

Foreseeing and Managing the Health Risks of Climate Change: A Translational Pilot Project for Local Government

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What is known about this subject?

- Climate change represents one of the biggest threats to human health and community well-being in the 21st Century
- The Australian Government's national policy framework *Climate Change Adaptation Actions for Local Government* makes health services development one of the six key functions required of local government in helping their communities adapt to climate change.
- Local governments in Australia and overseas are conducting climate impact and risk assessments but these are often paper-based and lack a health focus

What does the paper add?

- This paper describes early lessons learnt from a pilot Tasmanian project that is building on existing work in local government to help them and their communities better manage the health effects of climate change
- It explains the key challenges and strategies in developing an online tool to help find out what is happening or has happened (impacts) as well as what might happen (risks) and what should happen (adaptation) for the health and well-being of local communities
- The paper also describes special issues in climate and health for local government in those regions where the health risks are great and the adaptive capacity is likely to be lowest: rural and regional Australia.

Aim: Climate change is increasingly acknowledged as one of the biggest threats to human health in the 21st Century (Costello et al., 2009). It is in fact one of the biggest *foreseeable* health threats. This paper examines how local government could help their communities better foresee and manage the health threats of climate change.

Background:

The climate and health literature

There are tens of thousands of papers on climate change summarised in the reports of the Intergovernmental Panel on Climate Change. Over 3,000 such papers published since 1990 describe the health effects of climate change, most of them since 2008. The landmark paper in the field is widely acknowledged to be a May 2009 paper published in the *Lancet* with the University College London Institute for Global Health Commission. This paper identifies climate change as the biggest human health threat of the 21st Century (Costello, et al., 2009). The United Nation's Global Humanitarian Forum has estimated climate change now leaves over 300,000 people dead and 325 million people seriously affected each year, with 4 billion people vulnerable and 500 million people at extreme risk (Bell et al., 2010; Global Humanitarian Forum, 2009).

Australia is one of the most climate-vulnerable developed nations in the world yet research into the health effects of climate change is scant. The available research is summarised in Australia's National Adaptation Research Plan (NARP) for human health (McMicheal et al., 2008). The NARP document reflects the consensus view in the international literature that the health effects of climate change

need to be conceptualised in terms of *direct health effects* as well as *indirect health effects*. Direct effects include casualties and injuries from extreme weather events, as well as food and water security issues and dispossession from coastal inundation. Indirect effects include mental health conditions such as depression from sustained drought or flooding, allergic conditions such as asthma from changes in the seasonality of pollens as well as changes in air quality, waterborne diseases such as cholera, insect-borne diseases such as Ross River virus, malaria, and tick-borne encephalitis in areas where these have not been seen before, and so on (Bell, 2009; Bell, et al., 2010; Campbell et al., 2008; Costello, et al., 2009; Global Humanitarian Forum, 2009; Greer et al., 2008; Haile, 2005; Jackson et al., 2008; MacCracken, 2008; McMichael et al., 2003; McMichael et al., 2006; McMichael, et al., 2008; Menne et al., 2008; Menne et al., 2006; Schmidhuber et al., 2007).

The NARP also identifies another key concept in the climate and health literature: '*climate-vulnerable populations*' or populations that may be particularly susceptible to a changing climate such as older people, children, farmers, Aboriginal communities, and other groups that are socio-economically disadvantaged. For these climate-vulnerable groups, even subtle changes in climate may have disproportionately large effects (Costello, et al., 2009; McMichael, et al., 2008; Patz et al., 2005).

If health effects can be conceptualised in terms of the nature of the effects (direct or indirect) and who is affected (climate-vulnerable populations), these effects can also be conceptualised in terms of the *different levels at which health effects* occur. These different levels have been described by Woodward and colleagues as individual level effects, community-level effects, and regional or geographical-level effects (Bell, et al., 2010; Woodward et al., 2003). Another concept linked to where climate effects occur is the idea of climate change 'hotspots' or regions where the largest climatic changes or effects are expected. Many climate-vulnerable groups live in these climate 'hotspots' (Patz et al., 2002).

A focus on helping climate-vulnerable communities to adapt to climate change does not need to be based on any belief that carbon emissions are causing climate change. Recent work by the Intergovernmental Panel on Climate Change has suggested that certainty about the exact role of global warming in extreme weather events may not be possible for some time during which settlement patterns of increasing human populations will increase the toll of such climate events (IPCC 2011, 2011).

The role of councils

Increasingly, local councils are assuming a leadership role in helping communities adapt to, and mitigate, climate change in areas such as planning decisions, natural resource management, and infrastructure development (Bell & Towle, 2011; Wong, 2009). The Australian Government's national policy framework *Climate Change Adaptation Actions for Local Government* places the onus on local government to make the development of health services one of their six key functions in helping their communities adapt to climate change (Bell, et al., 2011; Department of Climate Change, 2009).

In a context in which local governments are emerging regional leaders in adaptation to climate change, a critical task in Australia and many other countries lies in better equipping them to manage the health effects of climate change. Unless local government and their communities have knowledge relevant to minimising the health burden of climate change, they and policy-makers cannot act to protect communities from the sometimes tragic and now far-reaching health effects of a changing climate. Our pilot project, a partnership between rural health leaders, climate scientists and local government, aims to enable this to occur.

Method

This paper describes early lessons learnt from our current pilot Tasmanian project, funded by the Office of Climate Change at Tasmania's Department of Premier and Cabinet. It describes how this project is building on the work already being done in local government to help them and their communities better foresee health risks and act to minimise the rising health burden of climate change. It explains how we are developing an online tool to achieve this in an integrated way for Australia, so that data from both climate science and local risk assessment exercises can be better shared within a translational research model. It explains the key challenges and strategies in developing our pilot online tool to help find out what is happening or has happened (impacts) as well as what might happen (risks) and what should happen (adaptation) for the health and well-being of local communities. The paper also describes special issues in climate and health for local government in those regions where the health risks are great and the adaptive capacity is likely to be lowest: rural and regional Australia, the focus of our pilot tool.

Discussion

Building on the work already being done in local government

The Tasmanian-led online tool is informed by existing impact and risk assessment efforts in local government. Much of this work has occurred through the Local Adaptation Pathways Program (LAPP) which has provided federal funding to councils for identification of local climate change risks and risk management. Round 1 of LAPP funding provided \$1.5 million for 60 councils and 33 projects, largely to do with urban and coastal impacts. Round 2 of LAPP funding provided \$874,000 to 30 councils in regional and rural Australia. Federal advice to local government has been informed by the work of ICLEI Oceania— Local Governments for Sustainability guidance materials for climate change adaptation *Local Government Climate Change Adaptation Toolkit*. (ICLEI Oceania, 2008) This toolkit draws on the contents of *Climate Change Impacts & Risk Management: A Guide for Business and Government* produced by the former Australian Greenhouse Office (Australian Greenhouse Office [now the Department of Climate Change], 2006).

However, it is fair to say that the ICLEI Oceania toolkit and related risk management exercises for climate change now being conducted by local government are most often paper-based questionnaires albeit in a highly structured format. (ICLEI Oceania, 2008) This makes it harder to lesson-share from data collected by such risk management exercises. To date, the paper-based results of such exercises have not been so well integrated into state and national health policy.

Nor have lessons from climate science, climate and health research, or the work of state governments in Australia conducting their own health impact and risk assessments (Spickett et al., 2008; Turk et al., 2010) informed by international research in countries such as Canada (Séguin, 2008) been well-integrated or translated into local government health impact and risk assessments.

The contribution that this pilot project makes is by way of providing both an online format designed to help share data and translate knowledge across sites, as part of bringing a health service development focus to existing risk management efforts in local government. It is proposed that the online Health Impact and Risk Assessment (HIRA) exercise be integrated into existing impact and risk assessment exercises that do not have a health focus. For example, its development in Tasmania aims to lead to its integration into risk management exercises such as those currently being designed by the Southern Tasmanian Councils Authority under the Local Government Reform Fund.

A critical aspect of the online tool is that not all adaptation actions developed by it need be undertaken by councils. It is recognised that only some of the adaptation actions developed in our HIRA workshops will fall within the community development work of local government. The HIRA

tool is therefore more broadly designed to support the regional advocacy work for local communities that local government undertakes.

An online health impact and risk assessment (HIRA) tool: key challenges and strategies

The HIRA tool takes the form of a 4 hour workshop to which community health and local government stakeholders are invited. The online tool is being trialled in at least 3 Tasmanian councils, after which the intention is to trial it nationally. The workshop implementing the HIRA tool is informed by theory and practice in the area of translational research which suggests the importance of creating a two-way street or knowledge exchange between climate science and local communities and vice versa. (Bell, Harpur, et al., 2011) It is also informed by the idea that community stakeholders can act as 'climate witnesses'—a term used by the World Health Organisation and a number of regional-level community development projects for vulnerable communities taking place overseas (<http://www.preventionweb.net/english/professional/publications/v.php?id=12468>) to provide observations of the local impacts and risks of climate for their local community, in ways that supplement climate science. The best practice principles on which the tool is based have been published in the American Journal of Public Health, a leading international journal (Bell, 2011).

The HIRA workshop has seven key parts

1. *Establish understandings*: in this part of the workshop local area climate projections are provided by a trained climate scientist; a climate and health expert also shares information from the international and national literature about climate and health connections.
2. *Obtain a profile of the 'climate witness' respondent*: this part of the workshop collects data on the nature of the climate observations made by individuals in the workshop, so that a group profile can be obtained.
3. *Record observations of health effects*: this part gathers data about climate and health connections in the local region that have some support in the international literature.
4. *Estimate health risks*: this part involves structured estimations of health risks including identification of the nature, extent and likelihood of the risk.
5. *Supplementary questions about observed health impacts*: this part of the workshop allows participants to add and answer new questions about climate and health dynamics that have not been covered previously but are important to their region.
6. *Identify priority areas of adaptation*: this part of the workshop asks participants to develop priorities for adaptation under five domains for health service development described by the author in the previously cited foundation publication in the *American Journal of Public Health* (Bell, 2011):

Health service adaptation domain	Definition
Governance and culture	<i>The mechanisms through which health services are managed, including for risk, both explicitly and implicitly</i>
Service delivery	<i>The form (programs and interventions) that service delivery takes to achieve specific population health outcomes</i>
Workforce development	<i>The use of education and training approaches to increase the capacity of the health workforce</i>
Material infrastructure	<i>The management/development of physical assets of healthcare</i>
Finance	<i>The processes and tools through which the economic aspects of healthcare services are expressed</i>

7. *Develop the summary health impact and risk statement:* this part of the workshop is prefaced by consideration by the group of collective responses which are projected onto a screen, after which the group reaches consensus on the key impacts, risks, adaptations and related practical considerations for implementation (such as costs).

Special issues in climate and health for local government in rural and regional Australia

Accounts of the health effects of climate-influenced disasters suggest that a lack of adequate health service planning and support is often a necessary (but not sufficient) cause of the health consequences of such events, especially for vulnerable groups (Bell, 2011). This is especially so in rural and regional areas where, as was seen in the case of the 2011 Queensland floods and the 2009 Victorian bushfires, (Teague et al., 2009) deaths and injuries are more likely in areas that are more isolated and lack ready access to emergency services support and centralised preparatory planning and risk management services. In rural communities adequate local community-based impact and risk management supported by local government becomes even more critical to effective community responses, both in the long and short term. The pilot project will contribute to this critical challenge in the risk management field.

There are special challenges in developing health impact and risk assessment exercises in rural and regional areas. These include the following faced by our pilot

- Local health practitioners are critical stakeholders but sometimes find it difficult to participate because of a lack of 'back-up' practitioners; the workshops need to be organised very well in advance, local councils need to conduct follow-up to invitations, and the HIRA research team needs to have credibility with local health stakeholders.
- The risk management exercise also requires a diverse range of stakeholders that go beyond health services, such as those in volunteer fire services and health consumer advocacy and

support groups; again, addressing this challenge requires careful organisation of the workshop to ensure sound participation levels.

- IT facilities may be lacking in rural and regional areas to support an online data-sharing exercise; we have addressed this by including in the HIRA team high quality IT support and equipment 'brought in' as part of the workshop delivery.

Conclusion

Health is the missing sector in too many impact and risk assessments done at local community level. Yet such exercises have critical importance for rural and regional Australia which often lies far from urban planning and service hubs. To be optimally useful to local government and policy-makers, health impact and risk assessments need to be online with sophisticated data sharing and data visualisation capacities. These assessment exercises must also be capable of helping local government efficiently bring together diverse community stakeholders and experts to reach consensus about the nature of the risks and appropriate responses. Our pilot project offers early indications that while such complex challenges lie ahead for local government and their researchers, they can be met within a translational research framework.

Acknowledgements

This paper describes a project 'Climate Change Health Impact and Risk Assessment Tool: A Pilot Implementation Project'. This project is supported by the Tasmanian Government through the ClimateConnect Community Grants Program and a UTAS Research Enhancement Grant. The author acknowledges the contributions of Assoc Prof Paul Turner, School of Computing and Information Systems, and Frank Sainsbury, ITSOIL Pty Ltd.



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