

Community Conceptions of Vulnerability – From Discourse to Policy

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ABSTRACT

This paper asks a straightforward question: how do community adaptation plans reflect the public's concerns about vulnerability to climate change and its impacts? We compare a discourse analysis of conceptions of vulnerability in local and regional media, stakeholder websites and literature, and government literature with the language of actual climate change adaptation plans in three case studies across Australia: Tasmania, Western Australia and the Australian Capital Territory. Additional questions include how such local discourses differ depending on place, and how different stakeholders may inequitably influence the development of adaptation plans. The paper uses the vulnerability literature and a 'capabilities approach' to explain different conceptions of vulnerability. The research reveals a disconnect between the discourse of council adaptation plans and that of community groups, with community groups expressing particular concern for basic 'capabilities' and councils adopting a more focused approach based in risk management. The paper concludes that this disconnect is partly due to a lack of community participation in the development of adaptation plans in the three case study areas. The diversity of community groups and subsequent variety of concerns is also proposed as a significant factor.

INTRODUCTION

In order to adapt to climate change, it must be determined what you are adapting to. The IPCC defines 'climate change adaptation' as: "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm..."¹ As councils develop Climate Change Adaptation Plans (CCAP), they must know (or be able to make an educated guess at) what kind of harm is to be caused by climate change in order to

¹ IPCC, "Climate Change 2007: Impacts, Adaptation and Vulnerability," in *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. M. L. Parry, et al. (Cambridge, UK2007). P.

moderate against it. That is, they must know what they are vulnerable to, in order to best plan for adaptation. There are a number of ways in which a local community's perceptions of vulnerability to climate change can be influenced. Downscaled climate modeling² has allowed local communities access to data which can inform climate change predictions for their area on a more specific scale than was available a decade ago. Historical experience of changes in weather patterns as well as increased instances of extreme weather events in an area can determine how vulnerable a community feels to events such as storms, bushfire or heat waves. The mediatisation of climate change also plays a role in how people perceive of risk from climate change.^{3,4} These are just some of the factors which can influence conceptions of vulnerability to climate change. Local councils across Australia have been developing CCAPs in response to the threat of climate change in their region. This paper seeks to ask how these CCAPs reflect the public's concern for vulnerability, if at all.

In 2006, the Australian Greenhouse Office developed 'Climate Change Impacts and Risk Management: A Guide for Business and Government.'⁵ It was published by the Department of Environment and Heritage. The document provides a step-by-step guide for businesses and local governments to conduct workshops in order to identify, prioritise and address risks posed by climate change within a risk management framework. Since then, a number of documents have been published with the intent to aid local councils in developing CCAPs, including the Local Government Climate Change Adaptation Toolkit,⁶ Climate Change Adaptation Actions for Local Government,⁷ and Adapting to Climate Change in Australia: An Australian Government Position Paper.⁸ Since 2008, the Australian Government's 'Local Adaptation Pathways Program' has provided funding to over 90 local governments to aid them in developing their risk assessments and action plans.⁹ As a result,

² Zhihong Li et al., "The Bureau of Meteorology Statistical Downscaling Model Graphical User Interface: user manual and software documentation," (Centre for Australian Weather and Climate Research, 2008).

³ Ann Henderson-Sellers, "Climate Whispers: Media Communication About Climate Change," *Climatic Change* 40, no. 3-4 (1998).

⁴ Alison Anderson, "Media, Politics and Climate Change: Towards a New Research Agenda," *Sociology Compass* 3, no. 2 (2009).

⁵ Australian Government, "Climate Change Impacts and Risk Management: A Guide for Business and Government," ed. Department of the Environment and Heritage (Canberra, ACT: Australian Greenhouse Office, 2006).

⁶ ICLEI – Local Governments for Sustainability, "Local Government Climate Change Adaptation Toolkit," ed. Department of Climate Change and Energy Efficiency (Melbourne, Victoria: ICLEI Oceania, 2008).

⁷ SMEC, "Climate Change Adaptation Actions for Local Government," (ACT2010).

⁸ Australian Government, "Adapting to Climate Change in Australia: An Australian Government Position Paper," ed. Department of Climate Change and Energy Efficiency (Barton, ACT: Department of Climate Change, 2010).

⁹ Australian Government, "Local Adaptation Pathways Program," Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, <http://www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/local-adaptation-pathways>.

local councils across Australia have been developing Climate Change Adaptation Plans for local areas,¹⁰ their coasts¹¹ and entire regions.¹² These CCAPs identify and prioritise climate change risks as well as establish implementation plans for addressing those risks through a risk management process that involves five phases: establish the context; identify risks and opportunities ; analyse and evaluate risks and opportunities; develop options and action plan; and implement action plan and review progress.¹³ In identifying risks, they articulate specific vulnerabilities to climate change for that area, effectively pin-pointing key areas of concern which inevitably differ from council to council.

But if councils are developing action plans for climate change adaptation, the articulation of vulnerability for an area is inherently political. Who decides and how they decide on vulnerabilities are important because CCAPs involve setting an agenda for typically long time frames with important implications for how the council proceeds in its many roles concerning infrastructure development and maintenance, waste management, energy provision etc. With potential for many vulnerabilities to be created by climate change, there are bound to be differences in priorities among stakeholders, and between stakeholders and local government. This paper seeks to compare discourses between newspapers, community groups and CCAPs in three case study areas in order to analyse whether the public's concerns for vulnerability are represented in the Climate Change Adaptation Plans for that council or region. The research reveals a disconnect between the discourse of council adaptation plans and that of community groups, with community groups expressing particular concern for basic 'capabilities' and councils adopting a risk management approach to vulnerability.

Vulnerability to Climate Change and Addressing 'Just' Adaptation

The Intergovernmental Panel for Climate Change 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.

¹⁰ SGS Economics and Planning, "Tasmanian Coastal Adaptation Pathways Project – Kingston Beach" (Melbourne, Victoria: Tasmanian Coastal Climate Adaptation Pathways Project , 2012)

¹¹ Department of Environment and Resource Management, "Queensland Coastal Plan" (2011). Available online at <http://www.ehp.qld.gov.au/coastalplan/>

¹² Graham, K., Green, G., Heyward, O. 2012 'Regional Councils Climate Change Adaptation Strategy, Southern Tasmania', Southern Tasmanian Councils Authority.

¹³ ICLEI – Local Governments for Sustainability, "Local Government Climate Change Adaptation Toolkit."

*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.*¹⁴

The relationship between ‘exposure,’ ‘sensitivity’ and ‘adaptive capacity’ can also be expressed in the form of an equation:

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

where V = vulnerability; E = exposure; S = sensitivity; and AC = adaptive capacity.¹⁵ The focus in these definitions is on the intersection between being exposed and sensitive to climate change in the first instance, and in the second instance, having (or not having) the adaptive capacity to cope with such exposure and sensitivity. ‘Adaptive capacity’ indicates that as well as identifying what a community is vulnerable to, there are other questions of who is ‘most vulnerable’ and how are they most vulnerable. The concept of ‘adaptive capacity’ is crucial, as it determines the level of vulnerability to climate change that a community can expect. But how to measure ‘adaptive capacity’? In one example, Cinner has found ‘adaptive capacity’ to be directly linked to poverty and literacy levels, the value of products produced in a community, and good governance.¹⁶ In other words, those who have the least amount of adaptive capacity are the marginalized of society, those who were already leading vulnerable lives before the onset of climate change.

This brings us to another layer to the question of vulnerability to climate change - the notion of ‘just’ adaptation. This not only takes into account that communities need to address vulnerability, but that the process should take into account existing (and possible future) inequity as a result of adaptation in practice. At the international level, this theory is a result of justice scholars who recognize the potential for climate change adaptation to further impede the most vulnerable in society as they suffer the effects of climate change with little adaptive capacity. Schlosberg has identified the ‘capabilities approach,’ as well as established principles of recognition, as useful in assigning vulnerability. He notes “a capabilities-based

¹⁴ IPCC, "Glossary of Terms used in the IPCC Third Assessment Report " (Geneva, Switzerland: IPCC, 2001).p 388.

¹⁵ Joshua Cinner et al., "Socio-ecological vulnerability of coral reef fisheries to climatic shocks " (Rome: FAO Fisheries and Aquaculture, 2013).

¹⁶Tim. R. McClanahan and Joshua Cinner, *Adapting to a Changing Environment: Confronting the Consequences of Climate Change* (Oxford University Press, USA, 2011).p. 116

approach to adaptation, in other words, offers a way to assess vulnerability as it varies across location, benchmark adaptation needs and goals, and include the affected public in the development of adaptation policy.”¹⁷

Martha Nussbaum lists ten specific capabilities which she classifies as crucial for the well-being of every human: life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; control over one’s environment (political and material).¹⁸ According to Nussbaum, justice requires the basic fulfilment of this list, and injustice is the condition of not having these basic capabilities to construct a functioning life of one’s choosing. This list of capabilities has been at the centre of a much wider literature on the topic, that includes Amartya Sen’s contributions to the framing of the UNDP’s Human Development Index¹⁹ and Millenium Development Goals.²⁰ For Nussbaum, these capabilities are a way to justify and codify a set of basic constitutional human rights.

Scholars, such as Breena Holland and Edward Page,²¹ have applied this set of capabilities to the impacts of climate change in order to outline exactly how climate change threatens basic human rights. Additionally, Holland has outlined that “certain environmental conditions are necessary...for making all human capabilities possible.”²² She establishes ‘sustainable ecological capacity’ as a meta-capability and in doing so, identifies the instrumental nature of the environment as first and foremost among any list of capabilities. The key to the theory of meta-capability is that if the natural ecological processes of the earth are vulnerable, then every other human capability is in danger.

The last capability, ‘control over one’s environment’ has been particularly emphasised by scholars who focus on the notion of justice as ‘participation’ and on the relevance of social recognition as a crucial part of participation and justice. These concepts are based in the democratic principles of equal inclusion in decision-making, with ‘recognition’ representing the added element of not only having a say in proceedings, but

¹⁷ David Schlosberg, "Climate Justice and Capabilities: A Framework for Adaptation Policy," *Ethics & International Affairs* 26, no. 04 (2012).p. 446

¹⁸ Ingrid Robeyns, "The Capability Approach: a theoretical survey," *Journal of Human Development* 6, no. 1 (2005). pp. 104-105

¹⁹ UNDP, "Human Development Report," (New York: United Nations Development Programme, 1990).

²⁰ Removing Unfreedoms, "Millenium Development Goals," http://www.removingunfreedoms.org/development_goals.htm.

²¹ Edward A. Page, "Intergenerational justice of what: Welfare, resources or capabilities?," *Environmental Politics* 16, no. 3 (2007).

²² Breena Holland, "Justice and the Environment in Nussbaum's "Capabilities Approach": Why Sustainable Ecological Capacity Is a Meta-Capability," *Political Research Quarterly* 61, no. 2 (2008).pg 320

having that say respected and heard.^{23 24} Decisions about addressing vulnerability should be conducted in such a way that allows for the participation of everyone affected and in doing so, justice as ‘recognition’ can be achieved. “In other words, broadening participation would bring a recognition of, and validity to, diverse ways of understanding and valuing (in numerous senses) the land.”²⁵

Determining vulnerability then, can be a complex process. In addition to the question of justice and adaptation, Fussel and Klein succinctly summarise some of the difficulties with the term ‘vulnerability’ in four questions:

1. Is vulnerability a starting point, intermediate or the outcome of an assessment?
2. Is it defined in relation to climate change or to effects? For example, is it about vulnerability to rising temperatures or vulnerability because of less accessibility to health care?
3. Is it inherent in system or a product of external stressors and internal responses?
4. Is it static or dynamic?²⁶

Answering this questions it is not simply a case of selecting the best option from those listed here in the question. Firstly, in the case of Climate Change Adaptation Plans, ‘vulnerability’ represents the *outcome* of a risk assessment but the *starting point* of an implementation plan to adapt. Secondly, CCAPs can address both climate change *and* its effects – ‘rising temperatures’ are identified as a risk while something such as ‘less accessibility to health care’ is addressed as a threat to be actioned in the implementation plan. In addition to climate risks and risks posed by the effects of that climate risk, I would add that climate change adaptation planning can also identify specific sites of risk such as ‘coast’ or ‘bush.’ And finally, in relation to static or dynamic vulnerability, the years-long time frames (sometimes over a decade) allocated to CCAPs may suggest static concerns, however uncertainty surrounding exact implications of climate change and the impact of different responses indicates that vulnerability to climate change can be quite dynamic. This is often controlled for with a periodic monitoring and review process.

Perhaps, the hardest to address of Fussel and Klien’s four questions is the third, is vulnerability “inherent in system or a product of external stressors and internal responses?”

²³ Iris Marion Young, *Inclusion and Democracy* (Oxford University Press, Incorporated, 2002).

²⁴ Nancy Fraser and Axel Honneth, *Redistribution Or Recognition?: A Political-Philosophical Exchange* (Verso, 2003).

²⁵ David Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (OUP Oxford, 2007).p 97

²⁶ Hans-Martin Füssel and Richard Klein, "Climate Change Vulnerability Assessments: An Evolution of Conceptual Thinking," *Climatic Change* 75, no. 3 (2006). P.305

This is because conceptions of vulnerability differ and certainly the development of a CCAP within a council or region of councils is a product of external stressors and internal responses. For example, one of these external stressors may be an extreme weather event which triggers reactive adaptation, but in other cases councils may not experience such an extreme event but instead opt for anticipatory adaptation. This paper considers three case study areas to identify different conceptions of vulnerability in the community, within councils, and across case study areas. It then seeks to explain those findings in relation to process of identifying risks, including the stakeholders involved in establishing the Plan.

METHODOLOGY

This paper examines three case study areas: Tasmania, Western Australia (WA) and the Australian Capital Territory (ACT). Tasmania and Western Australia were chosen because they both contained examples of individual council CCAPs as well as Regional CCAPs developed by a group of councils, which meant that they each offered two sets of CCAPs to be examined. However, as a point of contrast, Tasmania and WA represent two vastly different areas within Australia with different geographical make-ups and primary industries. The ACT presents an interesting contrast to Tasmania and Western Australia not only because it is a unique territory of its own but also because it is the only State or Territory in Australia that has no coast, making it a good contrast to the coastal areas of WA and Tasmania.

Graphs of the top eight terms from each discourse category were developed using the text analytics software DiscoverText to mine large amounts of data and tally the totals of keywords. Data was collected from Climate Change Adaptation Plans; newspaper articles; and the websites, documents and Facebook feeds of community groups active in the areas of sustainability, the environment and climate change. We then identified which words were repeated the most and developed graphs of the top eight words for each source (CCAPs, newspapers or community groups) after eliminating obvious word repetitions such as 'Australia,' 'climate,' and 'change.' We then eliminated statistically and insubstantial words such as 'more' 'agreement' and 'don't,' focusing on selecting words which represented specific issues which could be drawn back to climate change mitigation or adaptation. In essence, the methodology mines the text of different sources in order to identify the key concerns in each.

Within each of these States or Territories, CCAPs, newspapers and community groups were chosen for the discourse analysis. The following section outlines which CCAPs, newspapers and community groups were collated to contribute to the data mining.

Tasmania

In Tasmania, a graph was developed for two CCAPs pertaining to Clarence council, namely *Climate Change Impacts On Clarence Coastal Areas – Final Report*²⁷ from 2009 and the *Tasmanian Coastal Adaptation Pathways Project – Recommended Actions for Lauderdale*²⁸ from 2012. The second graph was developed for the *2012-2017 Southern Tasmania Regional Councils Climate Change Adaptation Strategy*.²⁹

The newspaper discourse was developed by using Proquest Newsstand databases to search Tasmanian newspapers for articles that cited climate change as a subject.³⁰ The database produced results for The Mercury, The Examiner, The Advocate and Tasmanian Country newspapers. We collected articles which were published between 2009 and 2013. 24 articles were found and imported into DiscoverText which then generated a word cloud that was manually coded into the graph using Excel.

The community concerns graph was developed by streaming Facebook feeds through DiscoverText from five Tasmanian Facebook groups: Climate Tasmania, Environment Tasmania, Labor Environmental Action Network, Wilderness Society and Sustainable Living Tasmania. In addition, the websites of the following community groups were also mined to produce the graph: the West Hobart Environment Network, the South Hobart Sustainable Community, and Climate Action Hobart.

Western Australia

Two CCAP graphs were also developed for Western Australia. The first represents the combined discourse from two separate CCAPs developed by neighbouring councils –

²⁷ SGS Economics and Planning, "Climate Change Impacts On Clarence Coastal Areas – Final Report," (Department of Climate Change, 2009).

²⁸ SGS Economics and Planning, "Tasmanian Coastal Adaptation Pathways Project – Recommended Actions for Lauderdale," (Tasmanian Coastal Adaptation Pathways Project, 2012).

²⁹ Katrina Graham, Graham Green, and Oliver Heyward, "2012-2017 Southern Tasmania Regional Councils Climate Change Adaptation Strategy," (Regional Councils Climate Adaptation Project, 2012).

³⁰ The researcher used <http://www.newspapers.com.au/> for a comprehensive list of all the newspapers in each State or Territory of Australia and then searched for the relevant newspapers in Proquest Newsstand's database.

Bassendean³¹ (2011) and Bayswater³² (2013). The two CCAPs were combined to a single graph because they are directly next to each other and therefore share the same geographical space. They were also both developed with the aid of the EMRC (Eastern Metropolitan Regional Council). The second graph represents the discourse from a regional CCAP, *Climate Change Risk Management and Adaptation Action Plan for the Southern Metropolitan Councils*.³³

Given the amount of newspapers in Western Australia, the discourse for this graph was limited to those newspapers which are in the Proquest Newsstand Database and which are distributed to Bassendean, Bayswater or any of the five councils represented by the Southern Metropolitan Regional Council (Cockburn, East Fremantle, Fremantle, Kwinana, and Melville). These included: the Eastern Reporter, Western Suburbs Weekly, Cockburn Gazette, Weekend Courier, and Melville Times. 140 articles were collected which cited 'climate change' as a subject and which were published between 2009 and 2013.

The community concerns graph was generated from the discourse from community groups based in Western Australia and who were linked in some way to at least one of the councils who contributed to the CCAPs chosen. DiscoverText was used to stream the Facebook feeds from: Camp for Climate Action Australia (Bayswater), Australian Youth Climate Coalition University of WA, Freo Green Guide, and the Conservation Council of Western Australia. The websites for Freo Green Guide and Climate Movement were also added.

ACT- Canberra

Only one CCAP graph was developed for the ACT – from two documents. The *Human Settlement and Vulnerability and Adaptive Capacity Assessment*³⁴ and *Spatial Plan Evaluation – Urban Form Scenarios – Adaptation and Mitigation Interventions*.³⁵ It should be noted that these documents are not intended as a comprehensive Climate Change Adaptation Plan but as a step in the process which involves assessing the limits and potential

³¹ EMRC Environmental Service and Town of Bassendean, "Local Climate Change Adaptation Action Plan," (2011).

³² EMRC Environmental Services and City of Bayswater, "Local Climate Change Adaptation Action Plan," (2013).

³³ GHD, "Climate Change Risk Management and Adaptation Action Plan for the Southern Metropolitan Councils," (Local Adaptation Pathways Program, 2009).

³⁴ Guillaume Prudent-Richard et al., "The Human Settlement and Vulnerability and Adaptive Capacity Assessment," (ACT Planning and Land Authority, 2010).

³⁵ SGS Economics and Planning, "Spatial Plan Evaluation – Urban Form Scenarios – Adaptation and Mitigation Interventions," (2010).

of mitigation and adaptation planning in ACT’s urban form. However, given that this is a significant contribution to adaptation planning in itself, they are included here as a CCAP.

342 articles were collected from the Canberra Times to contribute to the newspaper graph. Again, we collected articles which cited ‘climate change’ as a subject and which were published between 2009 and 2013.

The community concerns graph was generated from the discourse from community groups. It is made up of Facebook feeds from Australian Youth Climate Coalition Canberra, Living Green Festival Canberra, Conservation Council ACT Region, and Canberra Clean Energy Connection. The community concerns discourse here also includes the content from the Canberra Climate Action Now website and two submissions from ACT Climate Change Council.

FINDINGS

Tasmania

Graphing the Discourse

Figure 1 illustrates the concerns in the Southern Tasmanian Regional Councils CCAP. The regional council adaptation plan was established in 2012 and represents the combined concerns of 12 councils: Brighton, Clarence, Central Highlands, Derwent Valley, Glamorgan Spring Bay, Glenorchy, Hobart, Huon Valley, Kingborough, Sorell, Southern Midlands, and Tasman. The CCAP seems to illustrate a stark concern for ‘liability.’ The word counts of the next seven words are relatively low, with the second highest word ‘community’ mentioned only 20 times. There is a clear coastal concern with ‘sea’ ‘storm’ ‘rainfall’ and ‘coastal’ taking 50% of the top eight spots. ‘Infrastructure’ and ‘bushfire’ are also in the top eight at the fifth and seventh rankings respectively.

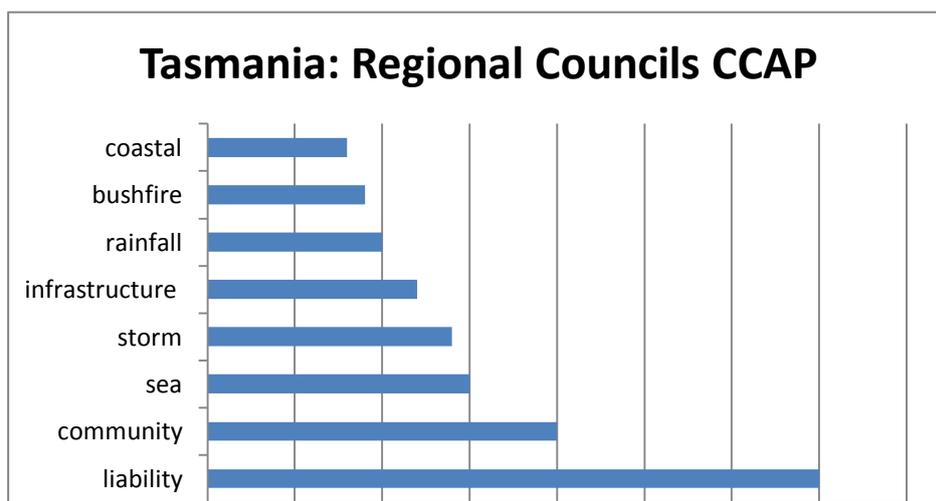


Figure 1

The two CCAPs specifically from Clarence Council are graphed in Figure 2. There is an overwhelming concern for the coast here with six of the top eight words relating to the coast – ‘coastal’ ‘beach’ ‘sea’ ‘erosion’ ‘sand’ and ‘inundation.’ ‘Water’ takes the third spot, with ‘community’ coming in eighth and being the only word not in some way related to water.

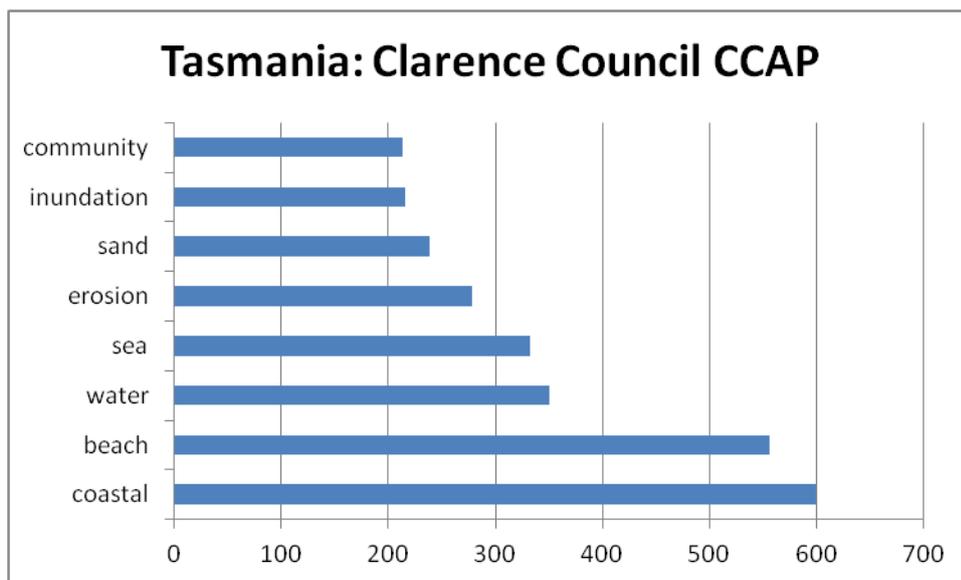


Figure 2

Figure 3 represents the concerns about climate change found in Tasmanian newspaper articles. Given that only 24 articles were found, the data is limited. ‘Carbon’ is the top concern, closely followed by ‘science’. ‘Wine’ comes in third, before equal repetitions of ‘forests’ ‘marine’ and ‘emissions.’ ‘Industry’ and interestingly, ‘Antarctic’ round out the top eight concerns in newspaper media.

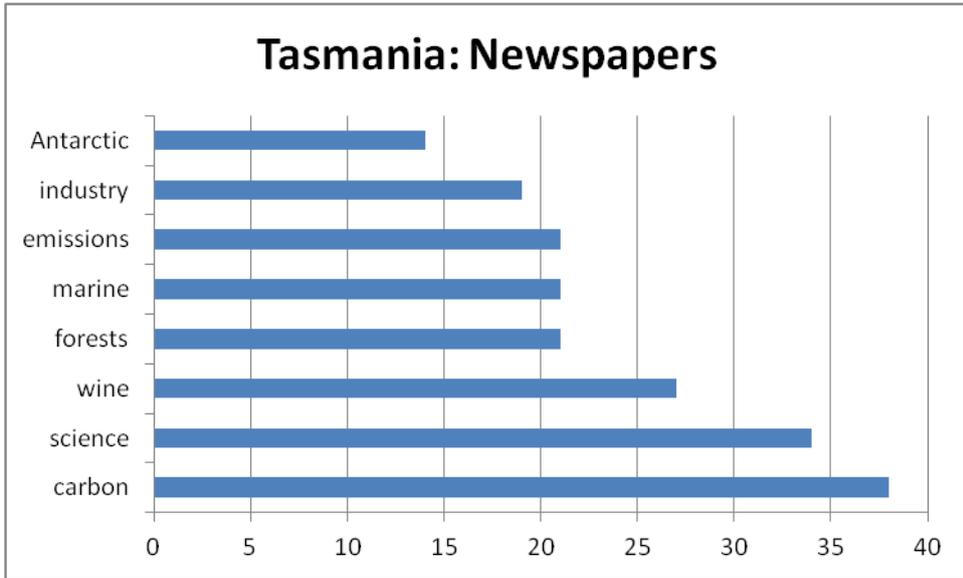


Figure 3

Finally for Tasmania, the community concerns graph in Figure 4 offers some different concerns. The two most cited words here are unique additions to the concerns we have already graphed – ‘food’ and ‘garden.’ ‘Energy’ comes in third, followed by roughly similar repetitions of ‘transport’ ‘transition’ ‘solar’ and ‘walking.’ ‘City’ comes in eighth with 58 cites.

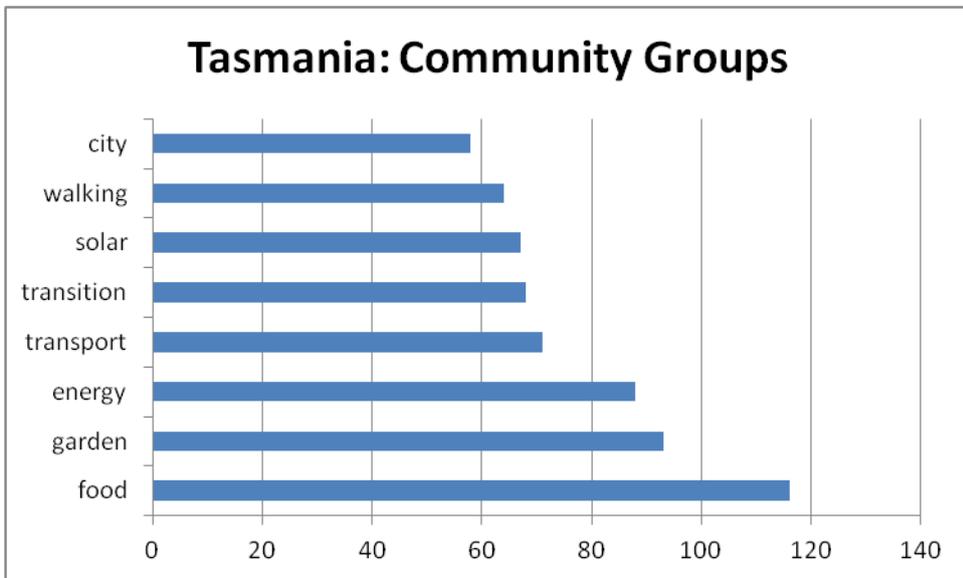


Figure 4

Discussion

Looking at the CCAP graph for Clarence, there is little variety in the types of issues raised. It's clear that climate change adaptation is well and truly revolving around anything to do with the coast – notice the references for 'coastal' 'beach' 'sea' 'erosion' 'sand' and 'inundation.' This is not altogether surprising as Clarence is a coastal council and the two CCAPs used to make the graph are a coastal adaptation plan and a Tasmanian Coastal Adaptation Pathways project plan – however it does indicate the extent to which this council views the coast as the primary site of vulnerability to the exclusion of other options.

The Southern Tasmanian Regional Councils CCAP also illustrates coastal concerns with 'sea' and 'coastal' making their graph. However, the Regional CCAP is more varied in its conception of vulnerability. The combined resources and contexts of twelve councils has allowed for a variety of concerns from a legal perspective (liability), to a sector perspective (infrastructure), and a threatened site not related to the coast (bushfire).

The newspaper discourse doesn't share the fascination for the coast however. The concern there focuses around 'carbon' 'science' and 'emissions.' This may illustrate a continuing focus on mitigation policy, as opposed to adaptation. It also articulates five sites of vulnerability for Tasmania – 'wine' 'forests' 'marine' 'industry' and (interestingly) 'Antarctic.' The absence of carbon from the top eight in the CCAP graphs may be explained by 'carbon's' relevance to mitigation rather than adaptation – however the other marked differences seem to suggest a disconnect between media and council adaptation planning.

In rather stark contrast, the community groups in Tasmania, at least as represented in their webpages and Facebook feeds, focus on a rather different set of concerns. The top two words– 'food' and 'garden' – illustrate an interest in food vulnerability that is not apparent in the council planning or media coverage. There seems to be a particular concern for mitigation shared with the newspaper graph – however the community groups articulate this beyond 'carbon' and 'emissions' by citing 'energy' 'solar' and 'transition' (in some cases referring to 'transition towns'); this illustrates that the community groups see efforts toward mitigation as integrally tied to adaptation policy.

We can see little correlation in Tasmania between the CCAPs and the community concerns. While the coastal council plans diligently for coastal threats for climate change and the regional councils plan for legal implications and extreme weather events, the community turns its attention largely to sector concerns which affect everyday living (food, garden, transport, energy). The community concerns illustrate a capabilities-based

understanding of vulnerability. If we apply Martha Nussbaum's 10 capabilities with the community concerns we can extrapolate that for the community groups, food provision can be applicable to Nussbaum's first and second capabilities of 'life' and 'bodily health' and 'garden' possibly having an effect on capabilities four, eight, nine and ten (senses, imagination and thought; other species; play; and control over one's environment respectively).³⁶

An interesting point, the community groups repeat 'walking' 64 times – making it unique not only in this Tasmanian case but also across all the case study graphs generated. Some further investigation reveals that the interest in walking comes from two separate initiatives. The first is to establish a 'Walking Bus' for schoolchildren which will "help reduce greenhouse gas emissions and traffic congestion around schools as well as contributing to improved health and sense of community."³⁷ The second concerns the production of a 'Walking West Hobart Map' which encourages "people to move from use of cars to more walking and cycling, by promoting little known pedestrian shortcuts and best cycle routes."³⁸ This too can be linked to the Nussbaum's list of capabilities – with the community espousing 'walking' as representing a way to ensure 'bodily health' and 'affiliation' through building a sense of community.

The different conceptions of vulnerability may be explained in part by the risk assessment approach which councils undertake in order to develop CCAPs. The risk assessments are typically developed within a risk management framework,³⁹ and therefore specific effects and sites of vulnerability are identified. Community groups, on the other hand, are not restricted by procedures of assessment and develop their concerns in a more organic way. The community groups chosen to develop these graphs are diverse in approaches to addressing climate change and as such, they cover a wide remit of concerns which can only be largely classified as pertaining to the provision of everyday capabilities. Additionally, community groups often run on a campaign/initiative basis – explaining why such unique terms are repeated so often, they are most likely part of a campaign or initiative that is 'shared' on Facebook or oft repeated on their websites. This would explain the disconnect between the sources of discourse in Tasmania.

³⁶ Martha Nussbaum in Robeyns, "The Capability Approach: a theoretical survey." pp.104-5

³⁷ Hobart City Council, "Walking Bus,"

http://www.hobartcity.com.au/Environment/Energy_Efficiency_Guidelines_and_Incentives/Walking_Bus.

³⁸ Transition Tasmania Roadshow, "West Hobart Walking Map," <http://transitiontasmaniaroadshow.com/be-inspired/west-hobart-walking-map/>.

³⁹ Australian Government, "Climate Change Impacts and Risk Management: A Guide for Business and Government."

Western Australia

Graphing the Discourse

Figure 5 illustrates the concerns drawn from the *Southern Metropolitan Regional Councils* CCAP, established in 2009. The number one concern here is clearly for ‘water,’ followed by similar amounts of concern for ‘damage’ and ‘storm.’ There is not much between fourth to eighth place here, indicating equal references to ‘business’ ‘fire’ ‘bush’ ‘emergency’ and ‘infrastructure.’

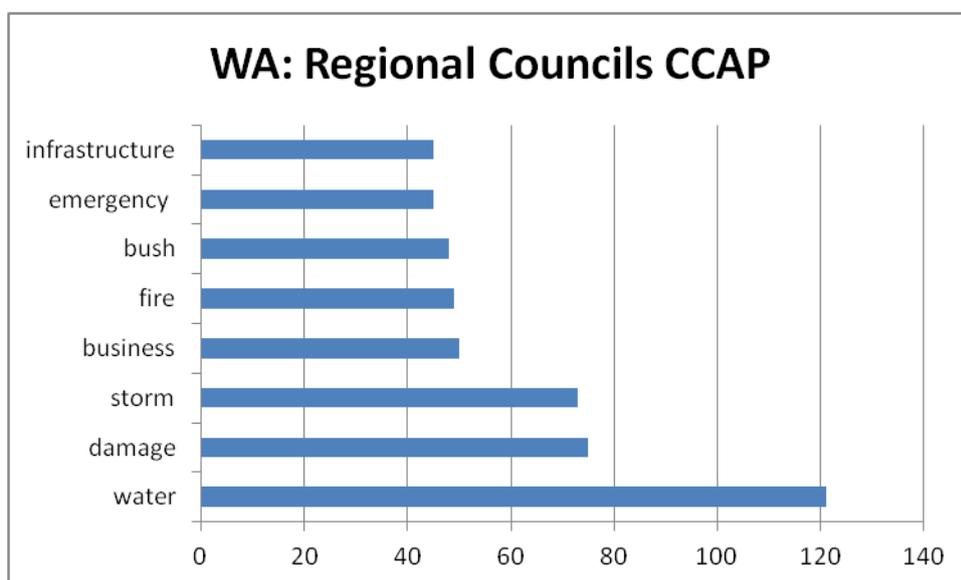


Figure 5

Figure 6 represents two individual CCAPs developed by the neighboring councils of Bayswater and Bassendean. This graph indicates an overwhelming concern for money related issues. While ‘services’ is the number one cited word, ‘budget’ ‘expenditure’ ‘funding’ ‘costs’ and ‘asset’ take the next five spots. These are then followed by sector specific concerns at the seventh and eighth spots, namely ‘health’ and ‘infrastructure’ respectively.

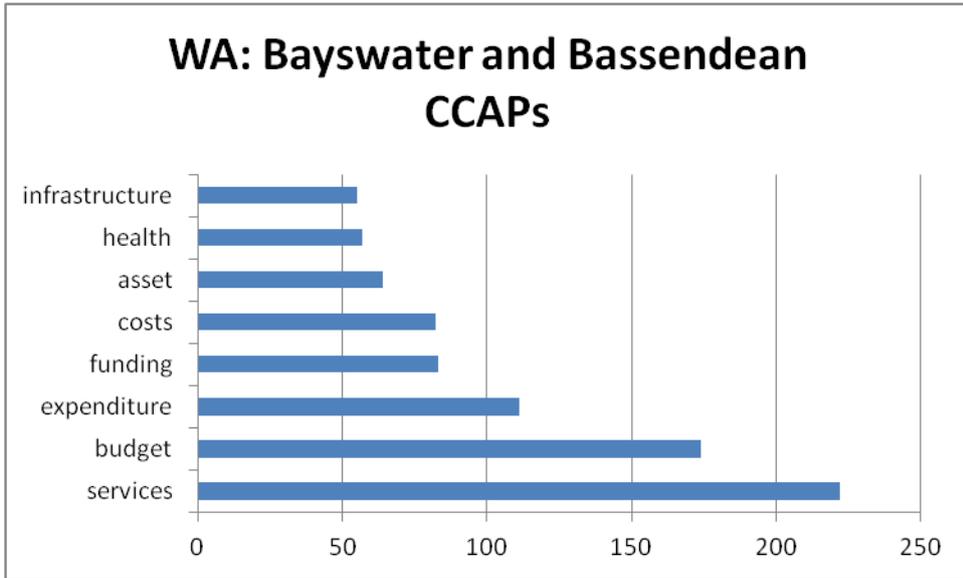


Figure 6

The newspapers graph in Figure 7 shares the same number one concern as the *Southern Metropolitan Regional Councils* CCAP – ‘water.’ ‘City’ ‘carbon’ and ‘energy’ take the second, third and fourth spots respectively. The other concerns are decidedly different from anything else we’ve seen. Concerns for ‘park’ comes in at the fifth spot, followed by two specific councils in Western Australia – ‘Fremantle’ and ‘Rockingham.’ Finally, the acronym ‘png’ comes in eighth – referring to ‘pipeline natural gas.’

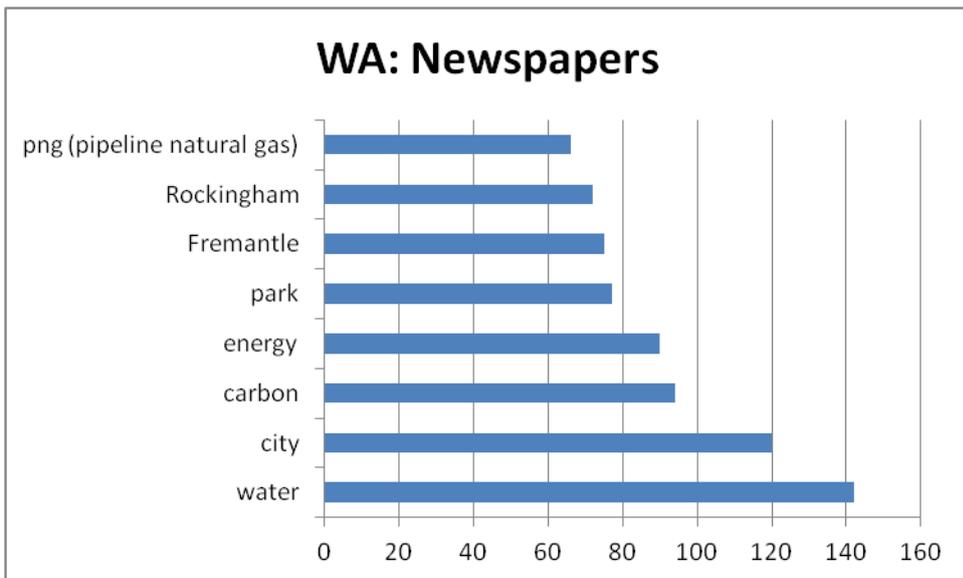


Figure 7

Figure 8 shows the graph of concerns gleaned from community groups associated with any of the councils represented in our chosen CCAPs. Once again, ‘water’ takes top billing, following by ‘food.’ ‘Fracking’ is a concern unique to this graph in the third spot. ‘Gas’ ‘conservation’ and ‘energy’ are illustrated as roughly similar in word tally, with ‘marine’ and ‘plastic’ rounding out in seventh and eighth place respectively.

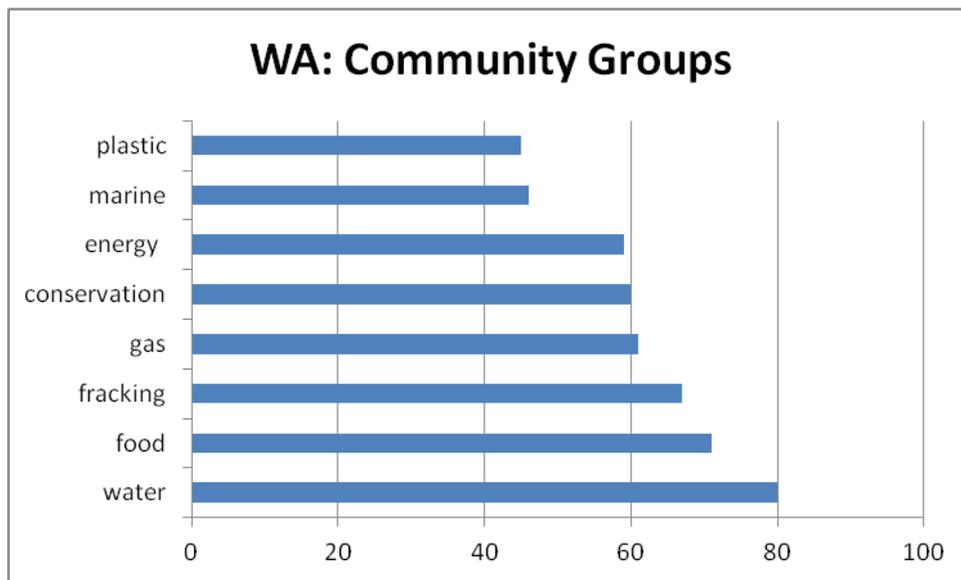


Figure 8

Discussion

‘Water’ is clearly a concern for our Western Australian case study. It was repeated the most in every discourse excepting the Bayswater/Bassendean CCAPs, and represents a shared concern for a basic human need which can be linked back to Nussbaum’s first capability of ‘life.’

Considering the community groups seemed to cite ‘food’ as such a priority it is interesting to note that the concern isn’t raised in the other discourses in WA (although it was also raised by our community groups in Tasmania). Other words that made the community concerns graph but not the others include ‘conservation’ and ‘plastic,’ the latter of which can be explained by campaigns run against ‘plastic pollution’ and landfill.

In terms of discourse, they share similarities. The Bayswater/Bassendean CCAPs showed an overwhelming tendency to lean towards financial considerations – citing only ‘health’ and ‘infrastructure’ as specific sector concerns. The *Southern Metropolitan Regional*

Councils CCAP also cited ‘infrastructure,’ but they mostly focus on four specific areas of vulnerability ‘damage’ ‘storm’ ‘fire’ and ‘emergency,’ and two sites of vulnerability ‘business’ and ‘bush.’ In the CCAPs, the concerns are more focused on climate change effects and affected areas. The regional CCAP in particular illustrates concern for extreme weather events (fire, storm, damage, emergency) while the community groups once again turn to the everyday amenities (food and energy) which will be threatened by encroaching climate change rather than distinct events. Once again, the distinction between a risk assessment approach for councils and the more organic development of community groups can be seen.

The newspapers shared a similar concern with the community groups concerning ‘energy’. As well as both placing ‘energy’ somewhere in the top eight, in the newspapers – ‘carbon’ and ‘png’ were specifically cited in the top eight word repetitions while in the community groups, ‘fracking’ and ‘gas’ made the list. Again, this can in part be linked to a capabilities approach in terms of provision of energy. In particular, the link between energy provision and mitigation efforts is expressed here, particularly through the term ‘fracking.’ It is important to note that the discourse surrounding fracking was largely negative including express concern about ‘poisoned water tables,’⁴⁰ particularly in Facebook posts. Such a focus only further emphasizes the concern for water supply issues in WA, and brings us back again to the community conception of capabilities-based vulnerability.

ACT

Graphing the Discourse

Figure 9 shows a graph of major concerns appearing in the ACT CCAP. This CCAP was established in 2010. The major concern here centres around ‘urban’ spaces, while once again ‘water’ proves a concern of high priority, taking the second spot on this graph and closely followed by a water concern of a different nature - ‘flooding.’ In terms of specific vulnerability to events, the ACT graph makes reference to ‘bushfire,’ but only after citing more general concerns for vulnerability events - ‘heat’ ‘rainfall’ and ‘temperature.’

⁴⁰ Gordon Sherriff-Smith’s Facebook page, accessed July 2 2013, <http://www.facebook.com/1275099315>; Blissful Oubliette’s Facebook page, accessed July 2 2013, <http://www.facebook.com/1275099315>; Conservation Council of Western Australia’s Facebook page, accessed July 2 2013, http://www.facebook.com/36676462435_10151718010517436

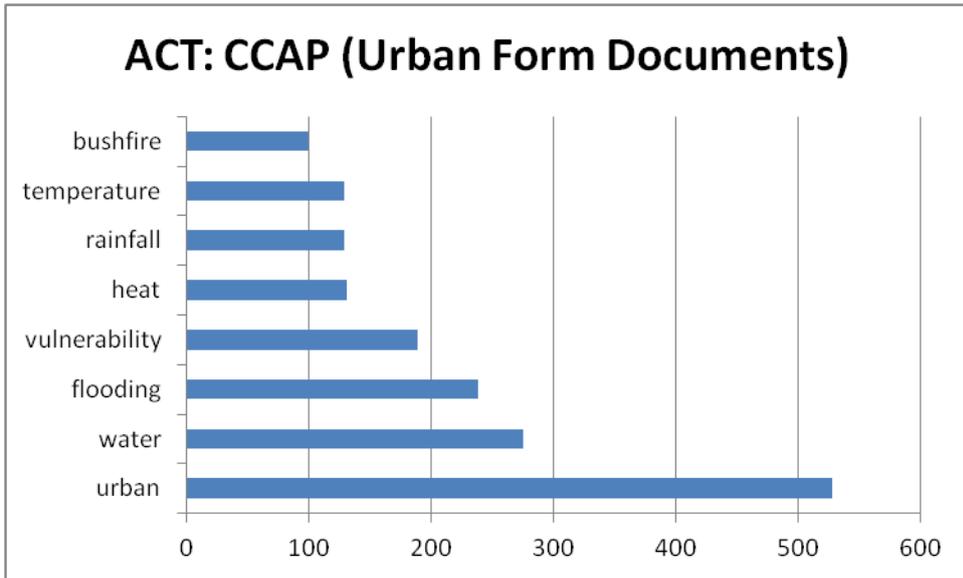


Figure 9

Figure 10 depicts the concerns drawn from the Canberra Times between 2009 and 2013. Here, 'carbon' is the most cited word followed by 'emissions' and 'science' or 'scientists.' 'Energy' 'tax' and 'water' seem to be mentioned roughly equally. 'Warming' follows, before a specific concern for 'koala' pips in at the eighth spot.

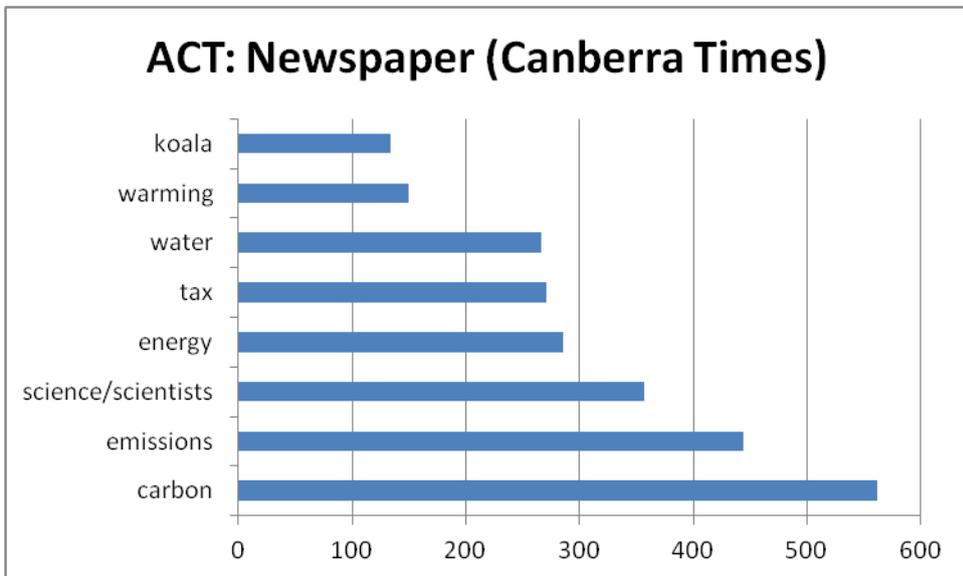


Figure 10

The graph of community concerns can be found at Figure 11. Interestingly, ‘youth’ is the most mentioned word here⁴¹, followed by a concern for funding with ‘grant’ coming in second. Here, ‘energy’ takes a similar spot in the ranking as it did in the newspaper graph, while ‘coal’ makes the top eight for the first time in this community concerns graph, The second half of the graph represents fairly equal concerns for ‘renewable’ ‘conservation’ ‘solar’ and ‘emissions.’

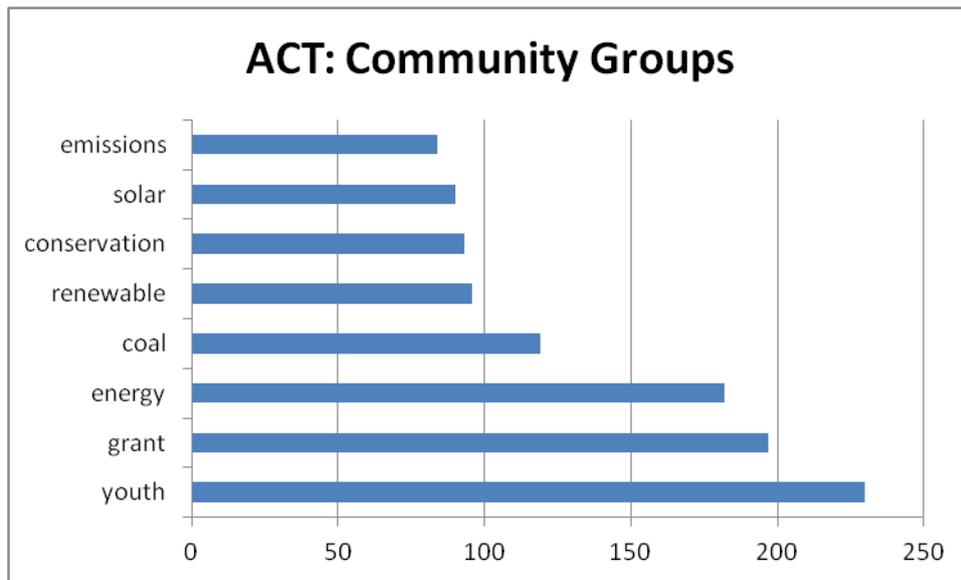


Figure 11

Discussion

In the ACT, as in the other case studies, the sources of discourse have few top concerns in common. The most similarity is between the newspaper graph and the community groups graph which both cite ‘energy’ and ‘emissions.’ There is one word that made the top eight for both the CCAPs’ graph and the newspapers – ‘water.’ However, that is the extent of the similarities as there are no common words between the CCAP graph and the community groups graph. In other words, there is little overlap between the concerns of the community discourse and that reflected in the CCAP

In terms of conceptions of vulnerability and attitudes to adaptation, the CCAP graph identifies five events which the ACT seems vulnerable to – ‘flooding’ ‘heat’ ‘rainfall’ ‘temperature’ and ‘bushfire’ in addition to having the word ‘vulnerability’ in the top fourth

⁴¹ It should be noted that ‘vote’ actually had a higher word count with 246 repetitions, however as this could not be directly related to the content it was not included. An interesting anomaly.

spot. On the other hand, the newspaper graph seems more ‘mitigation’ intensive with its references to ‘carbon’ ‘emissions’ ‘science’ ‘tax’ and ‘warming.’ However the newspaper graph does note three sites of vulnerability – ‘energy’ ‘water’ and ‘koala.’ The community groups graph continues the mitigative thread with mentions of ‘coal’ ‘renewable’ ‘solar’ and ‘emissions.’

The ACT case seems unique here in that the CCAP represents a wider conception of vulnerability than the newspaper or community discourse – both of which focus heavily on mitigation and energy concerns. In contrast, the CCAP concerns itself little with energy concerns and appropriately takes a more adaptation response to extreme weather events (flooding, heat, bushfire) and related climate changes (rainfall, temperature). However, an exception to this must be made. Upon closer inspection on the reason for ‘grant’ being the second most cited word, it was found that this was due to a member of AYCC Canberra applying to ‘Sunsuper Dreams’ for a \$5,000 grant “to stop the proposed mines and coal ports along the Great Barrier Reef”⁴² and encouraging Facebook ‘shares’ to vote on Sunsuper for his ‘dream.’ Yet again, this is an example of the diversity of community groups. Unlike the council, which has a specific jurisdiction to maintain, community groups are not necessarily bound by council, or State, lines. The fact that the discourse in the ACT community groups could include such a concern for a grant which would be directed at the Great Barrier Reef, indicates how far-reaching these group concerns extend.

Such an approach is reminiscent of Holland’s meta-capability, that no capabilities can be ensured without first ensuring ‘sustainable ecological capacity.’ What better way to express such a notion of considering ‘the bigger picture’ than to extend your concern beyond your own council, and indeed State/Territory in order to champion the protection of a natural environment? In contrast, the council CCAP represent the concerns of specifically bordered areas and are therefore heavily influenced by climate threats posed within that area before anything else. That’s not to say that councils don’t appreciate the importance of sustainable ecological capacity, but rather that evidence of the risk assessment procedure as outlined in the *Guide for Business and Government* is again apparent.

Contrasting the Discourse Between Case Study Areas

⁴² Morgan Hubbard’s Facebook page, accessed July 2 2013, http://www.facebook.com/173008002750970_525415194176914

Given these differences both within and across the study areas, what kinds of conclusions can we draw with regard to discourses of vulnerability in adaptation planning? There are some similarities ‘energy’ for example, shows up specifically in 5 of the graphs, not counting more general references to it such as ‘gas’ or ‘carbon.’ ‘Water’ is mentioned is the second most cited concern across the discourse. This concern for water is consistent in a number of nationally focused publications. Chapter 11 of the IPCC Forth Assessment Report is dedicated to ‘Australia and New Zealand’ and identifies “freshwater resources” at the top of a list of eleven of the most vulnerable sectors.⁴³ The National Climate Change Adaptation Framework also places “water resources” at the top of its list of nine areas of climate risk.⁴⁴ Finally, *Adapting to Climate Change in Australia: An Australian Government Position Paper* counts ‘water’ as one of its six initial national priorities.⁴⁵

If we look at the newspaper graphs for all three case studies – the discourse seems the most consistent. The conversation tends towards mitigation with ‘carbon’ in the top three for all the graphs. In fact, ‘carbon’ was first in Tasmania and the ACT graph and third in the WA graph where ‘water’ came in first – one of the few examples where the media, a CCAP and the community groups were all in agreement.

CCAP graphs are similar in that for a large part, they concern themselves with vulnerability to extreme weather events, in some cases also considering legal and financial implications of climate change adaptation.

Community Groups across the three case studies contained some of the most unique word tallies. In the WA graph, ‘plastic’ and ‘fracking’ made the top eight here but nowhere else. In the ACT ‘youth’ was the most cited word despite not showing up anywhere in the other word rankings. The Tasmanian community group graph had the most unique entries with 50% of the top eight words being unique only to this graph - ‘garden’ ‘walking’ ‘transition’ and ‘transport’. In addition, both Tasmania and WA community groups shared a concern for ‘food’ which did not come through in any of the newspaper or CCAP graphs. If anything, this once again illustrates the diversity of community groups who are engaging with climate change as an issue, a phenomena that seems to result in a unique issues being raised in the community discourse across the country. This is not to propose that community groups

⁴³ Kevin Hennessy et al., "Australia and New Zealand," in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Forth Assesment Report of the IPCC*, ed. M. L. Parry, et al. (Cambridge, UK: Cambridge University Press, 2007).pp. 516-517

⁴⁴ Department of Climate Change and Energy Efficiency, "National Climate Change Adaptation Framework," (online2007).

⁴⁵ Australian Government, "Adapting to Climate Change in Australia: An Australian Government Position Paper."

are not concerned about extreme weather events, but rather that this diversity creates a broad range of concerns, that most likely includes extreme weather events alongside a range of other issues.

The Influence of Stakeholders

Considering another aspect of the research question, we may now turn to ask how different stakeholders may inequitably influence the development of adaptation plans. A more in-depth examination of this question would involve a more thorough and partly qualitative methodology to better link how different stakeholder inclusion strategies can influence resultant CCAPs, however some small observations can be made from our data.

The development of a CCAP can involve many and varied stakeholders. For example, the Western Australian Southern Metropolitan Regional Councils CCAP has been developed with the input from: five Environmental Health officers, four coordinators from Environment and Sustainability, three representatives from Planning Projects and Policies, a manager for Patrol and Safety Services, the manager for Parks, and a Finance officer.⁴⁶

Of particular interest in terms of stakeholder input may be the Bayswater and Bassendean CCAPs graph. The word count from that discourse showed an overwhelming concern for the financial implications of climate change. However, a compilation of the stakeholders who were involved in the development of the CCAPs does not suggest this narrow concern was a result of a narrow selection of participants. It becomes clear why 'services' made the number one spot on that graph as the CCAP was developed with the aid of: two representatives from Environment and Ranger Services, Operational Services, Asset Services, Development Services, Senior and Disabilities Services, Leisure Services, and Technical Services.⁴⁷

However, the stakeholders involved were by no means limited only to these areas of service provision. The CCAPs were developed with quite a range of departments and included the input from: two Engineering officers, two Planning officers, an Environmental officer, Economic Development, Sport and Recreation, Strategic Project Coordinator, Environmental coordinator, Parks and Gardens, Environmental Health, an accountant,

⁴⁶ Appendix C: Workshop Participants in GHD, "Climate Change Risk Management and Adaptation Action Plan for the Southern Metropolitan Councils."

⁴⁷ Services and Bayswater, "Local Climate Change Adaptation Action Plan." p. 3; Service and Bassendean, "Local Climate Change Adaptation Action Plan." p. i

Planning and Development, representatives from EMRC, and representatives from Coastal Zone Management.⁴⁸

In this case, interviews with the participants would be needed in order to better explain how such a large variety of stakeholders produced CCAPs which were so heavily dependent on a financially-minded discourse. However, what we can discern from the adaptation plan development process is that community consultation is not always conducted before developing CCAPs. In fact, upon examining the lists of workshop participants for each of the CCAPs, only one of them explicitly noted that they had conducted consultation with the community. *Tasmanian Coastal Adaptation Pathways Project – Recommended Actions for Lauderdale* notes that the community preference was to “give nature precedence in relatively undeveloped areas while protecting property in more developed areas even if modifying the natural setting.”⁴⁹ Such a preference reinforces the theory that community groups are embracing the importance of the environment as a meta-capability, but at the same time – are concerned with their own basic capabilities, to protect their homes.

The lack of community consultation in other plans does suggest a lack of the principles of ‘participation’ and ‘recognition’ as developed in the environment and climate justice literatures. This raises questions of inclusion in the development of CCAPs and the appropriate recognition of the concerns of those who will be affected by the decision-making process. If just adaptation planning includes recognition and participation, along with a consideration of community vulnerabilities, the CCAP process, as illustrated in this study, is not meeting the basic definition. Of course, this is not to indicate that local councils are solely to blame for the lack of community participation in the development stages. Having access to the resources to conduct such a process is important for success, and a wider understanding of the importance of inclusive processes is needed to allow for such conversations to become widespread in adaptation planning across the country.

CONCLUSION

There are a number of vulnerabilities it will be necessary to prepare for, given the predictions for climate change across Australia. This paper has shown that conceptions of vulnerability differ across newsprint media, community group discussion and CCAPs themselves. There

⁴⁸ Services and Bayswater, "Local Climate Change Adaptation Action Plan." p. 3; Service and Bassendean, "Local Climate Change Adaptation Action Plan." p. i

⁴⁹ Planning, "Tasmanian Coastal Adaptation Pathways Project – Recommended Actions for Lauderdale." p.iii

seems to be little correlation between vulnerability discourse in CCAPs as developed by local councils and that of the community groups active in those same council jurisdictions.

While there may not be correlation between CCAPs and community groups, there is some correlation between the patterns of CCAP development across the country in this study. That is, that their definition of vulnerability is wide enough to encompass vulnerability to climate change (eg rainfall), vulnerability to the effects of climate change (eg flooding) and to pinpoint sites of vulnerability (eg coast).

On the other hand, community groups in this study were shown to be consistent in concern for energy provision and diverse in other areas of their discourse, whether it be 'food', 'marine' or 'conservation'. This indicates a common engagement with mitigation of climate change as well as diverse approaches to adaptation, one that is aligned with the 'capabilities' approach.

Thus Fussel and Klein's question: "is it [vulnerability] inherent in system or a product of external stressors and internal responses" may not be the important question in this case. Rather, *what process* of identifying external stressors and *which types* of internal responses lead to such varying conceptions of vulnerability to climate change - is the more interesting question. In this study – discourse analysis of the three case study areas illustrates that there are a number of internal responses to the vulnerabilities posed by climate change, be it from the media, the community or from councils. The external stressors from climate change were the same for each case study and yet the internal responses differed with great variety. Councils tended to focus on vulnerability from climate change itself (rainfall, temperature) and affected sites (bush, coast) where communities were focused on the implications of those vulnerabilities and tended to express vulnerability in terms of threats to basic capabilities (food, energy). The disconnect between these concerns can be explained by the process of identifying the 'external stressors.' Councils are encouraged to undertake risk management practice to identify vulnerabilities while community groups are free to develop more organic conceptions of vulnerability. The former process creates a focus on climate change itself, its effects and sites of vulnerability while the latter allows for a diverse collection of concerns to come to the fore which include (often unique) vulnerabilities based on threats to basic capabilities. Furthermore, the disconnect may also be explained by the lack of community participation in the case study CCAPs, a fact which denies the community participation and therefore recognition of their concerns.

Further research is required to better understand how these differing conceptions of vulnerability came to be and whether such conceptions are consistent over time or dynamic.

What this study has shown is that councils can (and do) undertake adaptation planning under a risk management framework, a framework that does not always capture the same conceptions of vulnerability expressed by community groups. But a 'just' conception of adaptation policy would require both more attention to the vulnerabilities defined by the community, and more participation by those groups in the development of adaptation policy.

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