Confronting the Inconvenient Truth
The Politics and Policies of Australian Climate Change Adaptation Planning

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Statement of originality

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted previously, either in its entirety or substantially, for a higher degree or qualification at any other university or institute of higher learning. I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Lisette B. Collins

To confront - *transitive verb*

1. face in hostility or defiance

2. face up to and deal with (a problem, difficulty, etc.).

<div align="right">(Australian Oxford Dictionary 2nd edition, 2004)</div>

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Abstract

Climate change adaptation policy development has been taking place for almost a decade, but thorough analysis of adaptation policy across Australia is yet to be achieved. This thesis explains variation in the identification of vulnerability in Australian climate change adaptation plans (CCAPs). It asks: how can we explain the variation in the prioritisation of socio-political concerns in CCAPs developed by local governments across Australia? The research shows that a general indistinct remit within local government contributes to a variety of problem definitions regarding climate change across councils that result in variation in identification and prioritisation of socio-political concerns. The thesis also engages with the question of 'adaptation as transformation' and concludes that transformation has not yet occurred in the Australian adaptation context. This thesis lays out the findings of a personally collated database of 97 climate change adaptation plans (CCAPs) from across Australia. CCAPs are categorised as either biophysical impacts-based or socio-political inclusive. Surveys and interviews were conducted to examine this variation, with specific attention paid to the inclusion of vulnerable groups and mental health in adaptation planning. Variation in the inclusion of and approaches to education and community consultation (key determinants of adaptive capacity) was also examined. The research is located at the intersection of the vulnerability literature, public policy, and the politics of climate change adaptation planning. As well as categorising Australian CCAPs as 'transitional' rather than 'transformational' adaptation, the research contributes a new theory – 'the politicisation of vulnerability' to the vulnerability literature, provides a new Australia-wide case study for the public policy literature, and offers a unique database of Australian local government CCAPs.

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Abbreviations

ABS: Australian Bureau of Statistics
ACT: Australian Capital Territory
AECOM: consulting firm (architecture, engineering, consulting, operations, and
    maintenance)
ALGA: Australian Local Government Association
CCAP: climate change adaptation plan
COAG: Council of Australian Governments
CPI: climate policy integration
CSIRO: Commonwealth Scientific and Industrial Research Organisation
EMRC: Eastern Metropolitan Regional Councils
GHD: consulting firm formerly known as 'Gutteridge Haskins & Davey' now known
    only as GHD
HCCREMS: Hunter and Central Coast Regional Environmental Management
    Strategy
IAP2: International Association for Public Participation
ICLEI: International Council for Local Environmental Initiatives
IPCC: Intergovernmental Panel for Climate Change
KPMG: Klynveld Peat Marwick Goerdeler (consulting firm)
LAPP: Local Adaptation Pathways Program
LCS: local conservation strategies
LGAQ: Local Government Association of Queensland
NCCARF: National Climate Change Adaptation Research Facility
NSW: New South Wales
OECD: Organisation for Economic Co-operation and Development
RTA: Roads and Traffic Authority
SKM: Sinclair Knight Mertz
TAS: Tasmania
UK: United Kingdom
UNDP: United Nations Development Programme
UNFCCC: United Nations Framework Convention on Climate Change
URPS: Urban and Regional Planning Solutions
VIC: Victoria
WA: Western Australia

Chapter One: Introduction to Australian Climate Change Adaptation Planning

This thesis explains variation in the identification of vulnerability in Australian climate change adaptation plans (CCAPs). It asks: how can we explain the variation in the prioritisation of socio-political concerns in CCAPs developed by local governments across Australia? The research develops in three steps, first explaining the broad variation between biophysical-based CCAPs and CCAPs that are inclusive of the socio-political concerns of climate impacts. Second, the specific variation in the inclusion of vulnerable groups and mental health considerations within adaptation planning is explored. Third, specific variation in the inclusion of education and community consultation in adaptation planning is explained. In short, the findings of this research show that the socio-political variation in CCAPs across Australia is a result of the intersection between the negative politics of climate change in the country, the indistinct remit of local government in Australia, and the effect of both on the process of policy 'problem definition' when determining climate risks.

Theoretically, this thesis engages with the concept of vulnerability to develop a new theory: 'the politicisation of vulnerability.' After presenting the reasons for variation in identification of vulnerability in CCAPs, the thesis concludes by questioning where current Australian adaptation planning can be located on Pelling's (2011) spectrum of adaptation. Findings show that current adaptation efforts are characterised as 'transitional'. They cannot be considered 'transformational adaptation,' although a clear possible 'first wave' of transformation is identified. This first chapter will provide an introduction to international and Australian adaptation planning and outline the research question in further detail.

Adapting to Climate Change

The need to adapt to a changing climate is imperative. Over the past three decades, the international community has debated the veracity of climate science and the checks and balances of mitigating emissions while a certain amount of disruption to the Earth's climate was being locked in (IPCC, 2007). Recent development in global emissions reduction targets in the lead-up to the Conference of the Parties in Paris, 2015 bolstered resolve for action on climate change (COP21, 2015). Because some climate change is unavoidable, however, communities are planning (both formally and informally) for the foreseeable changes in their environment while already beginning to feel the effects. The pre-emptive nature of climate change adaptation is not to be seen as a dismissal of mitigation efforts but rather as recognition of the inevitable changes to come and a willingness to prepare. Adaptation was (and in the case of geoengineering still is) considered a moral hazard as some believe adaptation will detract from mitigation efforts (Giddens, 2009; Stilgoe, 2015). But adaptation at its best is a call to begin adapting as well as mitigating; to be designing mutually inclusive policies where possible.

Though climate change is a global issue by nature, this dissertation has a distinctly Australian focus. Australia has one of the most variable climates in the world. Risby et al., in reference to findings by the Australian Bureau of Statistics, conclude that "Australia enjoys the highest inter-annual variability in rainfall of any occupied continent" (1999, p. 156). Hanna et al. point out that "Australia is regarded as being more vulnerable than most OECD countries to climate change, largely because of its 'fragile environment' and highly variable climate that under "pre-climate change conditions, is classified as extreme" (2011a, p. 109s). As the country begins to face the reality of climate change, communities across Australia are (and have been)

developing climate change adaptation plans to deal with increasing vulnerability to rising temperatures, increases in the number of extreme weather events, changes in average rainfall, and sea-level rise. Increased precision in climate modelling for specific areas (Li et al., 2008; UNSW Climate Change Research Centre & NSW Office of Environment and Heritage, 2012) has allowed communities to make better-informed judgements about possible future risks to their natural and built environments. It is these climate risks that Australian communities are identifying, prioritising and planning for at the local government level, even despite a quite vocal and entrenched attitude of scepticism towards climate change across the country. This scepticism may be a minority view but it has nonetheless been the position held by key political leaders (Taylor, 2014; Tranter, 2011).

This attitude of scepticism is an important context to the study of climate change adaptation in Australia. It is crucial to understand that the development of CCAPs across the country often happens within a politically charged environment. Many local governments find themselves on the front line of dealing with the increases in severity and occurrence of extreme weather events and are therefore willing to accept and combat climate change. Nevertheless, there is still a quite vocal contingent in a number of communities who do not accept the science of anthropogenic (human induced) climate change (Participant 12, 2014; Rickards & Howden, 2012). To add further complexity, certain parts of the Australian media, and indeed the Australian federal (and some state) governments are yet to accept the need to adapt to climate change (Bourke, 2015; L. Cox, 2015). Australia's history is fraught with the attempts to undermine climate action from Australian government officials removing a draft chapter on climate change from a federal energy policy blueprint in the 1980s, to an advisor to Paul Keating admitting "we were all sceptics," to John Howard "blocking

Robert Hill's proposed greenhouse trigger for federal environmental approvals and overriding Cabinet to block emissions trading" (Pearse, 2009, pp. 25-26). It is important to keep in mind this particular political barrier to adaptation to best contextualise the work that is taking place in this sector across the country.

Despite this setback to a cohesive national approach to climate change adaptation, local councils across Australia continue to develop CCAPs in response to climate change. This thesis presents four key original contributions to academic research in climate change adaptation. These original contributions are outlined below.

Original Contribution – Empirical

First, the research provides an empirical contribution. This thesis establishes a database of CCAPs from across Australia, a unique contribution that has not been achieved by any academic; federal, state, or local government before. This database has already delivered some positive outcomes for practitioners of adaptation policy across the country. The development of the database of CCAPs has been of particular interest to local governments, academics, and consultants. It has provided a starting point for government employees looking for a literature review of adaptation plans (Anonymous, 2015). It has been requested and used by the climate change coordinator for the Western Australia Local Government Association (Perks, 2014). It has been incorporated into a tool used by Victorian-based adaptation consulting firm Loop & Company (Rance & Silke, 2015). A portion of the database has been published by the Australian Centre of Excellence for Local Government, receiving over 1,400 hits on their website.[1]

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[1] The Australian Centre of Excellence for Local Government website was taken down on 11th February 2016 and I have since moved the database portion to http://sydney.edu.au/environment-institute/news/lisette-collins-to-shine-on-the-big-stage-in-sunny-queensland/

The database captures a unique period in Australia's adaptation journey, the very first stages. This is a significant period to understand as the country continues to develop CCAPs in the future. Furthermore, the database contains CCAP information for the whole country, presenting a holistic view of adaptation in Australia. This provides a point of contrast from the focus on coastal management of climate change adaptation in Australia to date (Gurran et al., 2013; NCCARF, 2015a; Norman, 2009; Walsh et al., 2004).

Using that database, the research presents a categorisation of all collected CCAPs as either biophysical-based or socio-political inclusive in their prioritisation of vulnerability. This categorisation is a crucial step in understanding how councils define their vulnerability to climate change and the findings illustrate the large scope within which local government can determine action for climate adaptation. By categorising the CCAPs as either biophysical-based or socio-political inclusive, a deeper understanding of the variation in adaptation planning is examined, one that goes beyond geographical, resource, or primary industry explanations of variation. This approach is the first of its kind and builds on a range of work (Berry et al., 2011; Cinner et al., 2012; Marshall, 2011) that is yet to be applied in such a systematic, countrywide way.

To achieve this categorisation, key socio-political indicators from the vulnerability literature are identified and applied to the CCAPs collected. While the categorisation of the CCAPs has been crucial to this research, the true utility of the database for practitioners has been the collation of Australian CCAPs in a single repository. Such a collection provides a reference point for local governments seeking to undertake new or review old adaptation plans. In at least one case, the database provided the necessary evidence that other Australian councils are undertaking adaptation thereby

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pushing an initially reluctant council executive to begin their own adaptation plan (Anonymous, 2014).

Original Contribution – Theoretical

Second, the thesis makes two theoretical contributions. It will develop a new theory applicable to climate change adaptation policy introduced as 'the politicisation of vulnerability.' The research offers an explanation for the variation in vulnerability concerns by engaging with the policy process literature to conclude that defining vulnerability is a political rather than a procedural process. The findings from the analysis of CCAPs, specifically the inclusion or exclusion of community education and/or engagement, are used to develop this nuanced understanding of the concept of vulnerability. The 'politicisation of vulnerability' is distinct from theories of vulnerability that have come before and is developed by unpacking the political context and engagement processes through which local governments undertake vulnerability prioritisation in CCAP development. Vulnerability prioritisation is linked to the process of problem definition that each council individually undertakes in the development of climate adaptation policy, a process that is in turn influenced by political context. Thus, the concept of vulnerability is 'politicised' in such a way that is yet to be examined in the academic literature.

The thesis makes a second theoretical contribution to the theory of 'adaptation as transformation.' The concept of adaptation as transformation is a particularly relevant theory as the adaptation literature over the past year has increasingly engaged with the concept (Aall et al., 2015; Fleming et al., 2015b; Fook, 2015; O'Brien & Selboe, 2015). For this reason, the spectrum of adaptation (resilience, transition, transformation) is applied to Australia's adaptation progress to conclude that Australian adaptation efforts represent a transition-based approach. The concluding

chapter of this thesis illustrates that transformational adaptation is not yet taking place in Australia. A specific future path for the 'first wave' of transformation in Australia is laid out based on the findings of the research.

Original Contribution – Policy Case Study

Third, the thesis provides a new case study for the public policy literature. The public policy theories of agenda-setting and problem definition are used to explain the variation in CCAPs both broadly (biophysical vs. socio-political) and specifically (the inclusion of vulnerable groups and/or mental health as priorities in adaptation planning). This involves a unique analysis, examining the intersection of public policy literature and the remit of local government in Australia, as well as analysis of the content of actual CCAPs, and primary interview and survey data about the development of CCAPs. In this way, the policy process is being applied to adaptation policy at a very different level to that focused on within the current literature as this thesis focuses not on the more often discussed global level of climate policy (Bahadur & Tanner, 2014; I. Burton et al., 2002; Pralle, 2009) but rather the local government level, specifically in Australia.

This thesis establishes a variation in the scope of vulnerability concerns that councils consider in their CCAPs, a scope that aids in the characterisation of CCAPs as either biophysical impacts-based or inclusive of socio-political concerns. This chapter will continue with a discussion of key terms before outlining the research question in further detail. It then proceeds to offer a general history of climate change adaptation in Australia and to contextualise climate policy in this country within the history of the difficult political climate in which climate policy development has taken place.

Key Word: 'Climate Change'

Climate change is one of the most ubiquitous terms of the 21st century. It has been questioned, co-opted, pleaded, adopted, misunderstood, misrepresented, and denigrated at varying times by scientists, politicians, media, academics and the public. The Intergovernmental Panel for Climate Change's (IPCC) definition for climate change is: "A statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer)" (IPCC, 2001b, p. 368). Yet this rather simple statement fails to capture the complexity of the politicised notion of climate change as we encounter it daily. For this reason, it is important to lay out three assumptions upon which this research is based.

First, climate change is occurring (IPCC, 1990) and it is anthropogenic (IPCC, 2001a).

Second, climate change refers to current and projected disturbances in the Earth's atmosphere including alterations to average temperatures and rainfall, broadly understood to be 'climate change impacts'.

Third, there is a 'domino effect' to the impacts of climate change that result in a number of risks to the natural environment, to humans, and to the built environment. The first-degree impacts include increases in extreme weather events due to both temperature and rainfall changes (storms, hurricanes, flooding, and storm surge). First-degree impacts also include sea-level rise (due to temperature increases and melting ice caps) and decreasing biodiversity (due to shifts in ecosystems as a result of temperature change) (Australian Bureau of Meteorology, 2014). These are followed by second-degree impacts, the flow-on effects from first-degree impacts. Examples include mass migration due to sea-level rise (P. J. Smith, 2007), pressure on

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emergency services due to increases in extreme weather events (Blashki et al., 2011), increased morbidity levels due to increases or decreases in temperature (Bi et al., 2011); less-reliable food security due to crop changes caused by temperature and rain variability (Goldenberg, 2014), and so forth. It is important to recognise these flow-on effects as they are what constitute the severity, scope, and overwhelming consequences of climate change.

While the first-degree biophysical impacts of climate change remain the most obviously observed, the fallout from those impacts are no less important though they can be much harder to ascertain and track. For example, consistent temperature rise can result in the hardening of sports ovals, prompting councils to close sporting grounds for fear of injury to players. Should high temperatures persist, sustained closure of sporting grounds can have many flow-on consequences. These include the negative physical and mental health effects from inability to participate in sport, possible cultural changes associated with a shift from outside to predominantly inside sports as a better alternative, and/or shifts to implement new technology including more synthetic surfaces (Greater Dandenong, 2011; Menzies et al., 2015).

Climate change adaptation plans seek to address the impacts of climate change and to assign appropriate actions for dealing with those impacts. They can be comprehensive documents, especially when they seek to account for the domino effect in order to be effective and, therefore, cover much ground in identifying risks to areas such as health, energy use, water use, education, planning, biodiversity, pests and weeds, agriculture, continuity of business and more. CCAPs typically address many of these areas, identifying many risks to be managed. Risk identification often results in unwieldy lists of actions to be implemented and thus planners must prioritise what must be done and what can wait. This can be achieved through a number of processes

including risk assessments (R. Jones & Preston, 2010), integrated vulnerability assessments (Hunt & Watkiss, 2011), and adaptation pathways development (Wise et al., 2013). This is where the process of identifying 'vulnerability' comes into focus, a concept that will be further explored in the literature review in Chapter Two.

Key Word: 'Adaptation'

In the context of this research, it is important to examine what is meant by the term 'adaptation.' Once again, we first turn to the IPCC for a definition, which defines 'adaptation' as an:

> adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation. (2001b, p. 365)

This is the scientific definition of adaptation; however, the academic adaptation literature has been developing a more nuanced understanding of the term. Goater et al. (2011) have defined adaptation in more practical terms of planned responses to threat using statistical approaches and inter-sectoral collaborative initiatives. In 2011, Mark Pelling developed a definition of adaptation by breaking the concept down into three parts: resilience, transition, and transformation. Adaptation as *resilience* is explained in terms of adaptive capacity to return to the status quo once a system is affected, although it is recognised that this can perpetuate unsustainable and unjust systems. In contrast, adaptation as *transition* is described as reform aimed at the application of governance, while adaptation as *transformation* is referred to as the altering of a greater socio-political landscape. Transitional adaptation is conducted in a number of

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different forms, including: maintaining stability, top-down reform, weak co-option, innovative substitution or innovative competition. It can also be understood in terms of incremental adaptation, rather than full-scale change (Fleming et al., 2015b). Transformation, however, is clearly the most radical form of adaptation as Pelling points out:

> perhaps the most profound act of transformation facing humanity as it comes to live with climate change requires a cultural shift from seeing adaptation as managing the environment 'out there' to learning how to reorganise social and socio-ecological relationships, procedures and underlying values 'in here'. (2011, p. 88)

The distinction is important as this thesis aims to understand how some councils come to prioritise the socio-political aspects of adaptation planning while others fail to recognise it at all. According to Pelling's definition, this may also be an exercise in understanding the difference between 'transformational' adaptation and adaptation as 'resilience' or 'transition.' The findings of this research conclude that transformational adaptation is not yet taking place in Australia, although a clear possible first wave of transformation is identified. Instead, Australian CCAPs reflect a transition-based approach.

Research Question

Adaptation to climate change is a relatively new practice. In Australia, local governments began to develop publicly accessible CCAPs in 2008 (Collins, 2015a). These plans outline, assess, and prioritise climate risks faced by communities and regions and, in doing so, ostensibly offer insight into how communities conceive of their own vulnerabilities. The process by which CCAPs are developed varies across

the country, depending on resources, how local government defines the role of council, and whom they include in the development of the CCAPs. As such, CCAPs across Australia demonstrate a wealth of variability in what they prioritise and the vulnerabilities and actions that they lay out. In some cases, this variation is easily explained; however, some variations are less easily explicable.

For example, examine Figure 1 below (data collected from HCCREMS et al., 2010a, 2010b). It illustrates the vulnerabilities prioritised in two geographically neighbouring regional CCAPs, one for a group of rural councils and the other, a group of coastal councils. Note that only the coastal councils are concerned with coastal area management and coastal ecosystems, while only the rural councils are concerned with the viability of mining and agriculture. This variation can be accounted for with simple geographical and primary industry explanations. The coastal councils are located near the coast and the rural councils depend on mining and agriculture to sustain their local economy.

What is less easily explained is the socio-political inclusion of 'community health and wellbeing' in the coastal plan only. Why is this only flagged as an issue for the coastal councils in this instance? The research question this thesis seeks to answer is, therefore, straightforward: how can we explain the variation in the prioritisation of socio-political concerns in CCAPs developed by local governments across Australia? The answer to this question provides us with insight into the influence this third tier of government in Australia wields in relation to adaptation planning vulnerability prioritisation, particularly in relation to concern for socio-political climate impacts.

Risks	Rural Councils (RC)	Coastal Councils (CC)
INFRASTRUCTURE AND ASSETS		
Council Buildings and Facilities	✓	✓
Stormwater	✓	✓
Transport Infrastructure	✓	✓
Water Supply	✓	✓
Waste Water Treatment	✓	✓
LAND USE PLANNING		
Land use planning in flood prone areas	✓	✓
Coastal Area Management		✓
EMERGENCY MANAGEMENT AND CORPORATE SERVICES		
Traffic Management	✓	✓
Emergency Response and Recovery	✓	✓
Community Health and Wellbeing		✓
Business Continuity	✓	✓
CORPORATE SERVICES		
Legal Liability and Insurance		✓
ENVIRONMENTAL MANAGMENT AND PROTECTION		
Pollution of Waterways	✓	✓
Stream Flows		✓
Coastal Ecosystems		✓
Remnant Vegetation	✓	✓
Pest and Weeds	✓	✓
Solid Waste Management	✓	✓
Energy Management	✓	✓
ECONOMIC DEVELOPMENT		
Viability of Mining	✓	
Viability of Agriculture	✓	

Figure 1 – Vulnerability prioritisations for two neighbouring regional groups

The thesis begins by setting out to illustrate the variability in the scope of vulnerability illustrated by these plans across Australia and to examine the reasons for this variability. This is achieved by first collating a unique database of Australian CCAPs and categorising them as either biophysical-based or socio-political inclusive. Primary research, including surveys and interviews, is conducted to explain the variation in vulnerability prioritisation in CCAPs. Thus, the analysis in the thesis is a product of the intersection of climate change adaptation, vulnerability, and public policy literature.

Research Methodology

The research progresses in three parts with the first part describing the collection of CCAPs from across the country in lieu of any national or state-based collation of this

information (Collins, 2015a). The database holds the CCAP information for 558 local councils across Australia through 2008–2014[2], with 97 plans and 183 councils involved in the development of CCAPs over this period. CCAPs were collected through manual searches of every local council website in Australia. As publically available documents, any CCAPs that have been developed should be available through the 'publications' or similar link on council websites.

CCAPs are then categorised as either biophysical-based or inclusive of socio-political concerns in stage two. This was conducted through manual coding of all 97 collected CCAPs using NVivo software. Socio-political concerns were identified through key word searches; the detail of this process is explained further in Chapter Three.

The third stage involved surveying and interviewing participants involved with CCAP development in order to explain the variation in scope. A survey was developed and administered to councils' employees and consultants with experience in developing adaptation plans. The response rate for the survey was low with only a 22% response rate on 100 surveys. This validated the use of in-depth elite-level interviews for more robust data. Consequently, survey findings are used very sparingly throughout the thesis, with a focus on survey answers to open-ended questions that were included in analysis in a similar way to interview quotes.

Elite-level interviews were conducted with 20 individuals who were involved in the development of CCAPs. Elite-level interviewees are selected for their expansive knowledge on a particular subject. In this case, participants were selected for their knowledge of climate change adaptation plans across the country, with many

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[2] NB: Not every council has a CCAP but all 558 Australian councils are included in the database and noted as either having or not having a CCAP. The councils without CCAPs went beyond the scope of this thesis although examination of these councils provides further research opportunities.

interviewees sharing experience from the development of more than one CCAP. In total, the interviewees had experience in the development of over 70 CCAPs in over 100 councils between them.

The findings of this primary research have implications for our understanding of vulnerability, as the variation in CCAPs across Australia is linked to a newly developed theory – the politicisation of vulnerability. The research also engages with where on the adaptation spectrum (resilience, transition, transformation) Australian adaptation falls. It questions whether the inclusion of socio-political concerns in CCAPs constitutes transformation and outlines what changes would be considered transformational for Australia.

The chapter will now proceed with a history of the development of climate change adaptation plans in local councils.

A History of Adaptation in Australia

Adaptation Policy – Climate Change Adaptations Plans

In 1990, the IPCC released their first assessment report. The report is divided into three sections focusing on the science of climate change, an impacts assessment, and response strategies. Since 1990, the IPCC has released four additional assessment reports, in 1995, 2001, 2007, and 2014. In 1995, the second assessment report dealt with the concepts of adaptation and mitigation together in Working Group II. The three most recent reports, however, have separated these concepts, with 'Impacts, Adaptation and Vulnerability' falling under Working Group II, while Working Group III has focused on 'Mitigation.' This illustrates the growing role that adaptation has come to play in the study of climate change. The third assessment report proclaimed "adaptation is a necessary strategy at all scales to complement climate change

mitigation efforts" (IPCC, 2001c, section 2.7). As such, climate change adaptation has been occurring internationally across all levels of government, from the national to the local. This thesis focuses specifically on the role of local government in Australia in preparing for climate change adaptation.

The Australian Government has been working to develop frameworks to assist communities in identifying risks and developing subsequent CCAPs since 2006. In that year, the then Australian Greenhouse Office developed *Climate Change Impacts and Risk Management: A Guide for Business and Government* (Australian Government, 2006). Published by the Department of the Environment and Heritage, the document provides a step-by-step guide for businesses and local governments to conduct workshops to identify, prioritise, and address risks posed by climate change within a risk management framework. The guide encourages workshop participants to 'establish the context' before identifying, analysing and evaluating risks. Implementation should follow with a view to review and monitoring. This basic process of risk management is a common guideline for government literature produced for local council climate change adaptation planning (Standards Australia, 2009).

In 2010, the Department of Climate Change and Energy Efficiency published the International Council for Local Environment Initiatives' (ICLEI) *Local Government Climate Change Adaptation Toolkit*. ICLEI is an international network of cities, towns, and regions that work to achieve sustainability and this toolkit is regarded as superior to the 2006 *Guide for Business and Government* (Scott and Weston, 2011). The toolkit focused on the use of risk management in developing CCAPs and outlines five phases to the process: phase 1 – establish the context, phase 2 – identify risks and opportunities, phase 3 – analyse and evaluate risks and opportunities, phase 4 –

develop options and action plan, and phase 5 – implement action plan and review progress.

This process produces a CCAP of two parts: a risk assessment and an implementation plan. Sometimes these two parts are incorporated in the same document and other times they are separate, but together they comprise an overarching CCAP. Note that the process of developing the initial risk assessment in phases one through three of the above process involves the standard procedure of risk management as outlined in *Australian and New Zealand Standard AS/NZS 4360 Risk Management* (Standards Australia, 2009). This standard is one that local councils across Australia are familiar with, making it the obvious foundation for the development of early climate change adaptation plans.

Also in 2010, the Australian federal government released *Adapting to Climate Change in Australia: An Australian Government Position Paper* published by the Department of Climate Change and developed as a proposed agenda for the Council of Australian Governments (COAG). It announced "along with efforts to reduce Australia's emissions and helping to shape a global solution, adaptation is one of the three pillars on which Australia's comprehensive climate change strategy is built" (Australian Government, 2010, p. 1). The paper points to the responsibility of business and communities to fund and manage their adaptation; for state governments to regulate and control services and assets in partnership with local governments; and for the Commonwealth to coordinate efforts, provide public information campaigns, maintain a strong economy and to use the social welfare system to assist vulnerable groups in adapting. While the document can be treated as an overarching guide to adaptation in Australia, it does not provide a comprehensive overview of how to undertake the complex nature of adaptation or how to overcome barriers to effective

adaptation policy development and implementation. This means that the early history of adaptation in Australia is characterised by local governments across the country undertaking the mammoth task of developing CCAPs with the guidance of only a basic risk assessment response from federal government. Additionally, this risk assessment response is one that the academic literature has been critical of in recent years, as outlined in the following chapter.

The National Climate Change Adaptation Research (NCCARF) was established following the publication of *Adapting to Climate Change in Australia: An Australian Government Position Paper* and works to support decision makers preparing for climate change. Research conducted through NCCARF has been a better source of support for adaptation studies than the previous federal government offerings. Understanding the complexity of the context in which local councils develop CCAPs is crucial to understanding the history of CCAP development. The inter-sectoral nature of adaptation planning is a barrier that local councils identified early. The NCCARF workshop *Learning from Experience: Synthesis and Integrative Research,* held in June 2011, included attendees from industry, public utilities, government, and research. The findings of the workshop note that deliberation on adaptation needs to move from a local to a regional scale. One participant noted:

> The biggest challenge is that our risk assessments on coastal inundation and flooding are not correlated with risk assessments conducted by other organisations and public utilities – the RTA, Telstra, Sydney Water and so forth. So, how do we get beyond jumping in alone at the deep end? And how do we move ahead? For that to happen, we need regional strategic planning approaches, driven by the [NSW Government] Department of Planning.
> (Booth & Cox, 2012, p. 13)

The report also notes that without pressure from the state level, planning can fail. One participant requested "What we really need is leadership at the State level to be able to say to developers: 'No way are you building that kind of thing in this coastal hazard zone!'" (Booth & Cox, 2012, p. 13). This indicates the potential for conflict local governments have encountered, especially given the imbalance of distributed power between state and local government (Howes et al., 2012; Nalau et al., 2015). In short, local governments have been hamstrung by a possibly inadequate risk management approach and a lack of authority to develop and execute effective adaptation policy.

The complexity of developing climate adaptation policy has meant that CCAPs are not the same across the board. This is not to suggest that CCAPs in Australia do not share similarities. On the contrary, CCAPs across Australia often share similar risk identifications and prioritisations. For example, CCAPs as variable as the Hunter and Central Coast councils, Melbourne City and Frankston council have all addressed concerns surrounding water management, protection of the natural environment and business continuity, to name a few. This collection of common risks is the foundation for a 'biophysical-based CCAP.' It is the points of difference in CCAPs that is the impetus for this research. Why do some councils and regions prioritise risks that are missing from other CCAPs? Namely, how do some councils come to prioritise socio-political concerns while others do not? Is this due to a difference in actual measurable vulnerability to climate change or is it an outcome of different processes within councils throughout the identification process? Are similar anomalies simply identified within similar regions? And as a case study in public policy, what is the role of typical policy process stages such as agenda-setting, problem definition, and policy entrepreneurship? These are the questions that my research seeks to answer.

The findings to these questions are important because they offer insight into the influence of local government (the lowest tier of government) on adaptation planning (an exercise with local and global implications). The international problem of climate change adaptation is being addressed in Australia in a much more methodical way than mitigation. The latter's policies in Australia have been politically difficult to introduce and implement (Beeson & McDonald, 2013; Crowley, 2013; Taylor, 2014). But, in adaptation, local councils have been making steady process since 2008 and the decisions they make within CCAPs have far-reaching effects on how Australians will adapt to climate change. Understanding how adaptation policy has developed at this early stage can inform how it is developed into the future. A typology of the CCAPs developed by local government in Australia is now outlined.

A Typology of Climate Change Adaptation Plans

The Local Adaptation Pathways Program (LAPP) is an Australian Government initiative that sought to support local governments by providing funding towards climate risk identification and the development of CCAPs. There have been two rounds of LAPP funding since 2008 that have provided a combined $2 million to local councils (Australian Government, 2008). This funding has aided (although cannot be solely attributed to) the development of CCAPs across the country, though the term CCAP does not indicate a uniform policy structure across Australia.

When studying climate change adaptation, it becomes apparent that there are at least four types of CCAPs being developed in local councils across Australia. In developing the database of CCAPs, it was important to define what constitutes a CCAP within the context of the research to avoid the 'dependant variable problem' in adaptation policy research highlighted by Dupuis and Biesbroek (2013). Dupuis and Biesbroek recognise that adaptation policy can be 'conceptually indistinct' and

comparisons between policies can be ill-conceived if researchers do not ensure they are studying comparable types of policy. As an academic typology of CCAPs is yet to be developed, I created typological categories from observations made in the process of collating a personal database of Australian CCAPs (Collins, 2015a). The first 'type' is the 'overarching' document. This CCAP is typified by an aim to cover as many affected areas, departments and industries as possible within the council. They can cover concerns as varied as water, agriculture, transport, human health, biodiversity, tourism and recreational activity, all within the one plan. These can be developed by individual councils, or regionally by pooling the resources from a group of neighbouring councils. The second type is the 'coastal' CCAP. These are plans developed for coastal areas at risk from climate change and can be developed by individual coastal councils or groups such as the Sydney Coastal Councils Group (Sydney Coastal Councils Group & NSW Environmental Defenders Office, 2008). These CCAPs reflect the specific concerns of coastal areas and their prevalence is indicative of the statistic that about 81% of the Australian population lives within 50 km of the coast (Hugo, 2011). The third category includes 'corporate' CCAPs, which are developed by local councils with the intention of planning for changes to the business community caused by predicted climate change. Finally, there is evidence of 'case study' CCAPs whereby a local council will focus on a particular geographic area, for example, a beach or a precinct, and develop a specific CCAP for this area. For example, Kingborough council in Tasmania has developed an adaptation plan for Kingston Beach (2012). These four distinct typologies do share a similarity – all these CCAPs comprise a risk assessment and implementation plan of some sort. The methods, focus and presentation of the development of the risk

assessment and implementation plan may, however, vary between councils and between typologies.

This research focuses on the development of only one of these four types of CCAP – the 'overarching' document. There are a few reasons for this. The first is that study of CCAPs is very recent as councils have been developing them for less than a decade. This means there are many areas of study to choose from and a focus on the overarching CCAP allows for focused analysis on a common, specific (but still broad) gap. Second, overarching documents, by their nature, include a wide variety of stakeholders and present solutions for many areas within a local council. Analysis of such a cross-section of climate change adaptation planning allows us to understand adaptation on a larger scale across the council. It also allows us to study the complex relationships between stakeholders from such differing backgrounds while also offering a variation in the scope of vulnerability concerns. Third, concentrating on overarching documents allows me to consider plans from a number of different areas in Australia. Any council may develop an overarching document; however, the coastal plan is restrictive to a particular geography, and corporate CCAPs and case study CCAPs are less prevalent. By focusing on all overarching CCAPs across Australia, I can also provide a counterpoint to the current trend of focusing on coastal adaptation work in Australia (Cinner et al., 2012; S. Graham et al., 2013; Gurran et al., 2013; NCCARF, 2015b; Norman, 2009), bringing a more holistic focus to adaptation policy across a range of geographic areas.

To be accepted within the study, CCAPs did not have to be explicitly named a 'climate change adaptation plan' but they did have to demonstrate that they addressed climate change adaptation in a cross-sector fashion. 'Sustainability' plans or policies were not included as these did not always make explicit mention of climate change

(City of Stirling, 2009), and where they did included only a small section on the topic (Liverpool City Council, 2012) and, therefore, did not meet the criteria for overarching CCAP."

It should be noted that this thesis does not focus on the implementation of CCAPs. CCAPs are not statutory instruments and even overaching plans vary in the detail of their performance measurements and review processes. There are questions about the efficacy and implementation of CCAPs (Baker et al. 2012), however, the focus of this research is on the development of these documents.

A Biophysical Focus for National Adaptation Planning

As has been outlined, this thesis seeks to explain the variation in climate change adaptation plans, specifically the variation in the identification of vulnerability. Categorising the plans as either biophysical impacts-based or socio-political inclusive allows for insight into how adaptation planning is developing beyond the early risk management approach that was outlined above. While this thesis focuses on the CCAPs developed by local councils across Australia, it is important to contextualise this policy work within the nation's history of identifying climate risks. An analysis of federal government priorities since 2007 reveals a bias towards the identification of biophysical risk, with minimal reference to socio-political factors.

While some national documents are intended to guide local councils through the process of developing a CCAP (Australian Government, 2006; ICLEI – Local Governments for Sustainability, 2008), others are published with the purpose of contributing to a national agenda of climate change adaptation. These documents identify priority areas of concern for the country. What they illustrate is a tendency to identify vulnerabilities based on biophysical impacts. At this national level, there is

little discussion of the socio-political impacts. The following provides a brief summary of some of the key documents in order to contextualise the identification of vulnerable sectors within Australia at the national level.

In 2007, the *National Adaptation Framework* was released. It is divided into two sections: 'building understanding and adaptive capacity' and 'reducing sectoral and regional vulnerability'. The *Framework* outlined nine priority climate risks: water resources, biodiversity, coasts, agriculture, fisheries, forestry, human health, tourism, and settlements and infrastructure (Department of Climate Change and Energy Efficiency, 2007, p. 3). From one perspective, this list illustrates the diversity of sectors affected by climate impacts; but from an even broader perspective, it lacks reference to the socio-political impacts of climate change that are also very important.

Three years later, in 2010, the federal government released *Climate Change Adaptation Actions for Local Government*. Chapter Four of this document focuses on 'adaptation options' and presents a list of six priority areas, again with a lack of socio-political consideration. The areas are infrastructure and property services, provision of recreational facilities, health services, planning and development approvals, natural resource management, and water and sewerage services.

That same year, the Australian federal government released '*Adapting to Climate Change in Australia: An Australian Government Position Paper*' published by the Department of Climate Change (2010). It announced "along with efforts to reduce Australia's emissions and helping to shape a global solution, adaptation is one of the three pillars on which Australia's comprehensive climate change strategy is built" (p. 1). The paper points to the responsibility of business and communities to fund and manage their adaptation; for state governments to regulate and control services and

assets, in partnership with local governments; and for the Commonwealth to coordinate efforts, provide public information campaigns, maintain a strong economy and to use the social welfare system to assist vulnerable groups in adapting. This last mentioned item begins to engage with the socio-political context of adaptation, although it is notable that in this document it is delegated as the responsibility of the federal government. The six 'initial national priorities' identified continue in a similar vein to the previous documents: coastal management; water; infrastructure; natural systems of national significance such as the Great Barrier Reef and Kakadu; prevention, preparedness, response and recovery with regard to natural disasters; and agriculture.

The most recent collation of national priorities is the *NCCARF Climate Change Impacts and Adaptation Factsheets* (2012b). The factsheets identify nine areas of concern: marine biodiversity and resources, terrestrial biodiversity, water resources and freshwater biodiversity, primary industries, settlements and infrastructure, Indigenous communities, emergency management, human health, and tourism. Although it does not have a factsheet, in 2011 NCCARF added a new research priority, 'social, economic and institutional dimensions of adaptation' (Barnett et al., 2011a). This is the beginning of the recognition of the role socio-political context plays in the adaptation of communities to climate change.

The priorities outlined in these four documents are not uniform, although there is some overlap. 'Settlements and infrastructure' and 'water' are represented throughout all four. Conversely, Indigenous concerns are only raised once, as are the 'provision of recreational facilities'. Some priorities are listed under different names, for example 'emergency management' and 'natural disasters.' This variety in the identification of vulnerability begins to establish the diversity that we can expect at

the local level in CCAPs. It also introduces us to a key distinction in the types of vulnerabilities discussed: that between biophysical impacts-based and socio-political concerns, a distinction that is further elaborated upon in the next chapter. The majority of concerns in these key documents reflect a biophysical impacts-based view of vulnerability. Yet there is a hint of socio-political concern, particularly in the 2012 document that cites 'Indigenous communities' and recognition of the need to assist the vulnerable in the *Australian Government Position Paper*. In particular, the Indigenous communities factsheet points out that climate change "seems likely to compound existing Indigenous poverty and disadvantage" (NCCARF, 2012a, p. 1). This preliminary distinction between biophysical-based impacts and concern for the socio-political impacts at the national level is translated more starkly at the local level in the specific climate risks identified, and the implementation plans developed to counter them.

The most recent and authoritative literature on the subject of policy and climate change adaptation in Australia is the NCCARF Policy Guidance Briefs. This collection of 12 briefs was developed in consultation with practitioners and stakeholders. They provides information to policy makers across the country on aspects as diverse as *Ensuring Australia's Urban Water Supplies* (NCCARF, 2013b), *Adaptation and First Australians* (NCCARF, 2013d), *Emergency Management and Climate Change Adaptation* (NCCARF, 2013e), and *Policy and Regulatory Frameworks for Adaptation* (NCCARF, 2013f). Each brief is six pages long and provides a starting point for policy makers that include relevant statistics, a context of the current landscape and future policy implications.

Placing adaptation within the remit of local government makes sense as it allows for planning to be undertaken at a place-specific level. Local governments already take

responsibility for a number of practices that are affected by climate change; for example, an increase in extreme weather events will place pressure on local emergency services. Legal liability for damage to assets that council are responsible for is also a driving factor of biophysical impact identification, as is outlined in Chapter Four of this thesis. But it is important to review adaptation planning as it develops in order to identify what councils are prioritising and what they are not. An analysis of this can give us a better understanding of what adaptation policy really looks like across Australia at the local government level and is also a place to start recognising what may be missing.

Climate Change Adaptation as Policy

From a Global to a Local Issue

While mitigation is best understood on an international level due to the global impacts of mitigation efforts (and non-efforts), adaptation has been more easily situated as a locally focused undertaking (IPCC, 2007). Research at the intersection of public policy and climate change adaptation is an emerging area. In Australia, it is preceded by the work of scholars who have explored the intersection between policy and mitigation to climate change – a key example being Clive Hamilton's book *Running From the Storm: The Development of Climate Change Policy in Australia* (Hamilton, 2001). This research will seek to add to the climate change adaptation policy literature and to provide a new case study within the public policy literature centred around the development of CCAPs in Australia. This will achieve two key goals, providing research into how the policy processes of agenda-setting and problem definition within local councils affects the scope of vulnerability concerns in CCAPs, as well as offering a unique Australian case study to the literature. The Australian focus here is

particularly poignant, as the widespread development of local climate change adaptation plans in Australia appears to be a world-first. First it is important to provide some context to this historical development.

Climate change adaptation represents both a global and local issue, and the establishment of the Intergovernmental Panel on Climate Change (IPCC) best represents the international focus. The IPCC has offered policy guidance for climate change mitigation and adaptation over the course of five assessment reports and remains the key body at this global level. Countries have established nationally developed frameworks to collate climate impacts and risks, and not all of these are as brief as the 27-page Australian *Framework*. The United Kingdom's (UK) *Adaptation Policy Framework for Climate Change: Developing Strategies, Policies and Measures* (Lim et al., 2005) offers a guide to developing adaptation policy and several technical papers - from scoping and designing an adaptation project, to formulating an adaptation strategy. While the framework is intended as a guide for developing national strategies, practitioners at the local government level may also find use for the framework, including principles such as "adaptation to short-term variability is the basis for reducing vulnerability to longer-term climate change" and "strategy and process of implementation is important" (Lim et al., 2005, p. 1). The stark differences between the length of the Australian and UK frameworks highlight the very different approaches each has developed towards adaptation, with the former relying on bottom-up action and the latter driving adaptation from the top-down.

Given climate change is a global issue (as well as a local one), it seems appropriate to briefly outline adaptation at the international level. Burton outlines two types of adaptation research that developed temporally at this level: the first focuses on the trade-off between mitigation and adaptation and the second focuses on development

and policy questions (I. Burton et al., 2002). This second type of adaptation research revolves around questions of developed countries providing aid to developing countries to assist them in adaptation to climate change. Such policies were developed on the 'polluter pays principle' and demonstrate the tension between the developed countries that bear the brunt of the responsibility for climate change that will disproportionately affect developing countries. Back in 2002, Burton et al. wrote "adaptation will only be entertained in developed countries when it becomes evidently necessary" (p. 147).

Burton et al. do not explicitly define what they meant by 'evidently necessary,' though perhaps developed countries reached their tipping point to engage with adaptation a little earlier than they expected. Merely three years after Burton et al. made their pronouncement, the Australian Government was justifying the need to begin developing adaptation strategies, under a Conservative government no less (Allen Consulting Group, 2005). This early lead in climate action can be hard to reconcile with the hostile political climate within which climate action since took place (Bulkeley, 2001; Taylor, 2014). By 2007, Australia had developed a *National Climate Change Adaptation Framework,* and local councils were already developing climate change adaptation plans across the country. Climate policy integration, or CPI, was well underway.

CPI is a reflection of the 1987 Brundtland Report, which stated that in order to be effective, climate change needs to be integrated into all areas of policy-making. Urwin and Jordan (2008) point to the importance of 'climate proofing' policies so as not to hinder adaptation efforts. For example, they note that some goals of nature conservation may not be congruent with the need for flexible adaptation policy in the future. Therefore, CPI is needed to best deal with the interrelated nature of addressing

climate risks. This thesis focuses on the overarching CCAPs as these best illustrate

CPI in practice by combining a number of stakeholders from a range of sectors and

producing a single, detailed policy.[3]

Research into policy options to date has focused on a national rather than local level.

Smith and Lenhart (1996) develop a suite of general policy options in their research

of African countries that could also be applied at the local government level. These

include: incorporating climate change into long-term planning, taking inventory of

existing practices and decisions used to adapt to different climates, tying disaster

relief to hazard reduction programs, and promoting awareness of climate variability

and change. While it is useful to point out that, generally, these principles and

frameworks aimed at a national level of governance can be of use to local government

CCAP development, it remains that the literature is yet to engage fully with a suite of

climate policy development questions at such a local level, with most research

revolving around the barriers and challenges to local adaptation policy. Offering

solutions to the barriers to developing climate change adaptation policy seems like an

obvious first step in the emergence of adaptation as a key theme. The literature must,

however, also take a self-reflexive turn to the description of the results of years of

adaptation work. This thesis contributes to this description in a countrywide effort that

has yet to be attempted.

Some Introductory Barriers to Adaptation (Besides the Politics)

There are many barriers to climate change adaptation in Australia including difficulty

in comprehending and managing the complexity of climate change, confusion over

how best to govern adaptation, and lack of adequate funding to develop and

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[3] 'Embedding' adaptation into a council's suite of policies is another form of CPI, and may represent
the next phase of adaptation policy in Australia.

implement adaptation policy (Measham et al., 2010). All this is coupled with the constant political and media questioning of the validity of climate change itself (L. Cox, 2015; White, 2014). Adaptation to climate change is a complex process that potentially affects all aspects of governance and the functioning of communities due to the overarching effect of its global impact. In an Australian context, the 2011 NCCARF *Adaptation Master Class* dealt with the difficulties of planning for adaptation. Wilbanks (2011) pointed out that adaptation is almost always dependent on the context of the area and highlights four key points:

1. What makes sense here is not necessarily what makes sense there.

2. Adaptation involves an enormous variety of contexts – by location, threat, vulnerable systems, time frame, and scale. Global science tends to be large scale and generic when decision-making requires sensitivity to the small scale.

3. Local knowledge is important to inform possible actions: localities have essential data and knowledge not available to global scientists.

4. There is evidence from sustainability science that innovation and problem-solving benefit profoundly from a fusion of general scientific knowledge and local knowledge and perspectives (2011, slide 3).

Therefore, we can begin to establish the complexity associated with adaptation to climate change through these key points. It is poignant to note that Wilbanks also highlighted another challenge to effective adaptation: "The fact is that innovative problem solving and capacity for adaptation is usually bottom-up while resource availability is top-down" (2011, slide 12). Funding for adaptation policy development is often a key barrier when it is unavailable and a key enabler of adaptation

development when it is. Most CCAP development can be traced back to either LAPP (Australian Government, 2008) or NCCARF funding (Collins, 2015a).

Justifying Adaptation Policy: Political Context and the Concept of 'No Regrets'

While the above barriers to adaptation are indeed important to consider, perhaps the biggest barrier to adaptation, indeed to any climate change work in Australia at the moment, is the political context in which this work takes place. The seemingly innocuous combination of two words 'climate' and 'change' have been co-opted by key political leaders and the media to create a political minefield where the science of climate change is repeatedly questioned, with key political players referring to climate change as a 'hoax' (L. Cox, 2015). Furthermore, the solutions to climate change are denigrated, including wind farms being maligned as 'visually awful' (Bourke, 2015).

The political difficulty in proposing and implementing climate mitigation policy is well documented in the literature. Taylor recounts Australia's history with climate change, noting a 1988 study that "called the Australian public the best informed on the planet" on the topic of climate change (2014, p. xii). Taylor's book chronicles the influence of fossil fuel and related industries on the climate change conversation, an influence that developed doubt and scepticism of climate science in the Australian population. The resulting negative impact on the proposal and implementation of mitigation strategies is well documented (Beeson & McDonald, 2013; Bulkeley, 2001; Crowley, 2013). The impact of the negative political culture around climate change is evident in the structure of this thesis. All interviewees are anonymised, with the Australia-wide approach offering them more secure anonymity than a case study or state-based approach. Many interviewees recounted their difficulty with reluctant council executives in establishing and implementing CCAPs. This fear of engaging with climate change and therefore, with adaptation, pervades the experience of almost

all CCAP developers and particularly comes to the fore in Chapter Six when examining approaches to education and community consultation on this topic.

The politicisation of climate change is an important factor in the history of adaptation work in Australia (and the world), influencing everything in this field to an extent that is rarely openly acknowledged in much of the adaptation literature (though it is often recognised in mitigation). This thesis will seek to change that by deeply investigating the impact politics has had on the development of CCAPs in Australia.

The concept of 'no regrets' policy neatly sums up the impact of this political influence as it describes policies that are of benefit to the community even if predicted climate change does not occur. While discussing the importance of mainstreaming climate change adaptation into ongoing and new development in public infrastructure, a United Nations Development Programme (UNDP) report on a 'no regrets' risk-based approach to climate describes 'no regrets' as enhancing "the effectiveness, efficiency, and longevity of initiatives by reducing climate-related risks, while at the same time contributing to sustainable development and improved quality of life" (Siegel, 2010, p. 18). In this way adaptation planning can be justified even to those sceptical about climate change because other benefits can be emphasised.

It has been established that engagement between policy development at the local level and climate change adaptation is at a relatively early stage, despite the involvement of many Australian councils in adaptation planning. This early part of the academic literature has revolved around three interrelated themes: cost-benefit analysis, 'win–win' or no regrets options, and the challenges and benefits to adaptation policy; although the last theme has emerged most recently as practitioners have begun to take stock of the processes they employ to develop CCAPs.

The concept of a no regrets approach is a longstanding element of the adaptation literature as it was adopted from similar attitudes in early mitigation literature. It is an approach that the Australian Government has continually encouraged, despite committing money to climate change issues from as early as 1997 (Sullivan, 2007). This approach indicates the political nature of climate policy. No regrets solutions provide a way forward for adaptation planning in Australia. With high levels of scepticism from key political leaders and the media, no regrets solutions mean climate benefits do not have to be the focus of policy. These solutions accomplish more than one benefit and, in many cases, the added benefits are not climate related therefore making them easier to 'sell' to communities. In short, this approach has contributed to the vast development in adaptation work the country has achieved despite the negative political climate towards climate change that has only intensified since the ousting of Prime Minister Kevin Rudd in 2010. No regrets solutions in the development of CCAPs place the politicisation of climate policy as front and centre to policy development.

The language of no regrets, low regrets and win–win solutions is evident in much of the Australian adaptation documentation. NCCARF's *Policy Guidance Brief on Supporting Decision-Making for Effective Adaptation* encourages decision-makers to recognise the value of such options in terms of cost-effectiveness and benefits (NCCARF, 2013c). The framework for developing climate change adaptation strategies and action plans for agriculture in Western Australia (WA) suggests the use of 'win–win/no-regrets/low-regrets' options in the 'Keeping it Simple' section of the framework (Hills & Bennett, 2010). The WA framework describes the use of these solutions as a second level of prioritisation once the impacts of climate risks have

been considered, therefore highlighting the very high importance of achieving not only action on adaptation but also politically acceptable action.

Case studies of no regrets actions are particularly represented across the Australian climate change adaptation literature, most notably in case studies of sector adaptation; for example, health (Hanna et al., 2011b), infrastructure (Hallegatte, 2009), and tourism (Mair, 2011). In these cases, authors study a particular area of climate change adaptation and observe (or in some cases, suggest) that a policy of no regrets action is taken. This concept ensures the policies intended to counter climate risk have a beneficial effect even if predicted climate change does not occur. This option is useful in affecting change where there may be some uncertainty about the occurrence or severity of climate risks. It also aims to engage those who are sceptical about climate change as it offers a solution where the benefits exceed the costs (UKCIP, n.d.). An example of a no regrets solution as suggested by Bambrick et al. is building better public transport infrastructure. Such a solution would have positive effects for mitigating climate change as well as beneficial health effects for the population who would engage in more "incidental exercise" to get to public transport hubs (Bambrick et al., 2011, pp. 71-72s).

While the no regrets approach to climate action has been pervasive, its effectiveness has been called into question by those who see the approach as a way to avoid the larger commitments to action required (Hamilton, 2001). In 2000, a Senate Committee inquiry found no regrets mitigation measures to be ineffective when compared to an emissions trading scheme (Crowley, 2013).

It is evident that no regrets options represent a great part of the literature concerning adaptation at this level of planning. Yet it only illuminates a single part of the policy

process, namely the role of framing solutions to produce an acceptable policy. Framing is a key step in the development of policy, particularly in the problem definition stage and the framing of climate change adaptation has been a focal point for some scholars (Dewulf, 2013). This thesis will directly engage in the policy process language of problem definition to better understand how local councils understand and articulate their own vulnerability to climate change in CCAPs. Such an examination leads to the development of a new concept, the politicisation of vulnerability and the subsequent implications this politicisation has for adaptation planning now and into the future. This outline of the rise of the no-regrets policy provides the initial political context of adaptation planning in Australia as it offers explanation for the widespread development of CCAPs, despite a sceptical political elite and a media that has insisted on 'balancing' climate arguments for a large part of Australia's adaptation history (Latter, 2011).

Conclusion and Thesis Outline

My aim is to evaluate the developed CCAPs in terms of the scope of vulnerability that they encompass and to offer explanations for variation in scope with a focus on the variation between biophysical-based and socio-political inclusive plans. This explanation will develop through use of the vulnerability literature as well as the agenda-setting and problem definition theories within public policy theory.

The thesis describes, in part, the current landscape of climate change adaptation planning in Australia, develops a process for measuring and evaluating the attention to socio-political vulnerability in the existing CCAPs, and uses the policy process literature to explain how agenda-setting and problem definition contribute to differences in scope of vulnerability. This research lies at the intersection of public

policy literature and the climate change adaptation literature that focuses on the definition of vulnerability to climate change. Ultimately, this research finds that the identification of climate vulnerability is context-specific and inherently political.

This chapter has provided an introduction to the research, an outline of key terms, and has presented the research question. It has sketched a history of the development of climate change adaptation plans as developed by local councils across the country, defined the type of CCAP addressed in this research (overarching), and linked national documentation for climate adaptation to a biophysical impacts bias. Finally, it has introduced the political context of adaptation in Australia and explained how a focus on no regrets has allowed adaptation to develop in this country despite the political negativity surrounding the topic.

The following chapter will present a review of the vulnerability literature and the policy literature. It begins with an overview of the vulnerability literature, with a focus on the question of what it means to be vulnerable. The chapter explores different frames used in climate adaptation – including hazard, risk, and resilience. Adaptive capacity is shown to be a factor of vulnerability and the connection between adaptive capacity and socio-political context is established. This review will also provide an introduction to biophysical-based adaptation planning, and two socio-political indicators of adaptation planning are identified through the literature: vulnerable groups and mental health. References to education are also identified in CCAPs, as education about climate change is shown to impact directly on adaptive capacity, a crucial component of vulnerability.

An overview of selected public policy concepts follows, establishing the field of research that has already been conducted in the development of climate policy. The

public policy processes of agenda-setting, problem definition, and policy entrepreneurship are reviewed as these are identified as key, but overlooked, theories for explaining vulnerability identification in adaptation planning. The findings of this thesis provide a valuable new case study for the public policy literature, if not a substantial new theory for the policy process.

Chapter Three will present the findings from the personally collated database of CCAPs. The chapter develops a measure by which scope of vulnerability concerns within CCAPs can be measured, namely the categorisation of CCAPs as either biophysical impacts-based or socio-political inclusive. This chapter will outline the methodology and findings from the database. It will also outline the climate change adaptation literature in terms of biophysical-based adaptation planning. Vulnerable groups are identified as a factor of socio-political climate impacts and linked to climate justice theory. Mental health is also identified, and linked back to the large amount of climate and health work conducted in Australia. Education is identified as a factor of adaptive capacity and linked to the body of work on community consultation in adaptation planning. References to social cohesion in CCAPs are also measured as a further, though less-specific, indicator of concern for socio-political context. By summarising the findings from the database, the variation in the identification of vulnerability in CCAP development in Australia is established, both broadly and specifically. The broad variation between biophysical-based CCAPs and socio-political inclusive ones is described, as is the specific variation in identification of particular socio-political indicators (vulnerable groups, mental health, education and community consultation) that contribute to adaptive capacity.

Chapter Four looks at the broad variation in CCAPs: the difference between biophysical-based and socio-political inclusive plans. The chapter outlines the

indistinct remit of local government in Australia as a driving factor in the varying problem definitions that result in either a biophysical-based plan or a socio-political inclusive CCAP. It will distinguish between two instances of decision-making undertaken by local councils: agenda-setting and problem definition, explaining how the former impacts on the result of the latter. Some preliminary findings from the survey are examined, focusing on legal liability and its connection with biophysical climate impacts. The implications of legal liability as a basis for identifying vulnerability to climate change are introduced here.

Chapter Five considers the inclusion of specific concern for vulnerable groups and/or mental health in CCAPs. Here, the combination of an indistinct remit and problem definition collide to create divisive attitudes in Australian councils about whether these are climate risks that can and should be planned for. The inclusion of these socio-political indicators is partly attributed to three influences: the (sometimes perceived) demographics of the council's constituents, the existing organisational agenda, and the presence of ad hoc policy entrepreneurship. Implications for the definition of vulnerability are explored as the research indicates that adaptive capacity is less likely to be considered and quantified in practice. The identification of 'vulnerability' is linked to political processes in this chapter.

Chapter Six considers the inclusion of education in CCAPs and explores the difficulties of educating the community about climate change. As a contributor to adaptive capacity, education and community consultation are important factors of adaptation policy. This chapter highlights education in the broad sense as a comparatively common inclusion in Australian CCAPs. It also proves to be one of the most difficult to execute, resulting in variation across the country in the processes used to inform and/or engage the community on the issue of climate change. This

chapter will examine how the political nature of climate change in Australia makes this relatively common CCAP inclusion so difficult, and turns to the body of work on deliberative democracy to illustrate the paradox of talking about an issue when councils cannot or do not want to talk about it. Councils who do prioritise it in their CCAPs tend to employ a positive frame that avoids the negative political context around climate change as much as possible. Once again, problem definition is shown to play a key role in these variations, leading to the creation of a new concept for adaptation planning: the politicisation of vulnerability.

Chapter Seven concludes the thesis. It summarises the findings of the research to outline the consequences these findings have on the concept of vulnerability. It directly engages Pelling's spectrum of adaptation, concluding that Australian CCAPs engage a transitional approach. While transformational adaptation is recognised as desirable, the research concludes that Australian adaptation cannot be described as transformational. A clear path for a first wave of transformation in the Australian context is offered based on the findings of the research. The thesis concludes by considering the implications for policy and future climate change adaptation given the findings.

Chapter Two: Two Key Literatures – Vulnerability and Public Policy

The importance of climate change adaptation has increasingly gained prominence as the world comes to the realisation that no matter what we do on mitigation we have locked ourselves into a certain amount of irreversible climate change (IPCC, 2014). Increasingly, some communities have already been forced to adapt to changes caused by climate conditions, creating a significant need for the study of adaptation policy.

In Chapter One, we reviewed the main Australian Government documents published on the topic of climate change adaptation. A problem such as climate change with boundless, and at times, extremely unpredictable impacts is, however, difficult to address holistically in such short documents, especially given the negative attitude towards climate change of key political leaders. Over the past decade, the academic literature on adaptation has become a fast-growing area of research, seeking to better understand the complexity of climate change itself and to critique existing (and develop new) solutions to this wicked problem.

In the adaptation realm, scholars have been studying types of adaptation and the difficulties inherent in approaching climate change adaptation. As has been explained, climate change adaptation touches on many areas that local government must consider in future planning. This host of competing priorities creates complexity around the roles and responsibilities of climate adaptation. Given the boundless reach of climate impacts, scholars have begun by focusing on the specific difficulties of adaptation, particularly in relation to mitigation. While adaptation and mitigation are two distinct modes of action on climate, they inevitably interact – conflicting and complementing each other. Lindenmayer et al. (2010) acknowledged the interconnected nature of adaptation strategies and developed a strategy for approaching the vulnerability of

Australian biodiversity to climate change. Their six-step strategy includes a mixture

of mitigation and adaptation options, noting that the two can be mutually inclusive;

however, it is important to note that adaptation and mitigation can also conflict.

Hamin and Gurran (2009) note that greenhouse gas mitigation often calls for a limit

on urban sprawl to cut down on vehicle use, while adaptation often calls for moderate

density in built forms to allow for natural infiltration of floodwater and wildlife

corridors. Overall, the authors found that half of all actions they identified contained

potential conflicts between adaptation and mitigation. This is illustrative of the

complexity of the climate change adaptation literature. This thesis seeks to understand

the intersection of climate change adaptation literature with both the literature on

vulnerability and the literature of public policy. The former is considered because it

provides an alternate frame from the risk management approach in terms of how we

conceive of harmful climate impacts. The latter is consulted because CCAPs

ultimately represent an exercise in public policy development. We first consider the

vulnerability literature, as a key theoretical contribution is made to this literature

through the research.

Vulnerability Literature – What Does It Mean To Be 'Vulnerable?'

In 1981, Timmermann posited that "vulnerability is a term of such broad use as to be

almost useless for careful description at the present, except as a rhetorical indicator of

areas of greatest concern" (p. 17). This summation explains the many and varied

definitions of vulnerability in general, but also in terms of climate change. Despite

Timmermann's assertion that the term had been rendered 'useless' – many continue to

employ the word (Cinner et al., 2012; Füssel, 2007b; Haines et al., 2006; Jonsson &

Lundgren, 2014), particularly in the field of adaptation. The use of this term in

relation to measurement of harm from climate impacts makes the vulnerability

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literature an important consideration in studying climate change adaptation plans. My research makes two key findings in relation to this literature. The first is that assessments of vulnerability to climate change are politically influenced rather than objective assessments. The second is that while the term is increasingly studied and used by the academic community, some practitioners of adaptation reject the term altogether.

As a starting point for understanding the more general use of the term 'vulnerability', Fussel and Klein (2006) nicely summarise the difficulties surrounding the term in four key questions. First, is vulnerability a starting point, intermediate point or the outcome of an assessment? Second, is it defined in relation to climate change or to its effects? For example, is it about vulnerability to rising temperatures or vulnerability because of low accessibility to health care? Third, is it inherent in systems or a product of external stressors and internal responses? And fourth, is it static or dynamic?

These questions pose a number of barriers to reaching a succinct definition of vulnerability. They are worth considering in terms of how communities are conceiving of their own vulnerabilities to climate change and, in turn, acting on those vulnerabilities by identifying risks in CCAPs. Different definitions of the terms may explain variation in CCAPs; they may be used to explain how the same risk may be viewed differently in two different communities. But this represents a general view of the concept of vulnerability. It is useful to turn to the specific employment of the term in relation to climate change. Many academics studying the impacts of climate change have undertaken to more succinctly define the term vulnerability, and we now turn to consider some of these.

The IPCC has defined vulnerability as:

> The degree to which a system is susceptible to, or unable to cope with, adverse
> effects of climate change, including climate variability and extremes.
> Vulnerability is a function of the character, magnitude, and rate of climate
> variation to which a system is exposed, its sensitivity, and its adaptive
> capacity. (2001b, p. 388)

Much has been written about the implications of this definition. The Allen Consulting
Group in 2005 noted that "It departs from hazard definitions, which have historically
defined vulnerability as the probability of a hazard and the magnitude of the damage"
(p. 20); a familiar definition that is often referred to as the 'likelihood–consequence'
scale (Standards Australia, 2009). There has been confusion over the IPCC wording
"susceptible to, or unable to cope." It has been noted that the term 'and' instead of
'or' would be more appropriate given that the definition concludes with the assertion
that vulnerability is a function of "its sensitivity, and its adaptive capacity" (Allen
Consulting Group, 2005, p. 20).

This relationship between sensitivity and adaptive capacity is succinctly expressed by
one of Cinner et al.'s equations for measuring vulnerability (2012, p. 14):

$$V = (E + S) - AC$$

(Where V = vulnerability, E = exposure, S = sensitivity, and AC = adaptive capacity)

This is the simplest of Cinner et al.'s equations as it uses only the sum of exposure of
sensitivity to climate impacts similar to the 'likelihood–consequence' scale, but
requires an additional consideration of the adaptive capacity before determining true
vulnerability. In short, it requires an assessment of the contextual environment in

which adaptation takes place before determining vulnerability, therefore recognising that similar levels of exposure and sensitivity in two different communities can have very different outcomes on vulnerability based on the contextual capacity of those communities. The better the adaptive capacity, the better able communities are to adapt to climate change. This particular form of vulnerability calculation was used in a 2012 study in coral reef management, which considers the measurement of adaptive capacity (Cinner et al.). The researchers studied 1,500 households across 29 coastal communities to find that adaptive capacity can be increased through a reduction in poverty, improvements in literacy levels, increases in the value of products produced, and good governance. Though Cinner et al. note that there is no single 'blueprint' of adaptive capacity to fit every community, the identification of factors that affect adaptive capacity is a useful starting point. Furthermore, their assessment includes both factors of Fussel and Klein's second question on vulnerability, namely vulnerability to climate change or its effects. Exposure accounts for vulnerability to climate change itself, while adaptive capacity accounts for vulnerability to the effects of that exposure, meaning that vulnerability is defined in relation to both climate change and its effects. Cinner et al. favour an equation to best define vulnerability; however, many scholars are less mathematical.

Risk Management and Vulnerability: Two Different Approaches

In a less quantitative approach to the matter, vulnerability can also be expressed in terms of a feeling – as being in a state of 'at risk' or 'danger.' Paavola and Adger point out that "obviously, the avoidance of danger cannot easily be separated from vulnerability: avoidance of 'danger' reduces vulnerability" (2002, p. 6). The notions of 'vulnerability' and 'risk' are closely tied; they both articulate a premonition of harm. In relation to hazard and disaster management, 'risk management' has a well-

established literature in its own right. In terms of climate change, 'climate risk' is increasingly being identified by local governments. The *Local Government Climate Change Adaptation Toolkit* developed by ICLEI (2008) encourages the use of existing risk management practices in developing a CCAP. The process is outlined in five phases: establish context, identify risks and opportunities, analyse and evaluate risks and opportunities, develop options and an action plan, and implement the action plan and review progress.

The risk management framework calls for a likelihood–consequence scale to be applied at the third phase; that is, risks are measured by the level of likelihood of their occurrence and the severity of the consequences should the risk occur (Standards Australia, 2009). Therefore, those risks with a high likelihood and high consequences represent the most extreme, and should be ranked high in importance. This is the traditional method of hazard assessment and therefore has been an arguably easy way of planning for climate impacts, if only because it is a familiar formula. After all, climate change presents risks that must be addressed and this is a readily available method for determining those risks. Some are beginning to question the utility of this method, however, in identifying vulnerability in the area of climate change adaptation.

Jones and Preston directly address the utility of risk management approaches for adaptation to climate change. Their thesis "is that risk management frameworks should be the major vehicle used for climate change assessments, including those for adaptation" (2010, p. 2). Yet they note that standard modes of adaptation are lacking because they do not necessarily encompass social elements in the prediction/optimisation process and therefore, risk management should be an iterative and learning experience.

Kennedy et al. agree. They argue:

> On their own, risk management strategies may not be enough to adequately manage system complexities and dynamics associated with climate change, and might even close off options that include building system resilience. We suggest resilience frameworks, adaptive and transition management, and vulnerability assessments complement risk-based approaches with greater understanding of adaptation as well as the production of quality policy and practical outcomes. (2010, p. 806)

The authors suggest some complementary approaches to risk management, including resilient systems; adaptive management, transition management and social learning; and vulnerability assessment. This is a clear indication of the *dynamic* nature of vulnerability – the concept that is encompassed in Fussel and Klein's fourth question. Vulnerability cannot be treated as a static form but as dynamic, emphasising the need for the practice of review in risk management as the fifth step in the process. This burgeoning conflict between the adequacy of risk management alone and the importance of expansion beyond risk management, to consideration of vulnerability at large, is at the heart of this thesis. In its simplest form, it represents the struggle between a focus on biophysical impacts of climate change, and CCAPs that include concern for socio-political factors. This is the very categorisation that I apply to the CCAPs in the database in Chapter Three and is what makes the vulnerability literature crucial to this thesis.

Examining the Socio-political in Relation to Vulnerability

In order to determine vulnerability according to Cinner et al.'s equation, we need a metric by which we can measure 'adaptive capacity.' This third level of analysis is

often viewed as the 'socioeconomic' frame of vulnerability, and it is the key to developing from a risk-based to a vulnerability-based approach. This vulnerability-based approach has significant impacts on the prioritisation of adaptive actions within CCAPs. There has been some confusion, however, about the differences between 'risk/hazard assessments' and 'vulnerability assessments.' Fussel (2007a) has attempted to clear some confusion with his classification of vulnerability definition. He refers to the 'risk–hazard approach' as dealing with the physical environment dimension and notes its difference to the political economy approach, which incorporates a socioeconomic dimension.

At this point, we begin to appreciate the complexity of defining what is vulnerable. For example, take Fussel's (2007b) comparison between Tibet and Florida. He points out that some will claim Tibet is more vulnerable than Florida because they are a lesser developed country, have less capacity for income diversification and therefore, have few options if their livelihood is threatened. This may be viewed as "vulnerability as absence of entitlements" (Adger, 2006, p. 271). If considered from a different angle, Florida may be considered more vulnerable because it is low-lying and therefore susceptible to sea-level rise. In this way, measures of vulnerability can be approached in different ways. If we reflect on Fussel and Klein's first question from the beginning of this section, Adger et al. offer some insight. Vulnerability as an 'end point' represents "climate change impacts minus adaptation," whereas vulnerability as a starting point "involves a set of attributes generated by social and environmental processes, including climate change, which limit the ability to cope with climatic and other stresses" (2006, p. 5). From this point of view, Tibet suffers vulnerability from a starting point, with a significant socioeconomic dimension defining that vulnerability; while Florida may be seen to suffer end-point vulnerability

based on the physical environment. In the case of Australian councils, the difference between biophysical-based CCAPs and socio-political-inclusive ones can be the difference between recognising end-point vulnerability alone or considering both end-point and starting point vulnerability that takes into context the socio-political dimensions.

The Allen Consulting Group (2005) developed a framework of vulnerability that they have applied in two different ways. The first is an application to sectors at risk (for example, agriculture) and the second application is to regions at risk (for example The Murray-Darling Basin). In each case, the sector or region is tested against five factors to assess vulnerability: exposure, sensitivity, adaptive capacity, adverse implications, and potential benefits. The Allen Consulting Group's framework has caused some problems, with some having noted the need for a separation between risks and vulnerability. Nelson et al. (2010b) have criticised the above framework for conflating hazard assessment with integrated vulnerability assessment. They claim that "definitions are not conceptual frameworks, they simply shift the conceptual debate to the subcomponents of vulnerability—what are exposure, sensitivity and adaptive capacity, and how can they be measured?" (p. 11). They prefer Ellis' framework of conceptualising "adaptive capacity as an emergent property of the diverse forms of human, social, natural, physical and financial capital from which rural livelihoods are derived, and the flexibility to substitute between them in response to external pressures" (Ellis in Nelson et al., 2010a, Table A3). In other words, the socioeconomic and political realms are always relevant. Their main contention is a reaction to the inability of Allen Consulting Group to define adequately the crux of the socioeconomic frame of vulnerability – that of adaptive capacity. Their paper proves that without defining this key component, you are left with the traditional

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'hazard assessment' of likelihood–significance. Conducting case study analysis in rural Australia, Nelson et al. note:

> The Australian evidence . . . shows that the rural communities that have experienced the most variable rainfall and pasture growth are not necessarily those that have experienced the most variable farm incomes. This provides tangible evidence that farmers in regions with severe climate variability can and have developed appropriate farming systems to manage this variability. It also demonstrates how misleading it can be to substitute or confuse hazard or impact modelling with more integrated approaches to vulnerability assessment. (2010a, p. 21)

Burton et al. (2002) provide five explanations why vulnerability assessments (which typically use methods of risk management) have not provided adequate information for the development of adaptation policy:

1. There is insufficient consideration of more pressing immediate and short-term policy issues, in particular in developing countries.

2. There is insufficient knowledge of future climate conditions on the scale relevant for adaptation decisions.

3. There is insufficient consideration of diverse adaptation options in most climate impact models.

4. There is insufficient consideration of the factors determining the adaptation process itself, including adaptive capacity.

5. There is insufficient consideration of key actors and of the policy context for adaptation.

Points four and five of that list point to the importance of considering the impact of socio-political settings when adapting, as these ultimately affect the adaptive capacity of a community. Additionally, Fussel and Klein outline three types of models for climate change vulnerability assessments: risk–hazard (from risk and disaster management), social constructivist (social vulnerabilities a priori), and hazards of place (integrates biophysical and social determinants). They note:

> Under ceteris paribus conditions, adaptive capacity and vulnerability are negatively correlated . . . Endogenous factors [for adaptive capacity] refer to the characteristics and behaviour of the considered population group whereas exogenous factors include the wider economic and geopolitical context. (2006, p. 320)

It is this variety of factors that affect vulnerability that we now turn to, with a particular focus on the socio-political frame.

Socio-political Inclusions: What Does Adaptive Capacity Really Mean?

Gurran et al. (2008) found that "in locations where social resources are greater – due to higher household incomes, more diverse age profiles, and community stability, the capacity of populations to independently adapt to the impacts of climate change is greater." Adaptive capacity is dependent, therefore, on the socio-political context of an individual or community. But what exactly does that socio-political context encompass? Understanding what exactly influences adaptive capacity has been discussed in the literature at length.

Kelly and Adger's (2000) work falls under the 'socioeconomic' frame of vulnerability definition. They consider the effect of poverty, inequality and institutional adaptation as measures of adaptive capacity and conducted case studies within Vietnam. They

studied the effect of storms and cyclones on the adaptive capacity of Vietnamese communities and found that the poorer households were more vulnerable due to a lack of access to resources and a reliance on livelihoods that can be severely affected by flooding (e.g. salt-making). Kelly and Adger also note that communication constraints increase the collective vulnerability of the community. Communicating openly with a community and maintaining lines of education can improve the vulnerability of a group by preparing them for impacts and providing them with tools to adapt in the crisis.

Marshall (2011) also considers the collective and social aspects of communities when defining vulnerability. She points to the importance of 'networking' to build adaptive capacity. Her focus is on those employed in the Australian fishing industry, and she notes that local knowledge can be a hindrance in this industry as the fishers know a lot about fishing but do not necessarily have the skill transfer to diversify their income if the industry is affected. She points to the importance of networking with other fishers and those outside the fishing community in order to build adaptive capacity. Creating strong relationships becomes important for adaptive capacity.

We have seen that social aspects play an important role in defining vulnerability in relation to the actual changes brought about by climatic fluctuation. O'Brien et al. (2004) have written on *Mapping Vulnerability to Multiple Stressors*, using India as an example. The methodology involves mapping a region according to its climate vulnerability and then mapping over that same region another stressor in order to see which areas have 'double exposure.' In the case of India, the authors mapped the projected effects of climate change and economic globalisation. They conclude that:

What the case studies show, which was not visible through the national

profiles, is the effect that institutional barriers or support systems have on

local-level vulnerability. In the cases of Jhalawar and Anantapur, institutional

barriers leave farmers who are 'double exposed' poorly equipped to adapt to

either of the stressors, let alone both simultaneously. In Chitradurga, on the

other hand, institutional support appears to facilitate adaptation to both

climatic change and globalization. However, these supports tend to

disproportionately benefit the district's larger farmers. (O'Brien et al., 2004, p.

311)

This type of analysis can yet again employ O'Brien's distinction of vulnerability as a

starting point as it identifies social and environmental processes at play. It also

engages with Fussel and Klein's third question concerning the role of external

stressors in vulnerability.

The thesis engages with the vulnerability literature by considering new questions in

relation to vulnerability. The question at this point is how do practitioners who

develop CCAPs define vulnerability, given the complexity of the term in the

literature? I posit that CCAPs can be categorised as either biophysical-based or

inclusive of socio-political concerns. The indicators of socio-political concerns for

adaptation developed in the next section are a result of a combination of the

previously outlined literature and the study of collected CCAPs in the database.

It can be difficult to identify 'institutional barriers' in CCAPs. There is a disconnect

between the language of academic literature and that of adaptation policy. Therefore,

three areas of socio-political concern are identified in CCAPs and have a root in the

vulnerability literature. These include vulnerable groups, mental health

considerations, and education. Each of these is outlined briefly below in order to establish key areas that can impact a council's vulnerability to climate change and, in turn, their adaptive capacity.

Vulnerable Groups, Mental Health, and Education as Components of Adaptive Capacity

The preceding sections have underlined the importance of socio-political factors when planning for adaptation. This research was organised into three areas whose importance has been agreed upon by the academic community as influential on vulnerability. Climate justice and concern for vulnerable groups, and mental health impacted by climate change, both represent socio-political factors that influence the vulnerability of communities. Variation across the country in the inclusion of these factors is presented in Chapter Three and analysed in Chapter Five. Education and the role of deliberative democracy are also explored as a part of the CCAP development process and is recognised as crucial to adaptive capacity. Here too, variation is identified in Chapter Three and explained in Chapter Six. While there are certainly other areas which help frame the socio-political context of adaptation, these three were chosen because they were not only represented in the literature but also because they are used in the language of CCAPs in Australia. Ultimately, the analysis reveals how an indistinct remit within local government has led to variation in the uptake of a socio-political framing of vulnerability.

Many scholars have pointed to the importance of social capital in developing the adaptive capacity of communities. They note that communities with healthy social networks are more able to cope with climate change itself as well as adaptation. Such scholarship recognises that adaptation occurs as a collective rather than individual activity, a fact that can be observed by the very nature of CCAPs pertaining to a

council area or regional groups of councils within which many stakeholders reside. Pelling and High (2005) point to the utility of understanding the informal relationships, trust and reciprocity that shape and give meaning to collective action. Adger notes that the ability of societies to adapt is in part, "bound up in their ability to act collectively" (2003, p. 388). He notes that adaptation processes involve *interdependence*: of people, institutions, and the resource base they share. Adger points out that these relationships are particularly important during the "unforeseen and periodic hazardous events" caused by climate change (2003, p. 392).

Vulnerable groups and mental health influence the adaptive capacity of a community, and are examined in detail in relation to CCAPs in Chapter Five. It is understood that councils who embrace these indicators recognise the importance of the socio-political context and while they may not engage directly with the language of 'adaptive capacity' they certainly see the benefit of addressing these areas as well as the biophysical risks. The level of engagement with a community through education and consultation is also linked to their adaptive capacity and is therefore examined in the research in Chapter Six. The varying approaches to community education and consultation speak to the political difficulty of discussing climate change in Australia and examination of these factors illuminates variation across Australian CCAPs.

Vulnerable Groups

A council can better understand their starting point vulnerability by considering how climate change adaptation can exacerbate the pre-existing inequity within a community. In a broader sense, this can be understood as embracing the theory of climate justice, as in practice it represents caring for the most vulnerable groups when adapting. People affected by pre-existing vulnerabilities in Australia are predisposed to be more affected by climate change than other Australians. The presence of this

indicator in a CCAP can indicate an engagement with a notion of 'justice' when adapting to climate change (i.e. that the most vulnerable need to be protected when a community faces collective vulnerability). In Australia, recognising disadvantaged groups may range from CCAPs identifying challenges for Indigenous communities, the elderly, the disabled and/or the homeless. In a recent Citizen's Panel held by the City of Sydney for the development of their CCAP, citizens were quick to express concern for how climate impacts would differentially impact the elderly, children, the physically disabled, and the mentally ill (Schlosberg et al., 2015).

The theory of 'recognition' as justice becomes important here as CCAPs that truly embrace the socio-political context of adaptation planning should be cognisant of the types of vulnerable groups who require assistance, as well as being aware that their involvement in participatory processes is key (Schlosberg, 2007). Whether this is how the concept is interpreted by councils in actual CCAPs remains to be seen, though a thorough examination of this is beyond the scope of this research. This thesis will focus on the presence of concern for vulnerable groups in CCAPs as an indicator of engaging in the socio-political sphere of adaptation.

Mental Health Effects

Climate change presents a number of risks to the physical health of communities; however, the mental health effects of climate change are also pervasive. In fact, recent investigation has shown that those who study climate change are beginning to show the effects of pre-traumatic stress disorder (Holmes, 2015; Richardson, 2015). The website "Is This How You Feel" provides accounts of climate change researchers who experience periods of extreme sadness and hopelessness (Various Authors, 2014). These feelings are increasingly also being felt by the victims of severe and more frequent extreme weather events.

Mental health post-disaster has already been identified as a key stressor that affects adaptive capacity. Norris et al. have pointed to the roles "bereavement, injury to self or family member, life threat, property damage, financial loss, community destruction and displacement" play in affecting the resilience of communities (2008, p. 589). While considering the health impacts of floods, Haines et al. (2006) point out that the spread of infection is less of a risk for industrialised countries than the increase in common mental disorders such as anxiety and depression due to damage to the home environment and economic losses. Given the growing number and increasing devastation of extreme weather events due to climate change, addressing the mental health concerns caused by these seems a pertinent consideration for councils developing CCAPs, especially since Australia is one of the 'industrialised countries' that Haines et al. theorise about.

Berry et al. have written extensively on the topic of adaptive capacity and mental health here in Australia. Firstly, on the link between mental health, caring for Country and adaptation in Australian Indigenous communities (Berry et al., 2010b) and secondly on the mental health of farmers in Australia and their ability to cope with climate change (Berry et al., 2011). This academic literature indicates that Australians have reason to incorporate the effects of climate change on mental health in adaptation planning and it has therefore been chosen as one of the socio-political elements to be identified within the CCAPs.

Education

Differences in levels of formal education have already been referenced by Cinner et al. (2012) as indicative of the adaptive capacity of individuals and communities. Cinner et al. point to general literacy levels as an indicator; more specifically, academics and practitioners alike have pointed to the importance of education about

the impacts of climate change in preparing communities for adaptation. The *ICLEI Local Government Adaption Toolkit* encourages councils to "facilitate an increased level of awareness, ownership and individual action regarding preparing for bushfire events" through educational programs (2008, p. 83). 'Ownership' of climate issues can also be achieved through a process of deliberative democracy, which plays a role in creating legitimacy around a policy as well as being a tool for educating the community about complex issues such as climate change.

Tang et al. (2012) have studied the decisions made by local planning directors in preparing for climate change. Within Tang et al.'s framework, they highlight education as one of the socioeconomic context variables to understanding the awareness, analysis scopes, and implementation strategies of these decision-makers. They note, "a jurisdiction with higher education level may have a higher perception of the need for environmental protection and more enthusiasm for participating in environmental management activities" (2012, p. 99). Tang et al. are speaking of general education levels, but they also recommend that climate change issues specifically be integrated into higher education for the next generation. Beggs and Bennett (2011) also point to the importance of education about climate change and human health in general, while Wamsler et al. (2012) promote formal education as a way to directly increase people's adaptive capacity. Councils are well-placed to directly educate communities about the risks of climate change and possible adaptive actions specific to the local area. The following section outlines the varying breadth with which councils may undertake this task.

Climate Change and Community Engagement

Community engagement is a key consideration in this thesis because it encompasses the ways in which councils undertake 'education' – one of the indicators of a socio-

political inclusive CCAP. Deciding the extent to which a council engages a community on the question of adaptation can vary as much as the forms of engagement that are available to them. Community engagement can and is used to describe processes as diverse as simply providing information to citizens, right through to immersing them in a problem and asking for their feedback on how to approach it (International Association for Public Participation, 2004). Ensor and Berger argue for the role of building social networks to improving adaptive capacity, not least because these networks offer "opportunities for training and information exchange, political engagement and influence in policy issues" (2009 p. 169).

Deliberative democracy is a key tool in educating communities about climate change. It is a "theory that in part addresses the failing representative mandate in liberal democracies and explores a broad range of mechanisms for overcoming the profound disconnect between citizens, their political representatives and the policy-making process" (Crowley, 2009, p. 996). Howes et al. (2012) identify improved community engagement and communication as a key area of development within disaster risk management, an area with distinct and strengthening links to climate change. The role deliberative democracy plays in adaptation planning can influence how a community is introduced to the topic, what they learn about it, and how they think about it into the future. This is because deliberative democracy represents a more immersive experience with the subject matter than a process of 'informing' the community about climate change. It can provide an opportunity for councils to educate citizens about the conditions to which they need to adapt and to ask for their input on adaptation strategy (Schlosberg et al., 2015).

In 2009, Larsen and Gunarsson-Östling considered the deliberative process by distinguishing between 'preserving' and 'transforming' scenarios. This vocabulary is

the precursor to Pelling's (2011) development of the 'resilient-transitional-transformational' framework for climate adaptation where 'preserving' means retaining current structures and 'transforming' indicates a shift to building new structures. It can also be compared to Dryzek and Stevenson's (2011) description of the political discourse around climate change being either conservative or progressive. Larsen and Gunarsson- Östling carefully consider the pros and cons of partisan deliberation (involving stakeholders) and non-partisan deliberation (based on a random sample). They conclude with the theory: "If the content values are not safeguarded, the scenario constructed does not reach the important target of reduced climate impact. On the other hand, if process values (inclusion of different stakeholders) are not safeguarded, the outcome is not legitimate" (Larsen & Gunnarsson-Östling, 2009, p. 265). Legitimacy is crucial to achieving truly transformative adaptation. The two go hand-in-hand, making education and consultation important for both adaptive capacity and for achieving adaptation at the radical end of the spectrum. The latter is needed to achieve the level of change required to adapt to future severe climate impacts.

Hobson and Niemeyer have considered the utility of deliberation in researching adaptive capacity to climate change (2011). The researchers use Q methodology to gauge community responses from the Australian Capital Territory (ACT) on four original discourses: Self-assured Scepticism, Governance Imperative, Assured Pragmatism, and Alarmed Defeatism. A percentage of respondents then took part in deliberation and produced two altered discourses and two new ones: Accommodating Scepticism, Governance and Engagement Imperative, Collective Action Imperative, and Adaptive Reassurance. The paper highlights the potential for deliberation to foster adaptive capacity at both the individual and collective level.

One of the areas to consider is the question of stakeholder inclusion in deliberative democracy. This process can be fraught with difficulty, including questions regarding who to include, at what stage to consult them, and how to characterise the extent of their involvement. In the case of CCAPs, councils are asking themselves if and how they should include the community as stakeholders in the discussion of climate adaptation. Few et al. deals with the specific problem of 'the illusion of inclusion' (2007). They outline the different modes of participation that can take place in deliberation of climate change adaptation. Participation can involve receiving information on already decided outcomes (passive participation), self-mobilisation, or consultative mechanisms where people are invited to submit opinions and undertake a joint analysis of problems. This scale of involvement is encapsulated by the IAP2 (International Association for Public Participation) spectrum (International Association for Public Participation, 2004). Few et al. note:

> Because of scale issues, anticipatory adaptation to climate change is inherently susceptible to the process of containment, particularly where the response entails a radical intervention . . . There may be a stated commitment to stakeholder inclusion in deciding how to respond to climate risks but attempted containment of the public participation 'exercise' is a likely consequence. (2007, p. 54)

The authors conclude that it is important to include the right stakeholders from the beginning and to build trust and enthusiasm; to create a 'consultative' process so that stakeholders can construct and discuss options. And finally, that the workshops are in relatively small groups and use a range of participatory tools. The focus on appropriate stakeholder participation in environmental planning is also expressed by Keen and Mercer, who note that:

A fundamental weakness of LCS (Local Conservation Strategies) can be the perception of an interest group or a sector of the community that they are not involved in the development process. In the case of one of the early pilot LCSs, this was a major factor in a number of difficulties which hampered its later implementation. (1993, p. 92)

The authors found that if certain groups were not included in the development process then there was a chance of pressure groups forming in opposition to the proposed strategy at the point of implementation. This would threaten the legitimacy of the strategy and highlights why community engagement is important.

Education and community consultation are therefore key components in adapting to the impacts of climate change. It indicates that adaptation planners should not merely ascertain the biophysical risks of climate change, but should also share knowledge with the community about those risks, their impacts, and appropriate ways of adapting to them, usually through some form of deliberative engagement. To that end, this research will consider references to 'education' as an indicator of a council widening the scope of vulnerability from 'biophysical impacts-based' to concern for boosting adaptive capacity (references have each been manually coded for context to ensure robust analysis).[4] The thesis will explain variation in CCAPs pertaining to education and community consultation: the inclusion or exclusion of it in CCAPs, as well as explaining the positive way in which it is approached when it is included.

Identifying the Gap in the Literature

The previous section has provided an outline of the vulnerability literature, with a focus on the socio-political aspects of vulnerability. This literature provides a frame in

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[4] See Appendix Part A for a detailed methodology of database compilation.

which I can categorise the CCAPs in the database as being biophysical-based or socio-political inclusive. What is missing from this literature is an examination of how the political context of climate change in Australia impacts on council assessments of their vulnerability. The research will contribute a new theory, 'the politicisation of vulnerability' by developing that political context in Chapters Four, Five, and Six.

Policy Literature

Developing a CCAP at the local government level is an exercise in public policy. It is the development of a strategy for a local council or a group of local councils who intend to plan for the climate impacts to come. This research provides a new case study within the public policy literature, not a substantial new theoretical contribution. Rather, it applies the common agenda-setting, problem definition, and (to a lesser extent) policy entrepreneur theories to the case of local Australian CCAPs. Much has been written about climate change in general and the process of agenda-setting in the policy cycle at the global level and in Europe (Keskitalo et al., 2012; Liu et al., 2011; Pralle, 2009). When it comes to developing CCAPs in Australia where there is a vocal minority of sceptics, examination of the agenda-setting and problem definition stages of the process is very important and currently overlooked. The content of CCAPs vary widely across the country, and this thesis will posit this is due to a difference in problem definition that is facilitated by indistinct local government remit. Before a problem definition is established, climate change must first be accepted onto the agenda. This application of public policy processes contributes a new case study of local Australian CCAP variation to the public policy literature.

Getting Climate Change on the Agenda

The development of climate change adaptation plans is an exercise in policy

formulation and represents the second stage of the policy cycle after agenda-setting

but before decision-making, policy implementation, and policy evaluation (Howlett &

Ramesh, 2003). Therefore, in the development of adaptation policy, climate change as

an issue must first be accepted by a council as worthy of the 'agenda' before they

begin the process of developing a CCAP, and then undergoing the next stage of the

policy process, that of problem definition. In other words, councils need to accept

climate change first as a reality and second as an issue that is within the remit of the

council to address. This may appear to be a simple process; however, given the

sceptical nature of key Australian political leaders towards anthropogenic climate

change, such a position is far from accepted across all Australian councils. While

problem definition and agenda-setting are partly parallel processes, in the case of

adaptation policy development it is best to approach them as two distinct parts. Given

the highly contested nature of the politics surrounding climate change in Australia,

local councils must first accept climate change onto the agenda as a legitimate issue

before they then turn to the process of problem definition. In other words, they decide

that yes, climate change is happening before even considering whether a CCAP is

needed, after which they undertake a process of policy development that leads to an

understanding of what impacts they are vulnerable to and what should be done about

them. It is at this point that the process of problem definition comes into play.

Pralle (2009) has written specifically on the topic of climate change and agenda-

setting more generally. Using Kingdon's (2003a) problem, policy and political

streams as a basis, she develops six strategies for raising the salience of the problem,

five strategies for framing the policy solutions and three strategies for maintaining

political will. The article is meant as a general discussion around having the issue of climate change reach agenda status; however, many of the strategies speak directly to the work of adaptation. For example, half the strategies for raising the salience of the problem are indicative of the focus that adaptation has taken. Firstly, "emphasise specific, local impacts and personal experience" (Pralle, 2009, p. 791) reminds us of the local focus of climate change adaptation and the work of many international organisations to encourage those affected to 'share their stories' (Micah Challenge, 2006). It is this shift to qualitative data that really highlights the importance of socio-political context and illustrates why a study of vulnerability, not just climate risks, should be central to adaptation planning.

This is a reflection of what Cobb and Elder (1972) define as two different types of agendas: the systemic agenda and the formal agenda. Issue-access to the former is dependent on widespread attention or awareness, shared concern by a sizable percentage of the population, and a shared perception that the matter falls within the authority of a governmental unit. In contrast, formal agendas are described as institutional or governmental agendas that are characterised by the discussion of 'old' and 'new' items. Issues are unlikely to reach formal agenda status if they are not first on the systemic agenda and, in order to do so, the issues should be visible and defined ambiguously to have implications for as many people as possible. In the case of climate change, the ubiquity of the term in day-to-day media indicates that it is very visible, although the issue is perhaps not so much defined ambiguously as it is in itself ambiguous by nature, especially when considering the role of prediction and unknown outcomes on climate impacts in adaptation planning. Jones et al. refer to the 'systemic' as the 'public' agenda:

> If an issue is not directly placed upon the formal agenda, then its expansion in the public arena may serve to heighten public awareness and facilitate the mobilization of public support in order to persuade decision makers to elevate the issue to the formal agenda. (2004, p. 384)

The literature is defining these two stages as separate agendas where problem definition plays a role in each; although I argue it is best in the case of adaptation policy to think of the 'formal' agenda as the space in which problem definition truly begins to occur.

A further factor influencing whether problem definitions achieve agenda status is the availability of solutions. Portz (1996) addresses this factor in the first two characteristics of problem definition: political acceptability of causation indicates the acceptability of the solution and the comprehensiveness of solution availability determines success. As Wildavsky writes, "A problem is a problem only if something can be done about it" (1979, p. 42). Kingdon notes "conditions become defined as problems when we come to believe that we should do something about them" (2003a, p. 109). The distinction is important, as Kingdon's caveat that people can 'believe' they are capable of a solution or not speaks to the individual nature of local councils in Australia and suggests that finding solutions is a complex and sometimes subjective practice. Additionally, the wide reach of climate impacts and the gravity of the need to successfully adapt to such a vast and severe threat make the belief that something can be done even more poignant.

In the case of Australia, climate change was most openly placed on the Federal Government agenda in 2007 when Kevin Rudd named it the "greatest moral challenge of our generation". However, the environmental movement was left "sucker-punched"

when the Rudd agenda made it clear that the focus would be on minimising the costs

of cutting emissions is such a way that the coal industry was provided with immunity

(Pearse, 2009, p. 72). While it may have not been a 'win' for climate action, climate

change was certainly fixed in the Australian psyche by the end of 2007.

Climate Change on the Agenda, What Next?

Traditionally, agendas are formed through the competition of issues. Agendas have

limited 'carrying capacities' that only allow for a certain number of issues to be

considered at any one time (Hilgartner & Bosk, 1988, p.53). Crenson defined this as:

"When one issue gains in prominence, others must lose. The life chances of one issue

are therefore bound up with the life chances of others" (1971, p. 160). Therefore, the

principles of selection are based on drama, novelty and saturation, cultural

preoccupations and political biases, and organisational characteristics (Hilgartner &

Bosk, 1988). Issues can be:

1. manufactured by parties who perceive unfavourable bias in the distribution of
   positions or resources

2. manufactured by a person or group for their own gain

3. created by an unanticipated event. (These are known as 'circumstantial
   reactors' and relate to extreme weather events in the case of climate
   adaptation)

4. generated by a person or group for no personal gain. These are sometimes
   referred to as 'do-gooders'. (Cobb & Elder, 1972, p. 83)

The first two of these, which indicate that issues can be 'manufactured,' point to the

amenable nature of the issues. The term indicates that issues are not necessarily

objective, that they can be moulded for the purposes of an individual or group. The last two explanations indicate that issues can be triggered by events (in the case of climate change, extreme weather events may be important) or they can be altruistically developed for a common good. In the case of climate change, this research will discover how Australian CCAP practitioners frame the issues of climate change adaptation. The crucial point is that in order for CCAPs to be developed, a local government must first recognise climate change as 'on the agenda' and then go about defining the problem of climate change in order to develop a CCAP that addresses the issue in an appropriate way. In this way, the use of the term 'manufactured' above is poignant, in that adaptation policy is an exercise in selecting which risks will be prioritised and which will not. It also speaks to the potential influence of political context in framing vulnerability to climate change, a theory that is further developed throughout.

Developing a CCAP is an exercise in framing and understanding a 'wicked problem' (Garnaut, 2008; Head, 2008; Rittel & Webber, 1973). It is therefore useful to consider how relevant climate change adaptation is to the general discussion of problem definition in the literature. It is a wicked problem being addressed at the local level, which means that the problem may be defined at the national level and apply across all councils, or each council may be responsible for their problem definition. Australia is an interesting case study in this regard, as the research reveals that it is the latter that applies in this case.

Stone has developed five causal strategies for problem definitions, drawing on the notion of the political acceptability of causation.

1. Show the problem is caused by an accident of nature.

2. Show the problem formerly interpreted as an accident is actually the result of human agency.

3. Show the effects of the action were secretly intended by the actor.

4. Show the low-probability effects were a calculated risk taken by the actor.

5. Show the causation is so complex that only large-scale policy change at the social level will alter the cause. (Stone, 2007, p. 204)

These causations can then be used to either allocate blame and/or provide an explanation (Houston & Richardson Jr., 2000). I argue that the allocation of blame in adaptation policy is key to the acceptance of the issue to the agenda, while the provision of an explanation is an important part of the problem definition of CCAPs. This is due to continued debate over the reality of anthropogenic climate change, which represents the difference between Stone's first and second causal strategies. Furthermore, the employment of each of these causal strategies will result in different problem definitions of the issue of climate change adaptation, so that those who employ the first causal strategy may not even develop a CCAP while those who adopt the fifth would be expected to have holistic, socio-political inclusive CCAPs. In developing these causations, Kingdon points to the use of data interpretation to take a "statement of condition" to a "statement of policy problems" (2003b, p. 94). He notes that issues can arise from a number of different avenues including government monitoring of anything from road deaths to consumer prices, from specific research studies undertaken, and from disaster or crisis events. This creates the necessary context around the development of adaptation policy and raises questions about what motivates the elevation of climate change adaptation to the agenda and what influences its subsequent problem definition.

In the context of climate change adaptation plans, showing the political acceptability of causation is dependent on local governments accepting Stone's second causal strategy: "show the problem formerly interpreted as an accident is actually the result of human agency" (Stone, 2007, p. 204). This is the definition of the argument for anthropogenic climate change, although the term 'accident' should be replaced with 'naturally occurring' to reflect the terminology typically used (Bell, 2012). In her 2002 book, Deborah Stone outlines four types of causal theories: mechanical, accidental, intentional, and inadvertent. Mechanical causes are the result of unguided actions with intentional consequences, and Stone offers brainwashed people as an example. In a discussion of climate change and its effects, however, the remaining three causes must be considered. Stone had apportioned 'the weather' as an 'accidental' cause – the result of unguided actions with unintended consequences. Yet climate science has taught us more about the climate system, and more about the effect humans have on our climate (and in turn, weather in the form of extreme weather events). This new knowledge means climate change has a rather complex causal theory, which at best is 'inadvertent' (purposeful actions with unintended consequences) and at worst represents 'intentional' (purposeful actions with intended consequences) as we begin to understand exactly how we impact the climate system through our own actions. If local councils are willing to employ the second causal story, then they are able to accept climate change onto the formal agenda.

Making the shift to more detailed problem definitions of this wicked problem, however, becomes more complex. In fact, for local government to accept the socio-political concerns of climate change as legitimate, then a far more developed definition of the problem is needed – one that is alluded to in Stone's fifth causal strategy: "show the causation is so complex that only large-scale policy change at the

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social level will alter the cause" (Stone, 2007, p. 204). This is where a local council can veer towards a socio-political inclusive plan if they accept not just the second causal strategy in the agenda-setting process, but if they accept the fifth one as the crux of their problem definition and recognise that a process of 'transformation' (Pelling, 2011) is required.

The literature on transformation and adaptation to climate change has been growing over the past decade. A number of academics have framed adaptation research with a focus on the concept of transformation. Inderberg (2014) has shown how processes external to adaptation, such as regulation and organisational culture, influence organisational adaptive capacity. Jonsson and Lundgren (2014) found that local decision-makers hold a significant amount of knowledge about how vulnerability and societal factors intersect. Von Oelreich et al. (2013) note that swift sea-level rise means adaptation will need to take place as soon as possible, even despite a lack of vigorous decision-making frameworks. Lujala et al. (2014) explain that personal experience with hazards is not correlated with a belief in climate change as a threat, discounting extreme weather events as necessary opportunities for adaptation policy windows. Pilli-Sihvola et al. (2014) highlight that communication of climate information must improve to increase utility and they single out high-resolution climate scenarios as particularly useful for local decision-makers. The concept of transformation in adaptation is broad and clearly (from this range of studies) interpreted in many ways. The intersection between the transformational adaptation literature and the processes of agenda-setting and problem definition in Australia, however, is yet to be examined and will be addressed in Chapter Seven.

Problem Definition – Socio-Political Concerns Enter the Picture

Problem definition is an important process that defines how a council will frame climate change as a problem. The process of identifying and prioritising risks for a CCAP represents the policy-development practice of problem definition. Baumgartner (1989) names three levels of political conflict: (a) whether a problem exists, (b) what the best solution is, and (c) what are the best means of implementation. He elaborated by pointing out that the answers to these questions could be achieved through 'reflective theory' (based on beliefs, values, and sentiments of the social psyche) or 'hypodermic theory' (based on the responsibility of powerful political and cultural leaders and ideological hegemony). In the case of CCAPs, a reflective theory would indicate that inclusion of socio-political impacts means a council values more than the biophysical environment and believes that it is within their power to extend their scope to the socio-political. A hypodermic theory would suggest that councils are responding to a cultural norm to include socio-political elements. This research directly addresses how the indistinct remit of local council accounts for the variation in CCAPs. It finds a direct engagement with this reflective theory, but a certain amount of cultural norm influence (hypodermic theory) can also be identified.

One way of defining a successful problem definition is determining if policy makers and the public accept it. Problem definitions define the boundaries of the issue and, therefore, determine the level of response. Portz (1996) has written about problem definitions achieving success and outlines three crucial factors: high visibility, strong political sponsorship, and the availability of viable solutions. The literature has expanded on the success of reaching agenda status by taking each of these factors in turn. In particular, the importance of high visibility is emphasised. Portz elaborates on the notion of high visibility by noting that this requires a combination of severity,

incidence, novelty, proximity and/or crisis. Rochefort and Cobb add "problem populations" to this list, recognising the importance of the visibility of the group affected by the problem definition and citing minority groups as an example (1994, p. 24). The media also plays a great role in the visibility of issues that gain agenda status. "Media tone promotes an atmosphere of enthusiasm or criticism that can focus attention on a particular problem definition" (Portz, 1996, p. 379). Extreme weather events are a clear example of a 'crystallising moment' for many local governments, although the unwillingness of the Australian media to draw a clear link between these events and climate change makes achieving agenda status difficult through this means.

Climate Change and Policy Entrepreneurs

The second factor for problem definition success is strong political sponsorship and has been espoused in a couple of different ways throughout the literature. Houston and Richardson note that "An effective entrepreneur is articulate, visible, willing to commit energy to the issue and, and perceived as knowledgeable and credible in terms of information offered" (2000, p. 493). Portz (1996) also makes reference to this concept in his third characteristic for problem definitions. He claims that along with the political acceptability of causation and the comprehensiveness of solution availability, problem definitions also require a claim of authority or knowledge. Cobb and Elder discuss political sponsorship in terms of accessibility to the policy process by noting "differences in accessibility to decision-makers are a function of the relative legitimacy of various groups" (1972, p. 92). This legitimacy can be attained through the right entrepreneur. Rochefort and Cobb (1994) have explained the difficulties of political sponsorship from the perspective of responsibility. They discuss the issue of

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'problem ownership,' which may be seen as assigning the responsibility for the success or failure of solutions to a single individual or group.

Policy entrepreneurs have been identified as playing a role in the development of climate change policy (Bahadur & Tanner, 2014; Beeson & Stone, 2013), but there is little work on the role of policy entrepreneurs specifically in climate adaptation policy. While there is research into the role of policy entrepreneurs in the development of drought policy in the United States and Australia, it is clear that this policy is viewed as separate from climate change policy with the suggestion barriers to entrepreneurs are being overcome "in the area of climate change, if not for drought" (Botterill, 2013, p. 108). This indicates a separation of the drought policy and its analysis from climate change, despite the increasing connection between these events and climate change (Bahadur & Tanner, 2014; Beeson & Stone, 2013). This thesis will uncover exactly how useful the theory of policy entrepreneurship is for explaining differences in CCAPs across the country. Findings show that the inclusion of socio-political factors such as vulnerable groups and mental health can be attributed not to traditional policy entrepreneurs but to a new subset: the ad hoc policy entrepreneur.

Conclusion

The research findings show that agenda-setting and problem definition are crucial to explaining the variation in CCAPs across Australia. A comprehensive study of CCAPs in Australia, such as the one in this thesis, has not yet been achieved and thus the findings that illustrate a role of the policy process literature in the specific areas of agenda-setting and problem definition create a significant new case. While there has been work conducted on the various problem definitions employed by practitioners to

discuss climate change policy at the global and national levels, a local council focus such as this (and one based in Australia) is unique.

If determining vulnerability involves analysing the exposure, sensitivity and adaptive capacity of an individual or community, then the follow-up question must be about how are to determine a *measure* of exposure, sensitivity, and adaptive capacity. This thesis will argue that in the context of local government development of CCAPs, determining 'exposure' is a common practice, though it is executed not in the language of vulnerability, but in that of 'risk management.' The practice of evaluating 'sensitivity' can be understood in terms of the socio-political context of adaptation, including consideration of vulnerable groups in society and the impact of climate change on mental health. Finally, adaptive capacity in a developed country such as Australia (as opposed to developing countries) is less about a reduction in poverty, improvements in literacy levels, increases in the value of products produced, and good governance. Although attention to these areas is important, perhaps one of the best ways to improve adaptive capacity is to educate and/or include the community in decision-making about climate change.

This literature review has dealt with two areas that intersect in the study of climate change adaptation plans: the concept of vulnerability, and the policy process literature. The research will seek to explain variation in CCAPs across the country, despite councils having access to the same government-approved guidelines outlined in Chapter One.

As an exercise in public policy, it is prudent that the development of CCAPs is considered in relation to the policy process literature. This chapter has outlined the relevant literature, focusing on the roles of agenda-setting, problem definition, and

policy entrepreneurs. A highly political subject such as climate change is crucial to consider in the context of how the problem and subsequent solutions are defined by policy makers.

The public policy literature then intersects with the vulnerability literature in this research. The definition of vulnerability has significant impacts on the prioritisation of adaptive actions within CCAPs. Identifying risks, both biophysical and socio-political, is an exercise in deciding how communities conceive of vulnerability. Adaptive capacity, as an important component of vulnerability and of climate change adaptation, is a key concept for adaptation practitioners to engage with. Broadening the scope of vulnerability to include socio-political risks on top of biophysical risks is a key area of that vulnerability/adaptive capacity literature.

The following chapter will outline the findings from the database of Australian CCAPs, collated for this research.

Chapter Three: Categorising a Database of CCAPs as Biophysical-Based or Socio-political Inclusive

The most useful way to begin this study is to establish what climate change adaptation planning is actually taking place across the country. The evidence that suggests it is crucial for communities to adapt has been outlined in the first chapter, and that has been supplemented by the financial incentives for adaptation planning offered at the federal level through the Local Adaptation Pathways Program (LAPP). There is no definitive source, however, on exactly what climate change adaptation policy actually looks like in Australia, as there is no state or national database of adaptation planning. As a result, this research begins by developing a unique database of CCAPs from across the country. This chapter will introduce some basic analysis from the database of CCAPs and establish the variation between CCAPs that is examined throughout the thesis.

The key research question for this thesis is this: how can we explain the variation in the prioritisation of socio-political concerns in CCAPs developed by local governments across Australia? With this in mind, the chapter will categorise the CCAPs collected as either biophysical-based or inclusive of socio-political concerns. As we have seen in the previous chapter, socio-political elements directly impact the adaptive capacity of a community, therefore influencing how communities perceive of their vulnerability to climate change. Ultimately, this chapter identifies two indicators of socio-political impacts in a CCAP, namely the inclusion of concern for vulnerable groups and mental health. It presents the findings of the dataset of CCAPs to show which plans reference these two indicators, laying the groundwork for the following chapters that will examine the inclusion of each of these indicators in turn and provide an explanation as to how they come to be included in Australian CCAPs. A second

variation is also established by this database of Australian CCAPs. This second variation revolves around the inclusion of education and consultation about climate impacts and adaptation within CCAPs. The literature in the previous chapter has highlighted the importance of educating communities about climate change and, by extension, involving them in the process of CCAP development. Therefore, the variation in references to education and/or consultation is also established from the database of CCAPs.

The chapter begins by outlining the difference between biophysical-based CCAPs and socio-political inclusive CCAPs, the first level of variation to be examined. The second variation, in education and community consultation, is then incorporated into the research. Once these levels of variation have been contextualised within the adaptation literature, an analysis of the database is presented. A summary of the findings from the database is then provided. A number of plausible hypotheses are examined and eliminated as possible explanations for the variation between CCAPs established by this research, thus establishing the need for further investigation through surveys and interviews.

A New Dataset of 'Overarching' Climate Change Adaptation Plans

In initiating this research, it became apparent that there was no single repository for CCAPs in Australia. This was concluded after phone and email correspondence with the NCCARF, the Department of Climate Change, the Offices of Climate Change in each state, Local Government Associations of each state, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). While no repository of CCAPs could be located, many of the people I spoke with in trying to locate this data expressed interest in accessing such a database if it were developed. The first stage of

this research, therefore, was to personally collate the database. This research focuses on the development of only one of the four types of CCAP – the 'overarching' document, which includes CCAPs with a holistic focus rather than specific coastal, case study, or business continuity strategies. The database holds the information for this type of CCAP only; although I have since been approached to aid others in the development of databases that would hold the information for all Australian coastal management plans (Ware, 2015). When initiating this research, there were limited models for collating a database of CCAPs. The Georgetown Climate Center has developed an interactive and sophisticated database of state, local, and regional plans from across the US (2011), although a database at this level was beyond the efforts of a single individual.

The information collected for my database included whether or not the council had developed an 'overarching' CCAP, whether that CCAP was specific to the council or the result of regional efforts, the year the plan was established, the population of the councils, and the geographical type of the councils.[5] It also notes the URL location of the plans and which consultants aided in the development of various plans.

Ninety-seven overarching CCAPs were collected from across the country – a mix of individual council and regional efforts to produce CCAPs. These 97 CCAPs cover 12.6 million people, or 55% of the population. New South Wales (NSW) has the most individual CCAPs of any state and is tied with Western Australia for the most regional CCAPs. It is important to emphasise that this research is focused on adaptation planning country-wide, not just coastal adaptation. In a country like Australia, that means a range from the largest capital city (Sydney, NSW, population 4,391,674) to the smallest rural towns (Belyuan, Northern Territory, population 181).

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[5] See appendix 'Part A' for detailed methodology of database collation.

It means engaging with councils who have very different foci for their town planning and infrastructure needs, from those who are continually expanding, to the more agricultural areas which are getting by with what they have.
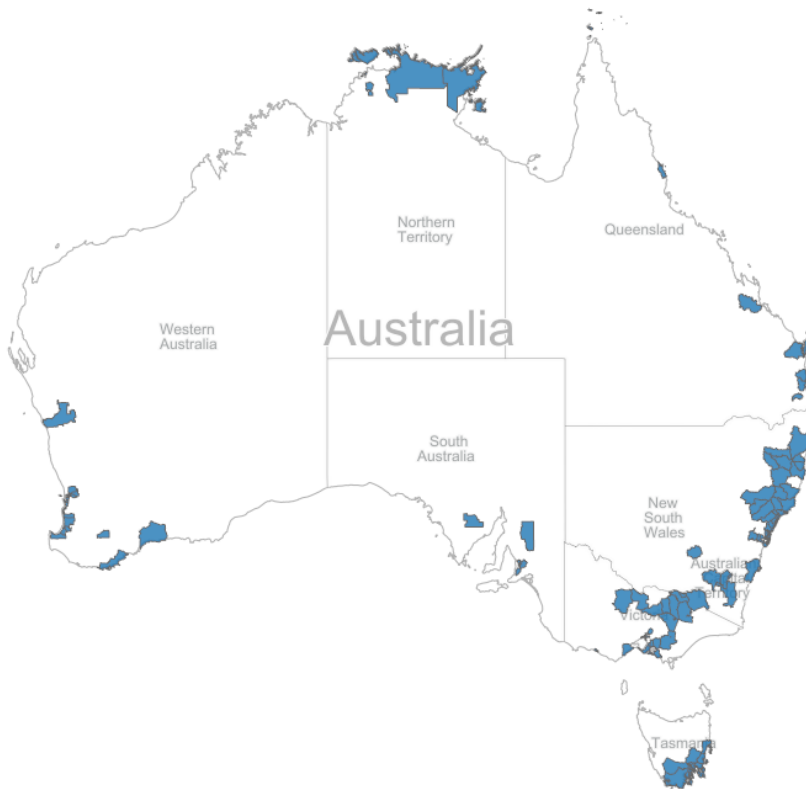
Figure 2 – Map displaying areas of Australia covered by a CCAP

This is a distinct departure from adaptation research in Australia, which has focused the bulk of case study research (and adaptation research funding) firmly on the coast (Department of Environment and Heritage Protection, 2013; S. Graham et al., 2013; Gurran et al., 2013; NCCARF, 2015b). This is despite there being very well developed literature in Australia on the impacts of climate change on Australian farmers. It is important to consider the adaptation practices of coastal *and* inland Australian communities, both of whom are threatened and are developing CCAPs. The literature is yet to approach the country as a whole, with work often separated

along rural and city lines. For example, flexibility and strategic allocation of resources are reflected in recommendations made by Hanna et al. in regards to Australian farmers. The authors point out "Australia is regarded as being more vulnerable than most OECD countries to climate change, largely because of its 'fragile environment' and highly variable climate, that under 'pre–climate change conditions,' is classified as extreme" (2011a, p. 109s). For this reason, farmers need support:

> to change crops or stock breeds that can survive on very poor pasture, such as hardy meat sheep (wiltipolls – wool-less sheep); new practices in landcare management and regeneration; assisting farmers to restore carbon to their soils, which improves soil nutrients and therefore productivity and water holding; and better water management and water sharing practices. These can all contribute to resilience where such strategies are led and managed by farmers and local organizations, and solar and wind power generation can provide rural incomes. (Hanna et al., 2011a, p.113s)

Importantly, the authors agree that worst-case scenario outcomes must be planned for. While it may seem unlikely for rural councils who face such daily difficulties to be involved in anything more than a focus on the biophysical impacts of climate change, the assumption is not true. Indeed, as is explained later, mental health in Australian farmers is a key area of research for climate change scholars. This group may provide the best example of what biophysical impacts of climate change can destroy, not only for the people who farm the land but also for the rest of country dependent on their successful output. To continue to exclude them from adaptation research is a terrible oversight.

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Once the CCAPs had been collected in the database, the next task involved

identifying the level of scope of vulnerability within each CCAP. There was notable

variation in the identification of risks in climate change adaptation plans. The next

section of this chapter will introduce socio-political considerations for determining

vulnerability, and explain how this was used to establish difference between

biophysical-based and socio-political inclusive plans.

Categorising the CCAPs: Biophysical-Based or Socio-political Inclusive?

In the *Oxford Handbook of Climate Change and Society*, Dale Jamieson describes

humans as having "a strong bias towards dramatic movements of middle-sized objects

that can be visually perceived, and climate change does not typically present itself in

this way" (2011, p. 48). Jamieson's insight captures the complexity of the

phenomenon, given that it manifests itself in gradual rather than dramatic movements;

is perceived as more of an intangible threat than a middle-sized object; and one that

we cannot simply 'see,' at least not until we witness the devastation of extreme

weather events. Unravelling the complexities of climate change is often achieved

through the same means as any wicked problem – the demarcation and

characterisation of the areas or parts that it affects. The adaptation literature has

attempted to unravel the complexity of the issue through a number of different

frames, with developments from risk assessment (Walsh et al., 2004), to integrated

vulnerability analysis (Heltberg et al., 2009; Kennedy et al., 2010), to a values

approach (S. Graham et al., 2013). There have been quantitative studies on how to

estimate the costs of climate change risks under different scenarios (Hunt & Watkiss,

2011), and qualitative ones that examine the role of concepts such as vulnerability

(Füssel, 2007b) and resilience (Bahadur & Tanner, 2014). More recent work has

developed in relation to Pelling's (2011) notion of adaptation as transformation (Aall

et al., 2015; Kates et al., 2012). This is all useful and important work. But an investigation of the CCAPs for an entire country is yet to be achieved. This research does just that, with a view to categorising the collected CCAPs according to variation in identification of vulnerability. The focus on this variation arose organically from analysis of the CCAPs themselves. Upon examination of Australian CCAPs, it was clear there was a demarcation in the plans; a different between biophysical risk and social-inclusive foci. The first level of variation is between biophysical-based CCAPs and socio-political inclusive plans. The following section will outline this distinction, focusing on planning and infrastructure as the biophysical focus of CCAPs, and identifying vulnerable groups, and mental health as socio-political concerns within adaptation planning.

The collation of the CCAP database was the first step in this research. The next step was to evaluate the collected CCAPs. Variation in climate change adaptation plans is not necessarily unexpected; especially when examining the CCAPs for an entire country, some variation between areas is to be expected, even if only because different geographical areas present different climate risks. Distinguishing socio-political concerns from biophysical impacts-based vulnerabilities in adaptation planning, however, has a less obvious explanation. Three key elements of the socio-political realm that must be considered in relation to Australian CCAPs can be understood and explained by the academic literature on socio-political vulnerability to climate change. Pre-existing vulnerable groups and mental health considerations represent socio-political concerns for adaptation planning and present a vulnerability-based rather than risk management focus of CCAPs. Variation in the education and consultation of communities can also be established. The inclusion of each of these

three elements plays a role in determining the adaptive capacity of communities. But first, we turn to establish the biophysical base upon which all CCAPs are developed.

Urban Planning and Infrastructure – a.k.a. the Biophysical Focus of Adaptation

All adaptation plans in the database engage with the biophysical impacts of climate change. Before turning to the socio-political and its impact on adaptive capacity, it is logical to first consider planning for the biophysical impacts of climate change. A biophysical analysis of climate change is a natural fit for adaptation planning, which often begins with a scientific focus on climate modelling and prediction of impacts. This is because CCAPs are likely to reflect climate concerns that impact the daily operation of the council. Town planning and council-owned infrastructure are two main areas of day-to-day concern in local government operations, and also two key areas affected by climate change impacts. Climate change has the potential to impact on a number of council assets, including public buildings owned by council (e.g. community centres), infrastructure that is maintained by council (e.g. roads and stormwater drainage), services provided by council (e.g. aged care) and spaces operated by council (e.g. parks). A large part of the role of a CCAP is undeniably planning for climate impacts to these areas of the council. The *Australian Government Position Paper* on adapting to climate change makes it clear that "Local Governments will be key actors in adapting to the local impacts of climate change and the engagement of Local Government will be a critical part of any national reform agenda" (Australian Government, 2010, p. 20). To this end, the particular difficulty of incorporating climate change adaptation into local government planning has been a growing area of interest to academics in Australia and around the world.

We have already seen that the guidelines for adaptation planning have focused on promoting a risk management approach to adaptation planning. This type of approach

leads to the identification of largely biophysical impacts of climate change. Risk management is designed to identify tangible risks to councils, such as loss or damage to physical council buildings, damage to council-owned public amenities, power loss, storm drainage, even the effects of climate change on local native flora and fauna. It is a process that is dependent on quantifying the cost-benefit of assets and on prioritising those assets accordingly. The risk management approach to adaptation planning has been much explored in the Australian adaptation literature, with some key limitations of the process highlighted below.

If we consider a council to be an 'organisation' at a general level, it is useful to look at the literature that considers the nature of organisations and the challenges for businesses to adapt to climate and weather extremes. The conclusion is that adaptation is particularly difficult due to organisational tendencies that favour efficiency. Linnenluecke and Griffiths (2010) developed a 'resilience framework' by applying the 'adaptive cycle' to organisations and found that management practices continue to lean towards reducing slack where possible. Indeed, this is backed by Tompkins and Adger's observation that "it is important to remember that institutional flexibility can generate high operating costs" (2005, p. 568). Through their research, they note that despite evidence of the benefits of 'organisational slack' for adaptive capacity, the notion is difficult to implement in practice, particularly when councils are employing a risk management framework that is dependent on cost-benefit analysis to ascertain vulnerability and to prioritise action. The sheer number of risks that can be identified through the process further complicates this process. In fact, a number of the interviewees for this research pointed to the vast number of risks that can be generated and the declining utility of an approach that can generate more than 1,500 risks (Participant 3, 2014). The sheer expanse of the problem of climate change

illustrates very real difficulties in developing CCAPs. So while this thesis will focus

on how CCAPs come to extend to the socio-political realm of adaptation, it is

important to note that there are challenges even for those CCAPs that engage only

with the biophysical impacts. When considering the equation for vulnerability,

accounting for adaptive capacity becomes difficult for organisations. The

identification of exposure and sensitivity appears to be less so, especially when

organisations such as councils are familiar with risk management practices that

identify discrete areas of risk.

When focusing on risk management frameworks and biophysical climate impacts, it is

important to consider the work of the insurance industry in Australia, as it has been

active in this area for about a decade. While the national conversation may continue to

question the importance of climate change for the future of the country, those

monitoring the forecasts for future damages to people and property have become

increasingly concerned and therefore, willing to act (Insurance Council of Australia,

2008). Insurance agencies are among those who have experienced growing concern

over increases in insurance claims following the onset of more extreme weather

events. Boyle (2002) has interviewed individuals from the insurance industry to find

that most got their information about climate change from websites and articles, that

most found the information difficult to interpret, but that 95% of participants thought

this area was of relevance to their professional development. One of my interviewees

(who represented an Australian local government insurance firm) noted:

> We identified the changing weather as a potential risk because we look at
>
> property. So severe storms, bushfires, inundation, to some degree flooding,
>
> were issues that were causing losses to the scheme. I went to the board and
>
> indicated to them that they have a risk now and an increasing risk in the future

that the varying climate, whether it be permanent or temporary (I tried to get

out of the political debate), was exposing the scheme and therefore losses on

its members . . . We decided with the board that we would fund our own

members and deal with that information ourselves because it was going to be

used for insurances and underlying services. (Participant 3, 2014)

This account indicates that biophysical risks created the impetus for the development

of climate risks assessments. Boyle also found that planners tended to nominate 'risk

management,' 'strategic plans' and 'regional planning' as the best techniques for

adaptation.

These findings are interesting since there has been much contention over the

suitability of existing risk management practices to deal with climate risks. Risk

management typically involves evaluation of risks based on the likelihood–

consequence scale. On this scale, risks are prioritised based on the likelihood of their

occurrence and the resultant level of consequences if the risk is not managed; thus

risks with high likelihood and significant consequence are deemed first priority. Jones

and Preston note that risk management should be "the major vehicle used for climate

change assessments, including those for adaptation" (2010, p. 2). They note, however,

that there should be a learning process involved whereby the limitations of risk

management are recognised. They point to the work of Dessai and Hulme (2004), and

Groves and Lempert (2007) who critique the likelihood–consequence scale which

"may mask plausible outcomes, particularly those that have severe consequences but

appear unlikely . . . A further strategy is to assess which adaptations are robust across

a broad range of plausible climate change" (R. Jones & Preston, 2010, p. 299). This is

why a shift in focus to understanding vulnerability instead of risk can be more useful.

The more holistic interpretation of vulnerability includes measures of adaptive

capacity and the socio-political context of climate impacts, providing a more rounded approach to understanding risk.

In summary, risk management typically involves evaluation of risks based on the likelihood–consequence scale. Risks are prioritised based on the likelihood of their occurrence and the resultant level of consequences if the risk is not managed – so that risks with a high likelihood and significant consequences are deemed first priority. While it is undeniably important to plan for these biophysical impacts of climate change, the research is focused on why and how councils resist being restricted by this focus and elect to broaden their scope to socio-political considerations when developing an adaptation plan. The following three sections will focus on socio-political elements of the climate change literature based on the earlier discussion of vulnerability. It considers the importance of providing assistance for vulnerable populations when adapting and preparing for the mental health impacts of climate change. It also turns to the processes of education and community consultation within adaptation planning, processes that are shown to impact adaptive capacity and yet are approached differently across the country. Each of these components of adaptive capacity were established in Chapter Two but are revisited in further detail here to provide a more thorough grounding in these key elements of variation within CCAPs. This will allow me to layout the kinds of socio-political vulnerabilities that are identified before examining the CCAPs themselves more closely in relation to these vulnerabilities.

Socio-Political Indicator: Vulnerable Groups and Climate Justice

A concern for vulnerable groups can be identified in many Australia CCAPs (a detailed breakdown is provided in the final section of this chapter), reflecting a growing body of the academic literature on climate change adaptation. The

intersection between climate change mitigation, adaptation and notions of justice is widely considered in the literature. It provides an alternate lens from the risk assessment approach through which all adaptation actions may be assessed. Edith Brown Weiss first used the term 'climate justice' in academic literature in 1989. It shares much in common with the environmental justice movement, and the two have continued to build on each other (Schlosberg & Collins, 2014; Star, 2008). Mohai et al. (2009) note that the term climate justice can be used differently, in some cases, referencing the inequality and the flow of resources between states on a global level, and in other cases it references issues of justice in communities suffering climate impacts at the local level. This illustrates how the term 'justice' can be applied at different scales, including a local government scale whereby identifying the vulnerable within a community and planning to help them to adapt is a form of climate justice. Baer and Reuter view the notion of climate justice as predominantly concerning the inequality of responsibility for climate change between developing and developed countries and the unequal burden of climate risks shouldered by the developing countries. This discourse emerged in 2000 at the Climate Justice Summit (6th COP in Hague) and was promoted by religious and indigenous groups (Baer & Reuter, 2011). Cox notes that:

> In ways similar to the criticism of mainstream environmentalism in the United States, climate justice advocates, indigenous peoples, and the poor in countries throughout Asia, South America, Africa, and the Pacific Island nations argue that climate change is not simply an environmental issue. Instead, the movement for climate justice asserts that global warming affects, disproportionately, the most vulnerable regions and peoples of the planet and

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that these peoples and nations often are excluded from participation in the forums addressing this problem. (2012, pp. 262-3)

While local governments do not themselves engage in the specific language of climate justice, they do engage with elements of it in practice through recognition of vulnerable groups in CCAPs.

Scholars frequently call on the work of Sen (2010) in discussions of 'fairness' around plans to mitigate and adapt to climate change. This engagement with Sen leads to debates regarding both distributive and procedural justice, although the latter concern is relatively new. Paavola and Adger note that "originally the UNFCCC framed justice in the context of climate change almost exclusively in terms of distribution of wealth: justice was considered a matter of an adequate amount of assistance" (2002, p. 14). Climate adaptation literature engages with both the distributive nature of climate impacts as well as the procedural nature of engaging communities in adaptation planning. This latter notion of procedural justice is expanded on later in this chapter when exploring the inclusion of education and community consultation in Australian adaptation planning.

The climate justice literature shares a common concern with environmental justice in that it often turns to the plight of indigenous groups in issues of climate mitigation and adaptation. Berry et al. (2010b) aim to prove a link between improving the health of disadvantaged Aboriginal people and allowing them to continue to adapt to climate changes on the land, as has been tradition. In doing so, they use data from a questionnaire about the correlation between participation in caring for Country and health. The article concludes that caring for Country results in climate change adaptation and better health for this disadvantaged group, though the authors note that

projects must be Aboriginal-led to ensure the importance of the 'group' over the 'individual.' Green et al. (2010) also emphasise the importance of community-led discussion when it comes to planning for climate adaptation. This last point, in particular, emphasises practices of participatory justice that represent collectives as well as individuals. It is also an example of identifying a vulnerable group and making provisions to aid that group when adapting to climate change.

Climate justice becomes a useful frame in which to understand pre-existing vulnerable groups. In terms of climate change adaptation, it is the already vulnerable groups in society who stand to be disproportionately affected by climate impacts. For example, in the case of the health effects of climate change Petheram et al. (2010) insist that climate change, while not one of the main issues for these groups, is an issue with the potential to make others worse. For Aboriginal groups, "the altered distribution and abundance of animal and plant species would markedly affect hunting and other cultural practices, and exacerbate current health problems" (Petheram et al., 2010, p. 187). Some communities felt unable to take on particular adaptive strategies as a result of a sense of disempowerment caused by historical or current effects. Additionally, the authors noted, "there was an overwhelming view among respondents that climate change issues could not be considered in isolation from current non-climate (social) issues" (Petheram et al., 2010, p. 685). Therefore, a CCAP that identifies vulnerable groups recognises the importance of socio-political influences on successful adaptation.

Indigenous Australians are, however, just one of a number of vulnerable groups that may be identified in communities across the country. The elderly and the very young are also often identified as being vulnerable to climate change, either through inability or difficulty in evacuating from extreme weather events, because they are more

sensitive to temperature changes, or are less likely to be able to fight off or recover from aero-allergens and/or vector-borne diseases. Bi et al. consider the increased instances of extreme heat events causing cases of heat stroke, dehydration and exacerbating other illnesses. These risks strengthen the need for public health agencies to address these needs – particularly for vulnerable groups. The aim is to "investigate the evidence for heat-related mortality and morbidity in Australia and to discuss the projected impacts from a warming climate" (2011, p. 28S). The article concludes with a need for public health messages as well as a directive for the public health sector to "influence urban planning and transport policies by providing comprehensive assessments of the impact of transport and urban planning policy options on health" (Bi et al., 2011, p. 33S). Spickett, Brown and Rumchev (2011) consider the potential effect of climate change on air quality and suggest vulnerable groups and policy options. They conclude with the need to improve modelling and forecasting of air pollution to produce better health impact assessments, coping capacity and adaptation options.

The homeless represent yet another vulnerable group. Even without the threat of climate impacts, homeless people are vulnerable due to high rates of poorly controlled chronic disease, smoking, respiratory conditions, and mental illness. A 2009 study of the effect of climate change on the health of homeless people found them to be negatively affected by heatwaves, air pollution, storms and floods, and viruses (Ramin & Svoboda). In a report on the impact of climate change on the community sector research shows that climate change was found to increase the risk of homelessness, that there is less understanding of how climate change will impact the homeless compared to other vulnerable groups, and that the homeless "could be at increased risk of death if social service provision were to fail" during extreme weather

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events (Australian Council of Social Service, 2013, p. 10). This demonstrates the importance of considering vulnerable groups such as the homeless when preparing for climate change.

Vulnerable groups in Australia may include Indigenous Australians, the homeless, the disabled, those in low socioeconomic areas, the elderly and the very young. While it is easy to establish that these categories of people constitute vulnerable populations, it is less easy to continually identify them within a local government area. While identifying key facilities can be a useful start, for example aged care homes when locating the elderly, not all vulnerable persons are so easily located with their peers. These categories are also constantly dynamic, with people falling in and out of them throughout their lives. The question is whether local governments are planning for impacts on these groups and, if so, how and why do they do this? By focusing on vulnerability to climate change instead of standard risk assessments, a social dimension to climate change filters through, one that can be captured in part by considering vulnerable groups in adaptation planning. The second socio-political indicator identified in this research is mental health.

Socio-Political Indicator: Mental Health, a Developing Area of Climate Change Literature

One of the fastest growing areas in the climate adaptation literature and one where Australia is a leader is the effect of climate change on people's health and subsequently, the effect on health services (Silberner, 2014). Mental health is the second socio-political indicator identified in CCAPs as it has a direct impact on the adaptive capacity of individuals and is recognised by more than a quarter of councils planning for adaptation. In 2012, the National Wildlife Federation published a report on *The Psychological Effects of Global Warming on the United States: And Why the*

U.S. Mental Health Care System Is Not Adequately Prepared (Coyle & Van Susteren). The report aims to address the gap in knowledge and awareness on the connection between mental health and climate change. Australia has conducted quite a bit more academic enquiry into this particular field than the US, and this work is outlined below.

In the policy literature, Pralle (2009) points to putting emphasis on human health impacts, a strategy we can relate to the focus on the impacts of climate change on mental health. Kingdon (2003a), who found that issues associated with health were placed higher on agendas because they had greater visibility than other issues such as transport, also endorses the theory of focusing on health. Pralle also suggests policy makers "insert a moral and ethical perspective into the debate" (2009, p. 792), another notion that has been explored extensively in the literature in the previous section on climate justice. In this case, health can be viewed as a basic 'capability' necessary for a functioning life (Nussbaum, 2001) and as a basic human right (UNDHR, 1948) to be safeguarded.

In the larger health literature, Blashki et al. claim:

> Rather than heralding a suite of new diseases, climate change is likely to amplify existing disorders and health inequities. Indications to date suggest that climate change will both increase the background demand for a range of health services and will also generate a shift in the intensity and frequency of service responses to prepare for, respond to, and recover from extreme events. (2011, p. 134S)

To this end, the authors suggest three key principles for adaptation planning: flexibility, strategic allocation of resources, and robustness of health services. These three principles are a common theme throughout the literature.

Norris et al. have pointed to the roles "bereavement, injury to self or family member, life threat, property damage, financial loss, community destruction and displacement" play in affecting the resilience of communities (2008, p. 131). Given the growing number and devastation of extreme weather events due to climate change – addressing the mental health concerns caused by these seems a pertinent consideration for councils developing CCAPs.

While considering the health impacts of floods, Haines et al. (2006) point out that the spread of infection is less of a risk for industrialised countries than the increase in common mental disorders such as anxiety and depression due to damage to the home environment and economic losses. As an industrialised country, mental health becomes an apt element for climate change adaptation planning in Australia.

A suite of connections has been drawn between mental health and extreme weather events, the kind of which we can expect to increase with climate change. These include: floods, forest fires (bushfires in Australia), heatwaves and cyclones leading to post-traumatic stress disorder (Salcioglu et al., 2007); as well as floods being particularly associated with long-term anxiety, depression, increased aggression in children, and suicide (Ahern et al., 2005). Psychological distress about the future may also increase as a result of acknowledging climate change as a reality (Fritze et al., 2008). Finally, Berry et al. point out that "Climate change may affect (1) physical health, through increased heat stress, injury, disease and disruption to food supply, and (2) community wellbeing, through damage to the economic and, consequently,

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the social fabric of communities" (2011, p. 126S). A number of studies are now

drawing the link between climate change and the mental health of children (Farrant,

2012; Stain et al., 2010). For example, in Australia a 2005 study in Canberra found

that bushfires led to high rates of emotional problems in children with almost half

displaying symptoms of post-traumatic stress disorder (McDermott et al.).

Furthermore, Australia's Indigenous population makes mental health considerations

in adaptation planning particularly poignant and is also linked to concern for

vulnerable groups in a way that illustrates the complexity of the socio-political

context of communities. Research into the effect of climate change on indigenous

communities in the Canadian Arctic have pointed to the mental health impacts

inflicted from a reduced ability to practice traditional activities and damage to

infrastructure which has caused disruption or relocation (Haines et al., 2006). Similar

work has also been done here with Indigenous Australians (Green et al., 2010).

Additionally, Berry et al. have written extensively on the topic of adaptive capacity

and mental health here in Australia. Firstly, on the link between mental health, caring

for Country and adaptation in Australian Indigenous communities (2010b), and

secondly, on the mental health of farmers in Australia and their ability to cope with

climate change (2010a; 2011). The authors explore the connection between

Australia's variable climate and the mental health of rural dwellers and farmers, most

specifically on the effects of drought. They find that farmers' vulnerability is

increased by socioeconomic disadvantage, reduced access to health services and a

'stoical' culture. The article concludes, "it is apparent that Australian farmers are

resilient, but it is not evident what makes them so, or why they report substantial

satisfaction in many domains of life and simultaneously report feeling hopeless"

(Berry et al., 2011, p. 127S). The authors encourage more research in the area to

understand the different effects on different types of farmers and on intergenerational transmission. This would appear to be an extremely important area of research given that "a study conducted by the Australian Institute for Suicide Research and Prevention in 2013 found almost 250 farmers in New South Wales and Queensland committed suicide in the decade after 2000, during the Millennium Drought" (Petheram et al., 2010, p. 685). The Millennium Drought was a prolonged period of dry conditions from 1996 to mid-2010 (Bureau of Meteorology, 2016). Berry et al. draw the connection between these high suicide rates in farmers to depression caused by "a lack of hope for the future among farmers and their children" (2011, p. 126S). These findings not only highlight the importance of understanding mental health impacts when adapting to climate change, but they also identify children as a particularly vulnerable group. Furthermore, it becomes apparent why preparing for the mental health impacts of climate change becomes important from the council perspective. For rural towns, such a devastating loss of life presents an emotional challenge for the community as well as presenting the economic challenge that comes with lost farms and families in small country towns (Ahern et al., 2005; 2011, p.126S; Farrant, 2012; Fritze et al., 2008; McDermott et al.; Salcioglu et al., 2007; Stain et al., 2010).

The key to avoiding outcomes such as these, besides educating the community about the mental health implications of climate change, is to build social capital in order to strengthen adaptive capacity. This can be achieved through the provision of basic human rights that protect our right to health but also through community deliberation, a topic discussed in the following section. Leighton (1965) proposes climate change as an opportunity to build social capital, a useful tool in providing socioeconomic and health advantages, particularly decreased psychiatric morbidity (Whiting, 2014).

Research also indicates that community-based adaptation promotes resilience and reduces vulnerability (Ebi & Semenza, 2008). Mental health is a truly important consideration in adaptation planning, and not beyond the consideration of councils as evidenced by its presence in some CCAPs across Australia. What mental health concerns suggest it that what begins as a biophysical risk can almost always extend to impacting the socio-political context. Risk may be biophysical, but vulnerability is the differential social experience of those biophysical impacts. Possible climate risks include increased temperatures, increasingly severe storms, drought, storm surge, and sea-level rise. In turn, these risks impact air quality and the prevalence of vector-borne diseases. They also place pressure on health services, the power grid, emergency services, and community services. In some cases, these risks may provide the impetus for the relocation of communities (due to sea-level rise, continued dangerous flooding and so forth) resulting in possible cultural loss (Adger et al., 2012). The impacts on flora and fauna brought about by what many are largely calling an ushering of the 'sixth great extinction' (Barnosky et al., 2011) will also impact on the identity of people and places. The loss of cultural heritage, of property, of jobs, and of life impacts individuals, families, and communities simultaneously. The explanation of this connection and discussion of the potential impacts and solutions requires education and community consultation as methods of best practice.

Education and Consulting with the Community

Education and community consultation is a point on which councils differentiate their response and is therefore considered in detail through this research. Informing the community about climate risks is no small task. In just one example, Hanna et al. (2011b) research the increases in intensity and frequency of extreme heat events and the effects on indoor and outdoor workers' health and productivity. They find "As a

matter of some urgency, adaptation strategies are required that include public education campaigns, the training of professionals to assist population adaptation, and the development of stringent occupational health and safety guidelines" (p. 23S). Kjellstrom and Weaver (2009) also express the need for public information campaigns around the effects of climate change on health. They discuss the impacts of environmental disasters, storms and floods; extreme heat exposure; water quality and quantity; heat stress and workforce productivity; air pollution; vector-borne infectious diseases; food-borne diseases; community and mental health. In concluding, the authors produce a table of mitigation and adaptation co-benefits for health; for example, improved public transport means more people are walking or cycling to stations, which promotes health and fitness and reduces obesity. Increasing community awareness of climate change and associated health risks is the key driver behind these public information campaigns.

Yet simply providing communities with information is a limited form of engaging about climate change. Given the difficulties of engaging in open discussion about climate change in Australia, it is important to approach the topic with care and purpose. It is also important to start engaging with what climate change means for individuals, families, and communities. This is where deliberative democracy can play a key role.

Deliberative Democracy and Other Types of Community Engagement

"Societies have inherent capacities to adapt to climate change . . . I argue that these capacities are bound up in their ability to act collectively" (Adger, 2003, p. 388). Adger makes this statement in relation to the importance of social capital and collective action in climate change adaptation. While mitigation has often been viewed as a global issue, adaptation is most often the domain of the local, and

Adger's sentiment highlights the communal process of local adaptation. CCAPs across Australia have been characterised by a process of risk assessment, in particular, the *Australian and New Zealand Standard for Risk Management, AS/NZS 4360:2004*. In accordance with this document, the Australian Government's *Climate Change Impacts and Risk Assessment: A Guide for Business and Government* outlines the procedure for conducting climate risk management workshops within local government. The procedure begins with the establishment of the context, including possible climate change scenarios, the scope of risks, the key stakeholders, and the development of an evaluation framework. Workshops are tailored to best identify, analyse and evaluate possible risks, leading to a prioritisation of risks that are embodied in the creation of a CCAP. While the process reflects standard procedure in risk management it is not without its complications. In particular, there is a vast literature on the difficulties of deliberation and the goal of reaching a meta-consensus (Bächtinger & Hangartner, 2010; Dickert & Sugarman, 2005). Within that literature is a burgeoning field of the particular difficulties faced when deliberating climate change adaptation (Hobson & Niemeyer, 2011).

In Australian adaptation planning, engagement with the community extends across the IAP2 Spectrum. Analysis of CCAPs illustrates that councils often employ the language of 'education' when discussing the inclusion of communities in adaptation plans, and vary in their engagement with 'deliberation' and 'community consultation.' Although community engagement is a familiar process for all local governments, their response to the process in the case of climate change is variable and therefore, worthy of examination.

Deliberative theory is the study of the process of deliberation among groups with differing interests. The need for deliberation is based on the assumption that "claims

for or against collective decisions need to be justified to those subject to these decisions in terms that, given the chance to reflect, these individuals can accept" (Dryzek, 2001, p. 651). The practice of deliberative democracy can take many different forms depending on the issue at hand, the stakeholders involved, and the aim of deliberation. Deliberation may be conducted for different reasons; participants may be expected merely to learn from the process or to take a more active role in contributing to the outcomes of deliberation (Larsen & Gunnarsson-Östling, 2009). Head summarises the types of participation ranging "from information-sharing, to formal consultation on proposals, through to various types of partnership, delegated powers and, ultimately, citizen control" (2007, p. 444). In addition to this, there are also many underlying questions regarding "the practical and conceptual difficulties in securing broad-based public engagement in the process" (Few et al., 2007, p. 48).

One of those difficulties is considering the question of stakeholder inclusion. This process can be fraught with difficulty, including questions regarding whom to include, at what stage to consult them, and how to characterise the extent of their involvement. Daniell et al. (2011) have case studied the decision-making process for estuarine management (Australia), flood and drought management (Bulgaria), climate policy (Spain), and food security (Bangladesh). They conclude that dividing stakeholders into areas of concern, rather than having all present at once, is useful for coming to a decision about adaptation. This can be a useful tool that allows for many stakeholders to be included while also avoiding the unwieldy situation of having a great number deliberate at once. It can, however, be damaging for the practice of integrating climate policy across a variety of departments within council. Without the opportunity for participants to interact with other viewpoints concerning adaptation, policies run the risk of leading to maladaptation or they may be ineffective if they are not readily

understood and accepted by all departments. Educating the community, as well as those who work for council, about the breadth of reach of adaptation policy is of great importance when producing a useful, legitimate, and inclusive policy. Although it should be noted that deliberative democracy is not necessarily a means of achieving unanimous consensus as "no decision can ever fully meet the claims of all competing discourses" and "consensus is in reality neither possible nor desirable" (Dryzek, 2001, p. 665). The variation in approaches to education and community consultation in actual practice is an interesting phenomenon and will be explored further in Chapter Six. It will address the inclusion and exclusion of education and community consultation, explaining how councils overcome difficulty in this area by adopting positive problem definitions. As key components of adaptive capacity, understanding council approaches to each of these (vulnerable groups, mental health, education and community consultation) is an important step in appreciating council conceptions of vulnerability.

Establishing Variation in Australian CCAPs

This final section establishes variation in the identification of vulnerability within CCAPs. The following outlines two levels of scope used to categorise the CCAPs in the database:

Biophysical Impacts-based: This category is applicable to councils who have developed a CCAP that is wholly based on addressing biophysical climate risks.

Inclusive of Socio-political Context: Specifically, this category is reserved for councils who have identified any of the following within their CCAP:

- the effect of climate change on existing inequalities (pre-existing vulnerable groups)

- the effect of climate change on mental health

- the effect of climate change on social cohesion

- the importance of educating and/or consulting with the community about climate change.

Note that references to the more nebulous concept of 'social cohesion' were collected from CCAPs in the database. It is not examined in depth in this thesis, due to the difficulty interviewees had in defining and explaining the concept. It was made clear, however, that social cohesion directly influenced the socio-political context of a community, and the literature has indicated that it impacts adaptive capacity (Marshall, 2011). Therefore, references to social cohesion are collected from the CCAPs and noted in the database. The database also contains information on references to education and community consultation in CCAPs. These are shown in the literature to have a significant effect on the adaptive capacity of communities. Therefore, understanding variation in the inclusion of education and consultation, as well as variation in how these concepts are approached, is important for understanding how councils conceive of their own vulnerability to climate change.

These elements have been identified because they represent areas that can affect the vulnerability of a community. Most CCAPs include a section of the risk assessment that deals with 'community and wellbeing', however, the risks identified are rarely uniform. The selection criteria outlined above for graduating to this broader scope of vulnerability will separate the councils who deeply engage with the socio-political scope from the more general biophysical approach to addressing climate issues. Interviews and surveys of these councils will be focused on understanding what drove

the adoption of the second comparatively wider scope of CCAP – one that is inclusive of socio-political contexts and considers vulnerability as both a start and end point.

Councils without an overarching CCAP are understood in the context of this research to have a 'limited scope.' While these councils may be involved in climate change adaptation on a different level (e.g. a coastal adaptation plan), they are yet to have produced a publicly available overarching CCAP. Councils who fall into this category are beyond the scope of this research, although it is important to note that there are many councils in Australia who are yet to develop a CCAP, a phenomenon which can no doubt be partly attributed to the politicisation of climate change in Australia and an unwillingness by key leaders to acknowledge anthropogenic climate change. The following section outlines the methodology of assessing the identification of vulnerabilities in the CCAPs.

Compiling the Database

The CCAPs were imported into the NVivo software program in their pdf formats. NVivo is a software for qualitative data analysis. Through the preliminary reading of the CCAPS, it became apparent that the notion of 'education about climate change adaptation' was one of the most common themes throughout the plans. Therefore, a 'text search query' was conducted on the plans to find the number of references to 'education', 'educate', 'awareness', and 'awareness-raising' in the plans. The other three elements of the socio-political were less reliable to search for as a simple 'text search query.' Instead, I manually searched (ctrl+ f) each CCAP for keywords. In looking for references to the consideration of existing vulnerabilities I searched for 'aged', 'elderly,' 'disabled', 'disability', 'homeless', 'low-income', 'indigenous', and 'Aboriginal.' In some cases, this search also showed up references to 'community' or 'social cohesion.' To be certain I had found references to community cohesion, I also

searched for 'cohesion', 'social wellbeing', 'isolate', and 'isolation.' In the case of 'mental health,' I searched for 'mental health', 'stress', 'depression', 'depressed', 'anxiety', and 'suicide'. The context surrounding the keywords was considered to ascertain whether the reference was indeed appropriate.[6]

Once references to vulnerable groups, mental health, and education had been collected, they were entered into the Excel database of CCAPs to enable further cross-referencing with the other collected data. Analysis of correlations between the socio-political references and other geographic, population-based, consultant trends etc. was conducted manually and the findings are summarised in the following section.

Analysing the Database

Since research of this nature has not been conducted before, I now present a summary of some of the findings of the database. Once all the CCAPs had been collected, each of the four concepts above was coded for – vulnerable groups, mental health, social cohesion, and education. This resulted in a spreadsheet of CCAPs that marked which concepts were present in each CCAP along with how many references were made. The database holds the CCAP information for 558 local councils across Australia through 2008–2014, with 97 plans and 183 councils involved in the development of CCAPs over this period. The number of references made are not a meaningful measure – some CCAPs simply cut and paste sentences in different tables several times, whereas some made mention of the indicator in one section and then refrained from repeating it in other sections. Thus, the number of references are not necessarily

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[6] For example, searching for 'aged' sometimes returned demographic results: "growing population of those aged between 18–35" or phrases concerning "aged infrastructure." Only results such as "to improve and integrate existing registers of high-risk groups (aged care services, infants and early years, as well as disability services)" (Beggs & Bennett, 2011, p. 81) were coded, as these were the instances that indicated a concern for existing inequalities in adapting to climate change.

an indication of how well a CCAP is engaging with an indicator, but the number can generally indicate whether the concept is referenced many times (sometimes up to 64 times) or only mentioned once. That wide range can, therefore, indicate some prevalence of the issues at hand.

The first point to make is that very few CCAPs were simply biophysical impacts-based (i.e. they did not have any socio-political concepts coded). Only 18 of the 97 plans were solely focused on biophysical impacts. This is in contrast to the earlier findings where a biophysical impact bias was established within the national priorities of climate change adaptation. This indicates that most councils are engaging with an extended socio-political understanding of vulnerability and adaptive capacity. It also indicates that the current risk management process does not necessarily preclude socio-political elements to adaptation.
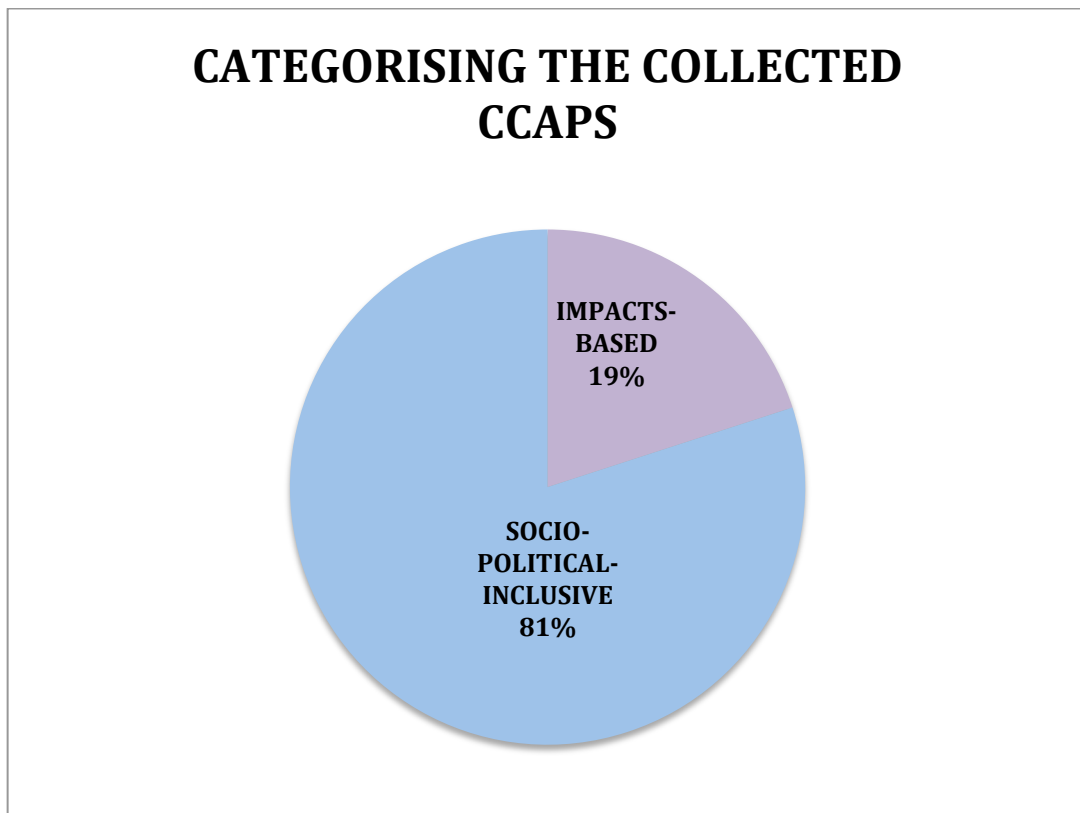
Figure 3 – Breakdown of biophysical-based vs socio-political-inclusive CCAPs

The second point to make is that the socio-political indicators were not equally represented across the CCAPs. Seventy-nine plans made reference to the socio-political context of adaptation. Ninety-two per cent of those plans made reference to the importance of education about climate change when adapting. Eighty-four per cent made mention of the impact on vulnerable groups when adapting to climate change. Thirty-eight per cent pointed to the importance of maintaining community cohesion and 31% referenced the effect climate change can have on the mental health of individuals. Nine CCAPs engaged with all four of these concepts while five CCAPs did not mention any socio-political concepts at all.
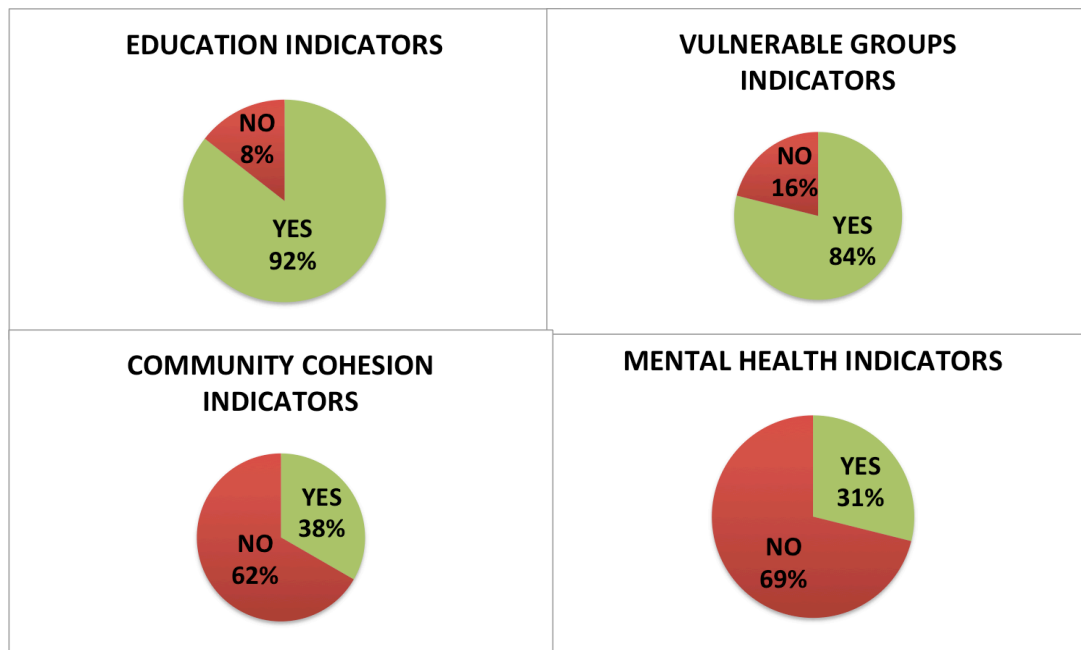
Figure 4 – Breakdown of individual socio-political indicators

It is this variation in engagement with the socio-political aspect of climate change adaptation and in the adoption of education and communication practices that the remainder of this thesis will address.

Climate change adaptation planning is well underway across the country. Almost 20% of the councils in Australia have been involved in the development of a regional or

individual overarching CCAP. Coastal councils counted for roughly 48% of the CCAPs collected. Of course, the percentage of councils thinking about climate change adaptation in a broader context is much greater, but this research focuses on the development of overarching publicly accessible CCAPs. In addition, developing an individual CCAP is not necessarily an indicator that councils do not also take part in regional CCAPs and vice versa. Twenty-four councils have been involved in both an individual and a regional CCAP.

A mixed methods approach to this research was crucial. The quantitative analysis has illustrated very clearly that there is a variation in the prioritisation of vulnerabilities in Australian CCAPs; however, there was no immediately obvious answer to explain why there was variation. I used basic descriptive methods to ascertain a pattern for variation but with limited success. The following summary of the data collected in the database will illustrate that there is no state, geographical, temporal, consultant, or population size-based reason to explain how some councils produced biophysical-based plans and others included reference to the socio-political context (including concerns for vulnerable groups, mental health, and social cohesion). Furthermore, there was no simple explanation for those who mentioned education and those who did not. Many plans referenced education but no other socio-political factors; while the inclusion of socio-political factors was highly correlated to references of education, there was evidence of four plans that highlighted the former without reference to the latter.

State-Based

Variation in CCAPs could not be comprehensively explained by state differences, at least not in terms of the biophysical vs socio-political division. While CCAPs that referenced all four concepts of vulnerable groups, mental health, social cohesion, and

education tended to be from NSW or Victoria, not all CCAPs from each of these states were so comprehensive. All states had at least one regional CCAP, except for Queensland and the Northern Territory.[7]

Geographical-Based

A coastal vs inland divide could not explain the variation. Coastal, inland, city, and rural councils each contained a mix of references to the four concepts identified. In addition, individual council versus regional CCAP efforts could not explain the variation. Of the nine CCAPs that referenced all four concepts, eight were by individual councils and one was a regional effort of four NSW councils. Only one of these CCAPs referencing all four concepts came from a coastal council, the rest were inland-based, highlighting once again the importance of adaptation research beyond the coast. Geography categorisation also did not play a role in explaining the variation between councils that did and did not develop CCAPs in the first place. The database holds the information for a cumulative 21 geographic categories (note that geographic categories vary from state to state), all of which had at least one CCAP. The categories are as diverse as a coastal city, coastal shire, capital city, rural shire, coastal borough, regional coast, and territory.

Temporal-Based

Plans that included reference to the socio-political could not be attributed to any particular time period over the eight years of adaptation planning that has so far taken place. This discounts a hypothesis that socio-political concerns represent a trend over a particular segment of time. It also negates any assumption that socio-political concerns were identified as necessary at a point and carried through all subsequent

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[7] Note that the ACT is a Territory and council all at once, making it the only state or territory that logically could not develop a regional adaptation plan as defined by this research.

adaptation planning. Four of the CCAPs that reference all four concepts were developed in 2009, although this must be considered in terms of the spike in the development of CCAPs in 2009 due to the availability of LAPP funding. Of the other five CCAPs that referenced all four concepts, one was developed in 2010, two were developed in 2011, one was developed in 2012, and another in 2014.

Consultant-Based

The database also noted the consultant involved in the development of each CCAP wherever a consultant was engaged (and acknowledged). This was to determine if different consulting firms were including (or excluding) socio-political concerns. Some correlations may be drawn between consultant and references to the individual concepts of vulnerable groups, mental health, community cohesion, and education – but there was nothing definitive. For example, plans developed by AECOM (architecture, engineering, consulting, operations, and maintenance) consulting never made reference to mental health, but always referenced education, vulnerable groups, and community cohesion. Echelon never referenced mental health or community cohesion, but they sometimes referenced education and always mentioned vulnerable groups. GHD consulting (formerly known as Gutteridge Haskins & Davey) is recorded having mentioned all four concepts in one plan, none of the four in a separate plan, and a mix in the rest. Marsden Jacobs and Associates also presented a mixed bag but were most likely to reference vulnerable groups and least likely to reference community cohesion. Sinclair Knight Mertz (SKM) referenced all four concepts; however, only two of SKM's CCAPs met the criteria for the database. This indicates that while there is consistency in some consultants, there is not among others, resulting in no consistent pattern of concern for the socio-political illustrated by use of consultants.

Population-Based

There was no evidence that population numbers contributed to the variation in CCAPs. It may be hypothesised that councils with large populations, such as capital cities, would be better resourced and therefore more likely to extend the scope of vulnerability to the socio-political; however, this proved not to be the case. The CCAPs with all four concepts ranged in population from capital city-sized 4,391,674 people in Sydney to the remarkably more modest 7,893 people in Mansfield, Victoria.

Resource-Based

Resource constraint is a common variable in the development and implementation of public policy, and climate change adaptation is no different. The problem of resources has been presented as a barrier to adaptation planning (Measham et al., 2011), and this should be recognised. It may be hypothesised, however, that those councils that include one or more socio-political concerns in their CCAP are simply the councils that can afford to do so. This hypothesis would suggest that it is the larger, more resource-rich councils (in personnel and financially) that come to broaden their scope of adaptation planning beyond the biophysical impacts.

The CCAP database was designed to capture information on the population size and capital city status of councils, and some cross-reference with the Australian Bureau of Statistics' (ABS) Socio-Economic Indexes for Areas (2011b) was also conducted. Even the most simple of analyses shows this hypothesis to be unfounded. Indeed, while many a capital city lacked the socio-political factors of adaptation planning, of those who identified all three socio-political concerns, many were low socioeconomic areas. Half of those who identified all three concerns had a population of less than 14,000 and of those, four had a relative socioeconomic disadvantage (Australian Bureau of Statistics, 2011b). While resources are shown later in the thesis to

contribute to the type and extent of community education in adaptation planning, it cannot be generalised as the most obvious explanation for the inclusion of socio-political factors in adaptation planning.

After eliminating these possible explanations for CCAP variation, the next step is to employ a qualitative methodology to interview stakeholders who developed these CCAPs to ascertain the reasons for differences in scope of vulnerability across the country. The following chapter will examine more closely the difference between biophysical impacts-based plans and socio-political inclusive plans. Chapter Five specifically examines the inclusion of two components of adaptive capacity, vulnerable groups and mental health, to determine in the first instance how they are articulated in CCAPs and in the second instance how they come to be included (or excluded) in adaptation planning. Chapter Six will examine the reasons for the inclusion or exclusion of education and community consultation in CCAPs. While education and community consultation is also a component of adaptive capacity, a further level of variation is examined in this chapter – the different ways in which councils conduct education and consultation in adaptation planning.

Conclusion

Adaptation planning is well underway in Australia and it is an excellent case to examine the variations in adaptation planning. An analysis of all available local adaptation plans shows that councils understand vulnerability to mean more than just physical impact – the adaptive capacity-building nature of consideration for vulnerable groups, mental health support, and education are present in many council plans. There is a significant variability, however, in the presence of these factors of adaptive capacity. The issue now is to explore and explain both the wider variation between biophysical-based plans and socio-political inclusive ones, and the variation

in the presence of each of the socio-political indicators (vulnerable groups, mental health, and education) within CCAPs.

Vulnerability to climate change is not simply a factor of the physical changes to come. The relationship between vulnerability and adaptive capacity has been established within the academic literature. The importance of identifying socio-political elements that can impact on adaptation planning has been shown to be as important as identifying biophysical impacts. A categorisation of CCAPs has been developed. It distinguishes between biophysical impacts-based and the socio-political inclusive CCAPs, the latter of which considers elements such as the effect of climate change on poverty/existing inequalities, mental health, and the importance of educating the community about climate change. The next chapter will now examine closer the variation between biophysical impacts-based CCAPs and those that consider socio-political factors.

Chapter Four: Explaining the Broad Variation - Biophysical-Based vs Socio-Political Inclusive CCAPs

In 2006, Crabbé and Robin noted that the issue of climate change appears "distant and cloudy amongst an already crowded agenda of demands placed on local government by concerned citizens" (p. 119). This observation was made on the cusp of a tipping point for Australian local government, where adaptation planning would go from a relatively unknown practice to a fairly widespread exercise. Amid increases in the occurrence and severity of extreme weather events; the devastating effects of the Millennium Drought resulting in a refocus of environmental policy (Dovers, 2013); and as Queensland was implementing enforceable regional plans that included climate change (Queensland Government, 2005), the issue no longer appeared as 'distant and cloudy' as it once had and climate change adaptation plans (CCAPs) were soon to be developed across the country.

The overarching research question of this thesis is how the variation in the identification of climate vulnerability in Australian CCAPs can be explained. After analysing the findings from the database of Australian CCAPs, the answer is best broken down into sections. This chapter will address the broad variation in CCAPs – the reason for the difference between biophysical-based plans and socio-political inclusive plans. The following two chapters will break down specific variation. Chapter Five will first address how some plans specifically come to prioritise vulnerable groups and mental health. Chapter Six will focus on the inclusion of education in adaptation planning, breaking down the reasons why some plans include and others actively exclude education about climate change as a part of adaptation planning. It will also explore the variation in approaches to community education and consultation.

First we turn to the broad variation – the finding that there are some plans which focus solely on biophysical impacts while others branch into consideration of socio-political factors. How can this broad variation be explained? Nineteen per cent of the CCAPs in the database are focused solely on biophysical impacts. This chapter will outline how this variation can be explained through a lack of uniform remit and responsibility within local government in Australia. It will then highlight areas of adaptation planning where responsibility is least contentious, namely the biophysical impacts that affect physical assets and the liability of local governments to protect these. This will establish the baseline of CCAPs across the country as a concern for biophysical elements of climate change, providing a stepping-off point for discussing the additional socio-political impacts that are included to varying extents in some Australian adaptation plans. The chapter will continue by distinguishing the difference between agenda-setting and problem definition in climate change adaptation planning, the latter being used to begin to explain how councils reconcile the indistinct remit which they face. The biophysical impacts of climate change are shown to present the least contentious area for which councils can accept responsibility, although even this cannot escape some form of dispute. It is shown that the indistinct remit and subsequent variation in responsibility for various socio-political factors in local government influence how councils come to define climate change as a problem when planning for adaptation.

In summary, the broad variation between biophysical-based and socio-political inclusive CCAPs can be explained through the variation in remit experienced by local governments across Australia. This chapter concludes that the variation in local government remit creates space for varying problem definitions when planning for adaptation. Responsibility for biophysical impacts is least contested among local

government (though not uncontested), meaning that biophysical impacts constitute a baseline of concern for adaptation for all CCAPs. In some cases, however, this baseline is the extent to which councils engage with climate change adaptation. The first step is to establish the remit of Australian local government.

The Indistinct Remit of Local Government in Australia

Perhaps the greatest irony of adaptation planning in Australia is that the tier of government on the front line of adaptation planning is the least powerful and also the tier with a relative indistinct definition of roles and responsibilities. A superficial analysis may conclude that local governments are responsible for the colloquial "roads, rates and rubbish" (Brackertz, 2013 p. 5), but this is far from a comprehensive summary of the role of local government in Australia. Finding a comprehensive summary of that role proves difficult. This section will outline the rather indistinct remit of local government in Australia to lay the groundwork for understanding the space in which councils operate when defining climate change as a problem. This is achieved by analysing information from publicly accessible websites, local government Acts, and the academic literature to create an understanding about the contextual elements which impact upon the actual and perceived roles and responsibilities of local government. A discourse analysis of current primary sources of information about the role of local government is conducted below.

It should first be noted that local government is not mentioned in the Australian Constitution. The Australian federal system involves a separation of powers between the Commonwealth and the six states and two territories. The most authoritative sources on the role of local government in Australia are the various state and territory Acts (e.g. *Local Government Act 1993* in NSW, *Local Government Act 1995* in WA)

and as a result, responsibilities can differ between states. Councils are not

homogenous entities, significant differences found between Australian councils

include: variations in the range and scale of functions; revenue-raising capacity;

physical, economic, social, and cultural environments; local values; and legislative

frameworks (Australian Government, 2014).

The official Australian Government website defines the general role of local

government as: "Local governments (also known as local councils) handle

community needs like waste collection, public recreation facilities, town planning"

(Australian Government, n.d.-b). A further three lines are attributed to local

government on the same website under 'Frequently Asked Questions'. In answer to

the question: "What kinds of laws can be made by each level of government?" the

website states: "Local governments are established by state and territory governments

to look after matters relevant to local communities. These include garbage collections,

public parks and sporting grounds, libraries, and local planning matters" (Australian

Government, n.d.-a). The inherent confusion around the role of local councils is

embodied perfectly in this answer from a primary source of information about local

government in Australia. In the first instance, the Australian Government website

notes that local governments "look after *matters relevant* to local communities"

[emphasis added] – a broad and far-reaching statement that can be used to define a

raft of issues and responsibilities for local government to address. It is immediately

followed by examples of those 'relevant matters' – a list of suggestions that point to a

rather focused role on the protection of key services and council assets. If we consider

this answer in relation to climate change, the potential for a number of interpretations

of the role of local governments begins to emerge. Different problem definitions

about the impact of climate change would lead to a different interpretation of the

relevant matters. Some may interpret it to mean what is laid out rather obliquely on the website: waste collection, public facilities, town planning. Yet there is space for a problem definition that is broader in scope when it comes to adaptation planning, one that considers other 'relevant matters', that is, the socio-political realm of a council's responsibilities.

A more definitive understanding of the remit of local councils cannot be found in the fact sheet 'Everyone's Parliament'. In answer to the simple question, 'what does local government do?' the fact sheet states:

> Generally, the local council looks after the parts of the local community that are public property, such as local roads and parks, and decides where new local roads and buildings should go and which natural areas and historic places should be protected. The plans for all new buildings must be approved by the council. The council looks after aspects of public health such as arranging for garbage and recyclable waste to be collected, checking that restaurants and shops are clean, registering dogs and destroying vermin. It is also responsible for street signs and traffic control. Some councils run libraries, museums and theatres and provide public halls and swimming pools. (Queensland Parliament, 2012)

Again, there is a clear outline of the responsibilities council has for public assets and services, including maintenance of parks and provision of waste disposal. But it is the last line that begins to hint at the possibility for variation between councils, *some* run libraries, museums and theatres and provide public halls and swimming pools. What this explanation fails to address is that the variation can extend a lot further than some councils providing public swimming pools while others do not. When it comes to

service provision in local government across Australia, the variation becomes starker, with great disparity in the provision of aged care, youth services, and other sources of community support (Purdie, 1976).

It is important to highlight this point – that to a certain extent there is a choice in what local government undertakes as part of its role. Besides this ambiguity in what roles and responsibilities are required of local government, the allocation of 'general competence power' by the *Local Government Act 1995* has opened up even greater possibilities of remit, giving councils the ability to do what is needed for the peace, order, and good government of their community (Australian Local Government Association, 1999). This rather open approach to governance explains a section of the Local Government Association (LGA) of South Australia website that outlines what councils *must do* and what they do *by choice.* The list of what they are obligated to be responsible for covers much of what we have seen already:

> planning and development services, including building assessment, some
> environmental health services, such as monitoring cooling towers for
> Legionnaire's Disease, fire prevention (some building inspection, and some
> bushfire prevention planning functions, are a duty, others are discretionary),
> dog and cat management, and some administrative requirements, such as
> preparing strategic plans for the area, maintaining an office, employing a
> Chief Executive Officer and supporting the elected Council. (Local
> Government Association of South Australia, n.d.)

The majority of these agreed areas of council remit represent responsibility for key physical council assets, assets that are potentially threatened by climate impacts and, therefore, some of the easiest to identify within CCAPs. The list that follows of 48

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responsibilities that councils may *choose* to take on provides a wealth of opportunity for difference between local governments across the country. For example, some councils may provide or be responsible for: immunisation; arts and cultural programs; wetlands; information services; community centres, services, and/or development programs; youth advisory committees; aged care; home care; community care; and crime prevention to name a few (Local Government Association of South Australia, n.d.). There are many climate impacts (as we will see in the coming chapters) that can and will affect these areas of service provision. While these may be responsibilities that a council *chooses* to take on, a key report found that councils often feel pressured to take on certain areas of service provision, placing themselves in a position where their responsibilities outweigh their financial capacity to deliver (Randall, 2003). The report showed that smaller councils felt the pressure to fill gaps in service delivery that the state government or private sector did not provide or no longer provided. In summary, councils deliver differing degrees of service provision across the country, are responsible for the bulk of adaptation planning in Australia, and are often already stretched thin across their remit.

Community Wellbeing: Taking On the Socio-political in Local Government

The uncertainty in the role of local government is not necessarily a crippling problem for council operations. My interviews with council employees indicated that many people go about their jobs in local government, defining their job and the council's role in society as they go. Public service is a *service* – and it is clear from the interviews conducted for this research that public servants continually define for themselves what type of service is required of them (Meier & O'Toole, 2006). This is why, when speaking to some local government members, I found many who subconsciously made the connection between caring for their communities and

providing socio-political elements of support. For others, this was more difficult and is one element of many which contribute to the variation of council operations.

When explaining my research to people within council, there were many who very clearly accepted the role of the socio-political in climate change adaptation as within their remit. Others were less inclusive, though it is important to remember that 81% of CCAPs in the database included socio-political elements of adaptation. Throughout the course of my research, when explaining that I study the variation in CCAPs across the country based on whether councils focus on biophysical threats or consider socio-political elements of adaptation when planning, people often enquired further. A gentleman at the NCCARF conference in Brisbane 2014 pressed me: "but is that happening? Is that something [socio-political concerns such as education, vulnerable groups and mental health] that councils are responsible for?" His surprise (and the surprise of others I have spoken with) that councils would be considering the socio-political impacts of climate change, effectively highlighted that what some local councils are actually doing in their adaptation planning (and have the potential to do) about climate change is not well known.

Councils have not always had such potential for an expansive socio-political remit. The expansion of the role of local government can be traced back to 1972–1975, when the Whitlam Labor Government increased the council funding base, allowing local government to expand their activity into the realms of "quality of life and wellbeing issues" (Brackertz, 2013, p. 5). Councils have also been identified as a facilitator for "building local identity and social cohesion depending on the priorities and capabilities of each council" (Megarrity, 2011, para. 6). These continue to be areas addressed by councils, with the Australian Centre of Excellence for Local Government pointing out that "Councils have a responsibility to their communities to

continually scan the broad socio-political arena (which includes all spheres of government and the community) to identify and respond to social issues and opportunities" (2015, para. 1). With this in mind, it can be established that the remit of local government is reasonably elastic, with room for councils to interpret a varying responsibility for socio-political impacts.

It begins to become apparent how the way in which a council defines its responsibilities can affect how it creates a problem definition around climate change, and specifically how broadly they define the effect of climate change and their ability to respond. Should the definition be defined within the bounds of biophysical impacts or should it be expanded to consider socio-political factors? Ultimately, this is the creation of a less than ideal circumstance: a council remit that is up for discussion and interpretation, and the looming threat of climate change that can be interpreted to affect almost every aspect of our lives, from the physical to the economic to the socio-political. In other words, both the problem of climate change, and the responsibility for that problem on the part of local councils, is up for definition. The following section will turn specifically to the effects of this elasticity on the interpretation of responsibility for climate change adaptation planning.

An Indistinct Remit for Climate Change

In terms of scope, there are few other issues that have the extent and duration of climate change problems. Climate change has global dimensions and temporal effects for every population on Earth over the foreseeable future.

Having established that the role of local government in Australia is generally broad and open to interpretation, let us now consider the guidelines for local government's role specifically when it comes to climate change. The first place to turn is the

Australian Local Government Association (ALGA). The ALGA has made climate change one of its top five priority policy issues. The association recognises the need to both mitigate and adapt to climate change. Most relevant to the development of CCAPs, the ALGA:

> acknowledges that significant impacts resulting from climate change cannot be avoided. Scientific evidence is clear that adaptation activities need to be undertaken now both as an investment in the future of communities and to protect valuable infrastructure. ALGA is committed to support local government's role in adaptation and ensuring that role is recognised in future Australian Government programs. (Australian Local Government Association, c2010, para. 2)

While the above recognises that local government has a role to plan in adapting to climate change, this outline is vague about the specific remit of local government in this space failing to outline their role precisely. It is unclear from this excerpt whether local governments have a role to play when it comes to the social costs of climate change.

The question of who is responsible for protecting against the social costs of climate change is rarely dealt with directly by any level of government. The Office of the Environment and Heritage in NSW argues that adaptation to climate change has the potential to minimise long-term economic, social, and environmental costs (Office of the Environment and Heritage, n.d.), but quantifying those costs is difficult, particularly the social costs of climate change which are difficult to measure. It is one thing to state that adaptation would minimise the social costs; it is quite another to define what those costs are and who is responsible for protecting against them.

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At the federal level, the Department of the Environment has emphasised the role of local councils in adapting to climate change. They highlight that councils "have a critical role to play in ensuring that particular local circumstances are adequately considered in the overall adaptation response and in involving the local community directly in efforts to facilitate effective change" (Department of the Environment, 2012, p. 8). The Department of the Environment website, however, makes no explicit mention of the social aspects of climate change when explicating the role of local government in climate change adaptation. It states:

> Governments – on behalf of the community – should primarily be responsible for managing risks to public goods and assets (including the natural environment) and government service delivery and creating an institutional, market and regulatory environment that supports and promotes private adaptation. (Department of the Environment, 2012, p. 2)

The Department of the Environment also provides a list of responsibilities for local government when it comes to responding to climate change. A few of these responsibilities are linked to the biophysical impacts of climate change: applying relevant codes such as the Building Code of Australia, protecting council-owned public assets, protecting council-delivered services, ensuring local planning and development incorporates climate change considerations to ensure building resilience, and work with other councils to manage regional risks. There is also a mandate for council to consider what could be defined as social elements of climate change adaptation. These include facilitating adaptive capacity in the local community (including providing information about relevant risks); working in partnership with the community, local non-government organisations (NGOs), local businesses and other stakeholders to manage risks; and contributing "appropriate resources to

prepare, prevent, respond and recover from detrimental climatic impacts"

(Department of the Environment, 2012, p. 9).

While this list of responsibilities may be the most comprehensive so far, it still leaves considerable room for interpretation. If we think about these responsibilities in terms of CCAP vulnerabilities, we can break down the difference between biophysical impacts and socio-political concerns. For example, 'manage risks and impacts to public assets owned and managed by local governments' seems a clear directive for councils to understand the biophysical impacts that climate change will have on existing assets and to plan accordingly. Councils are also clearly directed to consider future assets by ensuring that 'local planning and development regulations incorporate climate change considerations.' Educating communities about climate change seems clearly mandated by the instruction to provide information about relevant risks, reflecting an ongoing theme explored in Chapter Six that education through community engagement is the socio-political factor impacting on adaptive capacity that is most clearly accepted as within the remit of local government.

Other responsibilities may be a little less consistent between local governments. The mandate to 'manage risks and impacts to local government service delivery' will differ depending on the services provided by a council. While all councils are responsible for waste management and roads, many councils also offer other services, from aged care, to Meals On Wheels, to youth centres and so forth. But perhaps the most dividing mandate is the final one: 'contribute appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts'. Defining what the 'appropriate resources' are to not only prepare, prevent and respond to climatic impacts but also to aid in recovery is not a simple task. This is where space for the socio-political opens up. This is where the scope can be broadened because councils

will interpret this statement differently. Some will still view this in terms of biophysical hazards and risk management in the traditional mould; but others (as explored in the following chapter) will interpret it to mean caring for the most vulnerable and some have even extended it to dealing with the mental health considerations of communities that are expected to be exacerbated by climatic events.

In other words, planning for the socio-political impacts of climate change can theoretically be included within the remit of councils; however, even recent literature does not engage with the question of responsibility of local government for socio-political impacts (Nalau et al., 2015). Some even highlight the difficulty councils have in taking on extra responsibility and in creating unrealistic expectations about what they can achieve (Tan & Artist, 2013). In practice, there are cases where councils prefer to stick within the biophysical impacts of climate change. The difference is best described through a process of problem definition, a concept taken from the public policy literature. How councils conceive of or 'define' the problem of climate change directly impacts whether they include socio-political impacts or not. How do people define the problem of climate change? This question is addressed in the second half of this chapter and begins by distinguishing between two processes of public policy development: agenda-setting and problem definition. The process by which climate change is placed (or not) on the agenda is highlighted to recognise the highly political context in which adaptation planning takes place in Australia. The variation in remit, creating space for variation in problem definition, is then explored with use of survey and interview data. In short, a poorly defined remit for councils creates an opportunity for councils to extend their scope and to be proactive if they choose to do so (and if they are not hindered by State actions). A brief summary of the survey and interview methodology is now outlined.

Survey and Interview Methodology

The remainder of this thesis relies upon the findings of a survey and interviews conducted with local government employees and consultants involved in Australian CCAP development. The survey was developed and administered first and it should be noted that it only received a 22% response rate. Due to the low response rate, the survey data is mainly used where open-ended answers were provided and these are treated in a similar way to interview quotes. The low response rate precluded me from drawing any major claims from the survey, but the open-ended answers were still useful for the research. Further detail on the creation and dissemination of the survey can be found in the Appendix Part B.

Semi-structured elite interviews were also conducted for this research. Aberbach and Rockman highlight that when conducting elite interviews, interviewees must be in possession of knowledge that fits the "purpose" of the research (2002, p. 673). Furthermore, Richards (1996) notes that elite interviewees hold a place within society that results in them having more information on a topic than the general public. Elite-level interviews were conducted with 20 individuals who were directly involved in the development of CCAPs. This method was chosen because interviewees had expansive knowledge of climate change adaptation plans across the country, with consultant interviewees and some council employees sharing experiences from multiple CCAPs. In total, the interviewees had experience in the development of over 70 CCAPs in over 100 councils between them. Due to the large knowledge base of interviewees and the difficulty in accessing some potential participants (see Appendix Part C for further detail), elite interviews were more appropriate than a representative approach to interviewing (Malici & Smith, 2012).

Interviewees for this research represented a cross-section of the country in terms of coastal and inland CCAPs. They also had a mix of experience in the development of individual and regional CCAPs. Further detail about the interview methodology, including an interview schedule, can be found in the Appendix Part C.

The Two Instances of Decision-Making: Agenda-Setting and Problem Definition

Adaptation planning in Australia is not as simple as a decision by Australians to begin to take climate change seriously and, therefore, to plan accordingly. Rather, the process in Australia is akin to that of the US – the local tier of government accepting the responsibility for action while the national conversation continues to debate the veracity of climate science and the severity of projected impacts. This section will outline what this particular paradox means for the development of CCAPs in Australia by outlining the two instances of decision-making that every council must undergo in relation to climate change adaptation: agenda-setting and problem definition. This is in preparation for the later contrast between the undefined socio-political remit of councils and the better defined litigation-related remit, to explain how the adaptation planning process at this tier of government is often encouraged to remain within the biophysical bounds of climate change adaptation.

Though there are many documents that outline a general process of risk management that can be used to develop climate change adaptation plans (Australian Government, 2006; ICLEI – Local Governments for Sustainability, 2008), the parameters of local government-developed CCAPs are not clearly defined in these guidelines. Traditional methods of risk assessment rely on the identification and prioritisation of biophysical risks – those risks that endanger key infrastructure and council assets. These may

include libraries, sporting fields, street lighting, stormwater drainage, caravan parks and more. These are physical assets, which can be more easily quantified in a cost-benefit analysis than other social-related impacts.

Climate scepticism in Australia makes a straightforward cost-benefit approach difficult. For example, if a council proposes to build a road along the coast, they can run the necessary cost-benefit analysis to understand how much it will cost to build the road versus how much benefit it will offer the community. But unless the cost-benefit analysis also takes into account sea-level rise projections that forecast inundation that will render the road useless in 50 years, then the cost-benefit analysis is incomplete. Unless the council has a political culture where it is not taboo to discuss and access the sort of up-to-date data that would predict the sea inundation (as well as the confidence to admit you believe the science while your federal government continues to deny the urgency) then conducting an appropriate cost-benefit analysis becomes very difficult. This is even more difficult if you do not have access to the most up-to-date data in the first place, the delivery of which is often delayed (Anonymous, 2014). Climate change adaptation is necessarily a political process, influenced by the mainstream media and key political leaders who deny climate change repeatedly (Taylor, 2014). This particular control over the 'agenda' can be referred to as 'two-dimensional power' (Lukes, 2005) in the case of the media as they wield power not through decision-making but through influencing the conversation around the topic. It is this political context we must continue to address in studying CCAP development as it affects many stages of the process, including the first (and crucial) stage of accepting climate change as an issue in the first place.

This stage is where the first variation in Australian adaptation planning is manifest. For there are, in fact, two stages at which a council must undertake a decision-making

process when developing adaptation policy. The first is the agenda-setting stage. This is the difference between a council deciding that climate change is a problem that must be addressed, or doing nothing at all. It is an important stage, although achieving it is far from achieving success in adaptation policy. Baumgartner and Jones recognise that "raising a problem to the public agenda does not imply any particular solution" (1993, pp. 28). So, once an issue reaches agenda status, it must then be defined through a process of 'problem definition' to develop appropriate solutions. Dery qualifies: "Although the way an issue gains agenda status may influence how it is subsequently defined as a policy problem, this is but one conceivable influence whose force is a matter not of definition but of empirical investigation" (2000, p. 38). In the case of Australian CCAP development, the political context in which an adaptation policy is developed will ultimately impact on this problem definition stage.

How is Problem Definition Distinct From Agenda-Setting?

In order to explain the relationship between the process of agenda-setting and of problem definition, it is important to differentiate between the two. Dery argues:

> 'selecting issues for active consideration', which is the essence of agenda setting, must be clearly differentiated from the political process of problem definition. 'Poverty', 'illegal immigration', 'crime', 'health insurance coverage', 'nuclear safety', are examples of suitable answers to the question: 'Which issues are on the agenda?' . . . Problem definition answers a different question, concerning 'the decision to be made, the ends to be achieved, the means which may be chosen'. (2000, p. 40)

In the case of this research, 'climate change' is the issue on the agenda. The process of problem definition that follows this agenda-setting stage revolves around defining

the specifics of how a CCAP will address climate change as an issue. In short, differences in problem definition can explain variation in CCAPs – specifically, the variation between biophysical-based and socio-political inclusive plans. " . . . the ends to be achieved . . ." are directly informed by whether councils include social problems within the adaptation policy, and by whether they accept that these factors also constitute part of the 'problem' of adapting to climate change. But first, climate change must be placed on the agenda, a difficult task at times given the political context outlined earlier in the thesis.

Despite the scepticism within Australia, many councils believe climate change is a problem and that it should be placed on the policy agenda; however, they may not have the personnel, knowledge, or financial resources to conduct adequate planning. These councils are not necessarily deniers (though there are some in this category), resulting in four approaches to the concept of adaptation planning that I can establish:

1. The councils who deny the science and the problem of climate change.
2. Those who recognise the problem but lack support to undertake action.
3. Those who recognise a problem and define it in terms of biophysical assets.
4. Those who recognise a problem but apply a broad problem definition to climate change adaptation, one that includes concern for socio-political elements of adaptation planning.

It is on these last two groups that we will focus our attention because this is where the first broad variation is identified. Despite both groups recognising climate change on the agenda, the second instance of decision-making – 'problem definition' – divides them and results in variation in how broadly councils establish their remit when adapting to climate change.

The difference between these two groups of councils, ones that define the problem in terms of biophysical assets and ones that extend the scope to include socio-political concerns, is how they define the problem of climate change and how they define the remit of their local council. The first thing established in this chapter is that defining exactly what a local council is responsible for is not a straightforward process and is certainly not uniform across the country. It is this undefined area of local government politics that creates the room for variation we see in adaptation planning. Variation in the remit of local councils creates space for different problem definitions, which in turn enables variation in the identification of vulnerability in adaptation planning. Further explanation of that variation is still needed. A more nuanced study of this phenomenon now follows.

Variation in Remit, Variation in Adaptation Planning: A Problem for Problem Definition

Up until this point, two instances of variation have been outlined. Variation between CCAPs that are biophysical-based and those that are socio-political inclusive, and variation in the perceived remit of local councils in Australia. Variation in the latter creates the space for variation in the former through problem definition. By outlining the ways in which climate change is defined as a problem for local councils, we can understand the difference between those councils focused on biophysical impacts and those who extend their scope to socio-political concerns.

Before turning to the specific variations in reference to vulnerable groups and mental health, as well as varying approaches to education and consultation on climate change in the following two chapters, it is important to first examine the problem definition employed that narrows concern to the biophysical. In other words, what needs to be

examined first is the space where council remit is most clearly defined – the biophysical impacts of climate change, the constant within adaptation planning. Understanding the base from which all councils can agree on responsibility is useful for understanding the junction at which they begin to disagree. This is important to consider because there is some agreement in terms of council remit with regard to biophysical assets, although even this is contested when it comes to assigning responsibility for climate change impacts.

Clear(er) Remit – Legal Liability and the Biophysical

So where can local government remit be most clearly defined? If a council has actually declared climate change as a problem worthy of the agenda, the next step is to define the parameters of that problem – a process known as problem definition. How local governments in Australia undertake problem definition for adaptation policy is yet to be examined in the literature. Hogwood and Gunn define problem definition as:

> The processes by which an issue (problem, opportunity, or trend), having been recognised as such and placed on the public policy agenda, is perceived by various interested parties; further explored, articulated, and possibly quantified; and in some but not all cases, given an authoritative or at least provisionally acceptable definition in terms of its likely causes, components, and consequences. (1984, p. 109)

In the specific case of adaptation policy, Lim et al. define problem definition as the: "scoping of issues and options to be included in analysis and design of projects" (2005, p. 85). This comparatively simpler definition calls for the scope of the policy to be defined. Given the all-encompassing nature of climate change, defining the

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parameters of adaptation plans within problem definition is not simple. Extreme

weather events can affect all manner of buildings, natural environments, and people.

The damage may be physical and obvious – especially in the case of buildings, or it

may be internal and subtle – especially in the case of people. Pralle (2009) suggests

using existing solutions as a strategy for framing new solutions, which may be linked

to the well-established practice of risk management being adopted by adaptation

practitioners across Australia to develop their CCAPs. One way to clearly define the

remit is to look at existing avenues of recourse and the institutions already in place to

mediate problems within local government. In this case, other existing institutions are

insurance and legal liability. These two areas, familiar to local government, can

provide an obvious basis for their response to climate change, but they are also areas

that are designed to primarily tackle a particular type of climate impact – the

biophysical climate impact (Kennedy et al., 2010).

In 2011, the Australian Local Government Association (ALGA) commissioned a

report, *Local Council Risk of Liability in the Face of Climate Change – Resolving*

Uncertainties. The report identified areas of legal liability in relation to climate

change and ways to combat that liability. It also identified barriers to adaptation and

presented potential models to reduce or eliminate possible liability. The biophysical

approach to adaptation planning is highlighted in this report, with flooding of coastal

properties, stormwater runoff and flooding, infrastructure instability, structural

damage to buildings, demand for energy and water, fire risk and air quality, and

impacts on public open spaces identified as key areas of risk. The report states:

> climate change liability is unique due to the nature of the loss and damage
>
> potentially suffered by property owners or other claimants, the range of
>
> potential claims across many areas of law, challenges with establishing

causation and responsibility for impacts – particularly where claims relate to a failure to act or planning decisions that limit or refuse development, rather than the effect of positive actions, uncertainty regarding the likelihood of future impacts which affects long-term planning and the evolving body of scientific information which underpins decision making. (Baker & McKenzie, 2011, p. 2)

Legal liability in the wake of the destruction wrought by climate change is a real concern for councils, as public assets and town planning are so clearly located within their remit. The 'uniqueness' of climate change liability highlighted above further complicates the circumstances. There are a number of questions about the legal liability for damage done due to climate impacts. Liability, in this case, is difficult to ascertain because of questions about the availability of data for councils to make informed decisions around threatened areas, the extent of possible damage, and the likelihood of risk occurrence. The tension between the legal liability of councils who do not act on climate change risks and the political culture that debates the veracity of climate change places local governments in a difficult position. This tension played out in late 2014 when Queensland Deputy Premier Jeff Seeney wrote to Moreton Bay Council, stating "I direct council to amend its draft planning scheme to remove any assumption about a theoretical projected sea-level rise from all and any provision of the scheme" (Solomons & Willacy, 2014, para. 2). The LGAQ (Local Government Association of Queensland) was quick to respond, seeking legal advice on behalf of the council for fear that neglecting to consider projected sea-level rise now would lead to future litigation against the council. The Deputy Premier claimed to be protecting the property rights of residents, while the council argued that such a move could make them liable in the future. This particular situation highlights the difficulty councils

have in not only establishing their responsibility for varying impacts, but also in carrying out that responsibility when the political climate is less than favourable towards such action. Even in the case of biophysical impacts, it can still be difficult for councils to fulfil their responsibilities because of the political context within which they operate. As will be confirmed in the following section, it is often easier (though not easy) for councils to contain climate change as a biophysical problem because it is simpler to argue as being within their remit. This can therefore provide an explanation for why some councils produce a biophysical-based CCAP.

Councils are often also driven by their insurance companies to conduct the necessary risk identification for projected climate impacts (Participant 3, 2014). The following section outlines some findings from a survey of council employees and consultants involved in CCAP development, which established the biophysical impacts as the baseline for CCAPs in Australia and introduced the concept of problem definition in adaptation planning. It is shown that in the case of biophysical-based CCAPs, the problem definition of climate change is confined to what is 'manageable' and what can be most clearly encompassed within council remit.

Survey Research Findings and the Implication for Problem Definition

The second stage of this research, following the collation of the CCAP database, involved the development, administration, and analysis of a survey to be sent to local government employees and consultants who had aided in the development of a CCAP. Interviews with a separate group of local government employees and consultants who aided in the development of CCAPs were also conducted. Both the open-ended answers within survey responses and interview data provide particular insight into vulnerability prioritisation.

In the survey, one question asked respondents to select the top three issues for climate change adaptation in their council from a list of eight options. Four of the options were biophysical impact-based and the other four referenced the three indicators of socio-political concern developed in this research and an added concern for maintaining general social cohesion. All survey respondents prioritised one or more of the biophysical impacts. This finding is consistent with the conclusion that biophysical impacts create a common baseline for CCAPs. The biophysical impacts included: considering the impacts of climate change on infrastructure and assets, making provisions for water quality and availability, ensuring council had the resources and know-how to adapt and avoid future litigation, and impacts on service provision (e.g. health services, emergency services and business continuity) (see Appendix: Part B for survey methodology). When asked to explain their choice in an open-ended question that followed, respondents continually referenced the fact that infrastructure, litigation and service provision were areas that councils had a "specific responsibility for" (Survey Participant 5, 2014) that council "can directly influence" (Survey Participant 12, 2014) or because they were areas that councils "control, manage and/or influence" (Survey Participant 10, 2014). One respondent simply stated that "Council has the most control over these issues" (Survey Participant 22, 2014).

These sorts of responses indicate that some councils develop adaptation priorities not necessarily based on objective areas of vulnerability, but rather on the basis of what they can manage, control, claim, or influence. In the above responses, socio-political impacts did not fulfil these criteria and were therefore excluded or perhaps in some cases, not even considered. Climate change as a problem comes to be defined by the traditional factors that achieve success in problem definition: high visibility (physical

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harm caused to assets and services during extreme weather events), strong political

sponsorship (this is questionable given the difficulties at the federal and sometimes

state level but strengthening in liability guidelines helps), and finally the availability

of viable solutions (councils can influence, manage, and control these biophysical

areas of vulnerability).

Interviews highlighted the difficulties in expanding the scope beyond the biophysical

concerns of adaptation. When asked whether the socio-political elements of

adaptation planning were within the remit of local government, one interviewee

noted: "Generally, if you asked all the councils in NSW, probably 99% would say no .

. ." (Participant 15, 2015), while another noted that " . . . some people that work in

local government still think our main priority is 'rates, roads and rubbish'"

(Participant 13, 2015). This last observation was delivered with a tone that indicated

the opinion that those 'some people' held out-of-date beliefs about the function and

remit of local government.

Another interviewee pointed to the importance of statutes in assigning responsibility:

> There is no statute of how to manage climate change, 'you should do any of
>
> these things about climate change, you only have to do as much as the
>
> schemes or the benchmark base is at State government.' There's physical stuff
>
> around roads, assets, stormwater pipes but there is nowhere in anything that
>
> says you must manage for climate change risk hazards and the community. In
>
> local government you've got the statute bit but then you've got the community
>
> development function, there isn't a specific statutory driver, it's inherent in the
>
> Local Government Act that you should look after health and wellbeing of
>
> community but I've had legal advice that councils shouldn't be doing this

because there isn't a statutory driver for it. I've also had other legal advice if you don't we will get you under administrative review; that is where you are exposed if you don't do these sorts of things. (Participant 1, 2014)

This illustrates a confusion and fear within local government of how to approach this issue: confusion over the need for statutory drivers and fear of administrative review if they do not undertake 'statute-less' wellbeing issues. What these responses represent are the sorts of influences council face when developing a problem definition, best described in this case as the establishment of the boundaries within which council will adapt to climate change. In some councils, the establishment of those boundaries is guided by the climate impacts for which councils have a clear remit, and therefore, control over. The confinement of the problem to areas of biophysical risk has implications for adaptation planning itself, as well as for how we understand the concept of vulnerability. In the first instance, adaptation planning becomes contained within boundaries that actively exclude consideration for the prioritisation of other concerns, namely the socio-political. Second, the question of vulnerability becomes a less-objective enterprise. It is co-opted into the process of problem definition and, as such, it inherits the characteristics of problem definition, including the assumptions that there is no problem unless there is a viable solution (Portz, 1996) and that issues should be "comprehensible" (Dutton, 1986, p. 9). Climate change adaptation, in a holistic sense, is a complex process, making the task seem impossible with its all-encompassing and global focus that can obfuscate the availability of solutions and make the problem seem insurmountable. For these same reasons, the issue evades a comprehensible descriptor.

This coincidence of common factors that determine successful problem definition and how councils conceive of their own vulnerability is illuminating. It appears

vulnerability is understood as subjective in practice and is defined by a political process of problem definition. This finding has many implications for adaptation planning into the future. Although it is understood that all exercises in problem definition are inherently political, the situation, in this case, is complicated by two factors. First, that the national political position under conservative government is that climate change is a "hoax" (White, 2014), making the choice to place climate change on the agenda of local councils a highly political act in the first place. Even under a Labor government, support for climate action was not followed through (Chubb, 2014). Crowley documents this "bipartisan reluctance to act", pointing to the failings of both Labor and Liberal governments over the past four decades in relation to emissions reduction (2013, p. 603).

Second, the stakes for inaction means poor resilience to increasing extreme weather events, which can lead (and have led) to severe consequences, including death (Flannery, 2013). Determining vulnerability in this case becomes more about maintaining a politically acceptable line which lends itself to focus on the obvious biophysical impacts (determined through risk management and liability processes which measure exposure and sensitivity) and leaves little room for the consideration of the less obvious impacts that affect adaptive capacity, typically characterised in the literature as the socio-political factors (Adger, 2003; Pelling & High, 2005). This leads to two conclusions. First, vulnerability (as it is currently understood in the practice of adaptation to climate change) does not always consider adaptive capacity and, therefore, the socio-political impacts of climate change that have been proven to be crucial to successful adaptation. Second (with great implication for the future), it can be perfectly understandable why, in the present political climate, councils would lean towards a problem definition that resulted in the biophysical-based plan only.

The political context in which they operate makes even agreeing on acceptable remit for biophysical impacts difficult given unsettled questions over legal liability, let alone engaging with an indistinct responsibility for socio-political impacts. The next step is to explore the implications for vulnerability when local councils understand it as closely aligned with legal liability.

Legal Liability as a Focus for Vulnerability to Climate Change

Legal liability is inextricably linked with the biophysical impacts of climate change; both naturally lean towards the protection of physical assets. It is also an area that is more readily accepted within the remit of local councils than some of the socio-political impacts that will be discussed further in this thesis. At this point, it is crucial to highlight what it means to characterise 'legal liability' as the basis of vulnerability, and the relationship between this and our understanding of adaptive capacity.

It is no doubt easier for councils to highlight liability as a risk in CCAPs than it is for them to identify socio-political concerns, as the former can be more clearly located within the remit of all councils. The biophysical impacts of climate change that are of most relevance to legal liability (storm damage to council-owned buildings, for example) are much easier to quantify. A sole focus on the legal liability of councils actually does little by way of comprehensively adapting to climate change. Yuen et al. describe this as treating the assessment of risk as the "end point" of the adaptation process rather than only an early step in a larger process. This is particularly a problem because it lacks a more in-depth discussion of the "implications of climate change consequences and how they may be ameliorated" (Yuen et al., 2013, pp. 569-570). That is not to say that the practice of treating the assessment as the end point is uncommon. It is useful for councils with limited resources, but great responsibility (across urban planning, service provision, and maintenance of infrastructure) to better

understand which physical assets will be affected in the long term by climate impacts and possible future liabilities. But in terms of actually adapting to climate change, a focus on bringing to light only the biophysical damages without recognising the related nature of these damages to the reality of the socio-political impacts on local populations undermines the very basic principles of adaptation to climate change.

An interviewee with a background in insurance summed up the connection:

> At one end I've got the physical risks, cause we're insurance related, the second area I've got the liability risks, the third area is the moral . . . The people like the vulnerable, the elderly, and the sick. Quite a few of our members said we need to be able to offer them (especially with heat relief), we need to know where they are, we need to get broadcast out through community radios or whatever to say the next few days are going to be over 40 degrees, we've got facilities in the library, the shopping centre is going to be open 24/7 because they're air conditioned . . . If the physical assets went down, then the moral side was affected. (Participant 3, 2014)

He went on to explain that making the connection between the physical, liability, and moral risks required a certain approach to processing the impacts of climate change, one that went beyond the physical problem and started to consider the fallout stage post-extreme weather event. This is the stage at which a consideration of the socio-political becomes important because this is the stage when councils could begin to recognise how they could bolster their adaptive capacity. By recognising the difficulties of vulnerable groups in adapting to heatwaves they began to think through how this section of society could be accounted for in adaptation planning.

The three areas brought to light by the interviewee in the above quote present an interesting way to understand how we conceive of risk and vulnerability. I would combine the first two areas (physical and liability risks) as operating within the biophysical realm and, therefore, categories which are best understood in terms of measurable exposure (E) and sensitivity (S) within the definition of vulnerability: $V = (E + S) - AC$. The interviewee's third area, which he refers to as the 'moral', represents what is referred to in this research as the socio-political. These are concerns that the literature tells us directly impact adaptive capacity (AC).

Councils are executing a process of problem definition when they outline the boundaries in which CCAPs are developed. In the case of the survey responses outlined above, some councils are actively containing climate change adaptation within the confines of what they view to be within their realm of management. For some, this constrains adaptation planning to the biophysical an example of the notion that "to define a problem is to shape the options for a solution" (Althaus et al., 2013, p. 53). But for those who go beyond these boundaries and who embrace the socio-political concerns, the problem comes to be defined not only in terms of physical impacts but also in terms of the ongoing, and sometimes less obvious, fallout that follows those physical impacts. This extension further complicates an already complex process and, given the persisting difficulties concerning continuing questions about the attribution of legal liability concerning climate change (Lyster, 2015), it seems remarkable that any council would extend further beyond this biophysical realm.

The very real fear within local government around these issues was pervasive throughout the interviews. When discussing the problems brought about by storm surge and extreme weather events on property values, one interviewee noted: "There

was a certain amount of emotion and fear and paranoia running about these things in what were otherwise fairly rational local government people" (Participant 2, 2014). The theme of irrationality continues in a separate interview, over discussion of an early plan's development: "Back in those days when it [the CCAP] was created, climate change wasn't even confirmed, it was really frowned upon, and it was all 'tree huggers and they're just hysteric'" (Participant 12, 2014). The 'fear,' and the 'paranoia,' described above and the view that those who accepted climate change were 'hysteric' fuelled the political nature of the debate as it unfolded for the Australian public. Part of this fear may be attributed to concerns around the issue of land values and the impact that accepting climate predictions could potentially have in lowering the value of sites at risk of flooding, storm surge, or bushfire (Steffen et al., 2014). Another interviewee points out:

> The adaptation arena in Australia is incredibly politically sensitive. It doesn't really have any substantial funding out there that I am aware of. I don't think Tony Abbott and Joe Hockey are spilling all over themselves to spend much money on that at all. No, there isn't much on the adaptation side that's been given from the federal government, I only expect a third of them [councils] to see through the adaptation plans at the council level that we outlined. Partly, they'd like to do it, but they might not be getting the funding from the government, the government will hand out funding for stuff that aligns with federal government's interest, for examples – building a road. It has a better chance of getting funding rather than getting funding for spending it on some sort of climate change adaptation thing that may be seen as more of a 'greenie' exercise. (Participant 9, 2014)

When those who accept the problem of climate change as a policy issue are reduced to 'tree huggers' and 'greenies,' their legitimacy is undermined. One way to build that up again is to build a case of adaptation that was as far from the environmental focus as possible. The insurance industry presented a way to frame the debate in such a way so as to make it politically acceptable. One interviewee recounted the process of endeavouring to undertake risk assessments and CCAPs from the insurance perspective, and notably, he recounts how he tried to avoid the political part of the debate:

> I went to the board and indicated to them that they have a risk now and an increasing risk in the future that the varying climate whether it be permanent or temporary – I tried to get out of the political debate – was exposing the scheme and, therefore, losses on its members . . . We developed a document that would assist council to continue making the best possible decision by researching the appropriate legislation that they had to take into consideration before they made the decision. If we were to find ourselves in the court based on a decision that someone found themselves at some loss and wanted to sue council, that council would be able to say we have acted reasonably, we've taken into consideration and come up with this particular decision. (Participant 3, 2014)

This quote highlights the fear of legal action against councils and illustrates how a council could defend themselves in terms of protecting biophysical assets. The undertone is always one of fear of the political backlash in accepting and acting on climate change. When developing regional strategies, one interviewee pointed out the 'polarising' nature of climate change and explained how corporate responsibility was the best way for them to initiate action:

So we have a regional climate change initiative, that's the backbone of the

project. We knew when we set out . . . and wanting to engage with councils

who were quite alert to the community consultation process, particularly

something as polarising as climate change, they needed to get their house in

order through getting their corporate risk properly identified and managed . . .

How we got in the front door of those councils was saying to the General

Manager this is a potential liability you face, these are types of corporate risks

you may be exposed to, this workshop is about working with you at a

corporate level and understanding what level of risk you are responsible for

and can manage. (Participant 1, 2014)

While insurance and corporate responsibility may have proved solid arguments for

some councils, in others climate change managed to slip off policy agendas even post-

CCAP development. Sometimes, locating the people who helped develop early

climate change adaptation plans proved difficult as a direct result of political

machinations: "There was a climate change officer when the plan was developed, but

that position has been made redundant, in tune with the change in political direction

with climate change" (Participant 16, 2014). One interviewee noted that trying to

develop their CCAP now would be a very different process: "With review next year,

we have sceptics as councillors now so politically it will be more difficult, last time

we had councils advocating for it, the CEO of that time was different to now, he was

really a champion" (Participant 4, 2014).

This highly charged political landscape created the context for CCAP development

when it began in 2006 and continues even today. It is the foundation of the

'politicisation of vulnerability' developed over the following two chapters and is a

context that should not be overlooked. It is this negative political climate which

makes CCAP development difficult and can explain why some councils do not engage in adaptation planning or why they may confine the process to biophysical impacts that can be linked to council remit. How councils come to expand this remit to the socio-political is explored in Chapters Five and Six.

Before concluding this section and on the point of difficulty in extending beyond the biophysical, I would like to draw attention to the gravity of questions this research seeks to answer. It should be noted that more than one interview conducted was imbued at some point by the enormity and grimness of the subject matter. While discussing questions of legal liability, one interviewee noted: " . . . none of us want to end up at a coroner's inquest after a bushfire saying these people died on your watch" (Participant 1, 2014). This highlights the very real life and death situations these councils are in while undertaking adaptation to climate change. Given the difficulties even in placing climate change on the agenda and developing a biophysical-based CCAP, studying how some councils push the scope and problem definition beyond this realm becomes especially interesting. Ignoring the difficult political context in which this occurs is short-sighted at best, and damaging at worst.

The two instances of decision-making – agenda-setting and problem definition – have been established; however, it is important to remember that the political context of the former has a significant impact on the latter. In setting climate change on the agenda, councils are often going against the grain of the federal position, and (depending on who is in power at the time) also possibly against the party line of their state government. Such top-down pressure creates a difficult environment in which to expand the problem definition of climate change beyond the biophysical impacts for some councils. By sticking to what is most clearly within remit, as well as planning for impacts that are most easily observed, some councils attempt to maintain the line

between meeting their legal liability obligations and not rocking the political boat too vigorously. The restrictions presented by the focus of legal liability can partly explain the variation in CCAPs by providing a context in which we can understand the development of biophysical-based CCAPs. Should the political climate shift in the future, it would be interesting to research the use of relative freedom councils would presumably have to develop a broader problem definition around climate change and, in turn, the vulnerabilities they would then prioritise.

Conclusion

Given the vast expanse of land that constitutes Australia, it would appear inevitable that CCAPs across the country would be variable. Geographical differences across the country would be enough to ensure basic variation. The variation in CCAPs that has been identified in this research goes beyond the simpler explanations of coastal councils more concerned about sea-level rise than inland councils. What has been identified is a variation in a much broader categorisation with a less obvious explanation. Variation between councils that developed biophysical-based CCAPs and those who developed socio-political CCAPs can in part be explained by the indistinct remit of local government, which makes identification and prioritisation of biophysical impacts easier than socio-political impacts. The political context of adaptation planning in Australia also contributes to this variation, making CCAP development a contentious practice.

This chapter has outlined the variable remit of councils but has also highlighted that in the area of biophysical impacts of climate change, remit can be more clearly defined. Local governments are responsible for (and have a legal obligation to protect against) certain biophysical impacts, therefore those impacts define the problem

definition of climate change for some councils. This variation has been enhanced by the very real developments in liability concerns that have taken place at the local governmental level and by political difficulty in recognising the threat of climate change. Such an indistinct remit has created the space for varying problem definitions concerning climate change to emerge. This circumstance has lent power to local governments who can wield influence over the identification and prioritisation of vulnerability in crucial adaptation policy. Now, we turn to those plans that developed a problem definition that went beyond this biophysical remit of climate change and considered the socio-political impacts.

Climate change adaptation plans identify and prioritise vulnerability to climate change. A lot of this work is accomplished by considering what will be vulnerable in the future as climate impacts escalate, an exercise that considers the biophysical impacts to infrastructure and the natural environment caused by climate change. But socio-political inclusive plans also look to who is, and who will be, specifically vulnerable to such impacts – and preparations to address this vulnerability. It is an approach that goes beyond the primary impacts of climate change (e.g. storms cause damage to buildings, heatwaves increase instances of heat stroke) and considers the less obvious impacts of climate change, the impacts that can only be identified with a mindset of the importance of the socio-political context in which society adapts.

Chapter Five: Explaining Specific Variation: Vulnerable Groups and Mental Health

The broad variation between biophysical-based and socio-political inclusive CCAPs was discussed in the previous chapter, but there remains the need for a closer examination of the more-specific variation in identification of vulnerability (vulnerable groups, mental health, and education). For this exercise, I have divided analysis of the three socio-political factors between two chapters. This chapter will outline how CCAPs identify concern for two of the socio-political factors: vulnerable groups and mental health. The variation in the inclusion of the third socio-political factor, education, is examined in a separate, subsequent chapter. This is because interview research showed that reasons for including vulnerable groups and mental health are relatively similar, but including education as a part of adaptation planning is a different phenomenon that requires its own unique explanation.

In the database, CCAPs that reference concern for vulnerable groups and mental health considerations are identified. Eighty-three per cent of plans highlight the need to consider vulnerable groups while 31% show concern for mental health, making the latter a less common, though no less salient, indicator of understanding the interaction between adaptation and the socio-political factors that influence adaptive capacity. Councils show concern for both the pre-existing vulnerable groups whose vulnerability stands to be increased by climate change, and the increasing mental health impacts that are likely to rise in incidence with the onset of increasing extreme weather events. As has been outlined in Chapters Two and Three, both vulnerable groups and mental health can affect the adaptive capacity of communities, and there is evidence that both are being identified in some CCAPs across Australia. Climate justice literature has long focused on the plight of the less fortunate and the unjust

distribution of the impacts of climate change on these groups who are less equipped to adapt (Adger et al., 2006; Bulkeley et al., 2013; Pettit, 2004; Schlosberg & Collins, 2014). Australia has been a research leader in the field of mental health impacts and climate change, identifying both the risks to mental health and at-risk groups including youth, farmers, and Indigenous Australians (Berry et al., 2010b; Blashki et al., 2011; Fritze et al., 2008). This chapter will explain how some CCAPs go beyond the biophysical risks described in the previous chapter to identify vulnerable groups and mental health as areas of concern when adapting to climate change. The inclusion of these factors is found to be partly dependent on council demographics (sometimes perceived demographics), existing organisational agendas, and specific individuals known as 'ad hoc policy entrepreneurs.' The importance of understanding the policy context when identifying vulnerability is then demonstrated, with an emphasis on how the political context leads to the politicisation of vulnerability.

Vulnerability, in the context of CCAP development, becomes a more difficult process than is currently understood in the simple understanding of exposure plus sensitivity minus adaptive capacity. We cannot simply 'minus' the adaptive capacity of a group – this adaptive capacity must be understood in terms of complex socio-political impacts. Those socio-political impacts must be understood in relation to the policy context that influences the process of problem definition. Problem definition is what brings particular impacts to the fore in some cases.

Burton et al. (2002) note that policy context influences the prioritisation of vulnerability. Contextualising vulnerability by opening up the definition to include socio-political factors is how CCAP policy developers advance a problem definition beyond the biophysical. The process takes into account a number of factors including how openly climate change can be acknowledged within local government, what is

valued by the community they serve (explored further in Chapter Six), and what responsibilities council have already established towards socio-political aspects of community wellbeing. The first two of these are part of a larger and significant process that councils undergo in the practice of climate adaptation problem definition, that of vulnerability politicisation – a theory developed through this research. In areas such as climate change and in a country such as Australia, the politicisation of vulnerability is key to understanding how some risks are prioritised over others, and it is addressed in further detail in the following chapter on education. The role of established norms of council responsibility for community wellbeing, however, will be examined in this chapter. In some cases, this responsibility has been well developed, with one interviewee likening council to a 'taxi driver' or a 'hairdresser' who is in tune with the general mood of the community and who is often privy to people's worries and concerns (Participant 9, 2014). In other councils, the established scope of vulnerability is defined within narrower boundaries which focus on biophysical risks through a combination of perceived council remit and the difficult political situation in which CCAP development occurs.

Extending the Scope: Vulnerable Groups and Mental Health Concerns in CCAPS

The preceding chapter outlined the indistinct remit of local government in Australia. Local government responsibility for impacts to vulnerable groups and the mental health of their communities may not be explicitly outlined in statutory form; however, there is evidence of the socio-political role local government plays. The broadening of the role of local government can be historically traced to the Whitlam Government, which provided more funding for councils, part of which would be devoted to social projects such as " . . . home nursing, delivered meals, aged persons' homes, childcare

and preschools . . .” (Brackertz, 2013 p. 6). Some councils continue to administer these programs today, while in other areas these services are privately owned and operated, making for great variation between councils in what services they provide to their communities.

In answer to the research question, the explanation for variation comes down to problem definition – what do local policy makers define as a problem? As has been illustrated in the previous chapter, an answer to this question is at least partly influenced by how a council’s role is defined in the community – something that can vary from council to council due to the indistinct remit of Australian local government. This chapter will outline some of the reasons councils include concern for vulnerable groups and mental health – namely demographics, existing agenda items, and ad hoc policy entrepreneurs. Each can be directly linked to the context of policy development, which influences the problem definition stage of the process, and thus plays a role in explaining CCAP variation. In short, councils have variable remits of responsibility that create space for variable problem definitions of climate change. The way in which some councils contain the problem definition of CCAPs within biophysical bounds through justification of what they can ‘manage’ and/or can ‘control’ has already been explored. Different problem definitions lead to variation in the identification of vulnerability, including the inclusion or exclusion of socio-political impacts of climate change. But councils can also create and justify problem definitions that take socio-political factors into account. The contextualisation of vulnerability, which is later linked to the politicisation of vulnerability, is introduced here.

The first step is to return to the central findings of the CCAP database. We have established biophysical impacts as a baseline for adaptation planning in Australian

CCAPs. Extending beyond this baseline into a socio-political inclusive plan recognises the role of adaptive capacity when determining vulnerability, an important and growing area in the adaptation literature (Adger, 2003; Barnett et al., 2011a; Marshall, 2011). Two of the ways councils can illustrate an understanding of this adaptive capacity is by extending adaptation planning to concern for socio-political factors such as vulnerable groups and mental health. These factors are defined in further detail below.

Vulnerable Groups

Concern for the most vulnerable has been an important theme for the international climate change movement. The UN Framework Convention on Climate Change's (UNFCCC) "common but differentiated responsibilities" (United Nations, 1992, p. 1) between developed and developing countries outlines the common goal to achieve emissions reduction, but with an understanding that some countries are more responsible for, and others more susceptible to, the damages of climate change. In addition to emissions reductions strategies, the UNFCCC has been addressing the threat of impacts on the most vulnerable through the green climate fund (UNFCCC, 2010).

At the local government level, concern for the most vulnerable is expressed through the inclusion of provisions for this group – the marginalised who will be most affected by climate change. In 2010, the Australian federal government released *Adapting to Climate Change in Australia: An Australian Government Position Paper* published by the Department of Climate Change. It announced "along with efforts to reduce Australia's emissions and helping to shape a global solution, adaptation is one of the three pillars on which Australia's comprehensive climate change strategy is built" (Australian Government, 2010, p. 1). The paper points to the responsibility of

the Commonwealth to coordinate efforts, provide public information campaigns, maintain a strong economy and to use the social welfare system to assist vulnerable groups in adapting. Attention to vulnerable groups is central not only internationally, but nationally as well. Vulnerable groups are recognised throughout the climate change adaptation literature (Cinner et al., 2012; O'Brien et al., 2004), but specific measurement of CCAP reference to vulnerable groups has not yet been undertaken. Little work has been done on the issue in Australia, and none has focused on the actual adaptation plans developed by local councils.

In Australia, as in many other countries, there are a number of groups who fit the description of 'pre-existing vulnerability.' These include the elderly, the very young, the homeless, the disabled, Indigenous Australians, and low-income earners. These groups represent sections of society who are already defenceless (babies), exposed to increasingly harsh elements (homeless), and/or susceptible to health problems (elderly). Categorising people within vulnerable groups can be difficult as individuals are often vulnerable in more than one way, for example, elderly Indigenous Australians or the disabled homeless (Beer et al., 2012; Wolff & de-Shalit, 2013). Additionally, some of these categories of vulnerability are dynamic, as people come in and out of them as they age, or as they lose their jobs. Despite the overlap and movement between categorisation, at any given time these vulnerable groups represent a section of society that is already most vulnerable to climate change impacts and stand to become more so as climate impacts worsen.

In the database of CCAPS, 84% of plans included reference to vulnerable groups. Examples of references to vulnerable groups included calls for targeted programs and services:

Promote programs and services that support good community connections
(such as youth services, community groups, children and family services and
aged care and disability services) and promote community resilience in times
of need. (Bayside Climate Change Strategy, 2012, p. 3)

A stronger awareness of the risks and ownership of the adaptation responses is
required by the Council and community to build resilience to climate change
impacts. To increase the effectiveness of raising awareness of climate change
issues in these communities, it is important to put a greater emphasis on
indigenous leaders delivering the key messages to the community. These
community leaders should be resourced, trained and supported to raise
awareness within their own communities and region. (East Arnhem Climate
Change Risk Assessment and Adaptation Planning, 2010, p. v)

Others identified these groups as 'special needs' and specifically acknowledged
which types of people fell under this category:

Community Development: Advocacy for services for general community and
special needs groups – Aboriginal people, children, families, youth, older
people, people with a disability. (Blue Mountains City Council Climate
Change Risk Assessment, 2009, p. 63)

areas of higher vulnerability (e.g. higher proportion of the population aged
over 65 years, low income, low educational attainment, aged living facilities
and schools) where education and awareness programs could be targeted
regarding flooding, heatwave and bushfire. (Resilient South Regional Climate
Change Adaptation Plan, 2014, p. 60)

All sectors of the community should be engaged, including minority groups, children and the elderly, homeless, indigenous groups, culturally diverse groups and the socially isolated. [Council name redacted] City Council can use its connections to the community to help reach these people and include them in the development of community-based adaptation responses. Extreme wind, bushfire, rainfall and heat events all create occupational health and safety risks for the community. Those most at risk include infants, the elderly and people with existing health conditions. These vulnerable members of the community also risk becoming socially isolated when an extreme event occurs, as they are likely to remain within their own homes and may not have anybody to provide assistance. The disadvantaged or homeless are also particularly vulnerable to health risks associated with heatwaves. (Participant 20, 2015)

This plan directly linked a vulnerable group to a specific climate impact, outlining the potential risk explicitly:

More frequent heatwaves will present a health threat to homeless and vulnerable people in the City and will increase public health risks from food poisoning. (Adelaide Climate Change Adaptation Action Plan, 2011, p. 11)

Some plans even linked the two socio-political issues, recognising a connection between vulnerable groups and mental health issues:

The increase in people suffering from disease and injury due to heatwaves and severe weather events such as floods, fires and storms will lead to ever increasing issues with mental health and stress and displaced and homeless people. (Belmont Climate Change Adaptation Plan, 2010, p. 22)

Climate extremes such as storms, floods, bushfires and heat waves can have a significant effect on the wellbeing of community members, especially high-risk groups such as the elderly, infants and residents with disabilities or limited access to information and local networks. Recent evidence presented to the Victorian Bushfires Royal Commission indicates that these groups were particularly vulnerable during and following the fires. Even if they are not directly affected, vulnerable and isolated groups previously mentioned, can suffer from anxiety and stress. (Hunter and Central Coast Regional Environment Strategy, 2010, p. 80)

While councils choose which different vulnerable groups they highlight within their CCAP, mention of their vulnerability and the need to prepare and promote resilience among these groups was a common theme among plans that were socio-political inclusive. It was the second-most common factor after the inclusion of education. Also of significant interest is the inclusion of concern for the impact of climate change on mental health, which occurred in nearly a third of the CCAPs collected.

Mental Health

Studies on the impact of climate change on mental health are relatively new; however, much of what *is* being produced is originating here in Australia (Silberner, 2014). The literature includes studies on the mental health impacts of climate change on farmers (Berry et al., 2011), Indigenous Australians (Berry et al., 2010b), and youth (Stain et al., 2010). The findings of the database also illustrate that mental health is currently articulated as a concern in 31% of Australian CCAPs. The academic literature and CCAPs reference the impacts of climate change on mental health in terms of increased stress, anxiety and depression due to increasing extreme weather events and their effect on human life, property, jobs and general wellbeing. In some cases,

climate change is also linked to increases in suicide rates, particularly among Australian farmers (Berry et al., 2010a).

References to mental health in CCAPs include the following:

> The cumulative effect of drought or flood events on mental health and community resilience causes a manifestation of social issues, including drug use, gambling, littering, violence, suicide, domestic violence and mental illness. (Benalla Climate Change Adaptation Action Plan, 2012, p. 29)

> Direct mental health impacts to extreme weather events: Anxiety, post-traumatic stress, depression, despair, shock. (Frankston Climate Change Impacts and Adaptation Plan, 2011, p. 50)

> The type and capacity of mental health and counselling services offered may need to be reviewed over time in response to increased need for services due to the impacts of climate change. (New England Strategic Alliance of Councils Climate Change Adaptation Action Plan, 2009, p. 26)

> The increase in people suffering from disease and injury due to heatwaves and severe weather events, such as floods, fires and storms, will lead to ever increasing issues with mental health and stress. (Bassendean Climate Change Adaptation Plan, 2011, p. 23)

> Redland City Council is involved in local health and fitness programs at an on-ground level, even though these are largely organised by state. If mental health issues from climate change proved to be significant, Redland City Council would become involved. (Redland Climate Change Risk Assessment and Adaptation Plan, 2009, p. 56)

Review community health strategies and activities to ensure consistency with climate change risks . . . Support mental health agencies working with farmers during drought. (Campaspe Adaptation Action Plan, 2010, p. 40)

Extreme weather conditions and increased economic hardship leading to stress and mental health issues of community/farmers . . . [consequences include] increased suicide rate, depression, family breakdowns, financial hardship, population exodus, reduced employment opportunities. (Mansfield Climate Change Risk Assessment, 2009, p. 12)

References to mental health in CCAPS range from the specificity of the first example to the vague outline of the problem in the third, though both count as illustrating concern for mental health in the context of this research. The last couple of examples draw specific attention to the mental health of farmers, something that has been examined in the literature (Berry et al., 2011).

A focus on vulnerable groups and mental health are two areas of addressing vulnerability that can impact the adaptive capacity of individuals and the community to which they belong. By building the resilience of the most vulnerable, society can increase its overall adaptive capacity. Preparation for not only the physical but also the mental health impacts of climate change can also build adaptive capacity if it leads to greater awareness of threats to health and, in turn, the development of strategies to combat these mental health challenges. These are issues that councils are considering, at varying levels of engagement. But what influences a council to include these socio-political factors in adaptation planning? What role does problem definition play in the allocation of concern for these impacts? What do these particular impacts indicate about how these councils conceive of vulnerability? And

what elements lead to the politicisation of vulnerability? It is to those questions that we now turn.

Three Explanations for Identifying Vulnerable Groups and Mental Health in CCAPs

This thesis argues that problem definition is directly linked to the inclusion or exclusion of socio-political concerns for climate change adaptation. Those who include socio-political impacts of climate change such as concern for vulnerable groups and mental health issues do so because they can define these areas within the remit of their council and therefore, they can define it as part of the problem, and as their responsibility when planning for adaptation.

If we turn once again to Vogel and Henstra's (2015) four climate frames (first visited in Chapter Two) – hazard, risk, vulnerability, and resilience – then it is clear that biophysical-based CCAPs embrace languages of hazard and risk. What socio-political impacts highlight is thinking ahead to the fallout from that risk – the consequences of what happens once the risk comes to fruition. Yuen et al. note:

> when the [risk] assessment is framed as the end point of adaptation processes (as opposed to just one step in the framework), assessments risk becoming an academic exercise of risk identification, with little engagement with stakeholders about the implications of climate change consequences and how they may be ameliorated. (2013, p. 569)

It is this second process, one of considering the fallout from the climate risks which leads to socio-political inclusions that are concerned with the impact on the vulnerable, and for increasing vulnerability due to rising incidences of mental health issues in the community. Some councils have the predisposition to consider these

areas, either due to the (sometimes perceived) demographics of their constituency or because concern for vulnerable groups and/or mental health is already represented on their agenda. For other councils, an open mind to a wider scope and the suggestions of ad hoc policy entrepreneurs when considering adaptation is what leads them to include vulnerable groups and/or mental health in their adaptation plans. A detailed description of each of these three explanations follows.

Demographics

When examining how councils come to include vulnerable groups in adaptation plans, the first and most observable reason is because vulnerable groups represented (or were perceived to represent) a significant portion of their constituency. This was a common explanation offered by council employees and consultants who were interviewed. Focusing on issues that directly affect the demographics of an area also succeeds in making the issue of climate change visibly applicable to the community. As Pralle advises: "because these [climate] impacts will differ depending on the geography and vulnerabilities of particular places, messages should be tailored to different geographical audiences so as to 'bring the issue home'" (2009, p. 791). In this case, however, it is evident there is more than the geographical differences that can be tapped into to bring relevance to climate change. Demographic differences sometimes produced an explanation for the inclusion of varying vulnerable groups in CCAPs.

In terms of the different types of vulnerable groups that gained attention, the elderly were by far the most common group to be identified as present in a CCAP for demographic reasons. This is perhaps because the elderly are one of the easier groups to identify statistically because they are routinely monitored. Cross-referencing of ABS data on population and age group with CCAPs that highlighted vulnerable

groups shows that councils who reference vulnerable groups in CCAPs were likely to have more people over the age of 69 than people under the age of 10 years.

This finding was confirmed in interviews. When questioned about the concern for aged care and disability services in a NSW regional plan, one interviewee remarked:

> If you have a look at our population statistics, you'll see that our percentage of aged people is very high compared to the national average. We were one of the highest communities in [the state] for aged people. (Participant 15, 2015)

One plan with particular concern for the elderly and aged was explained in terms of the particular demographics of rural farming areas:

> I guess it's a reflection of the demographics and the geographic area, we have quite a few more rural townships where a lot of families have lived for several generations and as the generations get older they either have to choose to stay and help on the farm and be quite isolated, or move into town in their own house or into retirement villages so I think it's a phase we're going through, at the moment where families are coming off the farms and having to make that decision. (Participant 8, 2015)

A couple of interviewees highlighted their inclusion of the vulnerable elderly through comparison with other areas, as one consultant did when referencing his work with a council in Queensland, and a Western Australian council employee did when referencing a particular CCAP:

> [The council] had lots of concerns about the fact that a large part of their population was elderly, and out of proportion with the rest of the state. (Participant 2, 2014)

I think it's because (the council) is a much older suburb and potentially they

were looking at maybe they have a number of older residents. (Participant 19,

2015)

Despite the clear role it played, there was even some reluctance to directly identify

demographics as a factor in the inclusion of the elderly as a vulnerable group in

adaptation planning. A consultant for a Victorian plan approached the question

cautiously:

How do you word it delicately? People head out of Melbourne, and they want

a peaceful life and [this council] has a particular demographic about its

aesthetics and its area – people want to live their retirement years in that

region. It's the coastal councils that become de facto retirement village

locations. [The council] were particularly sensitive to that because it was the

bulk of their constituents. (Participant 9, 2014)

Interviewees rarely highlighted the inclusion of the very young when compared to

specific concerns for the elderly. References to young people in CCAPs were most

commonly made alongside a concern for the elderly, suggesting that concern for the

latter may have spurred a more general concern for the other end of the human life

spectrum at the same time. Interviewees also highlighted when low-income earners

characterised particular councils:

But generally, because [this council] has low-socioeconomic areas, there is a

big focus on vulnerable groups because there is a reputation for the area, so a

lot of emphasis gets put on because it has a kind of bad reputation. (Participant

4, 2014)

I imagine you would have got plans from similar rural districts, we're very

rural, and we have a low socioeconomic sector here so, that would have

played a part. (Participant 11, 2015)

References to Indigenous Australians can also be partly linked to demographics.

Seven of the CCAPs were collected from the Northern Territory, including Belyuen,

Tiwi Islands, and West Arnhem where Indigenous people make up around 92% of the

population, according to the most recent census at the time of CCAP development

(Australian Bureau of Statistics, 2006). Each of these plans highlighted the potential

for the loss of culturally significant sites, as well as less tangible impacts such as the

loss of cultural values, religion and belief systems (AECOM & West Arnhem Shire

Council, 2010; AECOM & Tiwi Islands Shire Councils, 2010; AECOM & Belyuen

Shire Council, 2010). Demographics cannot, however, be used as a definitive

explanation as some councils included references to Aboriginal Australians without a

significant observable demographical link (Manly City Council & Cardno, 2008).[8]

Demographics can offer a very neat explanation for the inclusion of vulnerable groups

in adaptation planning, particularly for the inclusion of the elderly. It is easier to

justify the inclusion of vulnerable groups in CCAPs when they are a highly visible

portion of the population; however, demographics cannot be used to explain this

variation fully. In the case of lower socioeconomic areas, there was no correlation

between ABS statistics on population of low-income earners and reference to

vulnerable groups, even though some interviewees clearly perceived a high proportion

of lower income earners as the reason for their inclusion in a CCAP. It seems that

either demonstrated demographics or perceived demographics contributed to the

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[8] I was unable to interview anyone who helped develop the Manly plan to investigate further, as emails
and phone calls to the council and consulting firm were continually unanswered.

inclusion of vulnerable groups in CCAPs. These groups become part of the problem definition of climate change for some councils because they are so obviously central to the identity of that council (perceived or otherwise).

Furthermore, demographics are less useful for explaining mental health inclusions, most likely due to the subtle, private, and slightly taboo stigma that continues to surround mental health as an issue. This makes it hard to determine exact demographics as sufferers are less obviously identifiable, and study into mental health issues is less extensive overall (O'Hara, 2009). There seems to be an exception to this assumption in extreme cases. In one interview, it was pointed out that the sheer number of farmer suicides spurred the council to include mental health as a potentially debilitating impact:

> The state government was concerned I think about the fact that there were rising numbers of farm men that were committing suicide and suffering from depression in the years of drought. That was done right on the back of [pause], 2011 that we were doing that and so we'd just come out of the drought years, so for 10 years people had been really struggling, and farms were really suffering and there was a higher instance of suicide in those communities. The fact that a number of suicides were linked to farm stress, and farm stress was as a result of drought and drought was as a result of climate change. Future expectation around drought is that it will increase and so that's where that link was made initially. (Participant 8, 2015)

Similarly, another interviewee related the dire situation of the council at the time of CCAP development, highlighting the increases in farmer suicides brought on by the Millennium Drought. He highlighted that one of the rural councils he worked with

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were losing up to three farmers a week to suicide at the height of the drought. He

pointed out that such a hit to rural communities directly impacts the economic

viability of that council in the future since populations are small and therefore these

suicide numbers make a significant impact (Participant 18, 2014). Another interview

veered in a similar direction, with the interviewee explaining:

> Suicide is an ultimate manifestation of mental stress, the point where you say
> 'I want to end my life, it's not worth it'. It came out that the stress on these
> people was something the council's felt was real – the councillors make up
> these councils, and they convey these stresses that the population feels. . .
> many of these councils are the first port of call where these people are under
> stress, and they don't know who to turn to. (Participant 9, 2014)

In short, what this section has addressed is that the demographic context of a council

is taken into account when prioritising vulnerability, particularly of pre-existing

vulnerable groups. It is a less useful explanation for the inclusion of mental health

concerns, except in extreme cases of suicide. Such cases can be more easily accounted

for than less obvious manifestations of mental stress such as anxiety, which would be

more difficult to demographically link due to lack of data.

Returning to Portz's (1996) successful problem definitions, 'high visibility' is seen to

play out in this case of vulnerability prioritisation. Interviewees can justify the

inclusion of certain vulnerable groups (and to mental health concern in its most

extreme form) because these groups are visible enough within council to warrant

concern. Rochefort and Cobb also refer to high visibility in terms of 'problem

populations,' also played out in relation to vulnerable groups (1994). Taking

demographic context into account may seem an obvious conclusion but in a country

where climate change is contested it is important to fully appreciate how adaptation policy is justified in different ways in different places with different populations. In this case, vulnerable groups are easily incorporated into the problem definition for these councils because they are perceived to represent a highly visible group and, therefore, the council readily accept concern for them. Fifty per cent of interviewees perceived demographics to play a role in whether vulnerable groups (in particular the elderly) were mentioned in a CCAP. In other words, climate change may be politically difficult, but helping out the elderly in areas with an ageing population is not. When mental health manifests in its most severe form (suicide), it also goes from being concealed to measurable and creates the context for action and justification for inclusion in CCAPs.

One vulnerable group, however, could not be explained neatly by demographics – the homeless. The database shows that the majority of references to the homeless in adaptation plans come from Western Australia (WA), despite the fact that WA does not have a higher proportion of homeless people when compared to the rest of the country. Homelessness has grown by only 1.1% since 2006 in WA, compared to 70.6% in the Australian Capitol Territory (ACT), 20.7% in Victoria, 20.4% growth in NSW, and 32.9% in Tasmania since 2006 (Homelessness Australia, 2012). Interviewees were less able to recall and explain the inclusion of the homeless in adaptation planning, although the impacts of climate change on this group are great given their exposure to climate extremes. An interviewee from Western Australia offered:

> The only thing I can think of is possibly an advocacy group around the development may have been fairly vocal at that point. I have found that particularly with our local plans they are reflective of whatever the biggest

issues were at the time of development . . . off the top of my head around

2009, there was the climate change conference in WA, and there were a

couple of organisations that were working with homeless people that were

presenting presentations at that time, so maybe that's where the trigger came

from. (Participant 19, 2015)

This response indicates that sometimes issues just happened to be on the radar of

councils at the right time. This phenomenon provides the beginnings of an

explanation for the inclusion of both vulnerable groups and mental health that goes

beyond the question of demographics. Socio-political factors as existing

organisational agenda items becomes the next explanation to which we now turn.

The Influence of Organisational Strategic Agendas

While particular demographics was one of the reasons for the inclusion of vulnerable

groups in an adaptation plan, there was one explanation that clarified the presence of

both vulnerable groups and/or mental health in CCAPs. Analysis of the interviews

indicates that if vulnerable groups and/or mental health were already on the council's

strategic agenda, they were more likely to also be present in adaptation planning. In

other words, issues on the strategic agenda other than climate change influenced

which socio-political concerns were considered when it came to planning for climate

change. Often, councils already had programs in place that made concern for

vulnerable groups second nature:

Council has also worked extremely hard in the provision of aged care within

our community. They have done that in two ways, council is responsible for

our new multi-purpose service which includes nursing home facilities under

the one room and have also been instrumental in assisting other private aged

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care hostels establish and expand within [council name redacted] as well. The aged care component is well known by the community and council, and we've taken steps to provide facilities into the future to cater for that need. (Participant 15, 2015)

As Council already provides a range of services to some of the more vulnerable people in the community, there are priority actions in the Climate Change Adaptation Plan to make sure that potentially vulnerable people are included in Council's communication and engagement about climate change. The Risk Assessment identified a potentially vulnerable component of the community, including the elderly, cultural and linguistically diverse community members, young (families) and those that may be economically disadvantaged. The definition of 'vulnerable' members of the community is echoed in recent Council publications…to minimise the impacts of climate change on residents, particularly those most vulnerable. (Participant 20, 2015)

For councils with this kind of focus, it was sometimes a question of whether people from those relevant departments and programs were invited to be a part of the CCAP development:

[The council] have a business section called community development so it would have been sitting with those staff in that role and saying what are the likely risks in your area of work? So those people would be dealing with things like Meals On Wheels and seniors, the role of seniors in the community and dealing with services to support them and children and early childhood. (Participant 8, 2015)

In other cases, research had previously been conducted that could then be used by council to expand the scope of their adaptation planning into considering vulnerable communities:

> It also came from [pause], there was a separate project that gave councils a head start on the vulnerable groups and communication plans – a consultant was commissioned to do these communication plans, they didn't quite get there but they started and there was some documentation from that as a secondary project of the bigger regional research project. So some of that information could be used. (Participant 4, 2014)

Sometimes, councils had whole committees already focused on an area. One interviewee who had aided in the development of a regional plan pointed out that his council pushed for the mental health component because they had been running a successful mental health committee within council:

> This was probably a greater push from [our] council than the other councils. The reason for that was that at that time we were running a mental health committee which was made up of the health professionals, citizens, and myself and what we would do is we would hold information nights, and we would pick a topic that we thought was relevant at the time and we would get expert people coming in to discuss that particular aspect. Things like depression that was a very big one, we ran that same course a number of times. And other things were on grief and loss, and we don't necessarily mean by grief and loss 'loss of a loved one,' it might mean loss of an income or loss of a farm or loss of pastures through drought or climate change . . . I think the amount of feedback that we were getting and the press we were getting

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throughout [the council] was unbelievable at the time and I think there was an awareness both of the residents and the elected representatives that this is an issue, this is not going to go away, anything we do going forward will have to include an area of mental health. (Participant 15, 2015)

For that council, the presence of mental health on their organisational agenda and the great success they had in implementing their program drove them to extend concern for this issue to other areas placed on the agenda, including climate change. Another interviewee pointed out that a separate health and wellbeing plan developed by council that was of particular importance in the hierarchy of council documents influenced the inclusion of mental health in their CCAP:

We also have a municipal health and well-being plan, and that has the three determinants of health . . . That's a plan that's supposed to govern; there is a hierarchy of council plans, so I think that community well-being plan sits right on top alongside the municipal emergency management plan, and then policies and things sit under that and govern council. That was one of the ones sitting up higher, and it had those determinants of health, so it was pushing that message. (Participant 4, 2014)

If getting vulnerable groups and mental health concerns within a CCAP is an exercise in problem definition, then it is clear from the above that these aspects are most easily defined as a problem within climate change adaptation if they have already been defined as a problem that council is willing to address. It becomes easier for councils to consider these issues because they already included them within the scope of council remit in other areas whether it be existing programs, service provision, or whether it was already captured in other key documents developed by the council.

This is consistent with Dutton's theory that an "organisation's belief system and values contribute to what makes the strategic agenda. If an issue is linked to values of the organisation it has a greater chance of making the agenda" (2002, p. 96). In this case, councils who previously valued vulnerable groups and mental health were more likely to define these areas within the problem definition of climate change.

Ultimately, what demographics and existing agenda items allow policy makers is a safe space in which to pitch climate change adaptation. When the issue of climate change is so hotly contested from some of the key players in Australian politics and the media, achieving successful prioritisation of these vulnerabilities can become dependent on framing the issue within familiar territory. The politics of climate change means that examining how councils define the problem is important. In adaptation planning, what we begin to see is that climate adaptation actions are identified because of high visibility and familiarity with those issues. The socio-political remit of these councils is a little clearer because they are addressing the vulnerability of large sections of their population and often (as the interviews reveal) these issues are already being addressed by the council in other ways. Fifty per cent of interviewees perceived demographics to play a role in whether vulnerable groups (particularly the elderly) were mentioned in a CCAP. Thirty-one per cent of interviewees cited the existing organisational agenda as influencing whether vulnerable groups and/or mental health was included as part of a CCAP. In this way, variation in CCAP vulnerability prioritisation reflects general variation in how councils have already come to define their own remit, something that councils should be aware of as they continue to develop plans. There is, however, room for a less deterministic reason for variation; the following section will develop the concept of 'ad hoc policy entrepreneurs.'

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A Role for (Ad Hoc) Policy Entrepreneurs

The preceding section is perhaps discouraging in some ways. It determines that councils that already considered vulnerable groups and mental health in other areas of operation are more likely to include them in climate change adaptation. This does not seem to leave much room for councils that do not already have consider these concerns to include them within the scope of adaptation planning. Yet the research also showed that there were some instances where vulnerable groups and/or mental health were introduced to CCAPs without necessarily being on the existing organisational agenda. In some cases, a certain type of policy entrepreneur influenced the problem definition of CCAPs, one that I have named the 'ad hoc policy entrepreneur'.

Traditionally, the policy entrepreneur is somebody who champions a policy through to successful development. As Houston and Richardson argue: "An effective entrepreneur is articulate, visible, willing to commit energy to the issue, and perceived as knowledgeable and credible in terms of information offered" (2000, p. 493). In other words, policy entrepreneurs are individuals who are highly invested in the outcome of a policy and can attribute their success to their knowledge of the process, the issues, and the etiquette that accompanies policy development. When successful, they achieve their ends, influencing policy in such a way that is favourable to their goals. They are described as being able to leverage "their position and resources to achieve desired outcomes" (Carmin et al., 2012, p. 20). Pralle (2009) indicates a specific example of a climate policy entrepreneur, describing them as someone who would highlight the consensus of climate scientists that there is a problem, using predicted trends and impacts to confirm the certainty of climate change as a threat. In this way, a climate policy entrepreneur would secure climate change on the agenda.

But the specific scoping of a CCAP undertaken by local councils creates a new process of problem definition around climate change, which can be influenced by various players in policy development and not necessarily traditional policy entrepreneurs.

In the case of adaptation planning, those who are responsible for the expansion of the scope of CCAPs may be viewed as policy entrepreneurs in the sense that they are successful in influencing policy. Yet the interviews uncovered a far less organised and less focused type of person also influencing CCAP development. I propose the term 'ad hoc policy entrepreneur' is given to describe a person who makes what appears to be a relatively small contribution to the development of a plan, but who nonetheless makes a huge difference in laying the foundation for scope extension to socio-political factors. This concept of the ad hoc policy entrepreneur was developed through the research process in uncovering a number of cases where a single person or small group brought attention to socio-political impacts of climate change, including vulnerable groups and mental health. Some examples of this phenomenon are recounted by interviewees below where they are more commonly referred to as 'champions' by council employees and consultants working in the field (Participant 7, 2014) who are unlikely to use language such as 'policy entrepreneur'. The interviewees relay the process of brainstorming workshops, risk assessment identification meetings, and other similar risk identification processes. In the first example, the interviewee points out the importance of considering who is invited to such workshops, as this can directly influence which issues are brought to the fore:

> One of the issues that I have with the process and methods that we use was
> your risks were based on who is in the room at the time. If you had people in

the room and you've got a talker who talks a lot, their risk will be a priority

. . . (Participant 1, 2014)

This interviewee was highlighting the impact that individuals can have on the identification process if they are given (and take) the opportunity to make themselves heard.

The following quote was in response to a question about a plan that notes the possible loss of community wellbeing due to climate change and highlights concern for vulnerable groups. When asked how these elements came to be included, he perceived that gender played a role in having these issues brought to the table:

The initiative of the people concerned with the social aspects, I can almost picture the two ladies involved, as often happens with things to do with social well-being it tends to be women in those roles. No need for it to be, that just seems to be the way it works out. They just started musing on the subject and it got a bit of a head of steam, and it wound up in the risk register. (Participant 2, 2014)

In addition, at least one interviewee likely brought mental health onto the agenda based on his professional background in the mental health sector (Participant 15, 2015). Ad hoc policy entrepreneurs were not only internal stakeholders. In the following example, vulnerable groups were included as part of the climate change problem definition through community workshops conducted as part of CCAP development. Explaining how the community workshop was conducted the interviewee recounted:

We say 'tell us about your community, tell us about what is important to you.'
The starting point is always you tell us what is important about your
community and why you enjoy living here, and when you ask that question,
people say, 'nature in our area' or 'local reserves, that's really important.' 'I
live in this area so protecting my house is really important', 'I work in this
area', 'my grandmother lives in the area, and she lives in a nursing home and I
need to make sure she is looked after.' So if you start with values you get to a
point of saying how you can identify key themes off the back of values and
when you do that, vulnerable members of the community come straight out.
And all the plans we do, vulnerable members of the community is just really
an essential theme. It's Australians, it's something we do, we look after people
less fortunate. It's something that is really core to our culture. It does really
strongly come out in all the plans we do, but I think it starts from that point of
understanding the values of a region. (Participant 10, 2014)

In this case, the opportunity for a wide problem definition of climate change is
enacted through a 'values' approach to identifying vulnerability. When approached
from this angle, as opposed to a risk management angle, caring for vulnerable groups
comes out as a theme of a greater culture of caring for others, something that can be
linked to a reflective theory of political conflict (Baumgartner, 1989). Within this
wider context, it is easier to understand the impacts of climate change as reaching
beyond the biophysical because the starting point is identifying how climate change
may affect what we value, rather than what has been identified as at risk through a
consequence-likelihood scale.

I directly observed community consultation as a forum for raising socio-political
concerns as a part of adaptation planning through the City of Sydney's Citizen's Panel

on Climate Adaptation in 2014.[9] When asked what risks they thought might be missing from the collection of risks already identified by the council, community members were quick to bring attention to vulnerable groups and mental health (Schlosberg et al., 2015). It should also be noted that this group also highlighted the importance of further education about climate change, a third socio-political indicator that is examined in the following chapter. In both this and the previous example, community members are given the opportunity to voice their concern, and socio-political factors come to the fore through this process. Though they may not know it, these community members are actually ad hoc policy entrepreneurs in the development of their council CCAP, individuals who ended up actually going "beyond the basic questions, and developed four simple principles for adaptation planning in the City of Sydney" (Schlosberg et al., 2015, p. 5).

More traditional policy entrepreneurs also played a role in the expansion of scope to socio-political factors. Individuals who wielded a lot more control than these ad hoc policy entrepreneurs included those managers and/or consultants who accepted a large responsibility for the CCAP development:

> The first coordinator for the project came from a social science background in Melbourne, and she was very big on talking about 'people won't act until they see how an issue is relevant to them and their values.' Communities that are well connected are going to be more resilient. From the very get go, that project had a much broader understanding of what builds resilience in their community than other projects. That language was coming though in the very

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[9] It should be noted I was a member of the research team that developed this Citizen's Panel as a part of the development of City of Sydney's Climate Change Adaptation Strategy. However, the community, without prompt, raised the references to vulnerable groups, mental health, and education early and organically in the process.

early stages. That's where is comes back to the power of good project

governance. The team was very clear on how they wanted their plan to be

developed. (Participant 10, 2014)

I think it comes down to one person and that was the director of planning at

the time who had both environment and social services in his portfolio.

(Participant 15, 2015)

This represents a more common form of policy entrepreneurship, someone with direct

influence on the policy development and an awareness of what they are achieving

when they shape the direction of a CCAP. Ad hoc policy entrepreneurs had

comparatively less control over the process they took part in. The contribution of

these ad hoc policy entrepreneurs may seem minimal at the time, but in the context of

this research they make a huge impact on the measurement of the scope of adaptation

planning. It also represents a less intentional form of policy entrepreneurship, which

is characterised not by a leveraging of position and resources but more an ad hoc

expression of a possible aspect yet to be acknowledged in the process. The key, it

seems, is for councils to open themselves up to this type of entrepreneurship in two

ways. Firstly, by extending the inclusion of participants in the planning process

beyond the typical environmental groups. And secondly, by being open-minded to

their suggestions once they are made. Of course, extending adaptation planning

beyond the default departments of environment and/or sustainability involves a

problem definition of climate change that extends beyond the environment. This is

dependent on policy makers' ability to recognise the interconnected nature of

ecosystems that create fallout impacts on humans; for example, the increasing

severity of extreme weather events may lead to anxiety and stress for those in affected

zones. But it can also be constrained by policy makers' perceived remit in these areas.

In summary, while the inclusion of vulnerable groups and mental health in CCAPs was often dependent on established (and in some cases perceived) demographics of council constituents and/or dependent on the existing organisational agenda of the council, there is room for councils to develop these socio-political impacts within CCAPs without those preconditions. This was most often manifest by the presence of an ad hoc policy entrepreneur in the risk identification process. That person would establish the connection between climate change and these socio-political factors and would have access to the development process in order to voice their concern. Creating a clearer understanding of the policy context in which CCAPs are created is all a part of the contextualisation and politicisation of vulnerability, to which we now turn.

Policy Contexts and Conceptualisations of Vulnerability

The limitation of traditional risk and vulnerability assessment was examined in Chapter Two. Burton et al. (2002) provide overarching explanations for why current vulnerability assessments do not work, citing insufficient consideration of factors determining the adaptation process, of key actors, and of the policy context. In determining how councils identify vulnerabilities to climate change, and specifically how they identify concern for vulnerable groups and mental health, these areas of 'insufficient consideration' begin to be addressed. Now that we have begun to unpack the policy context in bringing socio-political impacts such as vulnerable groups and mental health to light, we can see the importance of understanding how vulnerability is contextualised within the difficult political climate in which adaptation planning takes place. We have seen the impact the indistinct remit of councils has had on contributing to variation in problem definition (and in turn) on vulnerability identification. We can now establish the role of problem definition in influencing the

adaptation planning process. At its heart, problem definition is "the strategic representation of situations . . . constructed to win the most people to one's side and the most leverage over one's opponents" (Stone, 1988, p. 106). This is particularly important in adaptation planning as the political climate is so charged. Greater understanding of the influence of demographics and the existing policy agenda create a policy context that can be used to explain the identification of vulnerable groups and mental health in CCAPs. Both demographics and existing agenda items present useful justifications of the socio-political factors in a CCAP. Additionally, the role of ad hoc policy entrepreneurs as key actors who are yet to be examined in the literature emerges as important to the extension of the scope of vulnerability to socio-political factors.

More can be learned about the adaptation policy development process by examination of how problem definition highlights and/or excludes elements of a problem. Portz (1996) notes that issues with high visibility are more likely to achieve a successful problem definition. In turn, we have seen that demographics and existing policy agendas have influenced the vulnerabilities that are identified in CCAPs. Councils with ageing populations were more likely to identify the elderly and other vulnerable groups in their CCAPs. Councils that had established mental health programs, or had employees who interpreted part of the role of the council as providing information about mental health, were more likely to make the connection between climate change impacts and mental health. Taking the policy context into account when analysing CCAPs best illuminates how councils conceive of vulnerability in terms of the risk identification and prioritisation in the plans themselves. In these cases, the problem is defined beyond biophysical impacts only in terms of issues that are already highly visible and accepted by council.

Conceptions of vulnerability have been developed over the last few years in the adaptation literature. They have progressed from a hazard management framework that depends on a likelihood–consequence scale, to definitions that take into account not just the exposure and sensitivity of individuals and communities but also their adaptive capacity (Adger, 2003; Hobson & Niemeyer, 2011; Prudent-Richard et al., 2010). The IPCC itself has adopted this latter expanded definition, validating the importance of adaptive capacity and the socioeconomic-political context on which it is dependent. But the complexity of recognising adaptive capacity is yet to be fully grasped. What a thorough understanding of adaptive capacity ultimately means is contextualising vulnerability identification within councils. In this way, vulnerability identification becomes an objective practice only within biophysical risk assessment and becomes a subjective practice when understanding socio-political vulnerability. This is because socio-political factors are not easily encapsulated by a likelihood–consequence scale. Through problem definition, the expansion of scope to consider the socio-political (the elements that contribute to adaptive capacity) becomes a process of problem construction and justification. Vulnerability identification undergoes a process of contextualisation that produces a CCAP suitable for the aims, scope, and understanding of climate change within the council at the time of development. The demographics of a council define the vulnerability prioritisation in such a way that some vulnerable groups are recognised as vulnerable only in some councils and not in others. The pre-existing organisational agenda can determine whether councils are already predisposed to consider mental health through existing practices and policies and are therefore more likely to continue to do so when developing CCAPs.

The instance of ad hoc policy entrepreneurs offers an opportunity for councils without the demographics or a pre-existing policy agenda to include such socio-political concerns in an adaptation plan, but even this opportunity should be contextualised. Allowing for such new ideas to be brought to the table in the process of adaptation policy development involves a project manager who can recognise, is willing, and is able to expand climate change adaptation beyond the default department of environment, something which continues to prove difficult for many practitioners (Measham et al., 2011). Socio-political factors so crucial to the development of adaptive capacity can only be identified in an environment conducive to contextual and systems thinking, and by those with the ability to link the domino effects of biophysical impacts with the larger and more extended impacts of other aspects of council operations. Council employees from a range of council departments or community members in a consultation session can make this connection. Either way, adaptation policy developers need to consider the bigger picture of general wellbeing in the community if they are to adequately prepare for future climate impacts.

Conclusion: The Politicisation of Vulnerability

This chapter has begun to explain the specific variation in CCAPs across Australia. Demographics, existing agenda items, and ad hoc policy entrepreneurs have been shown to play a role in the prioritisation of vulnerable groups and mental health in CCAPs. Expanding the scope of CCAPs beyond the biophysical is a crucial exercise. Webb et al. note that "project scoping involves choices that will affect all subsequent stages of the project, including: spatial and sector coverage; whether to anticipate incremental change, transformation or both; and the appropriate balance between a 'bottom-up' approach and 'top down' approach" (2013, p. 325). Expanding adaptation planning beyond the default environmental sector indicates a more

comprehensive understanding of the interconnected nature of climate impacts. But despite these great benefits, the expansion of scope in CCAPs remains less an explicitly targeted practice and more the result of existing demographics, agenda issues that already reflect vulnerable groups and mental health as valued considerations, and ad hoc policy entrepreneurship. Each of these three factors contributes to the variation in Australian CCAPs and, more specifically, they currently determine the inclusion (or not) of the socio-political indicators of vulnerable groups and mental health that have been linked to adaptive capacity in the literature.

Dery tells us that "the concept of problems as constructs rather than givens, and the understanding that definitions of problems must embody 'opportunities for improvement' holds, whether problem definition is an input to a political process or its product" (2000, p. 40). We can see this dynamic play out in both the placing of climate change on the agenda and in the definition of what adaptation should encompass once it is placed there. The political difficulties in acting on climate change continue to impede the progress of adaptation planning, making scope expansion a by-product of external factors rather than the goal of a concerted effort to holistically address climate change. Climate change comes to be defined within areas of acceptable action when it does expand beyond the biophysical risks. Policymakers should also be aware that the expansion of scope beyond the biophysical is also partly dependent on ad hoc policy entrepreneurship, meaning that identification of socio-political factors can be dependent on ad hoc processes rather than holistically approached.

Vulnerability prioritisation, as understood by councils, is influenced by what can be defined as politically acceptable in that constituency. The policy context is crucial to

understanding what councils will focus on as vulnerable. Without considering how vulnerability is politicised in climate adaptation planning, we cannot gain a holistic understanding of how vulnerability is articulated in practice. Natural hazards are determined by where people live, how they use natural resources, and their coping mechanisms (Adger, 2006). But in adaptation planning, identification of vulnerability is influenced in part by what the political climate in the area will accept as vulnerability.

Developments in vulnerability studies have been focused on improving the methods by which we measure vulnerability. This is a worthy aim, but whether vulnerability measurements include consideration of adaptive capacity or whether scholars are developing measures that can quantify both physical and social parameters of vulnerability (Luers et al., 2003), the fact remains that the goal is to understand the objective vulnerability of a community, country, or council. In the case of climate change, where potential vulnerability can be large-scale, our understanding of what is vulnerable becomes a choice between the many options identified through the many systems, algorithms, and assessments that we use to determine vulnerability in the first place. According to Reich, "the most important aspect of political discourse is not the appraisal of alternative solutions to our problems, but the definition of the problems themselves" (1988, p. 5). This is particularly salient for climate change because councils can define the problem to limit the focus to key 'manageable' areas, something we have seen in the previous chapter. This is where the political context of a council and the problem definition they fashion for their CCAP becomes fundamental. This is distinct from the experiential and perceptual dimensions of vulnerability (Kasperson et al., 2005), although cultural understandings of vulnerability do play a part. The politicisation of vulnerability encompasses more than

cultural differences often characterised as between countries (Riedlinger & Berkes, 2001) because the politicisation of vulnerability as explained through this research is taking place in a single country – Australia.

The nature of climate change means that vulnerability to it can be all-encompassing. It is not useful for councils to conclude that everything is vulnerable; choices must be made about what can and will be addressed. In local government adaptation planning, vulnerability is not the point of focus for studying CCAPs, rather the political arena in which policy development takes place becomes the focus. The impact of politics on different understandings and articulations of vulnerability is yet to be studied, but understanding this is crucial to understanding how we will adapt and what level of risk is acceptable. The concept of the politicisation of vulnerability is further expanded in the following chapter, where we turn to examine how councils come to include or exclude education about climate change in adaptation plans. In Chapter Six we can further appreciate the role of politics in adaptation planning.

Chapter Six: Explaining Specific Variation: Education, Community Engagement, and the Role of (Positive) Problem Definition

> There is fairly broad acceptance that we need much more education and awareness-raising in relation to climate change. But there is much more work to be done in that area and not simply education that climate change is happening, and this is what you should be doing. It's about how you create those methods in a way so that they connect with people so that they change, or understand what's going on, or they change their behaviours accordingly without having to get drawn into the political debate that seems to occur around climate change. (Participant 7, 2014)

This thesis has outlined two broad categories of CCAPs: biophysical-based and socio-political inclusive. We have already examined the inclusion of two socio-political factors in CCAPs, vulnerable groups and mental health. This chapter will focus on education and community engagement, both recognised components of adaptive capacity and key aspects of many adaptation plans. In the literature, education contributes to climate change adaptive capacity in two ways: firstly, in terms of general education levels of a community, and secondly, in terms of specific knowledge about climate change and its impacts. This thesis explores only the second of these, as Australia's status as a developed country makes the latter measure of education more poignant.

This chapter will outline an interesting paradox in Australian climate change adaptation planning. Chapter One laid out the hostile political environment in Australia towards climate change and this chapter will recount how the very words 'climate change' have become unspeakable. This unique situation has made a

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formerly acceptable form of council and community communication, known as community consultation, particularly difficult and resulted in a 'politicisation of vulnerability' that characterises adaptation planning across Australia. Including 'education' in a CCAP may be an indication that a council recognises the importance of educating and engaging their community for increasing adaptive capacity, but this phenomenon must be understood in terms of the political climate in which it takes place. The research shows that many councils are employing a positive focus when undertaking community consultation to combat the negative politics of climate change.

The research question this thesis seeks to answer is about how we explain the variation in the prioritisation of socio-political concerns in CCAPs developed by local governments across Australia. We now turn to the politicisation of vulnerability through the inclusion of education and/or community consultation. The chapter will begin by explaining the intersection between education and community consultation. It will then outline the political fear in openly acknowledging and discussing climate change in public forums in Australia and the resultant variety of ways councils define the problem in terms other than climate change to communicate climate impacts with the community. In the previous chapter, the difference between councils that showed concern for vulnerable groups and mental health was explained by a process of problem definition that created space for a socio-political inclusive understanding of vulnerability to climate change, rather than a purely biophysical one. This chapter will lay out the variation in the inclusion of education and/or community engagement apparent in CCAPs, as well as explain how councils are undertaking education and community consultation within the difficult political climate. The variation in CCAP inclusion of education and community engagement is explored through the

intersection of public participation, problem definition, and the politicisation of vulnerability. Variation between councils in terms of education and community engagement around climate change is shown to be the result of a politicisation of vulnerability in Australia, directly related to the political difficulty in discussing climate change. Many of those who do undertake education and consultation do so by using positive problem definitions of climate change when framing community consultation. At times, the community is involved in the process of defining climate change as a problem, creating opportunity for variation in prioritisation of risk and, therefore, variation in CCAPs.

Education and Community Engagement – Different Ends of the Scale

It is important to define the key term of 'education'. Highlighting the need to 'educate the community' or 'raise awareness' in a climate change adaptation plan can be interpreted to relate to a range of intentions. Councils may seek to educate the community about the science of climate change with a view to establishing its validity. In a country like Australia, this is an important step for some councils to combat the conflicting views perpetuated by the mainstream media and key political leaders. Councils may wish to educate the community about the specific climate impacts in their area. Down-scaled climate modelling has improved some understanding of the predicted impacts for individual councils and regional areas (UNSW Climate Change Research Centre & NSW Office of Environment and Heritage, 2012). To contextualise education references in adaptation planning, some examples of the language used by councils in CCAPs are presented below:

> increase public awareness about the potential impacts of climate change and
> climate change adaptation measures for treatment of priority climate change

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risks. (Glenorchy City Council Corporate Climate Change Adaptation Plan, 2012, p. 35)

complement Department of Fire and Emergency Services programs with community education and local information on emergency preparedness and personal protection. (City of Subiaco, 2013, p. 25)

Implement a consultative program on climate change between youth and Council. (Alpine Shire CCAP, 2012, p. 13)

A review of proposed action reveals . . . the substantial numbers of actions in the community education, research and training categories, highlighting the need to build knowledge and understanding of climate change in the region . . . (Climate Change Risk Assessment and Adaptation Plan: Coastal Councils, 2010a, p. ES.xi)

Undertake community surveys and consultation to determine community knowledge, expectations and beliefs in the area of climate change. (Town of Bassendean Local CCAP, 2011, p. 29)

Ensure full and open community consultation. (Climate Proofing Bribie, 2010, p. 27)

Highlighting the key biophysical (and socio-political) climate impacts for a community is an important step in educating them about what is to be expected and how these changes affect current key decision-making choices in the area. Although there is a tactical risk in public consultation because opponents may use the forum to disrupt, delay, or spread misinformation. This risk is explicated further in the following section. Once vulnerability is established, hopefully in terms of both

biophysical and socio-political risk, the next step is to educate and engage the community on potential impacts and adaptive actions. There is an established spectrum of types of education and engagement, known as the IAP2 Spectrum. This spectrum runs from 'informing' the public about issues, to consulting, involving, collaborating and finally, empowering the public through engagement. 'Informing' the public involves education through fact sheets and websites, 'involving' includes workshops and polling that can directly influence decision-making, while 'empowering' leads to citizen juries and ballots where final decision-making is undertaken by the public (International Association for Public Participation, 2004). In an Australian context, the last three categories (involve, collaborate, and empower) can be replaced with partnership, delegation, and control that may be represented by advisory committees, citizens' juries, and referenda respectfully (Althaus et al., 2013).

This rather large scale of involvement is not always clearly distinguished in the language of CCAPs, meaning that many CCAPs make mention of the need to educate the community through public participation/workshops/forums/information nights, but they do not always specify what point on the IAP2 Spectrum they aim to achieve. This means there is much variation in what education and engagement in CCAPs means for councils. References to education, awareness-raising, and consultation were rarely accompanied by detailed breakdowns of the programs or information campaigns that would take place in order to fulfil the mandate, although in some cases it was included in the appendix of the CCAPs. Interview data showed that involvement varied along the IAP2 Spectrum, with some councils going beyond simply educating the community and moving to engage with them about climate impacts and CCAP development.

Beyond simply informing the community about climate science and the specific impacts of the area, some councils interpret education to mean *engaging* with the community on the issue to discuss adaptation options for the area (Schlosberg et al., 2015). This level of participation involves a democratisation of the process, with the public prioritising areas of vulnerability to climate change. It also recognises the importance of community knowledge about place; acknowledging that a two-way dialogue can take place between councils and communities rather than a one-way process of council informing the community about impacts. This level of engagement has been shown to be crucial to developing the adaptive capacity of communities (Hobson & Niemeyer, 2011). Councils may also ask the public for feedback on possible adaptation options, as well as opening up the discussion to concerns the public may have about climate change that may have been overlooked or not considered by the council in previous preparation (S. Graham et al., 2014; Keen & Mercer, 1993). In this way, community engagement becomes a tool for addressing vulnerability by increasing adaptive capacity. This level of engagement goes beyond merely informing the community about the facts of climate change and begins to consider what they value in the community and what they feel is most vulnerable to climate change. However, it can be difficult to ascertain what level of involvement has taken place in all CCAPs. While councils shared a language of education and 'awareness-raising' within CCAPs, they have not always had a common understanding of what these terms entail and interviews were needed to confirm the level of public involvement. What can be established then, are two questions. The first is whether a CCAP uses education and community engagement to address vulnerability in adaptation planning. The second is how they go about education once they have highlighted its importance.

Of the original four socio-political factors measured for in the database (vulnerable groups, mental health, education, and community cohesion), education is the most likely to be referenced by councils in a CCAP. Ninety-two per cent of plans made reference to education or awareness-raising in some form. Eighty-five per cent of those plans also made reference to vulnerable groups and/or mental health, illustrating a reasonably strong correlation between the two. The large number of CCAPs that make reference to education and/or community engagement is most likely because councils often conduct forms of community engagement on a range of issues relevant to the community (Department of the Environment, n.d.)

Recognising that climate change is a new and complex concept for the community (especially given the conflicting views of scientists against the media and federal government) is an important step in addressing adaptation policy. Educating the community about climate change seems a natural step in adapting to climate change effects; however, the process is not as straightforward in practice. The political climate in Australia makes recognising the validity of climate change difficult, let alone engaging in useful discussions about what climate change means for a community and what adaptation should look like. In short, educating the community about climate change is an indicator that a council is extending their scope of concern beyond the biophysical risks identified in standard risk management practice, because they recognise (though perhaps not explicitly) the importance to adaptive capacity in understanding and communicating about the issue. Additionally, the extension of education to community engagement that facilitates a two-way discussion between community and council goes even further to improve the adaptive capacity of communities, fostering ownership of adaptive actions. While there is variation in expectations of council engagement in other areas, as discussed in the previous two

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chapters, all councils engage in general education or consultation in some way. That some eschew it on this crucial policy area is reason for further investigation.

At the federal level, the Department of the Environment has emphasised the role of local councils in adapting to climate change. They highlight that councils "have a critical role to play in ensuring that particular local circumstances are adequately considered in the overall adaptation response and in involving the local community directly in efforts to facilitate effective change" (Department of the Environment, 2012, p. 8). Education influences the adaptive capacity of individuals and the community, contributing to the level of vulnerability to climate change that they face (Wamsler et al., 2012). Tang et al. (2012, p. 99) have specifically recommended that "climate change issues be integrated into higher education for the next generation of [town] planners". Without knowledge of projected impacts and the potential consequences of those impacts, communities have reduced capacity to plan for extreme weather events and to adapt accordingly to projected climatic changes. Beyond education, involving communities directly in developing adaptation plans through engagement not only creates ownership of policies but also can provide valuable new insights into possible future adaptive solutions and boost adaptive capacity through the increasing robustness that these plans enjoy through community engagement processes (Barnett et al., 2012; Barnett et al., 2011b; Larsen & Gunnarsson-Östling, 2009). Hobson and Niemeyer found that deliberative processes on climate change gave rise to discourses that were "indicative of a potentially constructive personal and collective adaptive capacity" (2011, p. 957). Increasing levels of awareness, ownership and action through educational programs and consultation with community becomes an important step for councils extending their scope of vulnerability beyond the biophysical. This is because it encourages

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communities to understand climate change as a valid concept and to begin to comprehend and appreciate its many varied impacts. It can, however, be a process fraught with political complications and, as such, there is variation across the country in terms of whether councils employ it for adaptation planning, to what extent it is applied, and how it is approached when it is embraced.

'Community engagement' is "the process of involving the public in the business of government" (Australian Centre of Excellence for Local Government, 2011) and, as a democratic country, it is a key part of Australian local government. Public participation in government processes is also often represented in the standard forms of risk management undertaken by all local councils. Communication and consultation with internal and sometimes external stakeholders is an ongoing process within the standard Australia/New Zealand risk management framework (Standards Australia, 2009), a framework that is employed by many councils when developing a climate change risk assessment. In local government practice, community engagement may be referred to under a number of different terms: 'public participation', 'citizen engagement', 'public engagement', 'public consultation', and 'empowering communities' to name a few (Australian Centre of Excellence for Local Government, 2011). The fluidity of the language used to discuss community engagement is evident. While the CCAPs most often made reference to education and awareness-raising, the language of public participation and its many variants populates the literature around community involvement in the policy process. The scope for public participation in adaptation policy stretches even within this one term of education to encompass many forms of inclusion. The extent to which councils engage their communities is highly variable (and sometimes they do not even explicitly mention climate change), but in the context of this research, the act of communicating with the community is an

example of extending the concern for climate vulnerability beyond just biophysical impacts to a concern for bolstering adaptive capacity of communities. Talking to the community about climate impacts and the available options becomes a way of recognising the complexity of the problem beyond the data and the science and towards a deeper understanding of vulnerability that encompasses the socio-political context, particularly when community engagement extends along the IAP2 Spectrum beyond 'inform.'

It may seem unproductive to measure references to education in CCAPs, especially after I have outlined how we might expect such referencing. Indeed, had education been mentioned in all plans, this may have been the case. But the 8% of plans that made no mention of education, awareness-raising, community participation or any other synonym for the practice of communicating with a community were not merely plans that bypassed mention of this rather established practice of community–government interaction. The CCAP database and interview research reveal examples of councils within this 8% that actively sought to avoid communication with the community on this issue (Participant 2, 2014). Those that did conduct education with their community were often at pains to discuss the difficulty they faced in developing strategies to do so. It is this rather deliberate act, to include or to avoid discussion about climate change adaptation with the community that creates a rather stark variability for investigation. The question becomes, what motivates a council to include education within a CCAP and what drives a council to exclude it? In other words, despite the almost commonplace presence of community engagement in local government, what is it in the CCAP development process that causes some councils to exclude this most simple and accepted form of community practice? This chapter will first seek to understand instances where education has not been identified in CCAPs,

before moving on to explain how councils overcome those barriers and develop key strategies that employ the techniques of problem definition to move forward with community consultation on the issue of climate change adaptation.

The Politicisation of the Process: A Barrier to Consultation

In talking with local council employees and consultants across the country, it becomes clear that the language we use – the words we employ to discuss climate change – is highly loaded with political implications. Those two words, in the specific order of 'climate' followed by 'change', have become so politically charged in Australia that they are together a barely acceptable spoken term. Indeed, this is illustrated by the example from Moreton Bay where the Deputy Premier of Queensland instructed the council to remove the term from all planning documents (Solomons & Willacy, 2014). I was informed by interviewees that the term had become so political that councils and consultants simply referred to 'a changing climate,' or 'climate variability,' or 'changes in weather over time' when discussing the matter in council and with the community (Participant 5, 2014). These variants on climate change appeared more acceptable, less provocative than their parent despite the similarity in word use and general meaning. I outline this particular phenomenon in order to emphasise the tension inherent in this topic and to demonstrate the context in which many CCAPs are developed. Discussing climate change, literally saying the words, becomes unacceptable and by extension any notion to discuss the topic with the community is approached with caution, if approached at all.

When asked about discussing climate change in their communities, many told of the difficulties in approaching the topic with the public:

The majority wouldn't accept the term . . . The majority don't believe in
[climate change] or don't care. (Participant 11, 2015)

We frame all of our communications about the environment around lifestyle
and lifestyle change. What sort of future do we want here? Rather than climate
change is coming, what are we going to do? (Participant 14, 2015)

[We] come at it from a health perspective and say it's going to decline
people's health and wellbeing because it's hotter and talking about the
financial impact of people having more sick days and that sort of stuff. It tends
to trigger people's interest more than saying "we've lost trees" and that sort of
stuff . . . I think climate change it probably scares people a little, if you start
talking about climate change it's a future problem but if you can bring it back
to something local to do with health or finance people pay attention to it.
(Participant 19, 2015)

The first quote highlights the unacceptability of the term while the other two quotes
explicitly acknowledge that the council 'frames' the issue in acceptable terms for their
community. This engagement with the policy practice of framing or characterisation
of the issue has great influence on how a problem is viewed (Kingdon, 2003a). A
number of respondents highlighted that correctly framing the issue was paramount.
The negative political climate surrounding discussions of climate change in Australia
has influenced if and how councils engage their community on the issue. A current
sustainability coordinator from a council with an early 2009 CCAP notes how the
council now approaches climate change a few years on from their CCAP.

I have no problem going out with my lifestyle things because it's something
tangible and everybody agrees "wouldn't it be nice to have more local food

production here" – that's going to have economic benefits and health and environmental benefits, so that's an easy thing to communicate to the community about. But climate change in itself is not so easy, we have just launched flood maps, and they are on public exhibition and things are framed more that way then an overarching umbrella around climate change.

(Participant 14, 2015)

The reluctance to talk specifically about climate change and to frame the issue around the creation of a better and sustainable 'lifestyle' is key to the process of problem definition that this council is executing to overcome political obstacles to engaging their community around climate change. The problem is not defined as a climate change issue, but rather a lifestyle choice. The benefits are defined in terms of their relationship to the economy, general health and the environment, but not explicitly linked to climate change mitigation or adaptation. The process has become so politicised that to acknowledge the vulnerability of the community to climate change has become taboo. Thus, the need for a different definition of the problem – one that revolves around local food production and the lifestyle benefits this would provide the community. In this case vulnerability, not only to climate change but to anything, is eliminated. This is not about being vulnerable but about improving an existing situation to make it better. I posit that this process is part of the politicisation of vulnerability and plays a key role in how councils approach community consultation, if, and when, they do.

The reference to local food production would, in an academic sense, be linked to mitigation and we begin to see the tendency for mitigation and adaptation actions to conflate when local government employees discuss climate change adaptation planning. I suggest this is due to an inclination to simplify the issue by treating it as

an umbrella, rather than abiding by the categorisations of mitigation and adaptation that add complexity and are perhaps not so useful for practitioners who can be more effective by addressing many bases at once. This is an example of what Kjellstrom and Weaver (2009) call 'mitigation and adaptation co-benefits', where strategies are designed to combat both issues. It appears that for councils, conflating mitigation and adaptation is more useful, perhaps because defining the difference between the two involves a more direct engagement with climate change as an issue, something that many are trying to avoid. Furthermore, this strategy exemplifies the no regrets approach introduced in Chapter One, which ensures non-climate-focused benefits are achieved and highlighted, and which is borne from the need to justify climate action in a difficult political context. No regrets solutions have been key for Australian adaptation policy makers, and their utility is often discussed in the literature (Heltberg et al., 2009; Siegel, 2010).

While these councils obviously do recognise climate change as a problem and have put adaptation on the agenda by developing a CCAP, they do not require that the public goes through this same process of acceptance. Instead, after placing climate change on the agenda, many councils define the problem to carefully avoid explicit mention of the issue. In this way, they can develop a CCAP and implement actions that mitigate or lead to adaptation, all in a bid to avoid the political difficulty that is climate change. In some cases, this process is considered in more corporate terms, with one consultant remarking, "we need better marketing" (Participant 7, 2014). This gets to the heart of how communication with the community on adaptation planning is approached. A strategy is developed to best engage the public with the issue and, usually, that strategy involves concealing the 'climate change' part wherever possible.

Effectively, climate change is no longer being defined as the problem, though it is the problem that councils are attempting to address.

While this rather extreme situation of 'covert' adaptation is still present in many councils and regions of Australia even now, some interviewees were keen to point out that the passage of time since developing their early CCAP has made discussing the issue easier. One interviewee presents a perspective on the difference between talking to the community when their CCAP was developed in 2009, and addressing the issue today:

> I think more people are familiar with the term climate change now than they would have been 5–6 years ago. If you go out to the community and talk about a CCAP, people would recognise at least what that means, as opposed to maybe when the Local Adaptation Pathways Project (LAPP) was developed – to talk about developing the LAPP [the community] would say "what does that mean?" A change in language has helped; climate change is something that has been topical for a very long time, and I think this community has really taken that on. (Participant 13, 2015)

A Director of Environmental Services in a rural NSW council who points to the effect of time on his community since they developed their CCAP enforced the sentiment:

> I think if we had those same discussions now, I think there wouldn't be as many "Doubting Thomases" as what there were then, I would only say a small minority did not grasp the concept of climate change. Most of the landowners have experienced a change in the last 50 years because the thing with [our council] is a lot of the land doesn't change hands, they're reasonably large properties, very successful properties and they get handed down father–son so

to speak, so the tenure of the land doesn't change that much, so I believe that they are aware of some of the issues in relation to climate change. It would be a lot easier now than what it was back in 2009. (Participant 15, 2015)

What is clear in these examples is that approaching the topic has become easier for them with time, as people have become more familiar with climate change and perhaps come to accept the term more easily. Personal experience with the 'changing climate' on the part of the community has also helped the cause; however, the process of normalising climate change as a concept is far from a linear process. Indeed, some councils recounted stories of moving backwards, not forwards over time – depending on state government opinion:

> It has shifted in terms of changing state government and focus on climate change not being there anymore and not being featured in many state-planning policies. The word 'climate change' isn't even referred to in the latest state planning policy that is being released. Instead the focus has been shifted onto natural hazards management and emergency response, so they are still adaptation initiatives, but the terminology has changed. The culture is not that upfront in using words like "sea level rise" as much as it was two years ago. Now it's about flood management, emergency management, natural hazards, rather than anything referencing climate change and that's been [a] state down [initiative]. (Participant 16, 2014)

> The draft-planning scheme will show that climate change is a phrase that has been removed; it won't exist anymore in the draft-planning scheme when it goes back out to consultation soon. We're all beasts of the political climate we're operating in. (Participant 5, 2014)

This political climate, which has made climate change discussion so difficult, is important to understand because it influences whether and how a council approaches education or consultation in their community. Indeed, using public participation to develop a CCAP can have a huge impact on the legitimacy (S. Graham et al., 2014) as well as the scope and awareness of adaptation planning in an area (Schlosberg et al., 2015).

One of the reasons that time has improved discussion about climate change for some communities in Australia (though obviously not in all) can be linked to the improvements in down-scale modelling of climate impacts (UNSW Climate Change Research Centre & NSW Office of Environment and Heritage, 2012) and the development of clearer liability guidelines for councils (Baker & McKenzie, 2011). Modelling has allowed councils to better predict impacts and, therefore, has improved planning and decision-making processes for councils who do develop CCAPs. As was recounted in Chapter Four, the development of liability guidelines for councils has since improved confidence in the remit of council jurisdiction regarding liability for climate impacts, though this has not always been the case. A risk management specialist for a regional Victorian coastal CCAP had this response when asked about whether community consultation was conducted for an early-developed CCAP:

> We didn't even consider it. I think that would have been regarded as too complicated . . . nobody really had a clear idea about the climate forecasts and future scenarios, and there was some concern about scaring the public. I suspect that would be less of a concern now because there is better quality information, and people have perhaps found better ways to convey it . . . and then you've got all this stuff going on in the public like planning permissions being denied or being granted and then things going wrong, possible liabilities

and lots of stuff being beaten up by the press and I don't think anybody felt

confident to take that mess out to the public. (Participant 2, 2014)

Many council employees would argue that there is still great concern regarding

conducting community consultation about climate change adaptation even now;

indeed, there are still many councils across Australia who are yet to accept adaptation

on the agenda and develop a plan, let alone consider community input. It is true,

however, that most of the interviewees agreed that while community consultation was

difficult in this area, the aim was to eventually achieve progress towards making

public participation easier. Only one interviewee denied an immediate need to educate

the community about climate change, and in so doing presented a very different view

of the situation:

> We agonised over that and tried to work out what to do because it's sort of a
>
> bit too early, I mean what can people do to adapt? Well, to be honest, unless
>
> you're living very, very close to the ocean there's not a lot that the average
>
> person can do other than save energy and try not to waste so much . . . We
>
> often fall into the trap of having a person, a beautiful website, interactive this
>
> and that and workshops and all this kind of stuff when in reality we should all
>
> just calm down and relax until the state government coordinates something
>
> bigger and better. There's not a huge benefit to be gained from [our council]
>
> raising awareness of climate change for its 100,000 people, if they need that,
>
> then those that are interested there is stuff available for them. The vast
>
> majority of people carry on regardless really because it's so slow, in
>
> geological time it's a rocket ship but in reality, [people today] will probably be
>
> dead before it really starts kicking in. (Participant 6, 2014)

This perspective is interesting because it comes from a manager who was absolutely convinced that the council needed a CCAP, a fact which may be difficult to reconcile with the above quote. When talking about being the lead on CCAP development for his council, this individual said:

> The health department in Perth around 2008, they published one of the earliest documents around climate change, and at that time we didn't really know the difference between adaptation and mitigation, it was all very early on in the piece. It was quite a lengthy document, and I thought "we need one, we need an adaptation plan," for [the area] pretty quickly just to make sure that we've squared off on the most important issues, particularly planning next to the coast because we're a coastal council. So we needed to identify what the major issues were, see if there was anything we needed to do immediately, and develop a stage one adaptation plan . . . I just wanted to make sure we hadn't missed anything. (Participant 6, 2014)

Clearly, the interviewee is keen to address the issue; however, he disagrees that engaging with the community is essential at this stage of planning. In this instance, support can be found in Mendelsohn's theory that "in most cases, it is sufficient that firms, individuals, and governments react to the climate as it is observed to change. There is little additional benefit to acting in anticipation of a predicted change in climate" (2000, p.596). This sentiment is expressed in this manager's concern about the limitations on action; however, like Mendelsohn's theory, this is not the prevailing attitude of the academic literature or for practitioners. Others indicated that the aim was to work towards eventually having the capacity to conduct consultation (Participant 1, 2014).

In summary, councils who explicitly mentioned that community participation was not a part of CCAP planning, or represented in the plan, reasoned the difficulty of conducting such programs given the political climate. They viewed community consultation about climate change as a barrier to the success of the CCAP. Yet this does not necessarily preclude councils from discussing adaptation through other, less explicit means. The framing of the issue without using climate change becomes a way for councils to encourage action for a CCAP or even develop a new CCAP. The key is understanding what will resonate and what will spark unhelpful conflict within the community. In short, what councils were looking for was a suitable problem definition that would justify the policy in a harsh political landscape, and the research shows this was usually achieved through a positive framing.

Engaging the Community and Maintaining a Social License

Analysis of interview data has shown that the key to successfully conducting community consultation and education is being knowledgeable about what will resonate with your community. When developing a problem definition for climate change adaptation, the key is to know exactly which framing of the problem will be successful in getting community members on board with the plan. Competing 'stories' of causes to climate change that persist despite scientific consensus on the issue complicate the discourse. Briggs (2012) names three of those stories: profligacy (common-but-differentiated responsibilities are necessary), lack of global planning (the solution is rooted in global governance), and 'much ado about nothing' (sceptical of the urgency of climate change and/or convinced technology and the market can fix the problem). In Australia, councils need a strategy for how to speak about what has become politically unmentionable. For some councils, this means asserting the boundaries of the conversation and maintaining that the consultation is not a forum

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for deciding on the validity of climate change, but instead focusing on solutions to an established problem:

> Even back in 2009 it certainly wasn't very well understood, and there was still scepticism about climate change at that time. We made a conscious effort that we wouldn't debate the science – whether climate change was . . . we would go from the premise that climate change does exist, and we would go from there. (Participant 15, 2015)

One consultant pointed out the thin line that councils walk between trying to get something done and the restrictions of local government remit of responsibility. When asked about including some sort of communication about adaptation with the community he notes:

> It's really important, I would say that if the council is not doing the education, they run the risk of alienating their community . . . statistically, a fair amount of the community sort of accepts climate change now, but back in 2009, the IPCC had only churned out its third report by that stage and the awareness curve was a lot lower than it is now. Here we've got denialists, I mean Tony Abbott came out and said the 'climate change is crap' comment in 2008, 2009. Now he is a reluctant convert. [If councils did not] do a lot of education, if they didn't do that but they embarked on some of these adaptation things, they ran the risk of stakeholder disengagement. (Participant 9, 2014)

This individual continued:

> Councils work on a social license to operate, the social license is a continual thing for a council, if they suddenly go green, and the rest of the community

says 'hey, we need money for a lot of other things than just [the environment]'

– you get a lot of friction. (Participant 9, 2014)

This concern for maintaining a social license to function is at the heart of the difficulty councils have with climate change adaptation. The highly charged political environment in which discussion of climate change takes places has led to a politicisation of the processes of council and community communication that were already established. In one respect, councils exist to serve their community (Purdie, 1976, p. 14) and this responsibility can be interpreted in two ways when it comes to climate adaptation. Either they are liable for negligence if they do not adapt appropriately and, therefore, fail the community. Or they are held to the democratic nature of government and, therefore, fail in bringing about appropriate changes because of a political climate that makes public education and consultation on climate change so difficult to instigate. This is the manifestation of Larsen and Gunnarsson-Ostling's theory: "If the content values are not safeguarded, the scenario constructed does not reach the important target of reduced climate impact. On the other hand, if process values (inclusion of different stakeholders) are not safeguarded, the outcome is not legitimate" (2009, p. 265). Educating individuals about an issue is the first step towards engaging them in discussions about that issue. But with the negative political climate around climate change, education and meaningful engagement on the issue becomes difficult. In this case, the inclusion of the community in the process is key to ensuring the legitimacy of the outcome. But if the people do not support adaptation, yet council feels responsible for producing an effective plan, they become caught in a no-win situation.

This difficult political environment has not necessarily precluded all councils from including education and community engagement as a part of adaptation planning, but

it has created the context for how councils go about conducting education and consultative processes. Some of the ways in which community education and consultation can be achieved are outlined below, but first a traditional policy limitation is addressed.

Traditional Policy Limitation: Carrying Capacity

To some extent, adaptation planning challenges what Hilgartner and Bosk (1988) call 'carrying capacities'– the concept that there is a limit to how many issues can be dealt with at any given time. Study of adaptation planning, however, indicates that councils can overcome the limitations of carrying capacities and a positive problem definition plays a role in facilitating this. Seemingly infinite identified risks, coupled with limited resources and personnel, would appear to stretch the capacity of councils to 'carry' the entirety of climate impacts. This is unless, as we have seen in the previous chapter, these socio-political risks have already been worked into the council's carrying capacity through being already positioned on the organisational agenda. In this way, the carrying capacity of the agenda facilitates the capacity for a range of impacts in adaptation planning. Often, councils employ creative ways to include education in adaptation planning, using less traditional forms of education than may be expected for the community.

Councils have been very creative when it comes to educating the community about climate change. This has allowed them to deliver information without necessarily using formal routes that can be constrained by carrying capacity and without having to spend huge amounts. It may be assumed that a council with a low socioeconomic demographic and with a 'one-woman' taskforce for CCAP development would struggle. Yet, a low socioeconomic coastal CCAP manages to include all three of the

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socio-political indicators of this research, with a varied and creative approach to education:

> To get community input, we had a community forum quite early on in development, because there were quite a few interested environmental friends and action groups at that time. The topic of what council's doing on climate change was very much of interest in the community. So we held a kind of forum to get a picture of where the scenarios are . . . That was really successful, 50 odd people came along to that and quite robust discussion . . . You want to try and keep it as broad as you can to make sure everything is covered. (Participant 4, 2014)

The creative utilisation of the Internet and late-night television spots has also allowed this council to deliver community education about climate change:

> We've now gone and done some YouTube videos. "Preparing for a Changing Climate [council name] TV." Community members are encouraged to upload positive things about the municipality, so I use that forum and then it also gets played on Channel 31 occasionally as 9:30 pm fillers so I develop some short videos, a series of four, covering emergency management, heat, coastal inundation and sea level rise, the other one was reduced rainfall. I got community members to talk about it – it might be someone from a community garden or someone from the [council name] beach association – to talk about how climate change impacts their group or their area or their reserve or their garden, so the message is coming from community members to build that kind of further understanding of the impacts of climate change and how we'll have

to adapt . . . Trying to build that understanding within the community.

(Participant 4, 2014)

Note that "community members are encouraged to upload positive things" in the above quote. This positive focus is part of a general shift in adaptation planning to engage the community while avoiding the negative political context. These creative ways of engaging the community can be found across the country. One council employee noted that: "Our community are a fantastic community, but I think society has been a bit bashed with the environment, and they are a little bit disengaged in regards to communication with council" (Participant 12, 2014). To overcome this barrier, the council organised a recycling information theatrical production that was attended by 900 students as a creative way to spread education about climate change to the wider community:

Children are the best tools you could possibly get of conveying information, and also too we've been smart with this. We say "hey look, bring your kids to this play, you can meet your [the teacher's] syllabus objectives – this is where the state syllabus aligns." When we do promotional material to the schools, we try and find where are the lines to the syllabus so the state can meet their lesson plan, they'll be more inclined to come. Kids go home they tell mum and dad, they think council is a bit cool, and they also learn something.

(Participant 12, 2014)

Resource restrictions are being overcome across the country. One capital city has admitted the difficulty it has in accounting for the effect of climate change on every species of flora and fauna in the city and has established citizen scientist programs whereby the public can collect data through photographs and submit them to council

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(City of Melbourne, 2014). The 'Witness King Tides' project employs a similar model in order to improve data about rising sea levels (City of Melbourne, 2014).

These creative and positive ways of encouraging adaptation planning preparation and engaging the community with climate change speaks to the variety of ways councils can engage the community on this difficult topic. These examples of councils tapping into their communities illustrate the very social capital that the inclusion of socio-political factors encourages and which is so crucial to adaptive capacity. A community is being reflected in each instance, be it a community of nature enthusiasts or a community of parents who share the knowledge imparted by their children and for whom social events such as a theatrical production at the local school will be local knowledge. It is a reminder that councils operate on a social license and that they therefore need to understand how the community operates within the established social norms that make that community distinct. Knowing this information can help them overcome carrying capacities through creative outlets and gives them a greater chance of using a successful problem definition for climate change, even if that definition means defining the problem not as climate change but as health or economy.

Interview data revealed that a number of councils overcome political difficulty by starting not with climate change, but with a positive focus on what people value, effectively easing people gently into the climate change discussion before they even realise they are having it.

A Further Role for Problem Definition: Fear or Values?

The above illustrates there are number of ways to undertake the discussion of climate change in communities. What many of these approaches have in common is that they

employ a positive frame. Most interviewees highlighted the usefulness of a positive approach, although not all. An example of the more rare negative approach can be seen in this response from a consultant when asked specifically about her work with rural councils:

> Rural communities are susceptible to drought, fire, and floods and people are scared of those things. Even if [the public] are not relating those things to climate change they still want council to be addressing those three issues and so some of the climate change language that councils are using – effectively they are planning for climate change but they might talk about it with those parts of the community more in terms of responding to an increased likelihood of more fires, more floods, more drought and storm events. (Participant 8, 2015)

The consultant goes on to draw attention to the fact that people are scared of these extreme weather events (EWEs) and, therefore, want something done about them. In this case, EWEs are assumed to offer a policy window for councils to develop CCAPs. Research has shown, however, that personal experience with hazards is not correlated with a belief in climate change as a threat, meaning that EWEs may not be useful as policy windows for adaptation policy (Lujala et al., 2014). A more positive and less reactive reframing of the issue was more common in interviews conducted with consultants. In particular, many expressed the utility of a 'values-based' approach to community consultation for adaptation planning. One consultant from South Australia recounted the lengths gone to in order to frame the issue in a positive 'community values approach' in workshops:

In the first workshop, we often don't even mention climate change until the

end of the first 3–4 hour workshop. We walk in there and say we're not going

to talk much about climate change now, we're going to talk about what you

think is important, and people really get taken away with talking about what's

important. And then towards the end of that, we say look, there is some key

organisations in the region here who want to develop an adaptation plan for

climate change, so recognise while there might be climate variability, there is

also climate change and what we know is that this is going to have an

influence on many of things that you think is important in the region.

(Participant 10, 2014)

By beginning with what people value, the consultants are able to direct the

conversation away from the political debate and engage people in something they are

certain of – what they value about their area. This opens up the discussion, making

people feel like they have something to offer that does not require them to understand

complicated statistics and it brings the conversation to common ground. It also creates

opportunity for variation in vulnerability prioritisation as communities may value

different aspects about the place where they live. One representative from a coastal

council mentioned developing the discussion around tolerable levels of risk:

The other thing which an adaptation strategy would give you the advantage of

if it's done properly is have a good consultation in terms of really robust

discussion with the community around the level of risk they are willing to

accept. In terms of, obviously people don't necessarily agree with climate

change but there are events, which have occurred, and we've had loss of life

as a result of natural disasters, is that tolerable for that community? You've

got to have the conversation with the community; they have to understand

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what that means, and they've got to make some calls for themselves as to whether or not that is an acceptable level of risk that you put people in that environment. (Participant 5, 2014)

The complexity of the issue can also begin to be overcome using a 'values' method of engagement, as the focus is shifted from 'what is at risk' to 'what do we value'. In this way, the community can aid in the development of problem definition, resulting in opportunities for many different interpretations and therefore variation in vulnerability identification and prioritisation. One consultant spoke about drawing out what people really value about their local area and making a connection between this and climate change:

You had to look at their values along with how climate change might affect those. You needed to get them to articulate values that were perhaps a little more implicit and to make them conscious and explicit. (Participant 9, 2014)

Such an approach creates an opportunity to discuss the complexity of climate change in an open forum where individuals can bring to light concerns about this difficult topic. It explains how some councils were able to engage their communities and include education and community engagement as a part of a CCAP, without directly engaging with the political debate. Despite the political difficulty in approaching this topic, councils are finding ways to communicate with their communities through no-regrets framing based on 'lifestyle choices', and through this 'values approach' to understanding climate risk. Councils who undertook community education and engagement were able to provide this positive framing to the climate change discussion.

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This values approach was often discussed in relation to the 'pathways' method of adaptation planning, a method which involves mapping several pathway options for a community to implement depending on temporal factors and their prioritisation of vulnerabilities. This positive approach was summarised thus:

> when you speak to people in a region they want to talk about the good things that are happening, there are some people willing to talk about the bad stuff but often people are more motivated to talk about positive things or what we can do about problems, and pathways puts them more on that positive footing. (Participant 10, 2014)

This tendency to talk about "what we can do about problems" speaks to a propensity for solutions, which fits with one of Portz's factors for successful problem definition – the availability of viable solutions (1996, p. 377). This certainly appears true for climate change adaptation. Viable solutions to such a complex global problem can mean the difference between hopelessness and action. Wildavsky frames this sentiment as "a problem is only a problem if something can be done about it" (1979, p. 42), making the role of councils all the more important because it falls to them to develop a problem definition within their CCAPs that is acceptable to the people. Framing climate change within the bounds of solutions can produce an effective problem definition but, given the all-encompassing nature of climate change, solutions can often be difficult to conceive. Defining climate change in terms of focusing on what can be done about what people value helps narrow the field a little, making adaptation appear more manageable.[10]

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[10] This theory – that problems are only problems if something can be done about them – may also help explain why mental health considerations were less likely to be included in CCAPs than other socio-political factors. The nature of mental health as a taboo subject and complex dimension which humans are yet to comprehend may have made this particular impact too difficult for some councils to include.

Effectively, there is variation in the uptake of education and community consultation because the negative political climate makes discussing climate change a difficult and undesirable topic in some communities. Councils have been forced to rethink how they have a productive conversation about climate change that overcomes the barriers of scepticism and bad press that climate change receives across the media. Most of those who did include education and community consultation in their CCAPs used a positive problem definition by removing immediate attention from climate change itself and focusing instead on values. Once values are established, and emotional energy is invested in protecting and maintaining those values, the impacts of climate change can be raised as a threat to these values.

Community members can become part of the problem definition process in deciding what will be prioritised in CCAPs through a values approach. The process is influenced by the political climate every step of the way, and the politicisation of education and consultation have been established. But there is another process of politicisation that is taking place, one where the very notion of vulnerability is rejected.

Staying Positive and Rejecting 'Vulnerability'

In keeping with the positive approach towards climate change within communities, practitioners rejected the term 'vulnerability' for its negative connotation. Vogel and Henstra (2015) outline four climate frames: hazard, risk, vulnerability and resilience. For the most part, councils are speaking in the language of risk but academics have begun to embrace a language of vulnerability. What this leads to is something that is missing from the literature on climate vulnerability and yet crucial to our

understanding of how governments are preparing for adaptation: the politicisation of vulnerability.

Besides an acceptable problem definition and process for communicating with the community, a policy entrepreneur or a 'champion' (as they are referred to by practitioners) can also help deliver the complex message of climate change adaptation to a reluctant public. One consultant pointed out the influence of champions in the community when developing one of their CCAPs. In particular, the champions identified were crucial in recognising that a positive spin was needed in defining the problem to their community. They were convinced that the consultants would 'lose' the community if they talked about vulnerability:

> [the champions] were leaders in their community who had a very clear view of how they thought their adaptation plan needed to be developed . . . [they said] we can't go back into our community and say we want to talk about how vulnerable they are and get lost in detailed climate science. They said there's got to be a different way to go about adaptation planning. I don't think it's widely recognised the role they've played in shaping what's happening in [the state] . . . they said we want to do it in a slightly different way and use this adaptation pathways approach. The sequencing of the plan was discussion around values and key decisions analysis . . . They had their finger on the pulse and knew what it was going to take to engage their community.
> (Participant 10, 2014)

This is a particularly interesting development in the practice of adaptation planning. The literature review of this thesis has outlined a portion of the prolific literature of vulnerability and climate change in the academic community; and yet in practice, the

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term is rejected and seemingly unlikely to engage some community groups. Consultants conducting community consultation, in this case, are not beginning with what is vulnerable to future climate impacts, but with what the community values about the day-to-day in the present and what they have treasured in the past. Yuen et al. address this phenomenon, noting that:

> While vulnerability has a vernacular meaning that is readily understood within organisations, the research community has emphasised the importance of attaching specific meaning to the term vulnerability and distinguishing it from other concepts such as risk or resilience that have similar vernacular meanings. Attempts to operationalise such academic definitions of vulnerability in technical assessments, particularly the incorporation of adaptive capacity as a determinant of vulnerability, led to confusion among stakeholders involved in the Sydney assessment. One interviewee believed the academic framing of vulnerability confused stakeholders possibly because the outcomes of the assessment didn't align with the 'mental models' of stakeholders. (2013, p. 584)

To examine this shift in language, we must return to the concept of vulnerability, where it is inextricably linked to a state of 'at risk' or 'danger' (Paavola & Adger, 2006). The nuance is important; the aim in a values approach to adaptation planning is to protect what the community values, rather than everything that is threatened. This finding has specific consequences for how we understand vulnerability. As Yuen et al. (2013) point out, academics and practitioners approach the term with different perspectives. In fact, the extent to which practitioners have rejected the term casts serious doubt on utility of the term in adaptation planning at all. Ignoring the political context in which councils develop CCAPs has made it easy to overlook just how out

of touch discussions of vulnerability are with the bureaucracy of local government, and this is precisely the sort of thing that can no longer be discounted. Vulnerability has been politicised through its negative connotations of weakness and fear, and abandoned in favour of more politically acceptable methods of risk prioritisation, including the values approach. This latter approach allows for an easier transition into conversations with communities about the politically difficult issue of climate change, and recognising this is crucial to comprehend fully what adaptation means in practice. Timmerman may have rejected the term vulnerability because he regarded it as "useless for careful description at the present, except as a rhetorical indicator of areas of greatest concern" (1981, p. 17); however in practice the term is rejected for different reasons. It is rejected because vulnerability implies a negative impression of feebleness and limitation and councils favour a more positive approach when communicating with the community.

In one way, rejecting the term vulnerability allows councils to take control of the conversation with less negative connotations. But it also gets to the expedient and practical heart of action for adaptation, one that admits councils will never be able to protect everything. In a way, it has the potential to solve a conundrum reflected on by an interviewee who had undergone CCAP development with a traditional risk assessment response:

> Our highest risk going through that particular process is the change to vegetation in our wetlands . . . In the early days we spent $35,000 doing a vulnerability assessment on the oblong tortoise and I remember saying to the guys at the time, I'm not really sure whether this is the sensible thing to do to pick a particular animal, to do a risk assessment of every single one because as the climate drives and certain vegetation changes, a lot of those species will

change and there's no way you can do anything about it. Maybe you need a
more broad risk assessment. Otherwise we'll end up spending $30,000 on this
critter and $50,000 of another critter it's really, to my senses, just throwing
money away because the vegetation is going to change whether we like it or
not. Do you protect the [flora and fauna] that are nice for people to look at or
the ones that are less impacted by humans so that you're maintaining the true
ecology of the area and kick people out? I don't know what you do.
(Participant 6, 2014)

The nature of climate impacts often results in unmanageable lists of areas of
vulnerability and required actions. For councils, this can turn a complex process into
an insurmountable one; and this is the case even if you are dealing with only the
biophysical risks. Begin to include socio-political risks and the situation can become
highly intimidating. While the above interviewee was unsure how to proceed, the
values approach developed elsewhere around the country may have been useful in
helping to prioritise the many identified risks.

Consultants were agreed that climate change is a large, complex issue that requires
'processing time' for both council employees and the community (Schlosberg et al.,
2015). One consultant depicted the scene:

Imagine sitting down [with] that spreadsheet open and having a discussion
around numbers with people from community groups . . . People have said to
us we thought it was quite good and well run because it helps us dissect what
the impacts of climate change are. But it's pretty heavy going, the idea in the
first workshop is to get people passionately excited, talking about what they
value in their region, introduce the concept of climate change but not to a great

degree, just get them thinking about it. Rather than climate change being a nebulous concept debated on the telly – does it occur does it not? We're saying what's important to them, and they're making the link that what's important to them could be impacted by climate change. (Participant 10, 2014)

This approach, the values approach, is gaining currency in community consultation in Australia. Effectively, it is a form of problem definition. Instead of beginning by defining climate change as a threat to a way of life, they begin with asking people about what they value about their way of life; and then they take steps to show how certain aspects of that life are threatened by climate change. The conversation is about how the changing climate will affect parks, beaches, local businesses, schools, roads; the atmosphere of the discussion is focused on local experiences and values and how these might impact on future decision-making (Fincher et al., 2014; S. Graham et al., 2014).

The importance of lived values, of considering the relationships people have with the places they live, is an important area of adaptation planning (Barnett et al., 2011b). This work ties into that on the value of local knowledge for adaptation planning (Barnett et al., 2012; Naess, 2013; Schlosberg & Carruthers, 2012). Wilbanks notes the benefits of the combination of scientific knowledge and local knowledge (2011). Recognising that the community can be a source of help in the development of a CCAP, rather than a barrier to be overcome, can be the difference between including education in a CCAP or not.

In essence, the values approach is intended to simplify the science as well as make the topic approachable. One consultant explained that telling people that temperature was going to rise 3–4 degrees was unhelpful as the community associated temperature rise

with fluctuations in weather and often noted that the temperature in any given year could fluctuate from 20–40 degrees. Drawing the connection between the mean base climate temperature and increases in floods became the tipping point for one community who acknowledged that they would struggle to deal with more than two floods a year. Explaining that climate change would push flood forecasts above this manageable level was the only way in which the council and community were able to understand the need for an adaptation plan (Participant 3, 2014). This simplification of the issue makes for effective communication with this particular community. As we have seen throughout the thesis, different problem definitions will resonate with different communities, depending on how the community views itself and on how social capital is specifically developed in that community. When successful, this social capital can influence the adaptive capacity needed to develop and execute a CCAP.

Social Capital and Problem Definition

Ultimately, the key for councils to prioritise education within their CCAP comes down to framing of the issue, a solid problem definition that the community will accept. For most councils, this involved employing a positive framing of the topic to overcome the negative political context. Councils who are successful in including community education and consultation understand their own political context and play up acceptable areas such as protecting health and the economy, while avoiding actually using the words climate change. Part of achieving this can be down to policy entrepreneurs or champions, and part of it comes down to involving the public in the process of problem definition by asking them what it is they value:

You prompt people with a question like when has the climate affected you? And get a micro-narrative out of them . . . The idea is to be oblique rather than pre-judge, so that you get stuff coming up that you might not have expected, stuff that you never thought to ask about because you find that everybody that lives on this side of the hill is talking about this thing that we didn't know was a problem. (Participant 2, 2014)

Opening up the conversation like this turns the risk management framework on its head. Instead of applying a likelihood/consequence scale to potential risks to ascertain the most pressing ones, this approach embraces a less linear process. Numbers that project the likelihood of occurrence does not define important climate impacts, nor does the numbers in a cost-benefit analysis define them. Rather, they are defined by the lived experience of people who are informed of predicted impacts by council, who then make subjective value judgements about the consequences of those impacts. Furthermore, not only is the community consulted about what they value and how they might prioritise risks within a CCAP, but they also have the potential to highlight areas of concern that council have not yet identified as a problem. There is evidence from sustainability science that innovation and problem-solving benefit profoundly from a fusion of general scientific knowledge and local knowledge and perspectives (Wilbanks, 2011). A certain open-mindedness is needed on the part of councils to achieve this, as well as respect and trust in the lived experiences of their constituents. When a council has that, they can choose to pursue this approach to consultation with the community. Ultimately, they also extend the problem definition of climate change to one of deeper complexity that is dependent on the intersection between the science and the experiences of people.

Educating the community, especially by means of forums or deliberation, works to build social capital within communities. This is particularly important for building adaptive capacity and, therefore, is crucial for successfully adapting to climate change. Reliving shared experiences and values through deliberation creates social capital that improves the community's ability to act collectively. According to Adger, it is this ability that unlocks "inherent capacities to adapt to climate change" (2003, p. 38), an ability he believes that societies possess. CCAP development occurs at the intersection of social cohesion, problem definition, and climate change politics. Councils have to develop a CCAP, but they must do so within a problem definition that does not transgress the acceptable boundaries of the community in which they operate. Councils can do this either by approaching the CCAP with an understanding of what their community will accept, or by opening up the issue entirely by inviting the community to define the problem with them. This maintains the social cohesion that is integral not only for day-to-day council operation, but also to the very practice of adaptation itself. In the case of the City of Sydney's Adapting for Climate Change strategy, the community was consulted through a Citizen's Panel. They were invited to provide feedback on identified climate risks and to suggest new risks that had not yet been noted. In this case, the panel was quick to highlight concern for vulnerable groups in Sydney and to raise issues of mental health concerns (Schlosberg et al., 2015).

While a top-down approach to climate adaptation in Australia is unrealistic in the current political climate, the example above illustrates it is perhaps unnecessary to wait for leadership at the federal level to achieve the necessary social capital. The existence of so many local council CCAPs is a testament in itself to the possibility of

action despite the circumstances. The imperative can come from the bottom-up instead of top-down:

> We've seen that we've gone backwards so much in the last 12 months with the change of federal government in Australia in our response to climate change, and I think that's because we haven't engaged the broader community. We've got to move beyond constantly trying to quote different statistics. (Participant 10, 2014)

What this consultant is ultimately advocating for is something that goes against the assumed basic principles of problem definition for climate change. In the case of climate change, the default causal strategy for problem definition would be the second of Stone's five politically acceptable stories of causation: "show the problem formerly interpreted as an accident is actually the result of human agency." (2011, p. 204). This is exactly how we should go about explaining anthropogenic climate change; and yet, this is a strategy that is no longer working with the community. Quoting different statistics, as it were, is no longer a viable causal strategy for action. Using a values approach to achieve micro-narratives from people affected by real changes becomes the circuitous route to the same ultimate outcome – a socio-politically inclusive CCAP. The causal strategy for problem definition, in this case, shifts to Stone's fifth and final option: "show the causation is so complex that only large-scale policy change at the social level will alter the cause" (2011, p. 204). For practitioners of adaptation planning who embrace education, this becomes not only an iterative experience but also one where understanding the full impact is a transaction between council and community. Asking for stories and values of the public and in turn sharing what information they can with constituents develops a process of shared learning whereby the problem is co-defined by both council and community.

This practice can also result in making the language of vulnerability less than helpful for practitioners looking for positive problem definitions within CCAPs. Though the term may still be useful in academic circles, and indeed vulnerability assessments conducted by council may be still accepted practice, it becomes important to pay attention to what language is employed in CCAP development once the community is involved. Like climate change, shifts in the use of the word vulnerability by practitioners are important for academics to track and comprehend.

Conclusion

This thesis addresses the variation in climate change adaptation plans across Australia. The reason for variation between biophysical-based CCAPs and socio-political inclusive CCAPs has been examined. This chapter has explored the variation in the inclusion of education and community engagement in Australian CCAPs (which are key factors of adaptive capacity), highlighting the political climate as a key aspect of this variation. The difficult political climate has resulted in variation between councils in terms of undertaking or rejecting community education and consultation as a part of adaptation planning. Those councils who do undertake education and consultation, for the most part, employ positive approaches to problem definition to circumvent the political problems of discussing climate change.

In uncovering how a council comes to include education and community engagement, the importance of language and its relation to problem definition has become crucial. One open-ended survey response noted that "political pressure to use or not use certain words or express findings in a particular way seems to be at least as significant in this area as other public sector work and at some times, when the climate change debate is running hot, much worse" (Survey Participant 2, 2014). The development

from wanting to conduct education to producing a successful conversation around the unspeakable notion of climate change has hinged on the problem definition, or more specifically, on the language employed. Employing euphemisms for climate change, not talking about vulnerability, and turning the conversation around to begin with community values have all been tactics employed by councils who have included education and community consultation in their CCAPs. Councils with education in their CCAP have employed one or more of these techniques. They have also used local champions as policy entrepreneurs to shape appropriate problem definitions relevant to the area. This can also lead to variation in CCAPs as councils subjectively define the problem of climate change in different ways and, in turn, they develop different CCAPs. This can help us understand the difference between socio-political inclusive CCAPs and those that are biophysical-based, but further investigation also helps us determine how councils come to include key aspects of adaptive capacity such as education. Education has proven a particularly interesting inclusion given the political context and the circuitous route some councils have had to take to include it as a part of adaptation planning. Understanding council reluctance to engage with the term vulnerability has been important in understanding this process. The following chapter will now examine another term increasingly raised in relation to climate change adaptation. Chapter Seven will question where current Australian CCAPs are located on the resilience-transition-transformation spectrum and conclude that adaptation as 'transformation' is not yet occurring in Australia.

Chapter Seven: Categorising Current Australian Adaptation Planning and Future Directions

As local councils continue to develop, review, and monitor climate change adaptation plans it will be important for the academic community to work with them to produce applied research that is useful to the CCAP development process. The period of CCAP development studied in this thesis can be identified as the 'first round' of adaptation in Australia. It is characterised by little political will for climate action at the uppermost tier of government, and yet a concerted effort by the third tier to meaningfully engage with climate change adaptation and to push ahead with CCAP development despite a negative political environment. Pioneers of adaptation policy not just in Australia, but also globally, these local councils have ensured that Australia will be prepared for climate change in the face of a strong likelihood that the world will be unable to slow emissions enough to keep warming under two degrees (IPCC, 2014; New et al., 2010).

This thesis has offered an explanation for variation in the identification of vulnerability in Australian climate change adaptation plans. It began by establishing the variation through analysis of a unique database of CCAPs from across the country. The three following chapters each explored one of three levels of variation. First, we addressed the broad variation between CCAPs that focus solely on the biophysical impacts of climate change and those that included socio-political factors. The indistinct remit of local governments across Australia created opportunity for councils to create different problem definitions to define climate change as an issue. This variation in problem definition led to variation in the identification of specific types of vulnerabilities in CCAPs. Chapter Five explored the specific variation in the identification of two socio-political factors, vulnerable groups and mental health.

Three explanations for the identification of one or both of these were provided, based on analysis of interview data of those responsible for aiding in the development of CCAPs. Councils were more likely to include one or both of these factors if their demographics included a high representation of the elderly (and interviewees sometimes perceived demographics to be the reason for their inclusion), and/or if these factors were already present on the organisational agenda prior to CCAP development, and/or if the council was open to the suggestions of ad hoc policy entrepreneurs. The opportunities for variation through different problem definitions caused by indistinct remit of councils plays out here. Demographics provided a justification for expanding concern for climate impacts to highly vulnerable groups, and pre-existing agenda items could also provide a justification for expanding concern to mental health impacts. Ad hoc policy entrepreneurs were sometimes identified as being the impetus for the expansion of the problem definition of climate change to socio-political issues.

Finally, the thesis explored the variation in the inclusion of education and community consultation in CCAPs. Adaptive capacity (a function of vulnerability) is affected by the inclusion of these processes in adaptation planning (Hobson & Niemeyer, 2011), making it an important addition CCAPs. The politicisation of both climate change and vulnerability that has taken place in Australia impacted the inclusion of education and community consultation in CCAPs. The communication strategies councils employ with their communities on this topic are heavily influenced by the negative political climate change discourse. In some cases, the politicisation of vulnerability was shown to prevent councils from including education and community consultation in CCAPs. When councils did employ education and community consultation, they tended to

employ a postive problem definition to overcome the negative context of climate change.

Such findings are important because they bring to light the hitherto unrecognised potential power of local government in adaptation planning. Local government employees and consultants working in adaptation wield considerable influence over the identification and prioritisation of vulnerability to climate change in some instances, an influence that is perhaps unexpected given the place of local government within the federal system. This thesis acknowledges this position of authority that local government can command and highlights the comparatively large scope with which councils can determine action on climate change due to their indistinct remit as a tier of government. It should be clarified, however, that while there is the opportunity for some councils to exercise this power in scoping CCAPs, others remain restricted by state government action. In theory, there is nothing to legally stop councils extending their scope but political barriers remain (and have been explored throughout this thesis).

Now that the variation in CCAPs has been established and explained, it is important to ground these findings within the broader literature on adaptation, in particular the current academic debate about adaptation as 'transformation.' This concluding chapter will seek to identify where Australian CCAPs can be located on the spectrum of adaptation. A thesis on climate change adaptation would be incomplete without consideration of how the findings are placed within the emerging resilience, transition, and transformational literature. Such an examination can determine how best to characterise the direction of adaptation planning across Australia in terms of the broad academic literature on adaptation strategies. This chapter seeks to question whether we currently see adaptation as resilience, transition, or transformation in

Australian CCAPs and explores what transformation could look like for future

Australian adaptation planning.

The Spectrum of Climate Change Adaptation

This research set out to examine the intersection between climate change adaptation,

public policy, and the academic literature on vulnerability. In doing so, key research

findings can now be established. First, there is indeed variation in the identification of

vulnerability in Australian CCAPs with this variation characterised broadly in the

research as biophysical-based or socio-political inclusive. Within that variation, there

is further disparity in references to two socio-political factors of vulnerability –

vulnerable groups and mental health. CCAPs were further characterised as being

inclusive of education and/or community consultation or lacking in these processes.

Those councils who do employ education and/or community consultation were then

shown to employ various approaches to these processes. It appears that despite

common guidelines for Australian CCAP development (though perhaps it is because

of the shared lack of specificity in those guidelines), adaptation planning in Australia

does indeed vary between councils.

Of course, a variation in CCAPs across an entire continent is perhaps not such a

shocking finding in and of itself. What is interesting is that the variation cannot be

easily explained by the usual factors. No concrete cause of variation could be

explained based on state, geography-type, time of plan development, population size

or consultant involvement. Explanation of this variation required a more in-depth

analysis, one that took into account the political climate in Australia around the topic

of climate change and traced the negative influence of those politics back to

adaptation planning. Interviews with those who aided in the development of CCAPs

almost always included references to the political difficulty of talking about climate change, something which directly impacted councils' ability to educate and consult with their communities about adaptation.

In terms of public policy literature, this research has much to offer in terms of establishing the importance of agenda-setting and problem definition when developing adaptation policy in a negative political environment. The role of problem definition is especially important in this case due to the indistinct remit of local government in Australia. As this thesis has demonstrated, an undefined remit creates space for local governments to determine their responsibility, to a certain extent, therefore creating space for variation in the problem definition of climate change and in the identification of vulnerabilities to climate change for which that particular council feels responsible. This research has uncovered the relative power local government has in relation to determining the scope of CCAPs, making it an interesting case study for public policy due to the paradox of local government being relatively under-resourced and yet weilding so much influence over something as important and crucial for the entire country as climate change adaptation.

But what do these research findings mean for identifying what kind of adaptation is taking place in Australia? Pelling distinguishes a spectrum of adaptation approaches with three levels: resilience, transition, and transformation. Resilience is seen as being "the most contained level" (2011, p. 50) which aims for a 'bounce-back' type of adaptation while transition adopts a more incremental approach to adaptation where small changes are implemented over time. Transformation is contextualised as the most radical approach in that it involves reconfiguration of structures of development, with the largest scope of change. Unfortunately, definitions of transformation are always a little vague because they lack the description of the changing point between

the status quo and transformation. This is a constraint because transformation is always dependent on an ever-changing context. What is transformative for one group will be the status quo for another who seeks a different level or type of transformation. This point is illustrated by Lyster (2015) who predicts that future action on sea-level rise in Australia may be characterised as transition or transformation depending on the context of how rights are applied, and whether an inadequate application of rights will provide an opportunity to develop new rights and thus transform the system.

But can we categorise Australian climate adaptation as transformative? Pelling describes transformation as being:

> concerned with the wider and less easily visible root cause of vulnerability. These lie in social, cultural, economic and political spheres, often overlapping and interacting. They are difficult to grasp, yet felt nonetheless. They may be so omnipresent that they become naturalised, assumed to be part of the way the world is. (2011, p. 86)

This holistic approach offers an opportunity to move beyond the biophysical risks of climate change to consider the larger and more complex processes that interact and produce vulnerability. It is at the intersection of those social, cultural, economic, and political spheres that this research has focused on by teasing out the socio-political vulnerabilities identified in CCAPs. But the identification of these socio-political vulnerabilities may not be enough to characterise Australian CCAPs as transformative, despite the prevalence of attention the theory currently receives.

Transformation is currently one of the most prevalent ways to consider adaptation, with much of the literature centred on the definition of transformation, how it may be

identified, and how one might undertake adaptation as transformation (Aall et al., 2015; S. Eriksen & Selboe, 2015; Fleming et al., 2015b; Fook, 2015; O'Brien & Selboe, 2015). In this case, it is pertinent to ask, does a socio-political inclusive CCAP (as defined in this research) represent adaptation as transformation processes? And how useful is this concept for future adaptation planning? It is these questions to which we now turn.

Australian Adaptation Falls Short of Transformation

First, it is important to establish that the term transformation is quite imprecise, with differences in both the theoretical discussion and its application in practice. The IPCC defines transformation as: "the altering of fundamental attributes of a system, including value systems; regulatory, legislative, or bureaucratic regimes; financial institutions; and technological or biological systems" (2012, p. 5). In effect, the IPCC defines transformation as changes to any system, regime, or institution on a fundamental level – meaning a major change to the original mode of operation. O'Brien et al. take a more concise view, understanding transformation as "physical and/or qualitative changes in form, structure or meaning-making" (2012, slide 19). Additionally, a common definition of the term is "a change into someone or something completely different" (Macmillian Dictionary, 2015). The imprecision in each of these definitions derives from a lack of boundary establishment. At what point is a change significant enough to warrant the description of transformation? When do you shift from the status quo to a state of transformation? And how can it be separated from more modest changes of transition? While vulnerable groups and mental health concerns indicate concern with the root causes of vulnerability that signal potential for transformative adaptation according to Pelling, in Australia they represent a more modest, though still significantly important, incremental approach to adaptation.

Consideration of the impacts of climate change on mental health implies an understanding of the underlying causes of vulnerability. Part social and part cultural, the acceptance of this stigmatised spectrum of conditions represents a deeper understanding of vulnerability to climate change than a purely biophysical approach. It signals that Australians understand adaptation involves more than a 'bounce-back' approach offered through resilience. It reflects a more complex understanding of the interconnected nature of society. Increasing instances of depression, anxiety, stress and even suicide influence not only the adaptive capacity of the individual but also the adaptive capacity of the community. The nature of mental health disorders is that they impact on the family and friends of those suffering, resulting in a much larger footprint of influence than single diagnoses can encapsulate. Additionally, findings show that those who are in a place of financial difficulty and who suffer from the associated stress, anxiety, and depression are less likely to consider the larger scale and longer term decisions that lead to transformational adaptation (Fleming et al., 2015a). This finding indicates that preparing for increased mental health disorders in communities is crucial for achieving transformational adaptation; however, the inclusion of mental health in CCAPs is not essentially transformative, as I outline in further detail below.

In terms of vulnerable groups, "measures to reduce poverty and increase access to resources could reduce present-day vulnerability as well as vulnerability to both climatic variability and climate change" (Adger et al., 2005, p. 83). This approach represents a holistic understanding of vulnerability that recognises the interdependency of vulnerability to multiple factors. But to what extent is the identification of these factors, vulnerable groups and mental health, an indication that Australian CCAPs are engaging in adaptation as transformation?

What the inclusion of these factors signals is the start of a process of developing adaptation policy, not only in terms of climate impacts to the physical world but also to the human condition. It is an example of a shift to Pelling's "human-centred approach to safety, built on basic needs and human rights fulfilment" (2011, p. 87), an indicator for Pelling that transformation is taking place. But if transformation is dependent on the outcome, and Pelling maintains that it is, then whether the addition of socio-political concerns of climate change is transformative is partly subjective, which makes it difficult to academically categorise plans as examples of transformational adaptation. As one interviewee pointed out: "[in]all the plans we do, vulnerable members of the community is just a really essential theme. It's Australians, it's something we do, we look after people less fortunate for various reasons. It's something that is really core to our culture" (Participant 10, 2014). An assessment such as this suggests that very little transformation is occurring in this case. It is subjective because this interviewee believes that caring is a part of Australian culture and therefore it is difficult to argue that concern for vulnerable groups in Australian CCAPs represents transformation. The process of recognising transformational adaptation is significantly more complex than ticking boxes for the inclusion of socio-political factors when assessing vulnerability to climate change. Therefore, I do not argue that the mere inclusion of vulnerable groups or mental health can elevate adaptation planning to transformation. Clearly, for the interviewee quoted above, the inclusion of vulnerable groups is not a signal of transformational adaptation. Rather it represents the expected action of a culture that ordinarily concerns itself with the less fortunate.

While a shift from biophysical-based CCAPs to socio-political inclusive CCAPs may have represented a transformation in some contexts, in truth the plans analysed for

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this research are first-generation CCAPs. Had the majority of first-generation CCAPs been biophysical impacts-based, then there would be an opportunity for transformation in the socio-political approach for the review process of those plans. That this was not the case is telling. Therefore, these CCAPs are characterised as part of the transition stage of adaptation, an incremental process that may lay the groundwork for later transformation, but currently fall short of the title 'transformational adaptation'. This approach has also been labelled as an 'incremental adjustment' approach which "enables re-organisation without causing major systemic disruption" (Pelling, O'Brien & Matyas, 2014, p. 117). In some cases, where a biophysical risk-based frame is still employed, CCAPs may even represent a resilience approach that does not recognise the socio-political context at all in relation to adaptation.

So while a focus on adaptation as transformation may be recognised as important within the academic literature, Australian CCAPs have not yet achieved this status. To come to this conclusion, it is important to break down the concept of transformation. In Pelling's (2011) assessment of adaptation as transformation, he identifies the root causes of vulnerability as originating from the social, cultural, economic and political spheres. The socio-political factors of adaptation explored in this thesis represent a part of these underlying spheres that influence vulnerability to climate change. Vulnerable groups are vulnerable to climate change because they represent a pre-existing group within society that stand to become only more vulnerable in the face of climate impacts. They are less mobile, less resourced, and/or less educated as a result of this pre-existing vulnerability resulting in less adaptive capacity to overcome the challenges of climate impacts. In the case of mental health, we are vulnerable to the increased impacts of climate change on our mental

functioning in a similar way that we are vulnerable to the physical impacts. Climate change and the devastating extreme weather events it brings increase our propensity for stress, anxiety, depression, and in extreme cases – suicide. Both vulnerable groups and mental health are specific areas within the socio-political sphere that impact on our vulnerability to climate change. But recognition of them in adaptation plans is not in and of itself an indicator of transformation. Recognising these areas signals an understanding of what influences vulnerability beyond the biophysical, and it is an important step to holistically understanding our vulnerability to climate change in a way that encompasses Pelling's social, cultural, economic, and political spheres. But transformational adaptation requires more than this; it requires a shift at the very fundamental level of how we interpret vulnerability and how we conceive of solutions to that vulnerability. Clearly, these plans attempt to forge some level of preparation, even transition. But the first generation of adaptation in Australia does not meet the broad criteria, set by either Pelling or O'Brien, to consider them transformational.

It is uncertain when transformation in Australia will take place, but it is clear that it is necessary. I posit that the most useful type of transformation for Australian climate change adaptation is quite specific and I outline it below.

A "First Wave" of Transformation is Needed

The context of Australian adaptation planning necessarily points to a particular type of change that would signal a substantive shift in the fundamental structures that directly and indirectly influence adaptation policy. There are many ways that the Australian adaptation-planning sector could transform in the coming years, and increasing predictions of severe weather provide the stimulus for such action. Though later iterations of transformation will most certainly require the more holistic view of

vulnerability that has begun with the socio-political CCAPs collected for this research, I propose there is first a need for the political discourse on climate change to undergo a radical transformation. Until our national politics and media shift from the current discourse of doubt and non-urgency on the issue, transformation in local government is constrained by politics. A 'first wave' of transformation is needed, from the co-option of the climate change story by the media, industry, and key political leaders (Taylor, 2014) to a place of climate change acceptance. It is obvious, and in many ways disheartening, that such a simple step counts as transformation, but given the manipulation of the conversation over the past twenty years (Taylor, 2014) it is now inevitable that this shift in the discourse must take place. I argue that such a shift would represent a large enough change to be defined as a transformation in the Australian context. It also represents a transformation that appeals to common sense in terms of future steps for Australians and climate change.

Interviewees often raised the political context when discussing adaptation plan development. Examples are recounted below to emphasise the widespread nature of the problem and to highlight the need for this first wave of transformation, which demands a shift in the discourse of climate change in Australia. The first of these examples points specifically to former Prime Minister Tony Abbott's politics on the issue:

> The temperature rise and the degrees that it's going to rise, we were looking at worst case scenario in 2008–09 and now it seems that's going to happen but people aren't really getting it . . . And certainly the messages that you get from Tony Abbott, I don't agree with that kind of politics, it's not helping. There is no suggestion that a large amount of money is available for anyone that wants to do something about climate change. (Participant 6, 2014)

Federal government is not solely to blame, however, with some interviewees highlighting that state government was hindering progress in climate change conversations:

> The shift at the state government level, the actual language being used in the state planning policies and the guidelines have moved away from using the phrase 'climate change' and uses 'changes in climate' and other language that softens the expectation. Now we're getting directions notifying us . . . to remove sea level rise from any measures in the planning scheme. There is a shift that's occurring at state level that is influencing local governments . . . there's been a lot of playing with the language in recent times. There was 'climate variability' for a while and even that now is gone and I think they're using 'changes in weather over time' which, even with the directions that we're getting from the state in regards to it, we're looking at ways we change the whole planning scheme including the broader strategic framework to still recognise that there are changes over time in weather conditions which have potential consequences but not using phrases which are emotive like 'climate change.' (Participant 5, 2014)

> We'd have sceptics in the audience [of community workshops] with people saying this is ridiculous but then we had the other extreme, people writing in 'it's not enough'. We had the extremes but definitely with local government being where you see the most action on climate change is difficult because you're getting this national thing that the jury is still out. [The federal government says] here is some information on sea level rise – the federal government released a visualisation mapping tool so we could change the scale so we could see how the municipality would be impacted by sea level

rise and it went up to seven metres for us! So there was that disjoint that you have this information coming down, these reports from the federal government providing information that [council name] is the fifth most 'at risk' residential area in the state and the third most at risk commercial/industrial and on the other hand that we don't need to do much about it. And then the state, "oh we're going to do a lot of information on sea level rise but then like oh, no we're not because we can't release information and devalue properties" . . . so you have this disconnect. (Participant 4, 2014)

It has shifted in terms of changing state government and focus on climate change not being there anymore and not being featured in much state planning policy. The word 'climate change' isn't even referred to in the latest state planning policy that is being released, instead the focus has been shifted onto natural hazards management and emergency response, so they are still adaptation initiatives but the terminology has changed. The culture is not that upfront in using words like 'sea level rise' as much as it was two years ago. Now it's about flood management, emergency management, natural hazards rather than anything referencing climate change and that's been state down. We're quite reluctant to use the word climate change out there [in the community]. (Participant 16, 2014)

The difficulty in engaging in the climate change conversation continues in the case below where local government is implicated, a reminder that there are many councils across the country who are yet to develop a CCAP because of the discourse that filters through from the federal and state levels:

I can't say I saw evidence of any strong drive from the top in any of the

councils. At the time there was a notorious case of some land near [council

name] where people owned blocks of land on sand dunes they had bought

back in the '50s and '60s and they had planned to build holiday house or a

retirement house there but never got round to it. The council changed the

zoning to preclude the building of residential property there, or to build

anything because it became clear that sand dunes were a risk and it was linked

with climate change – mainly storm surges and intense weather events and

people found that what they had regarded as capital worth $100,000 to

$200,000 was suddenly worth nothing. There was lots of very heated

argument about it . . . incidents like that just stirred everybody up, there was a

certain amount of emotion and fear and paranoia running about these things in

what were otherwise fairly rational local government people. (Participant 2,

2014)

This response was succinct in outlining the politics of climate change:

In the first workshop [with communities] we often don't even mention climate

change until the end. (Participant 10, 2014)

And when asked about the biggest barrier to adaptation policy development, one

interviewee replied:

you'd have to say its politics, its climate scepticism and it's pro-development.

Climate is green tape for the pro-development lobby. (Participant 17, 2014)

Such accounts of the political landscape make this first wave of transformation

necessary and justifiable. Besides the evidence of this thesis, which points to the

pervasive influence of the political sphere on the inclusion of socio-political factors and the communication approaches undertaken by councils and communities, the literature on transformational adaptation in Australia can also be interpreted to support this theory. Eriksen and Selboe insist "climate change highlights the need for *deliberate* transformation, that is, consciously taking action to influence future change toward more sustainable pathways" (2015, p. 118).

Though the addition of socio-political concerns in adaptation planning such as vulnerable groups and mental health is commendable for their indication of a holistic approach to adaptation planning, they do not themselves represent adaptation as transformation. In terms of the inclusion of education and community consultation, transformation is certainly stunted to some degree by the political sphere. This is illustrated by the tendency of councils to avoid the term climate change altogether when communicating with communities. In addition to the examples above, Buys et al. (2012) found that the terminology within Australian rural communities fluctuated between 'climate change' and 'weather variability' with the latter used by more sceptical individuals. Even more troubling, Raymond and Spoehr (2013) found landholders in rural Australia were more willing to adapt if they accepted anthropogenic climate change as a reality; those who perceived the variation as a natural cycle were less likely to take action.

This political obstacle regarding the language of climate change continues to bar the way for progress even in 2016. Despite an UNFCCC agreement in Paris (UNFCCC, 2015), there has been no shift in the discourse or policy put forward by current Prime Minister Malcolm Turnbull. Furthermore, the current chief of the CSIRO has stated that climate science "almost sounds more like religion than science to me" while addressing a restructure of the organisation which is likely to see the loss of hundreds

of climate science modelling and monitoring jobs (Sturmer, 2016). Without consensus on the reality of climate change and the urgency to act at the highest political levels, transformational adaptation will be a secondary goal to simply ensuring climate change remains on the policy agenda. This transformation can be achieved by focusing climate change conversation around everyday experiences of environmental changes and around increasing extreme weather events. For this reason, transformation in the political sphere at the federal level is timely and necessary for future adaptation efforts.

A Need for Transformation and Shifting Away From 'No Regrets'

In Australia, a large amount of the development of the literature about transformation has occurred in relation to agriculture and climate change. In fact, transformational adaptation in (and of) agriculture was recognised by the Australian Primary Industries as a priority (Rickards & Howden, 2012) before the Primary Industries Adaptation Network was defunded in 2013 (NCCARF, 2013a). In particular, the Australian wine industry has provided a case study for academics to better understand the process of transformational adaptation (Fleming et al., 2015b; Park et al., 2012). Park et al. contend that transformation is part of adaptation action cycles whereby organisations cycle through incremental adaptation and transformational adaptation, reverting to incremental adaptation strategies after transformation has taken place. It was interesting that engagement with the two concentric cycles was partly dependent on views about climate change:

> many stakeholders not believing in human-induced changes in climate also
> considered that incremental change alone will be sufficient to manage future
> climate. Whereas those operating within an adaptation arena that also includes

the potential need to transform, tend to perceive anthropogenic climate change as a real phenomenon. (Park et al., 2012, p. 121)

The political sphere once again pervades the adaptation space, this time inhibiting transformational adaptation for a key Australian industry. Fleming et al. had a similar finding: "decision-makers who perceived climate change as anthropogenic in nature, and hence not within past human experiences, structured the problem as one that may require changes that more fundamentally alter the structure or function of their enterprise" (2015b, p. 108). These findings directly link the crucial importance of acceptance of anthropogenic climate change with possible transformational actions in individuals. Such a finding reinforces the argument that the first wave of transformation, one where the national discourse shifts to take climate change seriously, is necessary to facilitate further transformational adaptation.

Transformation in Australia has also been tied to "low-regrets" strategies (Rickards & Howden, 2012), which we have seen in the literature review provide a politically acceptable frame to achieve action on climate change across many sectors without focusing on the climate change benefits (Heltberg et al., 2009; Siegel, 2010). Strategies include seeking options that increase environmental or economic sustainability and opportunity, not simply addressing climate change. Such strategies are useful in achieving many benefits, but they also highlight the unacceptability of a solution that is focused solely on addressing climate change. This problem is at the heart of the variation in approaches to education and community consultation in Australian local government. By engaging with the community on this issue through health and lifestyle topics, and by reframing education through new mediums such as YouTube and school children, councils have been looking for a way to achieve their

aims by a different means. Without a politically acceptable climate to discuss climate change, councils are searching for the low-regret strategy, a win–win situation.

It is true that many adaptation options, by their very nature, can address many areas of concern, and vulnerable groups represent a good example of this. But at the core of this push for low or no regrets options is an underlying assumption that we do not know what climate change will bring, that this uncertainty breeds doubt about the problem, and we need to invest in options that bring multiple benefits. In the event that climate change brings a different set of impacts from those expected, or in the case that the benefits of climate change adaptation cannot be openly discussed, it is useful to have other successful outcomes on which to focus. In this way there can still be success for policy makers who can play up benefits other than the climate-focused ones. But a global precautionary principle mandates action despite uncertainty and a culture in which adaptation continues to develop with little acknowledgement will impede increasingly urgent efforts. The transformation is needed first in how we think about climate change, not just about in how we adapt to it. Such a shift would indeed represent transformation as Howes notes: "acknowledgement of serious and systematic environmental risks would demand a major restructuring of modern industrial society" (2005, p. 20). This is certainly true of climate risk and justifies the categorisation of this shift in political discourse as transformational.

Given the scope of change required for transformation, the adaptation actions associated with it will require legitimacy as their success will be dependent on full implementation (Adger et al., 2005). "It [transformation] also requires an especially high level of willingness to adapt, which is determined in part by the potential benefits to be gained and the perceived legitimacy of the adaptation process" (Rickards & Howden, 2012, p. 246). This finding makes the influence of the political

conversation on climate change clear and the development of education and community consultation even more important. For example, the suggestion of developing a new non-polluting economy will require cooperation from citizens (in democracies like Australia) and acceptance by them that the change will be in everyone's best interest. This concept is actually one that was put forward by the Citizen's Panel for the City of Sydney Adaptation Strategy, and was endorsed by the dominant discourses that emerged from that panel (Schlosberg et al., 2015). This endorsement from the community illustrates the possibility of a transformative language emerging from the bottom-up. Although it is less clear how the city should specifically determine an appropriate strategy for the shift to the new economy, the endorsement of this concept, however, lends a social license to the city to begin to engage with these transformational solutions. Without legitimacy, transformation at the local government level will be almost impossible. Incremental adaptation has at times been occurring under the auspices of climate change and at times taken place for different reasons such as lifestyle changes and health – these represent no regrets options. When discussion of climate change is not a practical approach for achieving success, no regrets options make it politically feasible to achieve change. Therefore, transformational adaptation will continue to be constrained until Australia reaches a more favourable political climate for climate change: as a problem, as anthropogenic, and as an issue in need of urgent attention.

Ultimately, transformational adaptation will be very difficult for governments to commit to in an oppositional or denialist political climate. The connection between the political and adaptation as transformation has been poorly examined until now. While there are accounts of the political influence on mitigation in Australia (Crowley, 2013), there has been "a reluctance to deal with the politics of adaptation

head-on" (S. H. Eriksen et al., 2015, p. 2). Eriksen et al. endeavour to return the political context to adaptation by recognising that achieving transformation is contested and that a fundamental change in system attributes is called for. But this misplaces the politics of adaptation in Australia. It is climate change itself that is contested and change to this must occur before greater transformation (and a new set of politics) can take place.

Inderberg (2014) posits that adaptive capacity is influenced by organisational culture; in this case, Australia's collective potential adaptive capacity is impeded by a harsh political climate towards climate change. Only 25% of Coalition voters believe climate change is anthropogenic (Leviston et al., 2015). Findings that the uptake of transformational adaptation action is dependent on the belief in anthropogenic climate change (Fleming et al., 2015b) made federal action on this issue impossible under the previous Abbott government. Local governments are already showing the leadership and initiative to develop adaptation plans in spite of political difficulty, but their progress continues to tend towards the incremental kind of adaptation. This is not an inherently bad direction, but it is the only option until the first wave of transformation takes place.

While the inclusion of the socio-political concerns of vulnerable groups and mental health may not themselves constitute adaptation as transformation, they do lay a useful groundwork for further fundamental shifts in adaptation policy past the first wave of transformation. Once the political obstacle can be removed, a new status quo will be established, one that will be eventually further transcended by a new form of transformation in the adaptation space. For example, protection of vulnerable groups leads to a greater sense of community, one which challenges individualistic concepts that are at the heart of capitalist culture and that continues to exacerbate emissions

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and therefore, climate change itself. Furthermore, a robust mental health program will assist people in making the adaptive decisions they need to make to transform further (Fleming et al., 2015a). With the tools to recognise and combat increasing stress and anxiety triggered by climate change, it will be easier to plan for adaptation options that take these problems into account. It will also make the path of future transformational adaptation easier as a common baseline will be established: climate change is anthropological, it is a serious issue, and it should be addressed.

Policy Recommendations

What implications does this research have for policy? First, it is important to recognise that the findings of this research capture a moment in time in Australia's adaptation journey. It is the first moment of the country's journey in adaptation planning, and this alone gives the period distinction for study. Understanding what we have so far accomplished and how it was achieved is important in moving ahead to continue to review old and develop new CCAPs as needed. Contextualising the journey so far can help us understand the path ahead. The nature of climate change ensures that there will be an increasing need for policy in this area well into the foreseeable future.

Climate change impacts are increasingly variable. Despite improvements in down-scaled modelling, the relentless continuity of high emissions and inaction among key emitting states results in new data continually pointing to worse predictions (UNSW Climate Change Research Centre & NSW Office of Environment and Heritage, 2012). The enormity of the challenge we face in adapting to climate change can create disillusionment around the effectiveness of CCAPs. While this research necessarily

limited the scope to the development of CCAPs, questions remain around the success of their implementation, and further scrutiny in this area is needed.

In terms of discrete policy recommendations for local government, the best place to start is to normalise the conversations councils are already having about climate change. Taking steps to move away from the 'under-the-radar' approach that has hitherto been necessary due to the political climate can bring current adaptation actions into the public sphere. The establishment of my growing database of CCAPs goes some way in promoting the work of councils in this area and highlights the normalcy of the approach given the amount of CCAPs presented. Once councils capitalise on the strength in numbers they possess when it comes to concern for climate impacts, it will become easier to continue to progress. I recommend councils promote their CCAPs to the public, inform them of what work they have done, and ask what climate concerns remain among the community. Normalising this important work can be the first step in the first wave of transformation needed to shift the national conversation. This normalisation may be spurred through NCCARF's efforts to centralise and publicise best-practice adaptation planning case studies (Rissik & Palutikof, 2015).

Second, in thinking about policy recommendations for future CCAP developers, and for future adaptation planning in Australia (in all the many forms it may take including embedding into existing policy) (Loop & Company, 2015), I suggest it is best to understand that the identification of risk to climate change is a simplification of a very complex process. Even when taking into account the many and varied ways we are improving risk assessments and integrated vulnerability assessments, including interdependencies (KPMG, 2012), the problem before us is truly wicked. In cases such as these, a focus not on mitigating risks but increasing adaptive capacity without

a specific risk focus is best. This can begin by appointing a climate change officer/team to each local council whose role it is to coordinate across departments to develop, monitor, and review climate adaptation plans. Such a team would be responsible for (among other things) implementing education and awareness of those whose adaptive capacity is decreased; planning for helping the elderly and homeless in extreme weather events; and creating awareness of the mental health disorders that can be triggered by increasing climate change. They should be cognisant of ecosystems and the interdependence of species, and able to emergency manage possible action should flooding/bushfire/storm surge occur. This central coordination role would aid in overcoming barriers to communication across departments, define clear responsibilities for climate actions, and work towards mainstreaming adaptation across the organisation. There is an opportunity for this type of role to develop through the Rockefeller 100 Resilient Cities program, an initiative that aims to improve urban resilience in the face of globalisation, urbanisation, and climate change (Rockefeller 100 Resilient Cities, 2013). 'Chief Resilience Officers' have been appointed in each of the 'Resilient Cities' and this position seems a natural fit for this level of coordination between departments. The Australian cities of Sydney and Melbourne have been named Resilient Cities, providing an opportunity for these cities to take the lead in redefining future adaptation planning.

Third, policymakers should be aware of the impact a poorly defined remit within local government has on the possible scope of Australian CCAPs. CCAP developers should be aware of the variation in the identification of vulnerabilities across the country and thus, the possible scope for action. A biophysical impacts-based CCAP is insufficient for a comprehensive adaptation strategy and there is precedent throughout this

research that Australian local government is capable of developing socio-political inclusive plans.

Finally, drawing on the findings from this research of variation in the identification of vulnerability, rural councils should begin to take particular note of mental health considerations in adaptation planning. Interview research indicated that suicide due to the impacts of climate change was a particular concern for farming communities and making rural areas cognisant of this risk may go some way in preparing them to confront this mental health challenge directly with their communities. The implementation of community workshops on mental health is a possible tool for these areas.

Future research should be focused on three areas here in Australia. The first is in line with the first wave of transformation that I have identified in this thesis, a dramatic shift in the political discourse surrounding climate change. I posit that this transformation is the most important because it will make adaptation planning easier for local councils who have spent the majority of the last decade planning for a phenomenon that was not universally acknowledged, and was actively challenged in politics and the media. It will be interesting for future researchers to analyse the shift in approaches to adaptation planning should the first wave of transformation described in this thesis take place. In particular, it will be important to note whether such a transformation opens up a greater possibility for socio-political inclusive CCAP plans. Similarly, should political difficulty in discussing climate change continue into the future, it will be important to note how far adaptation planning continues to develop despite this obstacle. Local councils have so far shown great capacity to develop CCAPs, despite this barrier, and future policy development will

most likely demonstrate further tenacity of local government in Australia on this issue.

Second, this research has been focused on one particular part of the policy process – the development of CCAPs. Future research could analyse the implementation stages of CCAPs, including measures of success, barriers to implementation, and case study approaches to help highlight best practice in adaptation policy implementation. Some of this is already taking place (Measham et al., 2010; NCCARF, 2015b; Pasquini et al., 2013; Storbjörk, 2010). Additionally, as councils come to the end of the predetermined time frames for past CCAPs, a process of review and monitoring will take place. It will be prudent to study how this review and monitoring evolves, including any differences in the development of past and future CCAPs, the study of ideal time frames for review and monitoring, and different methods of review. Earlier CCAP developers can continue to pioneer in this space, given their head start in adaptation planning. But it will also be interesting to note the differences between councils who are developing second- or third- generation CCAPs against those coming to adaptation planning for the first time.

Finally, research may have to move beyond the study of single document CCAPs. A shift in adaptation practice towards embedding adaptation into all relevant policies and departments, not just segregated or stand-alone documents, reflects recognition of the need to take a holistic approach when it comes to climate change adaptation. Should this be the future of adaptation planning in Australia, however, it will present a new suite of problems for practitioners and researchers. A decentralisation of the process will mean locating reference to climate change in several documents in each council. Analysing the embedding approach will require close contact with individual councils to track how each department takes the adaptation message on board and

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uses it to guide future policy development. It will be important to monitor the effectiveness of this strategy, as well as develop tools of best practice in undertaking it, as councils will inevitably face barriers to such a cross-silo, holistic approach.

Conclusion

This thesis has made three types of contribution to Australian climate change adaptation research. First, the research provides an empirical contribution by establishing a unique database of CCAPs from across Australia, an undertaking that has not before been achieved by any academic, federal, state, or local government. This database has already delivered some positive outcomes for practitioners of adaptation policy across the country, as outlined in Chapter One. Furthermore, the research presents a categorisation of all collected CCAPs as either biophysical-based or socio-political inclusive in their prioritisation of vulnerability. This categorisation is a crucial step in understanding how councils define their vulnerability to climate change and the findings illustrate the large scope within which local government can determine action for climate adaptation.

Second, the thesis makes two theoretical contributions. It develops a new theory applicable to climate change adaptation policy introduced as 'the politicisation of vulnerability.' This theory is borne from unpacking the political context and engagement processes through which local governments undertake vulnerability prioritisation in CCAP development. Vulnerability prioritisation is linked to the process of problem definition that each council individually undertakes in the development of climate adaptation policy, a process that is in turn influenced by political context. Thus, the concept of vulnerability is politicised in such a way that is yet to be examined in the academic literature.

The thesis makes a second theoretical contribution to the spectrum of adaptation. The research illustrates that transformational adaptation is not yet taking place in Australia and that Australian CCAPs are better categorised as transitional. Since a politicisation of vulnerability has been identified, a specific future path for the first wave of transformation is laid out. This first wave of transformation involves a shift in the national conversation on climate change, a shift that will facilitate future transformational adaptation.

Finally, the thesis provides a new case study for the public policy literature while also providing further research on environmental issues in local government. The public policy theories of agenda-setting and problem definition are used to explain the variation in CCAPs both broadly (biophysical vs. socio-political) and specifically (the inclusion of vulnerable groups and/or mental health as priorities in adaptation planning). The policy process is applied to adaptation policy at a very different level than focused on in the current literature, as this thesis focuses not on the more-often discussed global level of climate policy (Bahadur & Tanner, 2014; I. Burton et al., 2002; Pralle, 2009) but rather the local government level, specifically in Australia. The key finding within this case study for the public policy literature is the relative (and hitherto unrecognised) power of the third tier of local government in relation to the scope of CCAPs.

This thesis sought to understand the variation between climate change adaptation plans developed by local councils across Australia. It began by establishing a key variation – the difference between biophysical impacts-based plans and socio-political inclusive ones. The indistinct remit of councils was shown to play a part in this broad variation between CCAPs. Further examination of this variation found that vulnerable groups and mental health considerations were included in CCAPs based on

demographics, existing agenda items, and the presence of ad hoc policy entrepreneurs. Each of these variations can be traced back to different formations of problem definition that local councils have had license to shape due to an indistinct local government remit.

Furthermore, variation in conducting education and community consultation as a part of adaptation planning was shown to be influenced by the negative political discourse of climate change, though this did not necessarily result in the exclusion of these processes. Those councils who did include education and community consultation in CCAPs tended to employ positive framings that favour problem definitions developed with the community through a values approach and that rejected vulnerability.

An examination of the adaptation spectrum in relation to Australian CCAPs revealed that the inclusion of socio-political concerns still leaves us short of transformational adaptation planning. For transformational adaptation to occur, the research made clear that a discursive transformation must come first. This first wave would involve a substantive shift in the political discourse of climate change among key political leaders and within the Australian media.

In a recent chapter on the challenge of governing adaptation in Australia, Waller and Barnett concluded: "It is the lack of attention by Australian governments at all levels to the cultural and processual [sic] aspects of adaptive changes that appears to be primarily responsible for the observed slow and ad hoc adaptation response" (2015, p. 93). The findings of this thesis negate any such conclusion that places all three tiers of government on par in terms of climate adaptation response. Local governments, as illustrated in both CCAPs and follow-up interviews, have put much time and effort into the first wave of adaptation planning, and have engaged with difficult questions

of vulnerability and the politics of communication. Local government adaptation response may not have been well publicised due to a difficult political environment, but it has taken place. Though many Australians are unaware of it, local governments have been at the global forefront in preparing the country for climate change impacts (Collins, 2015b), and because of this we are all a little less vulnerable. However, to progress Australian adaptation planning beyond a transition-based approach, a transformation is needed in how climate change vulnerability is politicised. The local nature of adaptation indicates that local government is the appropriate level for adaptation planning, but they need a more positive political climate around climate change in order to be successful in the future.

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Methodological Appendix

This appendix sets out the key methodologies used for this research. It is divided into

three sections and outlines the methodology for the collation and analysis of the

database (Part A), the survey (Part B), and the interviews (Part C).

Part A: Compiling a Database of CCAPs

In beginning the research I needed to understand the landscape of climate change adaptation planning across Australia. There is evidence that suggests it is crucial for communities to adapt (IPCC, 2014) and there have been financial incentives offered from the federal level to adapt (Australian Government, 2008). There was no definitive source on exactly what climate change adaptation policies looked like across Australia and their variation. The database of Australian CCAPs is a unique contribution to the literature, which gives a solid base on which to establish variation in CCAPs across the country.

This appendix presents some of the key variables included in the database. The information collected for this database included whether or not the council had developed an 'overarching' CCAP, whether that CCAP was individual to the council or the result of regional efforts, the date the plan was established, the population of the councils, the geographical type of the councils, and web links to the CCAPs where possible. This allowed me to draw some basic conclusions about which local councils had developed overarching CCAPs across Australia.

The dataset was originally intended to also include information regarding the political party in majority within council at the time of the CCAPs establishment; however, this type of information is not easily accessible and involves counting votes for individual elections in order to determine the winning majority. Time restraints prevented this thesis from including this information.

Ninety-seven overarching CCAPs were collected from across the country – a combination of individual council and regional efforts to produce CCAPs. The earliest overarching CCAPs in the database were developed by 2009. However, in

2006 a preliminary risk assessment seems to have been developed by a regional group in South West Western Australia, under the Department of Agriculture and Food; by 2007 Port Phillip, NSW had a risk assessment, and by 2008 the Sydney Coastal Councils Group was also considering climate change. This early indication of climate adaptation planning seems to hint at later findings, whereby NSW has the most individual CCAPs of any state and (along with Western Australia) has the most regional CCAPs.

Methodology

The early stages of this research revealed that there is no single record of CCAPs in Australia, at the federal, state or Local Government Association level. The most consistent and efficient way to go about collecting such information was to visit the website of every council in the country and to search for a CCAP. These plans are public documents and should, therefore, be accessible through council websites.

CCAPs were located through a systematic process of searching all 558 Australian local government websites. Almost every council website had a 'search' facility which I used to search for the terms 'climate change' and 'climate'. This often led to a 'Climate Change,' 'Sustainability' or 'Environment' web page, which is often where a CCAP was found. If the search turned up unsatisfactory results or no results, I proceeded to search through tabs such as 'Public Documents,' 'Environment,' or 'Sustainability' in search of a CCAP, which is where most CCAPs that I did find were located. Once a CCAP was found, it was saved to my computer, and I coded in the Excel dataset whether it was an individual or regional plan, and in what year the plan was established. I also recorded the date that I visited the site and a URL either to the CCAP, to a relevant 'tab', or to the council web page.

The dataset also records the geographical type and population size of each council. This data was taken from the Australian Bureau of Statistics website, from the Census QuickStats (Australian Bureau of Statistics, 2011a). This information allowed me to ascertain the population of the relevant 'local government area' and to note the type of council (i.e. 'shire,' 'city' and so forth). Unfortunately, types of councils are not uniformly categorised across the states and territories of Australia, for example, the councils in New South Wales are divided into either cities or areas but the councils in Victoria can be divided into either cities, rural cities, boroughs, or shires; and in Queensland they can be cities, shires, towns, or regional councils. Therefore, the dataset notes each of the allotted council's types. I also used the map provided by QuickStats to determine if the council was coastal, so the data indicates COCY (coastal cities) and COSH (coastal shires).

In the case of regional CCAPs, the name of the regional body developing the plan was recorded, for example, Southern Metropolitan Councils. Finally, the dataset also recorded whether the document collected from the website was a 'risk assessment' an 'implementation plan' or a combination of the two.

Local councils were identified via contact lists available on each state's Local Government Association website. The database holds the CCAP information for 558 local councils across Australia through 2008–2014, with 97 plans and 183 councils involved in the development of CCAPs over this period.

Some Database Findings

Since research of this nature has not been conducted before, I now present a summary of some of the findings of the database. This summary should serve as a basic sketch of the landscape of climate change adaptation across Australia in terms of overarching

CCAPs. It offers details on the number of councils who developed both an individual and regional CCAP, how many CCAPs were found in each state or territory, and the number of individual and regional CCAPs per state.

Councils that have developed an individual CCAP *and* who are part of a separate regional CCAP include:

- Glenorchy (TAS)
- Alpine (VIC)
- Benalla (VIC)
- Frankston (VIC)
- Gloucester (NSW)
- Greater Taree (NSW)
- Kempsey (NSW)
- Manly (NSW)
- Nambucca (NSW)
- Newcastle (NSW)
- Pittwater (NSW)
- Willoughby (NSW)
- Bassenden (WA)
- Bayswater (WA)
- Belmont (WA)
- Cottesloe (WA)
- Fremantle (WA)
- Mandurah (WA)
- Mosman Park (WA)
- Mundaring (WA)
- Subiaco (WA)

Table 1 – Summary of CCAPs by state and territory

State or Territory	Individual CCAPs	Regional CCAPs	Number of Councils for Each Regional CCAP
Tasmania	2	1	12 councils
Victoria	21	3	2 councils
			6 councils
			5 councils
NSW	26	5	3 councils
			4 councils
			7 councils
			8 councils
			15 councils
Queensland	10	0	N/A
Northern Territory	7	0	N/A
Western Australia	10	5	5 councils
			6 councils
			6 councils
			6 councils
			9 councils
South Australia	5	1	8 councils
Australian Capital Territory	1	0	N/A

Part B: Survey Methodology

The second stage of the research involved the distribution of surveys to councils' employees and consultants involved in CCAP development. It sought to ascertain the impetus for developing a CCAP in the first place. The second aim was to understand how many councils undertook community consultation as a part of their adaptation planning process. The third aim was to see how participants ranked a range of four biophysical climate impacts and four socio-political impacts when asked to select the top three climate impacts of concern for their council.

The survey was developed and administered using the software REDCap. Surveys were distributed to those whose name appears on a CCAP in relation to aiding in the development of the plan. Emails were located either on the CCAP itself or found by searching for their name and their affiliation, be it with a council or with a consultancy firm. The survey was accessed online and available for a month. A reminder was sent to participants two weeks following the initial distribution. The data was then exported in both pdf and Excel form to analyse and code the responses. The survey can be found below. It is important to note that the actual physical survey was electronic and, therefore, there was considerable more space for open-ended questions through the online platform than is represented in the image.

The survey received a low response rate. One hundred participants were invited to take part in the survey however, only 22 participated. For this reason, the findings of the survey are used sparingly in the thesis. Answers to open-ended were used in analysis in a similar way that interview quotes are used and are mostly confined to discussion of local government remit in Chapter Four. The low response to the survey

further increased the need for interview data, which had always been intended as a

key source of data for this research.

Climate Change Adaptation Plan Development Survey

Before commencing this survey, please read the Participant Information Statement provided.

[Attachment: "Participant Information Statement.pdf"]

Section 1: Climate Change Adaptation Plan (CCAP) Development

1 Please name the council or Regional Group for which you helped develop a Climate Change Adaptation Plan (CCAP).

_____
((If you have aided more than one council - please fill out this survey for one council of your choice. You are welcome to fill in the survey again for any other councils you have had experience with.))

2 In what year was the plan developed?

_____

3 What was your role in the organisation at the time of CCAP development?

_____

4.1 Was community consultation undertaken as part of CCAP development?

☐ Yes
☐ No

4.2 Please briefly describe the consultation process.

_____

5 Why was community consultation included or not included as part of the process in developing the CCAP?

_____

6 What factors led to the development of a CCAP in this council? For example was it in response to extreme weather events, or was it championed by an individual?

_____

Section 2: Issue Prioritisation

7.1 Please select the top three issues for climate change adaptation in your council from the list below

☐ Considering the impacts of climate change on infrastructure and assets
☐ Making provisions for water quality and availability
☐ Ensuring council has the resources and know-how to adapt and avoid future litigation
☐ Impacts on service provision eg. Health services, emergency services, business continuity
☐ Planning for impacts on mental health
☐ Preparing for impacts on most vulnerable groups eg. homeless, indigenous communities
☐ Lessening disruptions to community cohesion eg. isolation during floods
☐ Educating the community about climate change
☐ Other

7.2 Please describe the 'other'

_____

8 Why do you think these three issues may have been prioritized over others?

_____

9.1 Were there any issues that were not prioritised in the council's adaptation planning?

☐ Yes
☐ No

9.2 Please share why you believe they may not have been included _____

10 How would you describe the importance of senior management 'buy-in' to the adaptation planning process? _____

Section 3: Final Details

11 Do you have anything else you wish to share about the process of CCAP development or your experience? _____

12 Which political party had the majority in local council at the time of CCAP development?
☐ Labor
☐ Liberal
☐ Independent
☐ Greens

13 Are you male or female?
☐ Male
☐ Female

14 What is your age?
☐ 18-25
☐ 26-35
☐ 36-45
☐ 46-55
☐ 56 +

15 How do you wish to be identified in the study results? (No names will be used in the study)
☐ You can identify my role and the geographic location of my council eg. "A sustainability manager from a NSW coastal council"
☐ You can identify the geographic location of my council eg. "A response from a NSW coastal council indicated..."

16 If you wish to receive feedback about the study in the form of a one page lay summary, please provide your email address: _____

17 If you are willingly to be further contacted for a follow-up interview please provide your email address: _____

Part C: Interviews

Interviews were conducted with council employees and consultants who aided in the development of at least one CCAP. Most had been involved in the development of several. Elite-level interviews were conducted with 20 individuals who were involved in the development of CCAPs. Interviewees had expansive knowledge of climate change adaptation plans across the country, with consultant interviewees and some council employees sharing experience from more than one CCAP. I invited both current and former council employees who were involved in the development of CCAPs to be interviewed. In total, the interviewees had experience in the development of over 70 CCAPs in over 100 councils between them. They were identified either directly (their name was on the CCAP) or through emails with council information desks who located the right person for me to speak with about a past CCAP. As mentioned in Chapter One, this snowball method of recruitment was chosen due to the decision to conduct elite-level interviews with those experienced in the development of one or more CCAPs. It allowed me to identify key knowledge holders about the process of CCAP development across the country, with some interviewees providing their experience from several councils and from different states.

I invited 45 people to be interviewed; 20 agreed to participate. In some cases, it was difficult to locate early CCAP developers who had since changed jobs. The lack of renewed funding for climate change adaptation since LAPP resulted in quite a few people losing their jobs and, therefore, moving on to different areas and sometimes out of council. I was able to locate interviewees from all states but could not secure participants from the Northern Territory or Australian Capital Territory. It was particularly difficult to secure a representative from the Northern Territory as I had

been warned of the effect of negative politics around the CCAPs that had been developed there early in my PhD when I was first compiling the database. I was advised to avoid bringing up the topic at all when I made calls to the Northern Territory Local Government Association to enquire about the seven CCAPs developed there (Anonymous, 2013). This only seeks to emphasise the negative politics that influence climate adaptation across the country. At various points over the past four years I was unable to interview people from Queensland, Victoria, and Western Australia depending on how political landscapes were shifting in that state at the time. I was informed people had lost their jobs in the past for speaking too much about it (Anonymous, 2013), and every interview in this thesis is anonymised to ensure security for those who did speak with me.

Interviews were open-ended, based on a loose structure of questions that were tailored in each interview based on the context of the CCAP (or CCAPs) being discussed. The primary purpose of the interviews was to understand the differing experiences of councils developing biophysical-based versus socio-political inclusive CCAPs. Below is a sample of interview questions:

What was your role in the development of [council name] CCAP?

Can you describe the process of plan development?

How hard is it to discuss climate change in your community?

How would you describe the attitude towards climate change adaptation in [council name]?

How important was it to include education and awareness-raising as part of the CCAP?

Was community consultation undertaken as part of the CCAP development?

Could you explicitly use the words 'climate change' when communicating with the community?

I noticed the plan references mental health concerns [insert quote from CCAP and reference page number]. How did that come to be included?

OR

As part of my research of Australian CCAPs, I have come across some councils which consider the impacts of climate change on the mental health of their communities. Is that something that was ever discussed in [name of council]?

Do you see mental health as within the remit of local councils?

I noticed the plan references vulnerable groups [insert quote from CCAP and reference page number]. How did that come to be included?

OR

As part of my research of Australian CCAPs, I have come across some councils that consider the impacts of climate change on vulnerable groups in their communities. Is that something that was ever discussed in [name of council]?

Do you see these concerns for vulnerable groups as within the remit of local councils?

How would you describe the difference in the political landscape between now and when the CCAP was developed? How would your [early] CCAP be received today?

Questions or final comments?

Interviews were recorded where permission was granted. Only one interviewee was not recorded. I typed a selective transcription for each interview, which ranged from 30 to 90 minutes. Interviews were then manually colour-coded for themes in Word. The coding process matched the process outlined in Burnard et al. (2008) whereby the researcher works through the transcripts several times to narrow down the emergent themes in order to mark each of those on the individual transcripts. Some key themes coded for included references to: vulnerable groups, mental health, education, community consultation, politics, use of language, and liability. My decision to manually transcribe and code the interviews resulted in a personal deep-knowledge of the data, which aided in the writing-up process.

Ethics Approval

All interview and survey research was undertaken with the approval of the University of Sydney Ethics Committee. Approvals are provided below.

Tuesday, 15 October 2013

Prof David Schlosberg
Government & International Rel; Faculty of Arts and Social Sciences
Email: david.schlosberg@sydney.edu.au

Dear Prof David Schlosberg,

I am pleased to inform you that the Humanities Low Risk Subcommittee of the University of Sydney Human Research Ethics Committee (HREC) has approved your project entitled "**Climate Change Adaptation in Australia: Local Governments and Climate Change Adaptation Planning**".

Details of the approval are as follows:

Project No.:   **2013/818**

Approval Date: **15 October 2013**

First Annual Report Due: **16 October 2014**

Authorised Personnel: **Schlosberg David; Collins Lisette;**

Documents Approved:

Date Uploaded	Type	Document Name
26/09/2013	Participant Consent Form	Consent Form
05/09/2013	Participant Info Statement	Participant Information Statement
05/09/2013	Interview Questions	Possible Interview Questions

HREC approval is valid for four (4) years from the approval date stated in this letter and is granted pending the following conditions being met:

Condition/s of Approval

- Continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans.

- Provision of an annual report on this research to the Human Research Ethics Committee from the approval date and at the completion of the study. Failure to submit reports will result in withdrawal of ethics approval for the project.

- All serious and unexpected adverse events should be reported to the HREC within 72 hours.

- All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.

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- Any changes to the project including changes to research personnel must be approved by the HREC before the research project can proceed.

Chief Investigator / Supervisor's responsibilities:

1. You must retain copies of all signed Consent Forms (if applicable) and provide these to the HREC on request.

2. It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely

Dr Fiona Gill
Chair
Humanities Low Risk Subcommittee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

THE UNIVERSITY OF SYDNEY

Research Integrity
Human Research Ethics Committee

Wednesday, 23 July 2014

Prof David Schlosberg
Government & International Rel; Faculty of Arts and Social Sciences
Email: david.schlosberg@sydney.edu.au

Dear David

Your request to modify the above project submitted on 26 June 2014 was considered by the Executive of the Human Research Ethics Committee at its meeting on 9 July 2014.

The Committee had no ethical objections to the modification/s and has approved the project to proceed.

Details of the approval are as follows:

Project No.:   **2013/818**

Project Title: **Climate Change Adaptation in Australia: Local Governments and Climate Change Adaptation Planning**

Approved Documents:

Date Uploaded	Type	Document Name
15/07/2014	Participant Info Statement	PIS Version 2
15/07/2014	Questionnaires/Surveys	Survey Questions Version 2

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely

Glen Davis
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Professor Glen Davis
Chair
Human Research Ethics Committee

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