Chapter 10
Transforming Climate Change Policymaking: From Informing to Empowering the Local Community

Michael Howes

Abstract Adapting to the impacts of climate change is such an all-encompassing problem that it is beyond the capacity of the entire public sector, let alone a single local government or agency. If a policy is to be effective, it will therefore need to constructively empower the local community to participate in building its own resilience. This chapter is based on a synthesis of findings from three research projects that were conducted over the last fifteen years and included comparative case studies from Australia, the USA, and the UK. A three-step policy proposal is derived from this synthesis that uses climate change knowledge to inform, engage, and support democratic local community-based adaptation. It entails the strategic use of the Internet, public participation events, and targeted local community grants. If adopted, this three-step policy could help to develop effective, efficient, and appropriate adaptation responses that tackle some of the unique challenges inherent in applying climate change knowledge by empowering local communities.

Keywords Community-based adaptation · Resilience · Public participation Democracy

10.1 Introduction

What kind of policy could use knowledge to democratically empower communities so that they can adapt and build their resilience to climate change? This is the question addressed by this chapter. The claim that knowledge is power has been made so many times that it has become something of a cliché. But how does this

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claim stand up when the knowledge is crucial for policymaking but is difficult to understand, has become publicly contested, and contains uncertainties? This is the dilemma presented by climate change knowledge, and it manifests itself most obviously in the lack of progress in adaptation and resilience building at the local level of government (Howes and Dedekorkut-Howes 2016).

For more than a quarter of a century, the Intergovernmental Panel on Climate Change (IPCC) has collated the best available climate change knowledge and presented it in a series of reports that are designed to assist governments, businesses, and communities around the world to formulate responses. The essential message is that human greenhouse gas emissions are leading to changes in temperatures, heat waves, droughts, sea levels, rainfall, and extreme weather events, among other things (IPCC 2012, 2013). These changes will have significant environmental, economic, and social impacts (IPCC 2014a). In order to avoid the worst effects, there needs to be: (1) a reduction in greenhouse gas emissions to mitigate the worst impacts; and (2) effective adaptation to increase resilience to impacts that cannot be avoided (IPCC 2014a, b). These findings have been backed up by national agencies and scientific academies around the world (NOAA 2016; AAS 2015).

So far so good, but there are three problems. First, the scientific research on which this knowledge is based is quite difficult for nonexperts to understand, which has contributed to a proliferation of people who deny the science, several of whom now occupying positions of considerable power (Howes 2013). Second, the forecasts for future climate change increase in uncertainty over time [e.g., average temperatures have been forecast to rise between 1 and 4 °C by the end of the century, depending on the model and scenario used (IPCC 2013, 1037)]. Third, the resolution of current climate change knowledge is limited and cannot detail the exact impacts on a specific local community (IPCC 2014a).

The climate change knowledge presented by the IPCC is clearly crucial for adaptation policymaking at the local level. Local governments need to use their power to help prepare their communities for the impacts of climate change, but the problems outlined above make this difficult. In addition, there is often a lack of public resources and a hostile political environment (Howes and Dedekorkut-Howes 2016). This chapter addresses these problems via a synthesis of three different research projects spanning 15 years that involved relevant case studies in Australia, the USA, and the UK. A three-step policy is derived from this synthesis that will allow climate change knowledge to be utilized in a way that empowers communities to build their own resilience. The next section outlines the method by which this is achieved. Subsequent sections discuss the relevant results, analysis, and synthesis.

10.2 Methods

This chapter is a synthesis of the findings from three research projects led by the author with the support of his colleagues over the last fifteen years. All three were centered on the use of knowledge to improve policymaking and dealt with climate

change adaptation in various ways. Standard social science data collection methods were used throughout (such as surveys, interviews, focus groups, or charrettes) and all involved comparative case study analyses. The aim of these projects was to produce some original academic research as well as generate recommendations for practical policy improvements. Hence, there has been considerable collaboration with stakeholders within government organizations and community groups. All results were subjected to a peer review process by scholarly journals and international academic conferences. Some were also reviewed by practitioners.

The first project ran from 2001 to 2012 and investigated the effectiveness of the Australian National Pollutant Inventory (NPI), which requires major polluters to publicly report their annual emissions of specified hazardous substances online. Data was collected from interviews with key government stakeholders, a survey of community organizations, and focus groups made up of students enrolled in environmental studies degrees. Comparisons were drawn with the Toxics Release Inventory in the USA (Howes 2001, 2005; Thorning and Howes 2007). A spatial analysis was then undertaken that combined NPI data with flood maps for the Brisbane region to provide a useful adaptation tool for disaster risk management, climate change adaptation, and land-use planning (Howes et al. 2014).[1] The early results of this project were given back to the practitioners within the state and federal public sectors, and the author was also asked to chair the Technical Advisory Panel for the second 5-year review of the inventory (Howes et al. 2006).

The second project ran from 2010 to 2015 to investigate the use of scientific knowledge in climate change policymaking. Data was collected from interviews with key stakeholders within government and the scientific community in two case studies: South East Queensland, Australia, and the Southeast region of England. A comparative analysis was then undertaken to determine the key factors that influenced the use of scientific knowledge in policymaking (Tangney and Howes 2016).[2] The results were published and formed the core of a PhD thesis by the coresearcher, Tangney (2015), who was also involved as a researcher in a related project led by the author that is described below. Tangey later went on to help establish a program in science policy and communication at Flinders University, Australia.

The third project ran from 2012 to 2014 and investigated ways to integrate disaster risk management with climate change adaptation policy. Data was collected from interviews with key government stakeholders, charrettes with stakeholders

[1]The author would like to thank the following colleagues for their collaboration on the later stages of this project: Peter Thorning (Queensland Department of Environment) and Professor Jago Dodson (RMIT, Australia), as well as Dr. Deanna Tomerini, Dr. Leila Eslami-Endargoli, and Dr. Johanna Nalau (Mustelin) at Griffith University. This research was funded by Griffith University and the Commonwealth Department of Environment.

[2]The author would like to thank Dr. Peter Tangney (Flinders University, Australia) who undertook much of this research as part of his PhD and his co-supervisor Associate Professor Michael Heazle (Griffith University, Australia). The research was supported by funding from Griffith University and the Commonwealth Government of Australia.

from both the public and community sectors, and the final reports of official investigations into three major disasters: the 2009 Victorian Black Saturday Bushfires; the 2011 Brisbane Floods; and the 2011 Perth Hills Bushfires. A comparative case study analysis was undertaken, and the results were used to create recommendations for better policy integration (Heazle et al. 2013; Howes 2015, 2016; Howes et al. 2015).[3] The results of this project were fed back to senior policymakers in forums in Canberra, Brisbane, Sydney, and Melbourne that were run by the National Climate Change Adaptation Research Facility (which also funded the research).

The synthesis of the results from the three projects provides fairly generalizable insights given the range of different institutions that were studied, the comparative analyses that stretched across three countries (Australia, the UK, and the USA), and the number of years over which the research was undertaken. Having said this, all cases were drawn from countries where there was consolidated democratic governance, a free media, relatively low levels of poverty, and relatively peaceful communities. The findings will therefore be less applicable to countries that have authoritarian governments, a restricted media, a high degree of poverty, or are ravaged by war.

10.3 Results

The first project on the National Pollutant Inventory produced three key findings that are pertinent to the idea of democratic local community empowerment. First, publishing information online is a necessary first step, but not sufficient. The information needs to be presented in a way that is easy to access and understand by avoiding technical jargon, providing clearly written explanatory notes, and using a well-designed graphical user interface (Howes 2001). Second, when presented with information about specific environmental risks, community organizations in Australia tend to put pressure on governments to take action, rather than focus on the private sector (Thorning and Howes 2007). Third, governments could combine their environmental reporting with hazard mapping and zoning data to create a spatial analysis tool that would help with both disaster risk management and climate change adaptation (Howes et al. 2014). This could be useful for the emergency services, local government planning, and the local community.

[3]The author would like to thank his research team for this project: Dr. Deanna Grant-Smith (Queensland University of Technology, Australia), Dr. Kimberly Reis (Griffith University, Australia), Dr. Peter Tangney (Flinders University, Australia), Associate Professor Michael Heazle (Griffith University, Australia), Professor Darren McEvoy (RMIT, Australia), Dr. Karen Bosomworth (RMIT, Australia), and Professor Paul Burton (Griffith University, Australia). This project was funded by the National Climate Change Adaptation Research Facility, Griffith University, and the Queensland Department of Community Safety.

The second project on the use of climate change knowledge in policymaking also produced some useful results. This project tested the framework put forward by Cash et al. (2002, 2003) which argued that scientific knowledge is most likely to influence policymaking when it is seen as credible (i.e., scientifically plausible), legitimate (i.e., the process by which the knowledge is produced is seen as unbiased and fair), and salient (i.e., it is relevant to, and meets the needs of, decision makers). This project found that of these three, legitimacy is preeminent in climate change adaptation because the conflicting norms and politics that pervade this policymaking domain undermine the willingness of political leaders to act (Tangney and Howes 2016). It can also impact on the willingness of the local community to acknowledge a problem and take action.

The third project on integrating disaster risk management and climate change adaptation policies revealed that the local community has a key role to play in building resilience because of the limited capacity of governments to respond. This requires well-designed democratic community engagement that moves well beyond public education programs in order to be effective. One proposal was to have small-scale climate change adaptation grants where the local community could use publicly available information to propose and vote on projects that would help to build local resilience (Howes et al. 2013, 2015). This would require some significant reforms in the way the public sector operates in order to give the local community some sense of ownership of an issue and the response (Howes 2015, 2016; Heazle et al. 2013). The proposal was designed to improve the public awareness of issues as well as empower the local community to take its own adaptive actions.

10.4 Discussion

Governments are increasingly being asked to do more with less, and they are already unable to fulfill many public expectations. One way to address this challenge is to adopt policies that constructively engage the local community as a partner in democratically developing and deploying responses. Such policies require a well-informed and motivated local community that sees the engagement process as legitimate. This is where the link between knowledge and power is important, but there are problems when it comes to climate change knowledge. Governments collect a great deal of data that is relevant to adaptation, but it is scattered across many different levels and organizations. In addition, the data is often highly technical and difficult for nonexperts to interrogate in order to find salient, credible information. The combined findings of the three research projects outlined above can offer a three-step policy solution.

10.4.1 Inform

The first step would be to create an online 'one-stop-shop' Web site that would provide essential information to the local community in an easy to understand and well-integrated format. Visitors could simply enter their postcode or zoom into find their local community on an interactive map that would reveal:

- The geography of the region (e.g., major landforms, vegetation cover, waterways);
- Land use patterns and zoning (e.g., for recreation, residential, or commercial use);
- The distribution of natural hazards (e.g., floods, bushfires, landslides);
- The location of hazardous sites (e.g., where pollutants are stored or released);
- Key infrastructure (e.g., roads, hospitals, schools);
- Emergency management information (e.g., evacuation centers); and
- Current warnings and advice (e.g., for storms, cyclones, heat waves, or bushfires).

There are some prototypes of this kind of policy approach starting to emerge. The National Pollutant Inventory Web site (at http://www.npi.gov.au/) already uses interactive maps to identify sites releasing and storing hazardous substances. There is also an interactive test site called *Coastal Risk Australia* (at http://coastalrisk.com.au/) that indicates areas at risk of flooding under different sea-level rise scenarios. In addition, the National Climate Change Adaptation Research Facility offers a *Coast Adapt* test site (at https://coastadapt.com.au/) that has useful information on how to assess risks and adapt. On top of all this, most local governments provide online flood maps, zoning schemes, and city plans, while many government agencies, such as the Australian Bureau of Meteorology and emergency services, have useful online information. The idea is to bring this all together in a single Web site that the local community would find easy to use.

10.4.2 Engage

Then next step is to get the message out there so that the local community knows about the Web site, realizes its salience, learns how to use it, and factors it into decision making. A multimedia campaign could raise public awareness of the site. It could be similar to the very effective public information campaign run during the Millennium Drought 2001–2010 in Queensland, Australia, that encouraged the local community to significantly reduce its water use by offering practical changes in behavior (Walton and Hume 2011). This could be coupled with a series of local events to help volunteers learn how to use the site and then promote it to other members of the local community through their networks. The European Climate Knowledge Innovation Community (KIC) ran a worldwide Climathon on October

28, 2016, in 59 cities simultaneously around the world. This attracted 1495 participants who were asked to identify climate change issues and propose adaption initiatives. The event was promoted through social networks and online (at https://climathon.climate-kic.org/). The author of this chapter helped to facilitate sessions in Brisbane, Australia, and spoke about ways to get ideas implemented in regional planning. These kinds of events build the legitimacy of climate change knowledge by giving the local community a sense of ownership of the process that generates understanding of the problem and creates solutions.

10.4.3 Support

The final step would be to provide appropriate financial incentives and support for communities to get involved in building their own resilience. Local, state, and federal governments already offer community grants for various purposes. Landcare, for example, has been a very successful program that enabled thousands of communities to rehabilitate degraded land using their own volunteer labor supported by funding from the federal government. The program uses a network of nongovernment organizations to administer the grants and has its own Web site (at https://landcareaustralia.org.au/) to help with networking, applications, and reporting. A similar set of grants could be offered by local governments but focused on climate change adaptation and resilience building and with more of the decision making in the hands of the local community. The Web site created in step 1 would provide the necessary information about local risks and the events run in step 2 would get local people using this information and proposing solutions. The grants would then offer a way to implement these ideas. Communities could get together to view all the proposals either face-to-face in town hall meetings or online then vote on the projects they preferred. The top ranked projects would be funded in turn until the total pool of grant money was spent. Projects might be quite simple, such as organizing a network of volunteers to check on elderly people during a heat wave, flood, or bushfire.

10.4.4 Limitations

Three notes of caution should be sounded here. First, although increasing local community involvement in adaptation is important, governments should not be permitted to vacate the field. The public sector has the relevant knowledge, trained personnel, financial resources, and coercive powers that are essential to supporting successful responses. Second, empowering communities may not lead to the optimal outcome with regards to building resilience. Democratic decision making is not always rational, and some communities may actually choose to either ignore or increase their risk to the impacts of climate change. One example would be the

popularity of a housing development that offers waterfront homes despite the location being at risk of sea-level rise and coastal erosion. This is something that is a real issue for many coastal cities and towns. The three-step policy proposal outlined above should reduce the likelihood of such perverse outcomes, but it would not be eliminated. In such situations, governments will still have the ability to act for the public good despite adverse public opinion, but it will be politically risky.

On the positive side, governments have found ways of implementing unpopular polices in the past while deflecting blame. One example that springs to mind is the setting of official interest rates in the banking sector. A decision to raise rates is very unpopular because it increases the costs to households and businesses but there are times in the economic cycle when it is necessary. By giving the power to set rates to an independent organization, such as the Reserve Bank, the unpopular decision can be implemented when needed, while elected politicians distance themselves, criticize the move, and proclaim that they have no power to change it. So, there are effective strategies that can address such political difficulties. The third point is that this three-step policy is a proposal based on research and if implemented they would need to have some process by which to be evaluated in order to identify what is working and what is not. Althaus et al. (2013) offer a standard set of processes that could easily be applied to this proposal if it were adopted in order to ascertain whether it was effective, efficient, and appropriate.

10.5 Conclusions

If knowledge is power, finding a way to turn that power toward building local community resilience is crucial for effective climate change adaptation. It is also important to support more democratic decision making. The inherent complexities of climate change knowledge, however, make this challenge all the more difficult. Added to this are the limitations imposed on governments by a hotly contested political environment and limited public resources. This means that the task of adaptation cannot be left to governments alone and requires the assistance of local communities. Over fifteen years, a series of research projects have revealed the importance of three pertinent factors in policymaking that can improve democratic local community empowerment:

(1) Provide credible, salient, and legitimate public information that is easy to use;
(2) Create decision-making processes that are participatory and transparent; and
(3) Provide well-targeted financial support and incentives.

On the positive side, the rapid spread in the use of the Internet has opened up a new range of opportunities in the design of effective and cost-efficient policy instruments that can support democratic decision making. The three-step policy proposal outlined in this chapter (i.e., inform, engage and support) takes advantage

of these opportunities to empower the local community and build resilience in a way that also supports the principles of democratic decision making. The question now is whether existing governments would be willing to take such a step. Only time will tell.

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