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Adaptation policy and community discourse: risk, vulnerability, and just transformation

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ABSTRACT

How can public engagement assist in the development of just processes and outcomes in adaptation discourse and policymaking? A concern with justice is at the center of thinking about adaptation that is not only resilient, but also public, engaging, and transformative. Theoretically, the intersection of adaptation, transformation, and environmental and climate justice is examined, before exploring the specific concerns and normative foundations for adaptation policy articulated by local governments, environmental groups, and local residents engaged in adaptation planning in Australia. Despite a discursive disconnect between governmental focus on a risk or resilience-based approach and a community concern with the vulnerability of basic needs and capabilities of everyday life, deliberative engagement in adaptation planning can both address issues of justice and represent a transformative practice.

KEYWORDS Adaptation; resilience; environmental justice; public engagement

Introduction: theorizing a capabilities approach to climate adaptation and transformation

The research on adaptation policy is vast and growing, but the relationship between the design of adaptation processes and how it can encompass social and climate justice is still underexplored. One obvious and common way of thinking about and articulating adaptation in the public realm is risk assessment and disaster management, which assesses what the likely new dangers are, in particular in terms of infrastructure damage, emergency management, and liability, and then addresses how governments can prepare for them (IPCC 2012). This approach focuses primarily on issues such as emergency response, and its implementation in often differential vulnerability to such risks, or risks to human capabilities. It is very possible to think about adaptation without a

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conception of justice, but once it becomes a primary focus, approaches to adaptation radically change in both process and outcome.

Clearly, justice in adaptation has been a central concern, driven initially by the work of Paavola and Adger (2006a, 2006b)) in bringing attention to the key nature of social vulnerability, broad participation, and fairness in adaptation planning. Different approaches to, and designs for, adaptation impact the ability to address issues of justice. One key way of framing the relationship between approaches to adaptation planning and the role of justice is through Pelling's typology of adaptation planning. Different adaptation pathways, he argues, lead to 'resilience (maintaining the status quo), transition (incremental change) and transformation (radical change)' (2011, p. 3). Resilience is seen as 'the most contained level' (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. For Pelling, transformation is particularly

> concerned with the wider and less easily visible root causes 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. (p. 86)

Likewise, as O'Brien and Selboe (2015, p. 311) argue, 'adaptation to climate change is unlikely to have long-term effects if it is treated as only a technical problem'. Adaptation must address and challenge the 'drivers of risk and vulnerability', including various social, political, and economic systems and structures. Only an approach to adaptation that moves beyond a sole focus on the biophysical risks of climate change, to one that considers the larger and more complex processes that interact and produce vulnerability, can address social, environmental, and climate injustice(see also O'Brien 2012). We examine here how such an approach can be both understood and implemented.

While much of the literature on fairness, justice, and adaptation focuses on either distributive or procedural notions of justice, we take a capabilities approach to encompass and address the complexity of inputs and impacts that are part of the everyday experience of climate change, and so are necessary to design a just adaptation process and policy. Broadly, a capabilities approach to justice looks not simply at distributional or procedural inequity, but at the provision of a range of basic needs and processes necessary for citizens to construct a functioning life. According to Nussbaum (2011), justice requires the basic fulfillment of a fundamental list of capabilities, and injustice is the condition of not having these basic capabilities to make a life of one's choosing. For Nussbaum, these capabilities are a way to justify and codify a set of basic constitutional human rights; for Amartya Sen and others, the idea is at the center of the design of global development policy, including the Human Development Index

(UNDP 1990), Millennium Development Goals (Removing Unfreedoms 2004), and, most recently, the UN Sustainable Development Goals.

Climate justice has most often been articulated in terms of the unequal construction and impacts of climate change (see, for example, Agarwal and Narain 1991, Kartha 2011), or as a normative framework for global climate policy (see, for example Caney 2009, 2014). Proposals to use the capabilities approach in order to understand the implications of climate change for social justice have been a part of this discourse (beginning with Page 2007). Holland (2008), for example, has argued that all human capabilities are dependent on environmental conditions, and that 'sustainable ecological capacity' should be understood as a 'meta-capability'. The degradation of such ecological functioning, as with climate change, creates both vulnerability and social injustice (Holland 2008, p. 320). For climate change in particular, undermining environmental functioning threatens the systems that support a whole range of human capabilities, from housing to health to participation in political decision making itself (Holland 2012, 2014).

Turning to just adaptation, Schlosberg (2012a, 2012b)) has argued that a capabilities approach can be used to frame a form of adaptation policy with justice at its core. Central to this argument is the use of a capabilities frame to understand the basic needs, rights, and political processes to be engaged and protected as we adapt to the most important environmental challenge we face. Such an approach incorporates justice concerns for fair distributions, political and social recognition, and procedural inclusion as part of a set of necessary capabilities. In addition, this broad and inclusive approach to the conception of justice mirrors the demands and principles of climate justice developed by environmental and climate justice movements (Schlosberg and Collins 2014).

We can link discussions of capabilities in adaptation with recent work on transformation to identify some key commonalities of a just adaptation. The reality of what is to be lost, and what that means to various parts of the public, is key. For Barnett and Palutikof (2015, p. 238), when 'adaptation reaches its limits, things that are valued will be lost'.[1] Such losses include not just things we value, but the basic material needs necessary for justice. When those may be harmed or limited 'because of trade-offs in which the interests of some groups prevail over the interests of others, then adaptation becomes a matter of social justice' (2015, p. 238). Choices are necessary, but they are choices about what is valuable – and inevitably, they are choices where power may devalue the experiences and needs of the more vulnerable. Barnet and Paloutikoff (2015, p. 238) continue:

> Theories of justice advise us that these choices about what to protect and what to let go should be made explicit, and is the subject of deliberation by

> stakeholders. In this way adaptation can arise through active … choices rather than de facto institutional processes.

This procedural or participatory aspect of justice is incorporated in a capabilities approach as a basic right to have 'control' over one's political environment (Nussbaum 2011, p. 34), and is part of a broader capabilities-based framework of environmental justice that includes social and political recognition – including different cultural understandings, values, and priorities concerning loss.[2]

For an adaptation process to be just and transformative, anything that may be lost due to climate change, as well as the trade-offs between different values and needs, should be clear and explicit, through active public engagement on the different values, discourses, and potential loses involved. Failure to identify, make clear, and engage the broad public about these potential trade-offs will lead to the marginalization of those without power and influence, and lead to climate impacts that are 'morally unacceptable' and, so, unjust (Barnett and Palutikof 2015, p. 239). In contrast, 'expanding adaptation to include transformation foregrounds questions of power and preference' (Pelling *et al.* 2015, p. 113). Transformation is about the potential creation of new systems and processes, including participatory decision-making that engages a range of vulnerabilities, potential losses, and threats to basic capabilities (Park *et al.* 2012, p. 119); we can assess transformative adaptation through a 'benchmark' of impacts on social justice (Tschakert *et al.* 2013).

Just and transformational adaptation, then, demands a policy process conducted in such a way that allows for the recognition and representation of the values, interests, and reflections of community members and stakeholders who are impacted by climate change. The development of a 'reflexive engagement' in adaptation planning (O'Brien and Selboe 2015) is key to a process that moves beyond resilient infrastructure, and incorporates social vulnerability, human security, and just transformation. Such institutionalized reflexive engagement can address the vulnerability of basic capabilities and political rights while bringing in a variety of understandings and values regarding the impacts of climate change in local communities.

Here, we examine both the existence of public concern with vulnerability and transformation and a type of reflexive process that was designed and implemented in our Sydney case study.

Methods

We undertook two methodological approaches to examine the question of the different conceptions, understandings, or framings of climate adaptation – a broad content analysis and a more focused citizen engagement process. First, a simple content analysis compared the texts of local council

climate adaptation plans (CCAPS) with climate and adaptation concerns raised in the websites and social media posts of a range of local environmental groups. We selected regional CCAPs and community groups from Tasmania and Western Australia, and single-council CCAPs and community groups from Sydney and Melbourne, in order to provide comparison across Australia. These areas represent different geographic profiles, populations, and primary industries that make for a broad set of cases.

We used text analytics software (DiscoverText) to mine textual data and tally the mention of key words. Data included CCAPs and the websites, documents, Facebook and Twitter feeds of community groups active in the areas of environment and climate change. The top eight words from the CCAPs and the online community discourse were graphed after eliminating obvious word repetitions (such as 'Australia,' 'climate,' and 'change') and insubstantial words (such as 'and,' and 'the'). Simply put, the methodology mines the text of different sources in order to identify the key concerns in each; as a result, we identified the most popular terms or concepts generated by each source (council CCAPs, and community groups). The table in the Appendix outlines which CCAPs and community groups were collated to contribute to the data mining.

Second, we developed and analysed a citizen engagement panel as part of the City of Sydney's adaptation planning process. The panel consisted of 23 participants randomly recruited by an independent accounting firm. While the recruits included a good range across the demographics of age, income level, education level and home owners versus renters, two younger females (with children) dropped out at the last minute, leaving that demographic under-represented. In addition to the participatory process and citizen recommendations (discussed below), participants were asked to complete a survey before and after the deliberative process. The survey involved participants sorting 38 statements about climate change adaptation from those they least agreed with to those most agreed with, following an approach described by *Q*-methodology, which has been used in conjunction with a number of similar events (Hobson and Niemeyer 2011). Statements were collected from existing adaptation plans, government publications on adaptation, and environmental and community group websites and publications. The survey was administered using an online platform (Poet Q). In brief, producing the discourses (or perspectives) involved the use of inverted factor analysis to extract the main perspectives. Those perspectives, often overlapping, were mapped and illustrated using outputs from AdvanceQ (v.2.0.8; Niemeyer *et al.* 2013)

Adaptation in Australia

The context of our study is the inevitable turn from climate policy focused on mitigation to that focused on adaptation – and, specifically, that turn in

Australia. At the national level, Australia continues to be a laggard on mitigation efforts, as both major parties remain indebted and tied to the coal industry. But the Australian government has actually been a leader in the development of adaptation policy, as local governments have been developing CCAPs since 2006 (Collins 2015). Beginning in 2008, the federal government funded a National Climate Change Adaptation Research Facility (NCCARF), which has developed numerous reports and guidelines and hosted annual adaptation conferences. Most recently, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) announced a (controversial) shift in focus from basic climate science to adaptation. This focus may be a result of unwillingness to engage with policies necessary to play a responsible and significant part in international mitigation efforts, but Australia has long had a focus, at various levels, on adaptation planning.

The literature on adaptation in Australia is quite extensive, and much focuses on the range of potential options and approaches (Measham *et al.* 2011, Ren *et al.* 2011, Wise *et al.* 2013): adaptation processes, the design of adaptation pathways, and the value of local input (Barnett *et al.* 2011, Graham *et al.* 2014, Barnett *et al.* 2014; Nalau *et al.* 2015). Clearly, the research and case studies are more innovative than conventional CCAP planning.

The Australian CCAPs we examine typically set a long-term agenda for an array of policies, including infrastructure development and maintenance, overall planning policy, public health, waste management, energy provision, disaster management. Yet, crucially, they tend to be based on a narrow, risk-based notion of adaptation. Generally, while the focus is on the development of resilient forms of adaptation, there is a danger of policies that create maladaptative 'path dependency', where present actions make it more difficult to flexibly adapt to unforeseeable changes (Barnett and O'Neill 2010, p. 212). A very limited definition of adaptation, based on a minimal risk management approach, may be highly problematic, making more broadly flexible, adaptive, and transformative policies more difficult to identify.

This is not the place to offer a full analysis of Australian adaptation planning. Rather, our immediate point is to illustrate the very different framings of adaptation by local governments that have conducted CCAPs, on the one hand, and public interest groups and (a representative sample of) citizens on the other. In particular, our initial interest is in how those groups and citizens consistently move beyond risk, and use conceptions of the vulnerability of basic capabilities, and of transformation, to frame their concerns and responses.

Climate and adaptation: comparing discursive frames

First, we examine the discourse and framing illustrated by local government adaptation plans and that articulated by community environmental groups – and find a clear disconnect. Local governments primarily adopt a

straightforward risk management approach to adaptation policy, while community groups articulate their concerns around local vulnerabilities expressed as basic capabilities.[3]

In Tasmania (Figures 1 and 2), basic word counts from the council CCAPS show a concern with, in order: liability, community, seas, storm, infrastructure, rainfall, bushfire, and coasts. The community groups, on the other hand, prioritize – again, in order: food and gardens, energy, transport, transition, solar, walking, and cities. We can see little correlation in Tasmania between CCAPs and community concerns. While the regional councils plan focuses on legal implications and extreme weather events (risks), the community turns its attention largely to sector concerns that affect everyday living (food, garden, transport, energy) and illustrate a capabilities-based understanding of

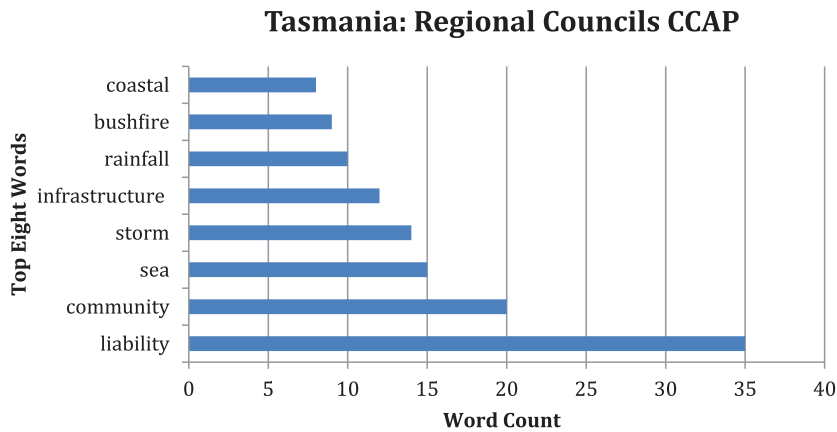

Figure 1. Top eight word counts for regional councils CCAP in Tasmania.

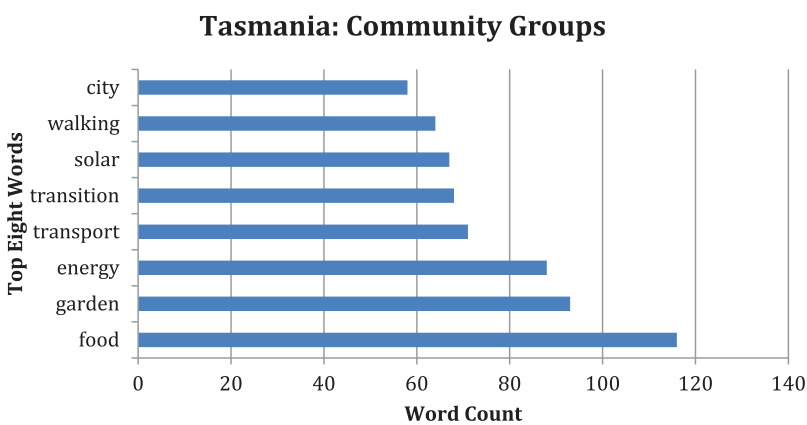

Figure 2. Top eight word counts for community group discourse in Tasmania.

vulnerability (in particular, Nussbaum's capabilities of 'life' and 'bodily health'). In addition, rather than a sole focus on risks such as fires or storms, community groups illustrate an interest in structural transformation – in particular of the energy and transport sectors.

In Western Australia (Figures 3 and 4), where drought is an ongoing concern, the regional council CCAP's top concerns include water, drainage, storm, business, fire, bush, emergency, and infrastructure. Again, the CCAP illustrates a risk, liability, and emergency response focus. Community groups, on the other hand, list water, food, fracking and gas, conservation, energy, marine, and plastic concerns. Obviously, this illustration of concern with water and food shows a concern for the vulnerability of basic human needs; the concern around gas and fracking is also based on the concern such practices will impact these same basic needs (especially as it concerns water contamination).[4] Once again, the distinction is clear between a risk assessment approach by councils and the more organic concern with vulnerability in everyday life illustrated by community groups.

This framing dichotomy is replicated in Australia's big cities (Figures 5–8). In the CCAPs for both Sydney[5] and Melbourne, risk management is one of the top terms for both cities. We also note the presence of infrastructure, policy, management, and control as key terms in the local adaptation plans, illustrating this risk management framing of adaptation planning. Community groups focus on concerns related to their basic needs in everyday life: food, water, energy, and waste. Again, we see a clear framing dichotomy, with a risk frame emphasized in the council documents, and the vulnerability of capabilities/basic needs emphasized by community groups: interest in the energy, carbon, food, and waste sectors can be read as concern for transformation of key industries and practices that structure and deliver everyday needs.

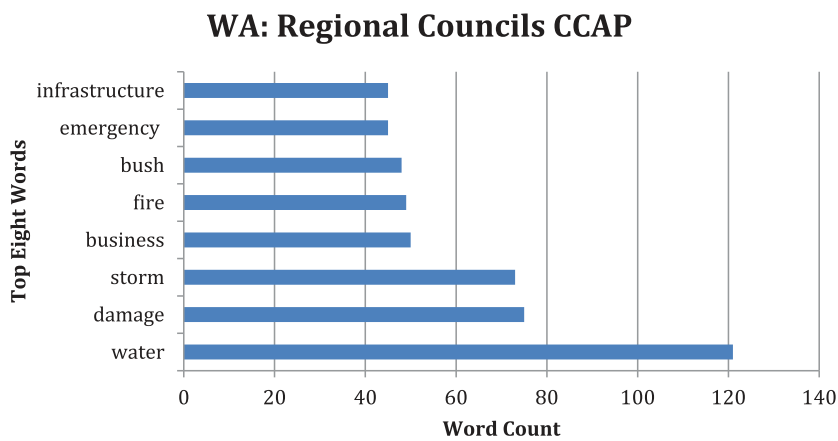

Figure 3. Top eight word counts for regional councils CCAP in Western Australia.

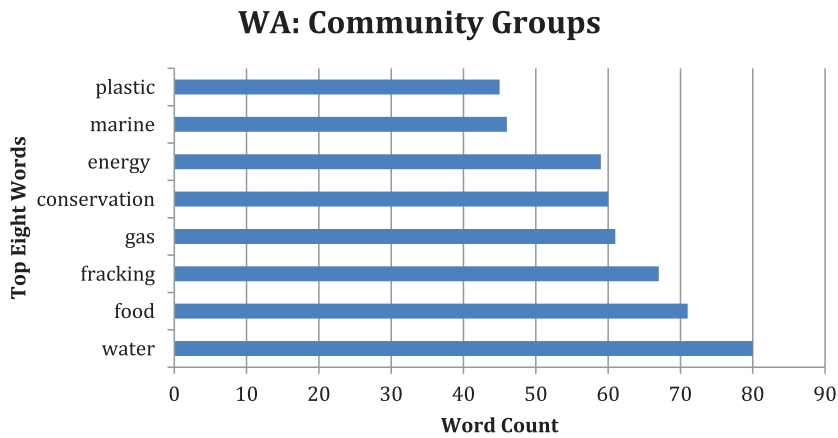

Figure 4. Top eight words counts for community group discourse in Western Australia.

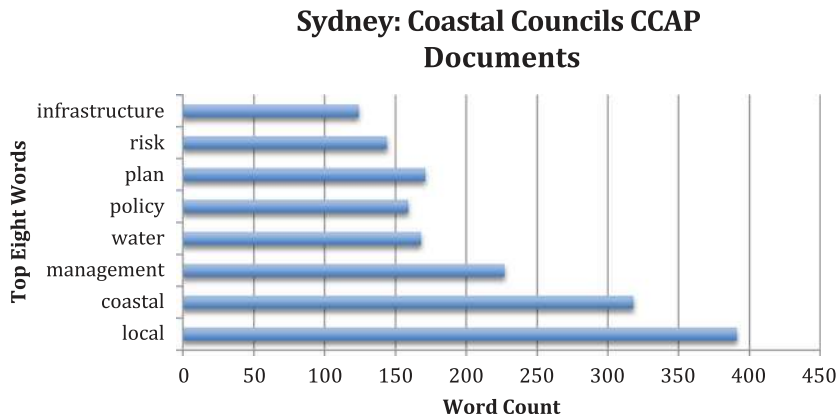

Figure 5. Top eight word counts for coastal councils CCAP documents in Sydney.

The CCAPs we examined clearly focus on the issue of risk, risk management, and financial liability. The language of these adaptation plans illustrates a wide set of important concerns, including the risk of climatic changes (e.g. rainfall or heat), effects of climate change (e.g. flooding or infrastructure damage), and impacts on specific sites (e.g. coasts or forests). The predominant apprehension is vulnerability to extreme weather events, though with a focus on the risks and the legal and financial obligations of the councils. Clearly, these plans fall within Pelling's category of resilience, informed by a risk and disaster management approach, where the basic idea is 'to protect priority functions in the face of external threat' (Pelling 2011, p. 67).

In contrast, the language of community groups illustrates a diversity of concerns regarding the threats of climate change. While differing in specifics,

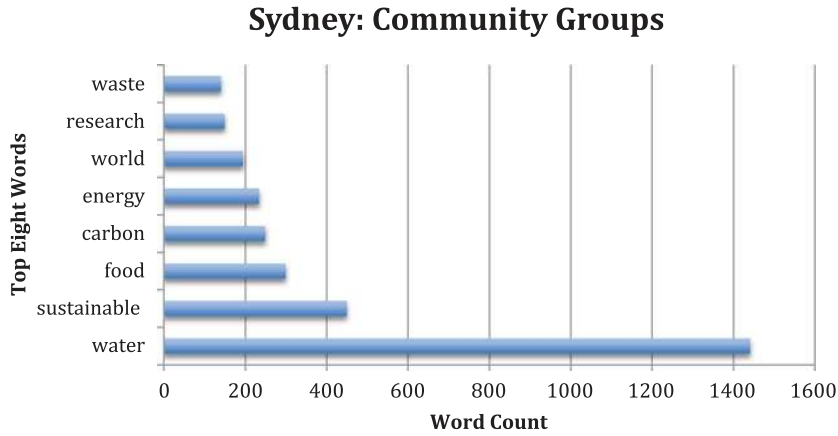

Figure 6. Top eight words counts for community group discourse in Sydney.

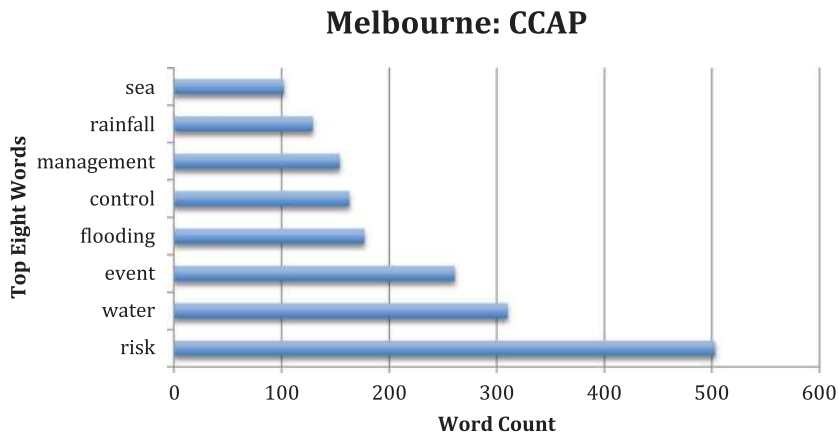

Figure 7. Top eight word counts for Melbourne CCAP.

the community group discourses were consistent in their concern for the basic needs of everyday life, such as food, water, and energy. Interestingly, this was the case for community groups across the country, indicating that differences in geography, population and/or primary industry is no barrier to this cohesive concern for a basic needs approach. Pelling (2011) notes that conceptions of transformation include notions of justice and human security; our argument is that the issues at the center of community group discourse illustrate these concerns, based in a capability approach.

Local community groups identify a variety of issues and ways of looking at climate change impacts, and do not operate in a risk management or simple resilience framework. This is not to propose that community groups are unconcerned about the kinds of risks at the center of CCAPs. Rather,

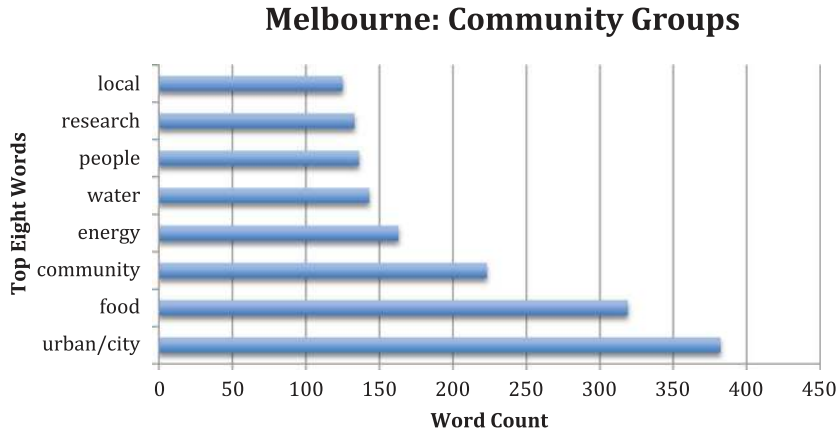

Figure 8. Top eight word counts for community group discourse in Melbourne.

the point here is that community groups focus more on impacts on the basic needs and capabilities of everyday life – which tend to be absent from government CCAPs. Crucial throughout this straightforward analysis of texts is the simple finding that community groups raise issues of capabilities in everyday life much more than we find in the adaptation planning documents of local governments. The point is not that the adaptation plans of the local councils we examined are improper in any way – simply that they are differentiated and disconnected from the concerns, and framing, of local environmental stakeholders.

Why might this be the case? We propose three explanations. The most obvious is that there has been an emphasis, and incentive, for councils to frame their adaptation plans with a focus on risk. Second, there may be a difference in the time scales considered by governments and citizens. Finally, and significantly, there has been little engagement or representation of community groups, or their concerns regarding basic needs and cultural values, in the process of the development of CCAPs.

On the first, the risk assessment approach that councils have primarily undertaken in the development of CCAPs can be traced back to guidelines offered by the Australian federal government beginning in early 2006 (Australian Greenhouse Office 2006) as well as the influence of state governments. Local governments are, in part, creatures of state governments, and their ability to act independently of those governments and their mandated planning functions is quite constrained (see Macintosh 2013).[6] In addition, CCAPS have been developed primarily with the assistance of various state government stakeholders (primarily internal departments). At both levels, a basic risk management procedure has long been suggested to identify, prioritize, and prepare for climate change impacts.

There are risks and costs to both acting and not acting to prepare for the impacts of climate change – the costs of implementing a preferred policy, and the financial liability and risk of not implementing policies and later having to pay for disaster relief (Baker and McKenzie 2011). Again, a risk assessment and management approach is a sensible approach for local governments, and yet it simply does not engage or include the range of concerns apparent in the broader community discourse on climate change. The approach lends itself to a lack of recognition of a plurality of community concerns, a troubling outcome given the centrality of the concept in climate justice literature (Adger and Barnett 2009, Bulkeley *et al.* 2014, Schlosberg and Collins 2014). The problem is not the existence of a risk management approach, but instead its exclusion of potential concerns and impacts that can only be identified through other methods.

A second possible reason for the disconnect we find is a possible mismatch of time-scales of concern to communities and policymakers.[7] An engaged and reflexive process requires long-term thinking, which for governments may be an unaffordable luxury (see, for example, Fincher *et al.* 2015). Similarly, Pelling (2011, p. 124) asserts that participatory methods could lead to communities prioritizing immediate risks while discounting the future. On this issue of timescale, Fincher *et al.* (2015) suggest a focus on diverse temporalities of adaptation, responding to both immediate need and the long-term future through 'a series of short and negotiated policy steps' (p. 263), on 'overlapping short terms' (p. 271). They suggest such steps be developed, as with adaptation pathways, through in-depth interviews, focus groups, and extended workshops.

Finally, the third key reason for the discursive disconnect between local governments and community concerns with regard to basic needs and capabilities may simply be a basic lack of engagement and inclusion of the community in the development of adaptation plans. Community consultation contributes to the legitimacy of policy (Dickert and Sugarman 2005) by providing an opportunity for community members to learn about and contribute to policy development. Crucially, the lack of community consultation in current adaptation planning does suggest a lack of the principles of participation and recognition as developed in the environment and climate justice literatures (Schlosberg 2007, Schlosberg and Collins 2014). In addition to being key to a capabilities approach (see also Holland 2017), these principles are at the core of a concept of 'interactional fairness' (Graham *et al.* 2014) suggested by others in the Australian adaptation literature, which includes being treated with dignity and respect, and being given sufficient information about the decisions being made. Our findings illustrate the exclusion of community interests in a palpable way. This raises questions of public 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 consideration of community vulnerabilities (in both the short and long term), the development of most Australian adaption plans has not led to a just adaptation framework, process, or policy.[8]

In our discussions with councils, we heard numerous simple reasons for this lack of engagement and inclusion. Often, councils fear any public discussion of climate change given the politics of the issue and the incessant pressure of deniers; the political passion of the ideologists creates a broader fear of engaging the public at all, stymying such discussion being a key goal of deniers and their funders. But councils have also expressed another key reason for not including residents in these discussions – a lack of funding for such planning. Over the 3 years of this research project, our efforts to observe public participation in adaptation planning were frustrated, primarily by the lack of any such processes, even in the context of the growing realization of the impacts of climate change.

Adaptation and community deliberation

Coincidentally, and conveniently, the City of Sydney began the development of a new climate change adaptation plan as we started this research, and this became the focus of our second methodological approach. After discussions with the adaptation and community engagement teams for the City of Sydney,[9] we designed and ran a 2.5-day Citizen's Panel on Climate Adaptation for the city in November 2014. Rather than wait (as originally planned) until the *end* of the process, where public comment would be invited on an already drafted policy, the idea was to insert citizens into the development of the risk assessment and policy priorities, so that their concerns could inform the overall plan *during* the process.

There were two sets of goals for the Citizen's Panel. First, the City was interested in getting resident feedback on the set of climate risks and potential policy responses identified by consultants, with input from internal and external stakeholders. The deliberative event, then, began with a focus on these identified risks and policy responses. Second, in addition to discussion and feedback on the risks and policies, we aimed to examine participants' own priorities for adaptation policy – and how the deliberative process itself impacted the understanding, framing, and policy preferences of residents. Toward this end, the participants individually completed an online Q-method-based survey both before and after the event.[10]

Over the 2.5 days of the event, participants heard information, deliberated on questions, engaged with experts, and came up with recommendations. The research group shifted the seating arrangements to move people around while maintaining demographic diversity at each table.

Presentations were made on the first day about a range of potential impacts of climate change: heat, rain, and flooding; fire and air quality; sea level rise; and combined risks. After each presentation, participants discussed the information in groups, which each developed 1–2 questions to pose in a plenary session. Participants developed a set of preliminary recommendations for Council about what vulnerabilities they thought were the most important, and which were missing from the list of risks Council had identified. The second day involved a presentation on Council's planned climate change adaptation actions. Once again, participants deliberated in small groups before forming a single large group to come to a deliberated consensus and refine the risks and adaptation action recommendations. The group, without prompting, also developed a consensus statement on broader *principles* on which to base the city's ongoing adaptation planning. The process concluded with two representatives from the group making a presentation of the Panel's recommendations to the City's Sustainability Director.

It was clear that the citizens took their charge seriously, and were dedicated to the healthy adaptation of their neighborhoods and the city as a whole. The Panel went beyond producing the desired commentary on the risks and policies presented to them; they also engaged much more broadly, and developed a set of principles for the City to use in the ongoing development of adaptation policy. The citizens wanted a long-term plan that could withstand political and economic shifts and that would be socially inclusive. They wanted a plan based on the best available data and evidence – and one flexible and responsive enough to account for unexpected trends and consequences. Finally, they wanted the plan to include a thorough communication, engagement, and education component, to keep residents of the City of Sydney informed and involved on adaptation strategies and actions.[11]

One of the key goals of the process was to gauge citizen reaction to the set of climate risks already compiled by the City. The Panel both supplemented the list and offered some priorities. Citizens identified a number of risks not noted by the city's contractors or stakeholders, expanding the issues in the risk management frame. Additionally identified risks included those to pets and pet owners during heatwaves, the impacts of strong wind events, wildlife in the city (and the potential for wildlife migration into the City), as well as the harmful and possibly deadly impacts climate change will have on flora and fauna. This provided an interesting citizen-sourcing of risk, citizen-science, or co-production of knowledge (see, for example, Jasonoff 2010), which was quite valuable and appreciated by the consultants compiling the risk assessment.

The citizens' panel also discussed how the various risks and policy responses should be prioritized in the City's adaptation policy.

Participants focused on everyday needs, from recycled water to sustainable energy to locally grown food. Here again, even when discussing risks, the frame was a concern for the vulnerability of basic needs of everyday life, rather than simply infrastructure. Citizens were particularly concerned about the impact of risks on the most vulnerable populations – not only floods and heat waves, but also food security, mental health and stress. The citizens immediately expanded the frame from risk alone to risk plus vulnerability, and noted concerns about how risk impacts different populations in very different ways. One of the central demands of the panel was for the City to conduct a broad and thorough vulnerability analysis of these various impacts, in order to gain a better sense of who, exactly, are more likely to be threatened by the risks and impacts of climate change in Sydney.[12] Beyond that, the panel extended their concern for the most vulnerable to those in other, less affluent cities, and asked the City of Sydney to use its resources to assist adaptation planning in the broader Asia Pacific region. This illustrates a broader cosmopolitan and other-regarding ethos – a concern for capabilities beyond the personal.

One way to characterize the difference between the council-identified risks and community-identified concerns is to recognize the latter within a capabilities approach. The community panel was quite quick to identify risks that align with a number of Nussbaum's list of ten central capabilities. Concerns for food security and mental health impacts can be linked to Nussbaum's second capability of 'bodily health.' Participants showed a clear desire for both 'sense, imagination, and thought' and 'control over one's environment' when they continued to advocate for further community consultation for adaptation, stressing the need for more education on the topic and the opportunity to continue to contribute to planning. While advocating for vulnerable groups in the community and also identifying the City of Sydney as positioned to assist other less affluent cities, participants were inexplicitly championing a right for 'affiliation.' While highlighting the need to better prepare pets and pet owners for extreme weather as well as demonstrating concerns for wildlife, participants indicated that they were additionally concerned for 'other species'. Overall, the community members were focused on the everyday impacts of climate change that could potentially affect their abilities to function – as both individuals and as a community. This capabilities-based concern clearly contrasts with the consultant-developed list developed within a risk management approach.

Deliberation, discursive shift, and capabilities

The types of concerns explicitly raised in the deliberative process, and formalized in the citizen consensus statement, are also illustrated in the evolution of participants' online survey responses. While both pre- and

post-event surveys show agreement to work towards a new type of economy that does not pollute the environment (clearly a transformational approach), there were many more areas of agreement across discourses after the Citizens Panel, and an increased concern for the vulnerability of people and basic capabilities. Figure 9 shows a discourse map describing the pre-event perspectives, shown as overlapping spheres that contain shortened versions of the statements with which the participants most strongly agreed and disagreed. Some statements are represented uniquely in a specific set or discourse, while others are in the shared or overlapping space of more than one discourse.

Before the event, participants merged into what we saw as four distinct discourses or frames. Two particular discourses stand out as strongest.[13] The first is what we call the 'Progressive Pragmatism' discourse, focused on the environment and supporting a transformation of the economy. This discourse represents what the researchers understand to be a reasonably representative perspective of inner urban Sydney residents. It is concerned both with practical issues (such as non-polluting economy, infrastructure, migration, and holistic adaptation planning), as well as more progressive issues, such as a general concern for the environment and controls on

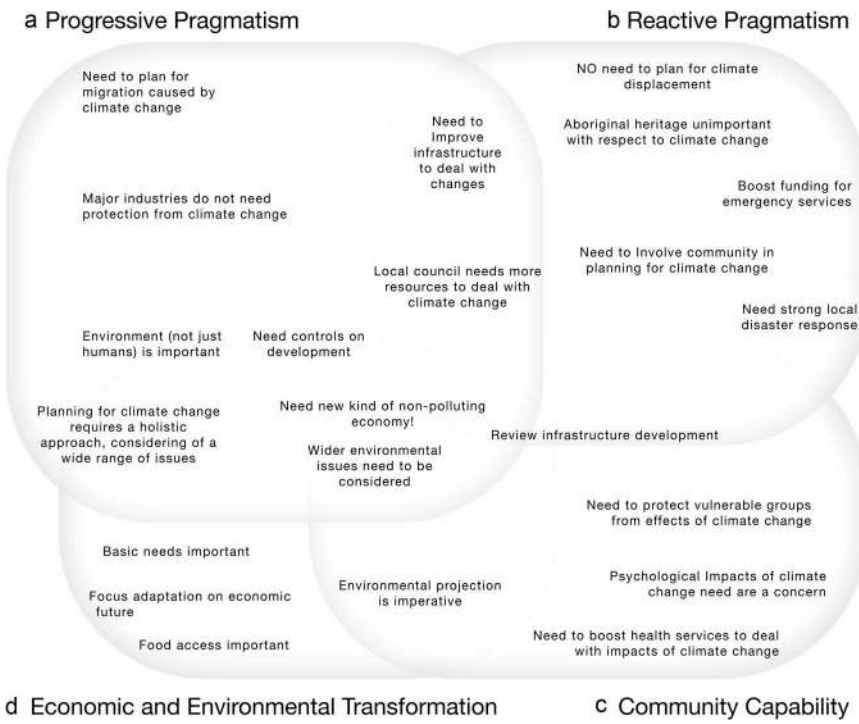

Figure 9. Pre-event discourse map.

development. The second discourse, which we label 'Reactive Pragmatism', is primarily concerned with infrastructure, emergency services, and disaster response. It is not concerned with more abstract or distant issues, or with community involvement. Most distinctly, this discourse has what can only be called a discriminatory aspect in its dismissal of concerns for climate migrants and Aboriginal cultural sites; statements on these topics were generally put in the 'least agree with' pile.

The third strongest discourse we labeled 'Community Capability'. This focused on the basic needs of individuals and vulnerable populations, including health and psychological impacts. Participants in this group also agreed with the statements that called for a new economy to respond to climate change, as well as a focus on the importance of broader environmental protection. Finally, while all the groupings illustrated support for a new type of economy that does not pollute the environment, there was a smaller grouping we call 'Economic and Environmental Transformation' that prioritized this focus as well as the capability of meeting basic needs such as food, and a holistic approach to climate adaptation.

As is clear from Figure 9 there was significant overlap between these discourses before the community event, so it is not surprising that the deliberative exercise brought a significant amount of consensus. In Figure 10, the post-deliberative discourse map, we see three distinct conceptualizations of transformation. There is fairly strong agreement around what we have described as A' 'Just Transformation', which is a combination of the original 'Progressive Pragmatism' and 'Community Capability' foci. C' 'Community and Environmental Transformation' is also a revised version of the earlier discourse C. A newly emerged, small, but distinct discourse we call E 'Practical Transformation'. While all participants show strong support for a new, non-polluting economy, infrastructure development, and support for vulnerable groups, the majority load into a consensus around A' 'Just Transformation'. With the strong consensus around A', we see a move from a narrow pragmatic perspective to a more widely held community-oriented concern for both action and attention to vulnerability and vulnerable populations, as well as broadly transformative policies. The survey illustrates movement toward a set of common concerns that include not only risk, but a concern for those most vulnerable, and a focus on broad transformative change in response to that risk. This includes the need for strong local disaster response and infrastructure development, a focus on basic needs such as health and food, and strong emphasis on vulnerability and unequal impacts. Citizens also agreed that the city should interfere with development as usual to deal with the impacts of climate change, and that adaptation is about broader issues of environmental concern. This example of community engagement sent a clear signal that adaptation is not just about humans in the city. Finally, while the sentiment is shared across the

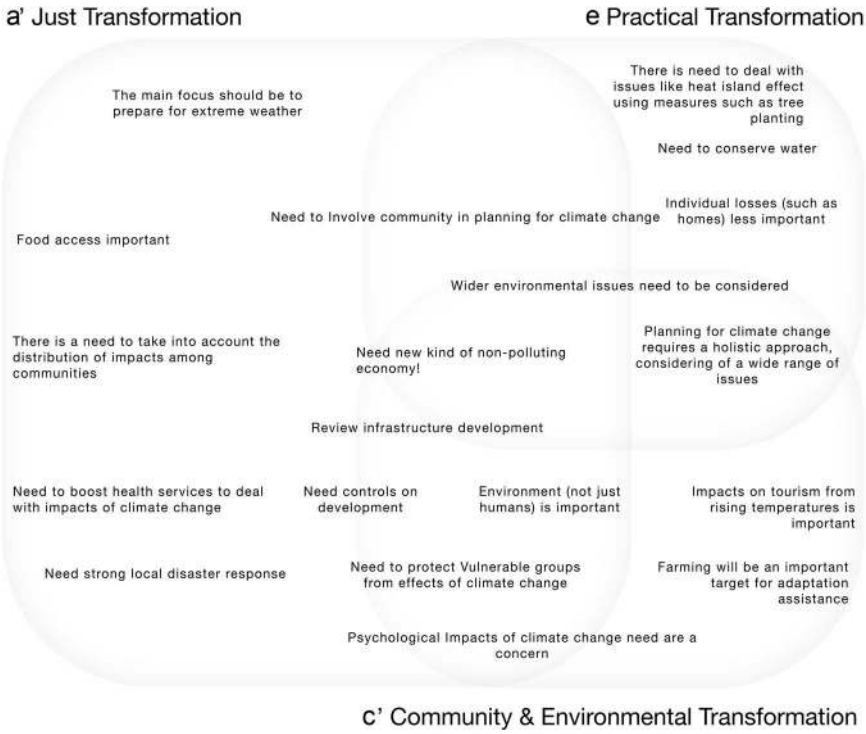

Figure 10. Post-event discourse map.

participants, the single strongest element of this discourse is support for community engagement.

Other shared discourses remained after the Citizen Panel, though with fewer people in each. Participants in the 'Community and Environmental Transformation' (C') group focused uniquely on the welfare and conditions of Australian farmers, as well as the health of the natural environment. The final, smallest, discursive grouping focused on 'Practical Transformation', which was strongly supportive of community engagement, yet with less focus on individual property loss and more on practical things such as tree planting and infrastructure.

The second survey illustrates the development of a broad consensus that encompasses risk, but also a clear interest in vulnerability (including a softening of discriminatory tendencies), basic capabilities (health, psychological impacts, food, displacement, and community participation), and a range of foci for transformation efforts. Pelling (2011, p. 269) argues that 'adaptation as transformation is composed of adaptive acts that consciously target reform in or replacement of the dominant political-cultural regime as primary or secondary goals ….' Likewise, for O'Brien and Selboe (2015, p. 313), transformation is about critical engagement with power and injustice,

inequality, 'and networks of control and influence that not only push for reform of systems and action but demand real transformation of both power holders and social systems'. In Australia, and in Sydney in particular, there is a sense of the constricting power of both the fossil fuel industry and real estate development; citizens clearly support limits on, and so transformation of, both systems that supply power to those industries. Overall, in the post-event discourse, the community clearly encompasses but moves beyond a sole focus on risk management, to embrace a broader transformative approach to adaptation that includes a just response to vulnerability and basic capabilities, which we would label a capabilities-based conception of just adaptation and transformation.

Discussion and conclusions

In both sets of data, we found very different framings of adaptation between the risk orientation of local governments on the one hand, and vulnerability and transformational interests of community groups and consulted citizens on the other. The early findings in the content analysis suggesting that communities embrace a capabilities-based approach to adaptation was confirmed in our examination of the participants in the City of Sydney deliberative process. Further, we see those concerns combined with conceptions of transformation – and not merely resilience or transition – in the survey of participants.

Broadly, we find citizens interested in the protection of key areas of capabilities, illustrating that there is a capabilities-based conception of just adaptation policy not only in theory, but also in practice. The Citizen's Panel highlighted health, housing, and two aspects of 'control over one's environment': public definition of (more sustainable) economic development, and insistence on further community involvement in policy discussions about climate adaptation. We see concern for the social basis of respect, with the softening of discriminatory views against climate migrants and Aboriginal heritage, and concern for other species (pets and the flora and fauna of the city). Beyond this, it seems clear that Holland's argument for environment as a 'meta-capability' is implicitly recognized by the community members, as they value both the crucial nature of non-polluting economic development, and broad attention to the non-human environment.

The community framing of adaptation, which has been shown to be inclusive of a capabilities approach, was also quite willing to embrace not merely resilience to climate change or transitional adaptation, but rather a more radical transformational approach. This more encompassing conception of adaptation was openly expressed in discussion during the Citizen's Panel and in the findings of the *Q*-survey, where the need for a new, non-polluting economy was a key point of consensus. The correlation between

the community's capabilities-based approach to climate vulnerability and their transformational stance on adaptation is an interesting new area for further research.

In addition, and in relation to the broad adaptation literature, the Citizen's Panel represents some important findings. First, while council guidelines for developing adaptation policy and a key focus of some of the literature is focused on risk management, we see the Citizen's Panel rarely engages with this type of language. Where they do support such an approach in terms of favorably ranking statements addressing preparation for extreme weather events and disaster response, they couple it with support for statements representing a 'transformational' concern for community education, social justice, and the development of a new non-polluting economy. This transformational language moves away from incrementalism and notions of resilience, representing what some in the literature see as promoting 'the confrontation and questioning of the established systems and their outcomes, [and] tackling the economical, socio-political and cultural roots of vulnerability' (Pérez Català 2014). As Pelling *et al.* (2015, p. 124) argue, 'provoking system change through engagement with political leaders and technocrats has different implications than working toward transformation of individuals, vulnerable peoples, marginalized households, or subaltern communities'. The citizens in our process were keen to embrace addressing vulnerability and transformational alternatives over simply accommodating minor change. That such claims were made using a vulnerability and capabilities frame, we argue, also illustrates the plausibility and strength of a justice-based approach to transformational adaptation planning.

As noted earlier, it may indeed be that the disconnect we found between government and citizen framing is due, in part, to a lack of community participation and reflexive engagement in the development of adaptation plans. If the City of Sydney process is any example, we find citizens capable of embracing – and adding original and key concerns to – a risk frame. But they are simultaneously concerned with expanding an adaptation strategy beyond risk, to encompass concerns for social justice and social transformation. So, we find not only a shift from an incremental risk-based approach to a more vulnerability and justice-based one, but also evidence for more support in the public sphere for more transformational responses. Citizen engagement, then, as suggested in much of the adaptation literature as necessary for procedural justice (for example, Barnett and Palutikof 2015, O'Brien and Selboe 2015), helps address a range of vulnerabilities, different conceptions of potential loss, a broad set of capabilities, and the potential for broad social and economic transformation. It is, in other words and as demonstrated, a necessary component of a process and goal of just adaptation.

Notes

1. On the centrality of loss, see also Barnett *et al.* (2016).
2. Holland (2017) further develops this relationship between capabilities, participation, and transformational adaptation.
3. Interestingly, at least in the CCAPs we examined, the focus is on risk assessment and risk management, rather than the often-used cost-benefit analysis approach. At least in the initial development of adaptation plans, the central question is about the risks to be addressed, rather than cost.
4. As in many other areas, fracking is both a local issue and one linked to broader campaigns about environmental damage of fossil fuels and the need to transition to renewables. For a good overview of fracking as a link between local and broader movements, see Neville and Weinthal (2016).
5. The CCAP examined for Sydney was done the broader metropolitan coastal region, rather than the smaller City of Sydney local government area we examine later.
6. Thanks to Reviewer 1 for this point.
7. Thanks to Reviewer 2 for this insight.
8. However, there is some indication of change to come, with both researchers and consultants beginning to adopt an approach to adaptation that includes vulnerability assessments and the inclusion of communities to help determine values, vulnerabilities, and priorities about where they live.
9. The City of Sydney Local Government Authority, or Council, covers a small part of the larger Sydney metropolitan area (around 200,000 of the area's 4.6 million residents), though it is the business centre of the state of NSW.
10. For a detailed description of this methodology, see Niemeyer *et al.* (2013).
11. These guiding principles were actually included in the preface to the published adaptation plan, available at http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0013/250123/2016-022571-Adapting-to-Climate-Change_accessible.pdf.
12. Again, the City responded to the citizens by adding climate vulnerability to a larger social vulnerability analysis that was later undertaken by the local government.
13. Using the language of *Q*-methodology, discourse (technically referred to as a factor) strength can be expressed either in terms of the average factor loading, or number of individuals significantly loaded. A factor loading can be understood as a correlation, or level of agreement between an individual's own orientation to the issue (captured by the *Q*-sort) and the discourse.

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References

Adger, N.W. and Barnett, J., 2009. Four reasons for concern about adaptation to climate change. *Environment and Planning A*, 41 (12), 2800–2805. doi:10.1068/a42244

Agarwal, A. and Narain, S., 1991. *Global warming in an unequal world: a case of environmental colonialism*. New Delhi: Centre for Science and Environment.

Australian Greenhouse Office, 2006. *Climate change impacts and risk management: a guide for business and government*. Canberra, ACT: Australian Greenhouse Office. Available from http://www.climatechange.gov.au/community/~/. . ./risk-management.ashx

Baker and McKenzie, 2011. *Local council risk of liability in the face of climate change – resolving uncertainties*. Available from: http://alga.asn.au/site/misc/alga/downloads/environment/ALGA Consolidated Report-v7B-1392955-SYDDMS - Final.pdf

Barnett, J., *et al*. 2011. *Year one project report*. Available from: http://www.abp.unimelb.edu.au/files/miabp/docs/Year 1 Report.pdf

Barnett, J. and O'Neill, S., 2010. Maladaptation. *Global Environmental Change*, 20 (2), 211–213. doi:10.1016/j.gloenvcha.2009.11.004

Barnett, J. and Palutikof, J.P., 2015. The limits to adaptation: a comparative analysis. *In*: J.P. Palutikof, S.L. Boulter, J. Barnett, and D. Rissik, eds. *Applied studies in climate adaptation*. Chichester, UK: John Wiley, 231–240.

Barnett, J., *et al*., 2016. A science of loss. *Nature Climate Change*, 6, 976–978. doi:10.1038/nclimate3140

Barnettt, J., *et al*., 2014. A local coastal adaptation pathway. *Nature Climate Change*, 4, 1103–1108. doi:10.1038/nclimate2383

Bulkeley, H., Edwards, G.A.S., and Fuller, S., 2014. Contesting climate justice in the city: examining politics and practice in urban climate change experiments. *Global Environmental Change*, 25, 31–40. doi:10.1016/j.gloenvcha.2014.01.009

Caney, S., 2009. Justice and the distribution of greenhouse gas emissions. *Journal of Global Ethics*, 5 (2), 125–146. doi:10.1080/17449620903110300

Caney, S., 2014. Two kinds of climate justice: avoiding harm and sharing burdens. *Journal of Political Philosophy*, 22 (2), 125–149. doi:10.1111/jopp.2014.22.issue-2

City of Melbourne, 2009. *Melbourne climate change adaptation strategy*. Melbourne, Australia.

Collins, B.L., 2015. *Australian climate change adaptation plan database*. Sydney: Sydney Environment Institute.

Dickert, N. and Sugarman, J., 2005. Ethical goals of community consultation in research. *American Journal of Public Health*, 95 (7), 1123–1127. doi:10.2105/AJPH.2004.058933

Fincher, R., Barnett, J., and Graham, S., 2015. Temporalities in adaptation to sea-level rise. *Annals of the Association of American Geographers*, 105 (2), 263–273. doi:10.1080/00045608.2014.988101

GHD, 2009. *Climate change risk management and adaptation action plan for the southern metropolitan councils*. Local adaptation pathways program. Booragoon: Southern Metropolitan Regional Council.

Graham, S., *et al*., 2014. Towards fair local outcomes in adaptation to sea-level rise. *Climatic Change*, 1–14. doi:10.1007/s10584-014-1171-7

Hobson, K. and Niemeyer, S., 2011. Public responses to climate change: the role of deliberation in building capacity for adaptive action. *Global Environmental Change*, 21 (3), 957–971. doi:10.1016/j.gloenvcha.2011.05.001

Holland, B., 2008. Justice and the environment in Nussbaum's "Capabilities approach": why sustainable ecological capacity is a meta-capability. *Political Research Quarterly*, 61 (2), 319–332. doi:10.1177/1065912907306471

Holland, B., 2012. Environment as meta-capability: why a dignified human life requires a stable climate system. *In*: A. Thompson and J. Bendik-Keymer, eds. *Ethical adaptation to climate change: human virtues of the future*. Cambridge, MA: MIT Press, 145–164.

Holland, B., 2014. *Allocating the earth: A distributional framework for protecting capabilities in environmental law and policy*. Oxford: Oxford University Press.

Holland, B., 2017. Opportunities for procedural justice in local climate adaptation: political capabilities and transformational change. *Environmental Politics*, 26 (3).

Intergovernmental Panel on Climate Change, 2012. *Managing the risks of extreme events and disasters to advance climate change adaptation*. Cambridge: Cambridge University Press.

Jasonoff, S., 2010. A new climate for society. *Theory, Culture & Society*, 27 (2–3), 233–253. doi:10.1177/0263276409361497

Kartha, S., 2011. Discourses of the global south. *In*: J.S. Dryzek, R.B. Norgaard, and D. Schlosberg, eds. *Oxford handbook of climate change and society*. Oxford: OUP.

Macintosh, A., 2013. Coastal climate hazards and urban planning: how planning responses can lead to maladaptation. *Mitigation and Adaptation Strategies for Global Change*, 18 (7), 1035–1055. doi:10.1007/s11027-012-9406-2

Measham, T.G., *et al*., 2011. Adapting to climate change through local municipal planning: barriers and challenges. *Mitigation and Adaptation Strategies for Global Change*, 16 (8), 889–909. doi:10.1007/s11027-011-9301-2

Nalau, J., Preston, B.L., and Maloney, M.C., 2015. Is adaptation a local responsibility? *Environmental Science & Policy*, 48, 89–98. doi:10.1016/j.envsci.2014.12.011

Neville, K.J. and Weinthal, E., 2016. Scaling up site disputes: strategies to redefine 'local' in the fight against fracking. *Environmental Politics*, 25 (4), 569–592. doi:10.1080/09644016.2016.1154124

Niemeyer, S.J., Ayirtman, S., and HartzKarp, J., 2013. Q methodology and analysis of policy issues: the fremantle bridge case study. *Operant Subjectivity*, 36 (2), 114–134.

Nussbaum, M.C., 2011. *Creating capabilities: the human development approach*. Cambridge, MA: Harvard University Press.

O'Brien, K., 2012. Global environmental change II: from adaptation to deliberate transformation. *Progress in Human Geography*, 36 (5), 667–676. doi:10.1177/0309132511425767

O'Brien, K. and Selboe, E., 2015. Social transformation: the real adaptive challenge. *In*: K. O'Brien and E. Selboe, eds. *The adaptive challenge of climate change*. Cambridge: Cambridge University Press.

Paavola, J. and Adger, W.N., 2006a. Fair adaptation to climate change. *Ecological Economics*, 56 (4), 594–609. doi:10.1016/j.ecolecon.2005.03.015

Paavola, J. and Adger, W.N., 2006b. *Fairness in adaptation to climate change*. Cambridge, MA: MIT Press.
Page, E.A., 2007. Intergenerational justice of what: welfare, resources or capabilities? *Environmental Politics*, 16 (3), 453–469. doi:10.1080/09644010701251698
Park, S.E., *et al*., 2012. Informing adaptation responses to climate change through theories of transformation. *Global Environmental Change*, 22, 115–126. doi:10.1016/j.gloenvcha.2011.10.003
Pelling, M., 2011. *Adaptation to climate change: from resilience to transformation*. New York: Routledge.
Pelling, M., O'Brien, K., and Matyas, D., 2015. Adaptation and transformation. *Climatic Change*, 133, 113–127. doi:10.1007/s10584-014-1303-0
Pérez Català, A., 2014. Conceptualizing transformational adaptation. Availble from http://climate-exchange.org/2014/03/02/conceptualizing-transformational-adaptation/
Removing Unfreedoms, 2004. Millenium development goals. Available from: http://www.removingunfreedoms.org/development_goals.htm
Ren, Z., Chen, Z., and Wang, X., 2011. Climate change adaptation pathways for Australian residential buildings. *Building and Environment*, 46 (11), 2398–2412. doi:10.1016/j.buildenv.2011.05.022
Schlosberg, D., 2007. *Defining environmental justice: theories, movements, and nature*. Oxford: OUP.
Schlosberg, D., 2012a. Climate justice and capabilities: a framework for adaptation policy. *Ethics & International Affairs*, 26 (04), 445–461. doi:10.1017/S0892679412000615
Schlosberg, D., 2012b. Justice, ecological integrity, and climate change. *In*: A. Thompson and J. Bendik-Keymer, eds. *Ethical adaptation to climate change: human virtues of the future*. Cambridge, MA: MIT Press, 165–183.
Schlosberg, D. and Collins, L.B., 2014. From environmental to climate justice: climate change and the discourse of environmental justice. *Wiley Interdisciplinary Reviews: Climate Change*, 5 (3), 359–374. doi:10.1002/wcc.275
Smith, T.F., *et al*., 2008. *Case studies of adaptive capacity: systems approach to regional climate change adaptation strategies*. Sydney, NSW: Sydney Coastal Councils.
Sydney Coastal Councils Group & NSW Environmental Defenders Office, 2008. *Coastal councils and planning for climate change: an assessment of Australian and NSW legislation and government policy provisions relating to climate change relevant to regional and metropolitan coastal councils*. Sydney, NSW, Sydney Coastal Councils Group.
Sydney Coastal Councils Group, Office of Environment and Heritage, and Sydney Water, 2012. *Demonstrating climate change adaptation of interconnected water infrastructure. Synthesis report - part 1 overview ed*. Sydney, NSW: Coastal Adaptation Decision Pathways Project.
Tschakert, P., *et al*., 2013. Inequality and transformation analyses: a complementary lens for addressing vulnerability to climate change. *Climate and Development*, 5 (4), 340–350. doi:10.1080/17565529.2013.828583
UNDP, 1990. *Human development report*. New York, NY: : United Nations Development Program.
Wise, R.M., *et al*., 2013. Reconceptualising adaptation to climate change as part of pathways of change and response. *Global Environmental Change*. doi:10.1016/j.gloenvcha.2013.12.002

Appendix. Data sources for word count figures

	CCAPs	Community discourse
Tasmania	2012–2017 Southern Tasmania Regional Councils Climate Change Adaptation Strategy (Graham *et al.*)	Climate Tasmania, Environment Tasmania, Labor Environmental Action Network, Wilderness Society, Sustainable Living Tasmania, West Hobart Environment Network, South Hobart Sustainable Community, and Climate Action Hobart
Western Australia	Climate Change Risk Management and Adaptation Action Plan for the Southern Metropolitan Councils (GHD 2009)	Camp for Climate Action Australia (Bayswater), Australian Youth Climate Coalition University of WA, Freo Green Guide, The Conservation Council of Western Australia, and Climate Movement
Sydney, NSW	Coastal Councils and Planning for Climate Change (Sydney Coastal Councils Group & NSW Environmental Defenders Office 2008) Demonstrating Climate Change Adaptation of Interconnected Water Infrastructure (Sydney Coastal Councils Group *et al.*, 2012) Case Studies of Adaptive Capacity (Smith *et al.* 2008)	Sydney Sustainable Markets, Sustainability News Sydney, Sydney University Youth Climate Society, The Climate Institute, Sydney Water (Tap™), UTS Institute for Sustainable Futures, Green Villages, Australian Research Institute for Environment and Sustainability, and GreenUps
Melbourne, Victoria	Climate Change Adaptation Strategy (City of Melbourne 2009)	Melbourne Sustainable Living, Sustainable Melbourne, Victorian Centre for Climate Change Adaptation Research, Sustainable Living Festival, Australian Youth Climate Coalition – RMIT, and Melbourne Sustainability Jam