given a link to complete the survey online. Permission will be sought from councils to advertise the research.
>
> **Please see attached documents for further information**

6.3. Will potential participants be given time to consider and discuss their involvement in the project with others (e.g. family) before being requested to provide consent?*

   ● Yes
   ○ No

6.4. How will informed consent be obtained from participants?*

   ☐ Participants be required to sign an informed consent form
   ☑ Consent will be implied e.g. by return of completed questionnaire
   ☑ Verbal consent will be obtained and recorded (audio, visual or electronic)
   ☐ Other

6.5. Provide procedural details for obtaining informed consent:*

> For both groups, the student investigator will provide participants with a written overview of research information in plain, English where each person will be asked to consent to participating in the research and to have the option to withdraw if they so wish. Participants will be advised that if they do not understand the nature of the research, or what I will ask of them they are free to contact the student researcher or the Victoria University Ethics Department for further information and the two Chief Investigators/Supervisors. Participants will also be advised that participation is voluntary and they can withdraw from the research at any time.

6.6. Will you be seeking consent in order to contact participants in the future for related research participation and/or use participants' data for related research purposes?*

   ○ Yes
   ● No

Competing Interests

6.7. Will any dual relationship or conflict of interest exist between any researcher and potential or actual participants? (e.g., a member of the research team is also a colleague or friend of potential participants)*

   ○ Yes
   ● No

6.8. Does the research involve participants who are in dependent or unequal relationships with any member(s) of the research team or recruiting organisation/agency (e.g. counsellor/client, teacher/student, employer/employee)?*

   ○ Yes
   ● No

6.9. Will you be offering reimbursement or any form of incentive to participants (e.g., payment, voucher, free treatment) which are not part of the research procedures?
Gift cards can only be ordered through Procurement using the Gift Card Request Form located here.
You must clearly identify the value, quantity and type of gift cards to be purchased in both the Ethics Form and the Gift Card Request Form. *

   ○ Yes
   ● No

6.10. Is approval required from an external organisation? (e.g., for recruitment of participants, data collection, use of premises)*

   ○ Yes
   ● No

SECTION 7 - RISKS ASSOCIATED WITH THE RESEARCH

Physical Risks

7.1.a. **Are there any PHYSICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***
○ Yes
◉ No

Psychological Risks

7.1.b. **Are there any PSYCHOLOGICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***
○ Yes
◉ No

Social Risks

7.1.c. **Are there any SOCIAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research.** (e.g., possible inadvertent public disclosure of personal details or sensitive information)*
○ Yes
◉ No

Other Risks

7.2. **Does the research involve any risks to the researchers?***
○ Yes
◉ No

7.3. **Does the research involve any risks to individuals who are not part of the research, such as a participant's family member(s) or social community (e.g., effects of biographical or autobiographical research)?***
○ Yes
◉ No

7.4. **Are there any legal issues or legal risks associated with any aspect of the research that require specific consideration (i.e., are significant or out of the ordinary), including those related to:**

- participation in the research,
- the aims and nature of the research,
- research methodology and procedures, and/or
- the outcomes of the research?

*

○ Yes
◉ No

7.5. **Risk-Benefit Statement:**
Please give your assessment of how the potential benefits to the participants or contributions to the general body of knowledge would outweigh the risks. *Even if the risk is negligible, the research must bring some benefit to be ethical.**

> There is negligible risk associated with the undertaking the current project. Given the potentially detrimental effects of climate change inaction, the current project provides many benefits to the current literature and to Australian society. Some of these benefits include better understanding the psychological responses to climate change and highlighting climate policy implementation strengths and deficiencies. The benefits associated with this research outweighs any potential risks that may arise of participating in the research, where one potential risk may be where a participant is inadvertently distressed by a question asked).

SECTION 8 - DATA PROTECTION AND ACCESS

Data Protection

8.1. **Indicate how the data, materials and records will be kept to protect the confidentiality/privacy of the identities of participants and their data, including all hardcopies, electronic files and forms.** *See help for definitions.**
○ Data and records will be entirely anonymous
◉ Data and records will be coded and non-identifiable
○ Data and records will be coded and re-identifiable
○ Some or all of the retained data and records will include personally identifying information
○ Other

8.2. **Who will be responsible for the security of and access to confidential data and records, including consent forms, collected in the course of the research?***

> The student investigator, chief investigator and secondary investigator will be responsible. Data will be kept in a safe and secure storage, where it will be indexed appropriately and can be easily accessible by the student investigator, chief investigator and secondary investigator. Copies will be secured in password protected VU computers, accessed only by Chief investigators and Supervisors. The research team will maintain electronic records of research data, therefore will benefit from VU backup procedures. Data will be saved on the student R drive as well as secondary backup files on the research teams individual password protected personal computers.

8.3. **Where will data, materials and records be stored during and after completion of the project?** Provide full details of the location for all types of data. *Note: The VU Research Storage provides secure digital storage and long term retention for research project data including graduate research projects.*

During the project:*

> Data, materials and records will be stored on the university R drive as well as keep a second backup of files in my password protected personal hard-drive. A Research Data and Materials Plan will be registered with the Office for Research prior to commencing data collection, which will outline the level of access for the student investigator, chief investigator and associate investigator (Appendix E). The issue of how the data is collected and managed will involve clear and ongoing communication between the student investigator, chief investigator and associate investigator and relevant third parties which is something that the research team via the student researcher will oversee throughout the project.

Upon completion:*

Data, materials and records will be stored on the university drive as well as keep a second backup of files in password protected personal hard-drive until analysis is completed. Data will be used and accessed until all relevant thesis examinations, responses, and papers, publications and further investigations have been completed. All personally identifiable data will be deleted or de-identified.

8.4. **Indicate the minimum period for which data will be retained.** See help for definitions.*
- ○ Indefinitely
- ⦿ 5 years post publication
- ○ 7 years post publication
- ○ 15 years post publication
- ○ 25 years after date of birth of participants
- ○ Other

8.5. **Who will be responsible for re-evaluating the data/materials after the retention period and considering a further retention period for some or all of the data/materials?***

The student researcher, chief investigator and secondary investigator will be responsible for all data, materials and records for all retention periods, where this will be articulated via the RDMP form.

8.6. **Will you transfer your data or materials to a managed archive or repository during the project, after the project, or after the retention period? Which discipline specific or institutional archives will be considered?**
*Note: Some funding agencies and publishers may require lodgement with an archive or repository. Retain a copy at VU where possible.**

The student researcher will retain a copy of all data, materials and records to the university drive as well as keep a second backup of files in my password protected personal hard-drive during and after the project (including the retention period). The results of the will be made available through the VU Research Repository; and will form a part of a published PhD thesis, as well as potential journal articles and conference publications.

8.7. **When further retention of data and materials is no longer required, responsible disposal methods should be adopted. Disposal software should also be adopted if digital software, computer hardware, disks or storage media are reused or retired. What methods of appropriate disposal or destruction will be employed?**
*Note: Personal, sensitive or confidential information, both digital and hardcopy, will require secure destruction or disposal. For other materials you may need to refer to the Hazardous Materials Policy, Animal Ethics Standard Operating Procedures, or the Ethics and Biosafety site found on the VU Office for Research website.**

Disposal software will be adopted after the retention period for all data that is no longer needed according to VU Policy and Procedures on Data Management and Disposal and the Data Management Plan. All data and materials will be destroyed by the VU document destruction facility after the retention period. If required, all research data will be destroyed following approval by the Public Record Office Victoria. Research will be destroyed via paper shredding for hard-copy materials and reformatting for electronic data.

SECTION 9 - DISSEMINATION/PUBLICATION OF RESEARCH RESULTS

Publication Details

9.1. **Indicate how the results of this research will be reported or published.***
- ☑ Thesis
- ☑ Journal article(s)
- ☐ Book
- ☑ Research report to collaborating organisations
- ☑ Conference presentation(s)
- ☐ Recorded performance
- ☐ Other

9.2. **Will any contractual agreement exist between the researchers and a third party that will restrict publication of the research findings?***
- ○ Yes
- ⦿ No

9.3. **Are there any other restrictions on publications or reports resulting from this project?***
- ○ Yes
- ⦿ No

SECTION 10 - OTHER DETAILS

Comments

10.1. **In your opinion, are there any other ethical issues involved in the research?***
- ○ Yes
- ⦿ No

10.2. **Additional information and comments to support this application:**

This question is not answered.

SECTION 11 - DOCUMENTS, ATTACHMENTS AND SUPPLEMENTARY FORMS

Required Attachments
The following documentation **must** be attached to your application:

- Scanned copy of the Declaration Form for External Investigators (if applicable)

- Copy of the 'Information to Participants Involved in Research' form *(Please use the templates provided on the Human Research Ethics website)*

- Copy of Consent Forms to be used in the research *(Please use the templates provided on the Human Research Ethics website)*

- Any flyers or other advertising material to be used in the research

- Copy of questionnaires

- Copy of interview schedules

11. **Please attach each of the items specifically listed above as well as any other supporting documentation.**
All documentation must be <u>accurately titled and referenced to</u> within the body of your application where appropriate (i.e. "Appendix A - Declaration Form", "Appendix F - Risk Factor Assessment Questionnaire", etc.). Please limit file types to .doc, .docx, .xls, .xlsx, .pdf, or small-medium images (ie, .gif, .jpg).*

1	Document type	Soft copy
	Name	Consent Form
	Reference (Document Title)	Consent Form - Brett Quayle.docx
	Description	
2	Document type	Soft copy
	Name	Information to Participants Involved in Research
	Reference (Document Title)	Participant Information - Brett Quayle.docx
	Description	Participant Information - Brett Quayle.docx
3	Document type	Soft copy
	Name	Declaration Form for External Investigators
	Reference (Document Title)	
	Description	
4	Document type	Soft copy
	Name	Reference List
	Reference (Document Title)	Appendix A - Reference List.docx
	Description	Appendix A - Reference List
5	Document type	Soft copy
	Name	Advertising Material (flyers etc.)
	Reference (Document Title)	Appendix D - Flyer.docx
	Description	Appendix D - Flyer
6	Document type	Soft copy
	Name	Questionnaire
	Reference (Document Title)	Appendix B - Questionnaire.docx
	Description	Appendix B - Questionnaire
7	Document type	Soft copy
	Name	Interview Schedule
	Reference (Document Title)	Appendix C - Interview Schedule - Brett Quayle.docx
	Description	Appendix C - Interview Schedule
8	Document type	Soft copy
	Name	Research Data Materials Form
	Reference (Document Title)	Appendix E Research-Data-Materials-form.docx
	Description	
9	Document type	Soft copy
	Name	Amendment email Feb 2020
	Reference (Document Title)	HRE17-188 Amendment memo Feb 2020.msg
	Description	
10	Document type	Soft copy
	Name	Survey Participant Information (Updated)
	Reference (Document Title)	Survey Participant Information - Brett Quayle.docx
	Description	
11	Document type	Soft copy
	Name	Annual report 2019
	Reference (Document Title)	HRE17-188 Annual report 2019.doc
	Description	

Note: Please click the Question Help icon above for instructions on how to upload documents and use this table.

If you are certain that you do not need to supply a Consent Form or Information to Participants Involved in Research (both of which are mandatory), please tick Hard Copy and type 'N/A' in the Reference field.

SECTION 12 - SUBMISSION DETAILS

Declaration

> **I / we, the undersigned, declare the following:**
>
> - I / we accept responsibility for the conduct of the research project detailed above in accordance with:
>   - a. the principles outlined in the National Statement on Ethical Conduct in Human Research (2007);
>   - b. the protocols and procedures as approved by the HREC;
>   - c. relevant legislation and regulations.
>
> - I / we will ensure that HREC approval is sought using the Changes to the Research Project process outlined on the Human Research Ethics website if:
>   - a. proposing to implement change to the research project;
>   - b. changes to the research team are required.
>
> - I / we have read the National Statement on Ethical Conduct in Human Research prior to completing this form.
>
> - I / we certify that all members of the research team involved the research project hold the appropriate qualifications, experience, skills and training necessary to undertake their roles.
>
> - I / we will provide Annual / Final reports to the approving HREC within 12 months of approval or upon completion of the project if earlier than 12 months.
>
> - I / we understand and agree that research documents and/or records and data may be subject to inspection by the VUHREC, Ethics Secretary, or an independent body for audit and monitoring purposes.
>
> - I / we understand that information relating to this research, and about the investigators, will be held by the VU Office for Research. This information will be used for reporting purposes only and managed according to the principles established in the Privacy Act 1988 (Cth) and relevant laws in the States and Territories of Australia.

1	ID	E5000112
	Name	ASPR NICK SCIULLI
	Role	Chief Investigator
	Type	Internal
	Declaration signed?	Employed
	Signed on	26/09/2017
2	ID	E5101829
	Name	PROF ELISABETH WILSON-EVERED
	Role	Associate Investigator
	Type	Internal
	Declaration signed?	Employed
	Signed on	24/09/2017
3	ID	S4518058
	Name	MR Brett Lee Quayle
	Role	Student
	Type	Student
	Declaration signed?	Employed
	Signed on	21/09/2017

Note: Please click on your name in the table above to complete your declaration; or click on the name of an External Investigator to acknowledge that their declaration has been supplied.

Declaration Instructions and Information

- A digital signature must be supplied by each and every member of the research team using the declaration table above.
- The 'Needs Signature' icon ![Needs Signature icon] shows which records you are responsible for signing.
- Physical signatures are not required for VU staff and students in applications using form version v.13-07.
- External Investigators do not have access to Quest. The Chief Investigator must supply a completed physical declaration on their behalf by following the steps below:
  1. Send the person a copy of the full application form (including any attachments), as well as the **Declaration Form for External Investigators** document.
  2. Once returned, attach the signed *External Investigator Declaration Form* document in 'Section 11 - Required Attachments'.
  3. Enter into the External Investigator's record in the above declaration table and mark the checkbox to indicate these steps have been completed, include the date you have done so.
     The 'sighted by' field will automatically populate with your name. *(Only the Chief Investigator will have permission to complete this step.)*
- The application cannot be submitted until all members of the research team have logged in and completed this declaration.

Finalise Application

<u>Reminders</u>

- All applications must be sighted and approved by <u>all</u> members of the research team and any relevant parties. Please ensure each member of the research team has completed their declaration in *'Section 12 - Declaration'* above, including any declaration forms supplied on behalf of External Investigators. *Applications will not be reviewed without appropriate authorisation.*

- It is <u>strongly recommended</u> that you save a PDF version of your application before submitting as you will lose access to the electronic record while it undergoes formal review.

- **You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.**

<u>Ready to Submit?</u>

- Once the form is complete and all documents are attached, **click on the** *'Action'* **tab** above the left-hand form navigation, then **click** *'Submit Application'* to forward the application to the Ethics Secretary to be reviewed and assigned to a Committee meeting.

- You will receive an automatic email notification from Quest when your application has been successfully submitted.

- *Note: Only a Chief Investigator is able to submit an application for ethical approval. The Chief Investigator who is marked as the primary contact for this application is:*

ASPR NICK SCIULLI

Appendix D: Recruitment email to councils

From: Brett Lee Quayle [mailto:brett.quayle1@live.vu.edu.au]
Sent: Wednesday, 6 September 2017 1:12 PM
To: [Identity removed]
Subject: Victoria University Research Collaboration Opportunity

Dear [Identity Removed]

My name is Brett Quayle and I'm currently conducting research with Victoria University and I'd like to have a chat with you about potentially collaborating on a research project.

We are examining sustainability initiatives in local council areas and want to learn more about organisational strategy, leadership, sustainability reporting, and community engagement. Because it is a diverse topic we are looking for a range of opinions from council representatives, where I believe your insights would be invaluable. We are also developing a survey on Victorian residents' climate change perceptions and their environmental behaviour, for which I hope can directly assist your council in your future endeavours as we would be willing to share the findings with you.

Would you like to arrange a time to talk about this further? If you're so willing, I would also be interested in speaking with your colleagues in the organisational management team.

I sincerely appreciate your time and look forward to speaking with you further about this project.

Warm Regards,

Brett Quayle | Psychologist | PhD Candidate

Victoria University, Ballarat Road, Footscray VIC 3011

T: +61 414 677709 **E:** brett.quayle1@live.vu.edu.au

Appendix E: Information to Participants Involved in Research (Councils)

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to take part in a research project entitled *Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement.*

This project is being conducted by PhD Student, Brett Quayle as part of a study at Victoria University under the supervision of Associate Professor Nick Sciulli and Professor Elisabeth Evered-Wilson, both from the College of Business.

Project explanation

This project is focused on examining collective environmental actions of local communities in responding to the risk of climate change. This will involve identifying the decision-making processes within local governments that contribute to action on climate change, and its considerations of the psychological adjustments amongst the public to a changing climate. The project focus is from a perspective of psychology and accountability, where we are hoping to explore formal and informal mechanisms of climate change accountability.

There are two parts to this study:
1. This project will examine what it means for local government areas in Victoria to be accountable for climate change, where we will examine both the organisational structure of local government areas and the processes involved in community engagement.
2. This project will examine the underlying psychological responses and attitudes of community residents toward climate change and how this influences environmental actions.

For the first part of the project, this project will examine the organisational initiatives that address climate change responses within local government areas in Victoria, Australia; which include strategic direction, management decision-making, organisational communication, performance reporting, and stakeholder engagement. The second part will identify the psychological and social dynamics that contribute to environmental actions of community members within these local government areas.

What will I be asked to do?

Representatives within your local council will be asked to partake in an interview to discuss current organisational initiatives (i.e. strategy, leadership, sustainability reporting, and community engagement) related to climate change response in your local community. We are seeking diverse viewpoints, so encourage representatives from different areas within your council to take part.

What will I gain from participating?

The purpose of this research project is to use any research findings to inform government policy on climate change response and to contribute resources to your council's environmental strategy. An analysis of results will be shared with your council, which have the potential to inform the organizational processes related to climate change decision making and engagement. Further, the findings may further provide your council with information on how to enhance your community engagement initiatives, as well as advice on connecting with your residents in a more tailored and meaningful way.

How will the information I give be used?

All data collected in this study will be stored confidentially on an approved password protected computer. Only Brett Quayle, Associate Professor Nick Sciulli and Professor Elisabeth Evered-Wilson will have access to identified data. The data will be coded in a de-identified manner and subsequently analysed and reported in such a way that responses will not be able to be linked to any individual. The data you provide will only be used for the specific research purposes of this study.

What are the potential risks of taking part in this project?

There is minimal risk associated with participating in this research. Participation in this study is completely voluntary and you are free to withdraw from this study at any time without prejudice or penalty. If you wish to withdraw, simply discontinue from the interview. If you do withdraw from the study, the information that you provide to that point will be deleted and will not be included in the study.

How will this project be conducted?

The interviews will take between 30-45 minutes. Depending on your availability, interviews can be conducted either by telephone, in-person, or Skype.

Who is conducting the study?

Chief Investigator
Associate Professor Nick Sciulli
Tel: (03) 9919 4424
Email: nick.sciulli@vu.edu.au

Secondary Investigator
Professor Elisabeth Wilson-Evered
Tel: (03) 9919 9264
Email: elisabeth.wilson-evered@vu.edu.au

Student Investigator
Brett Quayle
Tel: 0414677709
Email: brett.quayle1@live.vu.edu.au

Any queries about your participation in this project may be directed to the Student Investigator, Brett Quayle.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix F: Information to Participants Involved in Research (Residents)

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled *Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement.*

This project is being conducted by PhD Student, Brett Quayle as part of a study at Victoria University under the supervision of Associate Professor Nick Sciulli and Professor Elisabeth Evered-Wilson, both from the College of Business.

Project explanation

This project is focused on examining collective environmental actions of local communities in responding to the risk of climate change. This will involve identifying the decision-making processes within local governments that contribute to action on climate change, and its considerations of the psychological adjustments amongst the public to a changing climate. The project focus is from a perspective of psychology and accountability, where we are hoping to explore formal and informal mechanisms of climate change accountability.

There are two parts to this study:
1. This project will examine what it means for local government areas in Victoria to be accountable for climate change, where we will examine both the organisational structure of local government areas and the processes involved in community engagement.
2. This project will examine the underlying psychological responses and attitudes of community residents toward climate change and how this influences environmental actions.

For the first part of the project, this project will examine the organisational initiatives that address climate change responses within local government areas in Victoria, Australia; which include strategic direction, management decision-making, organisational communication, performance reporting, and stakeholder engagement. The second part will identify the psychological and social dynamics that contribute to environmental actions of community members within these local government areas.

What will I be asked to do?

You will be asked to complete a survey on your personal environmental actions, how they compare to other people in your community, and your level of community involvement. You will also be asked about your personal views on climate change. Lastly, you will also be asked to complete non-identifiable demographic information.

What will I gain from participating?

No incentives are provided for your participation; however, the findings of this research can be used to inform government policy on ways to involve the community in responding to climate change.

How will the information I give be used?

All data collected in this study will be stored confidentially on an approved password protected computer. Only Brett Quayle, Associate Professor Nick Sciulli and Professor Elisabeth Evered-Wilson will have access to identified data. The data will be coded in a de-identified manner and subsequently analysed and reported in such a way that responses will not be able to be linked to any individual. The data you provide will only be used for the specific research purposes of this study.

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

What are the potential risks of participating in this project?

There is minimal risk associated with participating in this research. Participation in this study is completely voluntary and you are free to withdraw from this study at any time without prejudice or penalty. If you wish to withdraw, simply discontinue from the interview. If you do withdraw from the study, the information that you provide to that point will be deleted and will not be included in the study.

How will this project be conducted?

You will be provided with a link to complete the survey electronically, which should take no more than 20 minutes to complete.

Who is conducting the study?

Chief Investigator
Associate Professor Nick Sciulli
Tel: (03) 9919 4424
Email: nick.sciulli@vu.edu.au

Secondary Investigator
Professor Elisabeth Wilson-Evered
Tel: (03) 9919 9264
Email: elisabeth.wilson-evered@vu.edu.au

Student Investigator
Brett Quayle
Tel: 0414677709
Email: brett.quayle1@live.vu.edu.au

Any queries about your participation in this project may be directed to the Student Investigator, Brett Quayle.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix G: Facebook recruitment flyer

Appendix H: Consent form for council staff

VICTORIA UNIVERSITY
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CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:
You are invited to participate in a study investigating collective environmental actions of local communities in responding to the risk of climate change. This will involve identifying the decision-making processes within local governments that contribute to action on climate change, and its considerations of the psychological adjustments amongst the public to a changing climate.
There are two parts to this study:
1.   This project will examine what it means for local government areas in Victoria to be accountable for climate change, where we will examine both the organisational structure of local government areas and the processes involved in community engagement.
2.   This project will examine the underlying psychological responses and attitudes of community residents toward climate change and how this influences environmental actions.

The risks associated with participating in this research are minimal. You will be asked to complete an anonymous online survey on your personal environmental actions, how they compare to other people in your community, and your level of community involvement. You will also be asked about your personal views on climate change.

CERTIFICATION BY PARTICIPANT

I, "[Click here & type participant's name]"
of "[Click here & type participant's suburb]"

certify that I am at least 18 years old* and that I am voluntarily giving my consent to participate in the study:
Climate Change Strategy in Local Government: The Role of Psychological Adaptation in Understanding Community Engagement being conducted at Victoria University by Associate Professor Nick Sciulli

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Brett Quayle and that I freely consent to participation involving the below mentioned procedures:

*   A semi-structured interview with the student researcher, lasting no more than 60 minutes.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:

Date:

Any queries about your participation in this project may be directed to the Chief Investigator researcher

Associate Professor Nick Sciulli
Tel: (03) 9919 4424
Email: nick.sciulli@vu.edu.au

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix I: Consent form for residents

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:
You are invited to participate in a study investigating collective environmental actions of local communities in responding to the risk of climate change. This will involve identifying the decision-making processes within local governments that contribute to action on climate change, and its considerations of the psychological adjustments amongst the public to a changing climate.
There are two parts to this study:
1.   This project will examine what it means for local government areas in Victoria to be accountable for climate change, where we will examine both the organisational structure of local government areas and the processes involved in community engagement.
2.   This project will examine the underlying psychological responses and attitudes of community residents toward climate change and how this influences collective actions.

The risks associated with participating in this research are minimal. You will be asked to complete an anonymous online survey on your personal environmental actions, how they compare to other people in your community, and your level of community involvement. You will also be asked about your personal views on climate change.

CERTIFICATION BY PARTICIPANT

I, "[Click here & type participant's name]"
of "[Click here & type participant's suburb]"

certify that I am at least 18 years old* and that I am voluntarily giving my consent to participate in the study:
Collective Climate Actions: An Interdisciplinary Analysis of Citizen Behaviour and Local Government Accountability being conducted at Victoria University by Associate Professor Nick Sciulli

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Brett Quayle and that I freely consent to participation involving the below mentioned procedures:

- Complete an online survey, lasting no more than 10 minutes, and contains the following:
  o   Your perceptions of climate change
  o   Your environmental actions
  o   General demographic information

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed:

Date:

Any queries about your participation in this project may be directed to the Chief Investigator researcher

Associate Professor Nick Sciulli
Tel: (03) 9919 4424
Email: nick.sciulli@vu.edu.au

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix J: Semi-structured interview schedule

Climate change response – any actions that relate to the natural environment (sustainability practices, Adaptation, mitigation etc), refer to the person's role when speaking to individuals

- From your perspective, what, if any, strategies within your council are there for responding to climate change?
  - How are these strategies enforced?
  - What decision making strategies are utilised when planning for climate change in your area/department/role?
  - How do senior decision makers facilitate conversations concerning climate change response in your council?
  - Describe the information that is exchanged within your organisation in relation to climate change response and the ways in which they are discussed?
- In your opinion, how is accountability for climate change defined within your local council?
  - Mention what accountability might mean, is it hierarchical (i.e. chain of command), or does it come from community demand?
  - What are the current methods of measuring for climate change response? Are there other methods that might be useful?
    - What do these mechanisms look like in your council?
      - Are there current ways of enforcing these mechanisms?
  - What are the mechanisms linking accountability with individual level consequences and organizational performance?
  - Are there any mechanisms in place that link individual performance to organisational objectives concerning climate change response?
- What are the contextual and environmental factors (i.e. drivers and influencers) that set the stage for public sector accountability mechanisms for climate change?
  - How exactly do various government reform programs, such as contracting and managing for results, affect the accountability relationships?
- In what ways does your local council engage with members of the community in planning for climate impacts, such as flooding, coastal erosion or severe storms?
  - In your opinion, how do members of the community hold your local council to account for climate impacts?
  - What would better facilitate effective climate action in your area?
- In what ways would behavioural science influence the way in which you engage community in preparing for future climate impacts? Would local council responses to climate change be more effective if behavioural science research was incorporated into planning?

Appendix K: Questionnaire

Do you consent to participate in this survey?
☐ Yes
☐ No

PART 1: DEMOGRAPHIC AND BACKGROUND DETAILS
Firstly, we would like to collect some background information. Please answer the following questions by choosing one of the options or entering information in the space provided.

1. Gender:
☐ Male
☐ Female
☐ Other

2. Age Range:
☐ 18-24
☐ 25-34
☐ 35-44
☐ 45-54
☐ 55-64
☐ 65-74
☐ 75 and older

3. What is your highest education level?
☐ Year 10 or less
☐ Year 11
☐ Year 12
☐ College certificate or diploma
☐ Trade qualification/apprenticeship
☐ Undergraduate degree
☐ Postgraduate degree
☐ Other (please specify)

4. How would you rate your current residential circumstances?
☐ Urban
☐ Suburban
☐ Country town
☐ Rural
☐ Rural residential

5. Approximately, how far in kilometres is your residence from the town centre or central business district (CBD)?
☐ 0-25kms
☐ 26-50kms
☐ 51-100kms
☐ 101-250kms
☐ 250kms and over

6. For how many years have you lived in the general area that you are now living?

☐ 0 – 10 yrs
☐ 11 – 20 yrs
☐ 21 – 30 yrs
☐ 31 – 40 yrs
☐ 41 – 50 yrs
☐ 50 + yrs

7. How would you describe your current political party identification or preference?
☐ Liberal
☐ Labor
☐ National Party
☐ Greens
☐ One Nation
☐ Independent
☐ Other

8. What is your household income (before tax)?
☐ $40,000 or less
☐ $40,001 - $60,000
☐ $60,001 - $80,000
☐ $80,001 - $100,000
☐ $100,001 - $150,000
☐ $150,001 - $200,000
☐ Greater than $200,000

9. Have you completed a survey in the past two years addressing environmental issues and/or climate change?
☐ Yes
☐ No

PART 2: SURVEY
Please indicate your level of agreement to the following statements:

1. I identify with other people within my community.						
Strongly disagree						Strongly agree

2. I see myself as a member of the community.						
Strongly disagree						Strongly agree

3. I am glad to be a member of the community.						
Strongly disagree						Strongly agree

4. I feel strong ties with people within my community.						
Strongly disagree						Strongly agree

Please indicate your level of agreement to the following statements:

1. I have changed the way I think about the seriousness of environmental problems because of climate change					
Strongly disagree					Strongly agree

2. Increasingly I find myself less likely to attend to media reports, articles and discussions about the nature or impacts of climate change					
Strongly disagree					Strongly agree
3. I have seriously thought about alternative places to live because of the increasingly evident impacts of climate change					
Strongly disagree					Strongly agree
4. Climate change has forced me to change the way I think about and view how we live in and use our natural environment in Australia					
Strongly disagree					Strongly agree
5. I have often discussed my thoughts and feelings about climate change with others over the past several years					
Strongly disagree					Strongly agree
6. I tend to think differently these days about what is acceptable and sustainable and not acceptable with respect to consumer products and packaging, and consumption in general					
Strongly disagree					Strongly agree
7. Media images of climate change consequences from around the world have changed my appreciation of how soon we are likely to experience the impacts of climate change					
Strongly disagree					Strongly agree
8. My response to the possible consequences of climate change has moved from a sense of uncertainty and concern to an acceptance that profound changes are taking place and that I must act accordingly					
Strongly disagree					Strongly agree
9. In recent years I have thought more about what I and my family might do to reduce our carbon footprint					
Strongly disagree					Strongly agree
10. I am increasingly aware of how my daily activities might be affecting the natural environment and exacerbating the problem of climate change					
Strongly disagree					Strongly agree

The following items refer to the procedures used by your local government in responding to climate change. To what extent:

1. Have you been able to express your views and feelings during those procedures?				
To a small extent				To a large extent?
2. Have you had influence over the outcome by those procedures?				
To a small extent				To a large extent?
3. Have those procedures been applied consistently?				
To a small extent				To a large extent?
4. Have those procedures been free of bias?				
To a small extent				To a large extent?
5. Have those procedures been based on accurate information?				
To a small extent				To a large extent?
6. Have you been able to appeal the outcome arrived at by those procedures?				
To a small extent				To a large extent?

7. Have those procedures upheld ethical and moral standards?				
To a small extent				To a large extent?

How much do you agree with the following statements:

1. Communities can do something together to reduce the negative effects of climate change						
Strongly disagree						Strongly agree

2. Communities can work together to reduce the negative impacts of climate change						
Strongly disagree						Strongly agree

3. By working together, communities can achieve the goal of reducing the negative effects of climate change						
Strongly disagree						Strongly agree

4. Large-scale groups are capable to solve the various problems that may arise in joint activities against climate change						
Strongly disagree						Strongly agree

5. Communities can plan and implement interventions together that are directed against the negative consequences of climate change.						
Strongly disagree						Strongly agree

6. Communities can solve various problems that may arise through joint efforts to combat climate change?						
Strongly disagree						Strongly agree

7. Communities can do something about climate change together, even if they face unexpected challenges and problems						
Strongly disagree						Strongly agree

Please rate your willingness to engage in the following behaviours:

1. Write to your local government about climate change						
Not at all						Very much

2. Take part in a protest on climate change						
Not at all						Very much

3. Donate to a campaign group on climate change						
Not at all						Very much

4. Do something with members of the community to address climate change						
Not at all						Very much

5. Join a campaign group to tackle climate change						
Not at all						Very much

Appendix L: Exploratory factor analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.95
Bartlett's Test of Sphericity	Approx. Chi-Square	16762.24
	df	435
	Sig.	.000

|	Factor 1: Collective efficacy	Factor 2: Psychological adaptation	Loadings Factor 3: Procedural Justice	Factor 4: Collective Action Tendencies	Factor 5: Social identity	Communalities
I have changed the way I think about the seriousness of environmental problems because of climate change.		.65				.54
Climate change has forced me to change the way I think about and view how we live in and use our natural environment in Australia.		.73				.75
I tend to think differently these days about what is acceptable and sustainable and not acceptable with respect to consumer products and packaging, and consumption in general.		.74				.62
Media images of climate change consequences from around the world have changed my appreciation of how soon we are likely to experience the impacts of climate change.		.60				.57
My response to the possible consequences of climate change has moved from a sense of uncertainty and concern to an acceptance that profound changes are taking place and that I must act accordingly.		.66				.67
In recent years I have thought more about what I and my family might do to reduce our carbon footprint.	.41	.74				.83
I am increasingly aware of how my daily activities might be affecting the natural environment and exacerbating the problem of climate change.	.42	.72				.80
I identify with other people within my community.					.72	.54
I see myself as a member of the community.					.84	.73
I am glad to be a member of the community.					.87	.80
I feel strong ties with people within my community.					.83	.71
Communities can do something together to reduce the negative effects of climate change.	.83					.88
Communities can work together to reduce the negative impacts of climate change.	.85					.91
By working together, communities can achieve the goal of reducing the negative effects of climate change.	.87					.87

Community groups are capable to solve the various problems that may arise in joint activities against climate change.	.75					.69
Communities can plan and implement interventions together that are directed against the negative consequences of climate change.	.78					.77
Communities can solve various problems that may arise through joint efforts to combat climate change.	.80					.79
Communities can do something about climate change together, even if they face unexpected challenges and problems.	.81					.84
Have you been able to express your views and feelings during those procedures?			.53			.40
Have you had influence over the outcome by those procedures?			.54			.37
Have those procedures been applied consistently?			.73			.53
Have those procedures been free of bias?			.77			.62
Have those procedures been based on accurate information?			.82			.75
Have you been able to appeal the outcome arrived at by those procedures?			.58			.38
Have those procedures upheld ethical and moral standards?			.81			.69
Write to your local government about climate change.					.65	.53
Take part in a protest on climate change.					.69	.76
Donate to a campaign group on climate change.					.59	.61
Do something with members of the community to address climate change.	.46	.42			.61	.81
Join a campaign group to tackle climate change.					.73	.82
Eigenvalue	12.78	4.03	2.44	1.66	1.36	
% of Variance	42.59	13.42	8.12	5.52	4.55	
Cumulative % of Variance		56.02	64.13	69.65	74.20	

Appendix M: Factorial Algorithm Method for Item Parcelling

Latent variables	Item score	Factor loading	PA01	PA02	PA03	Parcel Mean score
Psychological Adaptation						
I have changed the way I think about the seriousness of environmental problems because of climate change.	1.66	.65		•		
In recent years I have thought more about what I and my family might do to reduce our carbon footprint.	1.45	.74		•		1.55
My response to the possible consequences of climate change has moved from a sense of uncertainty and concern to an acceptance that profound changes are taking place and that I must act accordingly.	1.58	.66			•	
I am increasingly aware of how my daily activities might be affecting the natural environment and exacerbating the problem of climate change.	1.49	.72			•	1.53
Climate change has forced me to change the way I think about and view how we live in and use our natural environment in Australia.	1.51	.73			•	
I tend to think differently these days about what is acceptable and sustainable and not acceptable with respect to consumer products and packaging, and consumption in general.	1.41	.74	•			
Media images of climate change consequences from around the world have changed my appreciation of how soon we are likely to experience the impacts of climate change.	1.68	.60	•			1.55
Collective Action Tendencies			CAT01	CAT02	CAT03	
Write to your local government about climate change.	1.73	.65			•	1.73
Take part in a protest on climate change.	1.63	.69		•		
Do something with members of the community to address climate change.	1.56	.61		•		1.59
Donate to a campaign group on climate change.	1.76	.59	•			
Join a campaign group to tackle climate change.	1.69	.73	•			1.73
Collective Efficacy			CE01	CE02	CE03	
Communities can work together to reduce the negative impacts of climate change.	1.46	.85		•		
Communities can plan and implement interventions together that are directed against the negative consequences of climate change.	1.58	.78		•		1.52
By working together, communities can achieve the goal of reducing the negative effects of climate change.	1.52	.87	•			
Community groups are capable to solve the various problems that may arise in joint activities against climate change.	1.67	.75	•			1.59

			PJ01	PJ02	PJ03	
Communities can do something together to reduce the negative effects of climate change.	1.45	.83			•	
Communities can solve various problems that may arise through joint efforts to combat climate change.	1.65	.80			•	1.57
Communities can do something about climate change together, even if they face unexpected challenges and problems.	1.59	.81			•	
Procedural Justice			*PJ01*	*PJ02*	*PJ03*	
Have you been able to express your views and feelings during those procedures?	1.46	.53	•			1.50
Have those procedures been based on accurate information?	1.53	.82	•			
Have you had influence over the outcome by those procedures?	1.23	.54		•		1.38
Have those procedures upheld ethical and moral standards?	1.52	.81		•		
Have those procedures been applied consistently?	1.42	.73			•	
Have those procedures been free of bias?	1.39	.77			•	1.37
Have you been able to appeal the outcome arrived at by those procedures?	1.29	.58			•	

Appendix N: Direct effects model
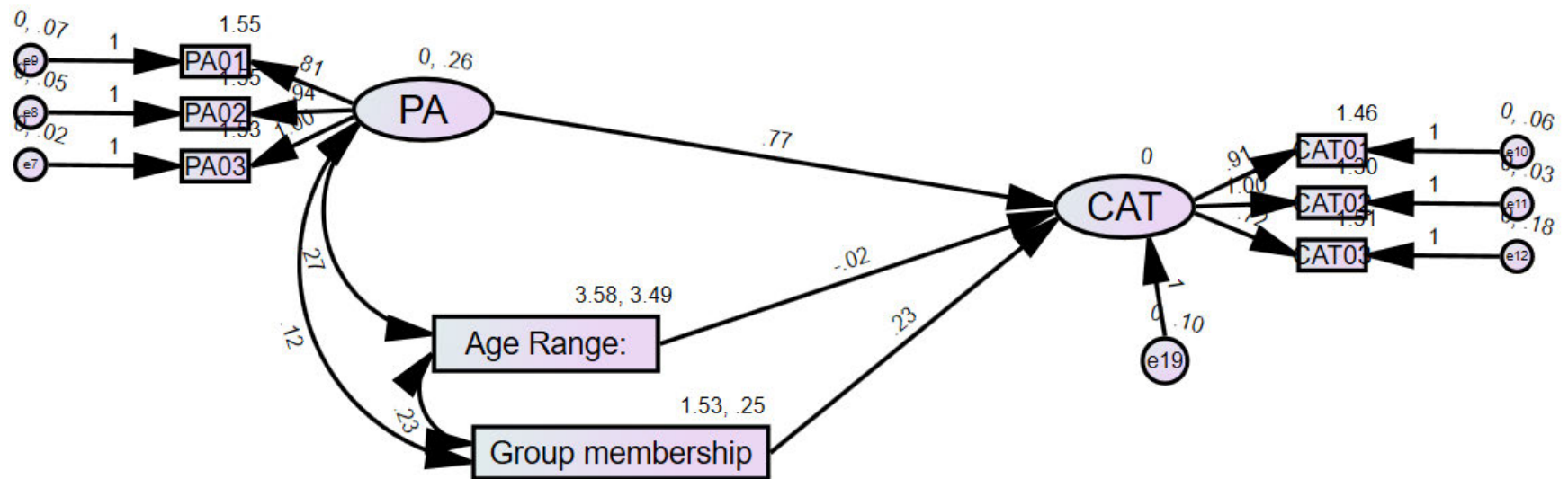
Appendix O: Indirect effects (Mediation)
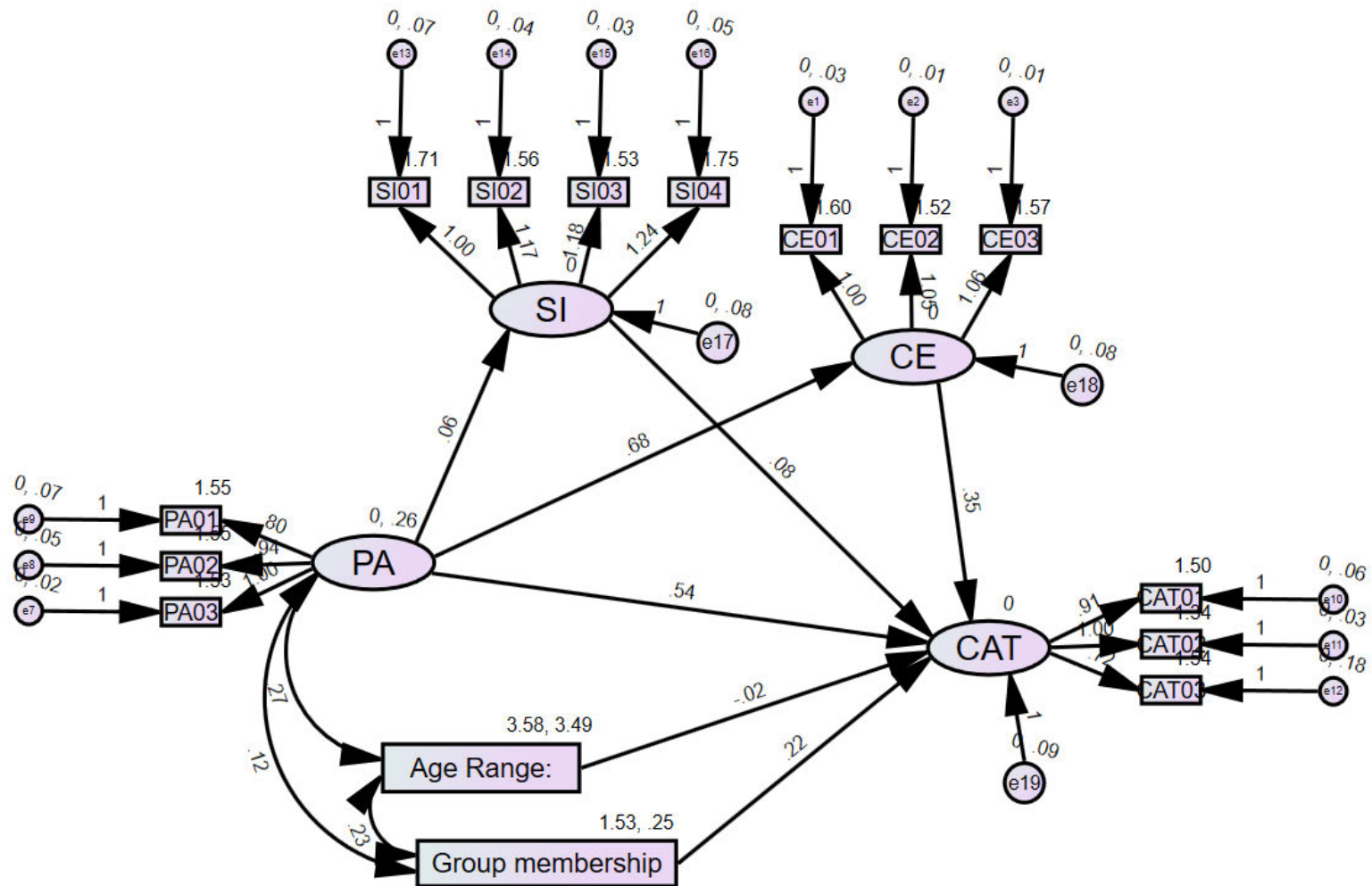
Appendix P: Indirect effects (Moderation)

Measure	Threshold*	Original Model (27 Variables)	PA3xPJ3 removed (26 variables	PA2xPJ2 removed (25 variables)	PA1xPJ3 removed (24 variables	PA1xPJ2 removed (23 variables) – Final Model
CMIN/DF	< 3	12.28	10.01	7.79	5.65	2.57
Comparative Fit Index (CFI)	> .92	.81	.85	.88	.92	.97
Tucker-Lewis Index (TLI)	> .92	.78	.82	.86	.91	.97
Root Mean Square Error of Approximation (RMSEA)	< .07	.14	.12	.11	.09	.05
SRMR	< .08	.04	.04	.04	.04	.03

*Hair, Black, Babin and Anderson (2010); removal of one variable at a time to achieve Model Fit