

Assessing the Vulnerability and Adaptive Capacity of Australian Settlements to Impacts of Climate Change and Variability

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BACKGROUND

While climate variability has always been a major contributory factor to disasters and emergencies, it is now widely accepted that this contribution will increase with projected climate change and increased variability (IPCC, 2007). Increased climate variability will interact with other factors including increased population, especially in vulnerable areas, worsening inequity and insecurity of livelihoods, and rapid urbanization. This will exacerbate current situations of inadequate preparedness and chronic vulnerability, and at the more severe end of climate change projections, this will very significantly exacerbate existing and future vulnerabilities (Handmer and Dovers, 2007).

There is considerable activity in policy and research aimed at assessing the likely and possible impacts of climate change on human settlements, economies, nations and natural ecosystems, with an emerging emphasis on approaches that can integrate multiple climate impacts, entities at risk, methods of assessment, disciplinary inputs and stakeholder perspectives, generally termed *integrated assessment* (IA).

This paper reports on insights from the recently completed research project IACCIUS (Integrated Assessment of Climate Change Impacts on Urban Settlements) which developed an IA methodology through interdisciplinary research and engagement with applications of the methodology in five Australian case study urban settlements (Li, 2008; Li *et al.*, 2008). The methodology incorporates insights and approaches from existing IA approaches, systems thinking, participatory and integrative research designs, climate science, risk and vulnerability analysis, public policy and urban studies. It involves collaborative research moving through stages of joint problem framing and scoping, systems-based risk assessment, issue prioritization, detailed investigation using multiple methods, and consideration of adaptive strategies. The project was funded by the Australian Government, Department of Climate Change.

METHODOLOGY

IA generally and the IACCIUS methodology in particular relies on communication, partnerships and collaboration between multiple participants and partners in the process of research, assessment, synthesis and application of findings to decision making. Sustained engagement with partners in the research and assessment process is key to the methodology, and the partners will include state (provincial) and local government agencies, private firms, other research groups, consultants, and private, state-owned (corporatized) or mixed public-private utilities and service providers (e.g., of water or energy), and individuals in these group with specific interests, responsibilities and skills. There is a heavy reliance on the perspectives, professional and local expertise and data from these partners. IA is a highly informative-rich and communication-dependent activity. The aspects of IACCIUS reported here concern the conference theme of *public-private partnerships*, exploring the multiple purposes and types of partnerships required in an IA exercise or in any similar assessment.

Public-private partnerships (PPPs) can take many forms, for different purposes, each requiring a variety of agreements and relationship management strategies. Most simply, the term PPP indicates a government-industry agreement, joint activity or formal collaborative ownership or management arrangement for a particular purpose. This, however, conceals a much wider variety of entities, purposes, motives, driving imperatives and scales, and significant variation in what might be termed either 'public' or 'private'. Table 1 presents a tentative and summary typology of organizations encountered when assessing climate change impacts on urban settlements, including disaster considerations, drawn from the IACCIUS project and general IA experiences, to illustrate the diversity and blurred boundaries that can hide behind the simple term PPP.

Table 1. Summary spectrum of 'private' and 'public' organizations

Category	Examples from integrated assessment of climate change impacts, including disasters	Private (PR), Public (PU), Community (CO)
Executive and legislature; government agencies (national, state-provincial)	President-prime minister, cabinet and ministry, political staff. Depts of health, infrastructure, security, science, environment, transport, development, etc.	PU
Statutory authorities and other semi-autonomous public agencies	Emergency agencies, land management authorities, military, auditors-general, ambulance, statistical bureaus, universities, research bodies Medical services and supplies, hospitals	PU PU-PR
Local government	Various departments: land use planning, roads, water and waste management, information provision and community education	PU
Public trading corporations	Water authorities, corporatised resource management agencies (eg forest agencies, land commissions), some banks, telecommunications bodies, postal services	MX: PU, PR
Private firms	Land developers, tourism operators, builders, architects, infrastructure providers, consultants, engineering firms, fire equipment manufacturers	PR
Epistemic communities (organized around expertise)	Infrastructure engineers, hydrologists, epidemiologists, development studies, economic analysts, risk assessment experts	PU- PR
NGOs, informal institutions, community-based organisations	Interest group NGOs, local socially-enforced customs, neighborhood firewatch groups, kinship networks, cooperatives, volunteer emergency brigades.	CO-PU

(Source: summarized and adapted from Handmer and Dovers 2007.)

In Table 1 the important category 'community' is added, reflecting the critical need for engagement with groups reflecting interests not captured by government or the private sector. A comprehensive assessment of disaster (or other) risks and vulnerabilities associated with climate change requires interactions between multiple participants

from the categories in Table 1, and purposeful consideration in design, implementation, management and communication of the research and assessment process.

Although expanding on the public-private simplification, Table 1 still conceals considerable detail *within* some of the categories. For example, different government agencies will have varying mandates, interests, priorities and favored means of analysis. Local independently owned firms will have different aspirations and capacities compared to semi-independent franchises or directly controlled outlets.

FINDINGS

From the IACCIUS project experience of undertaking IA investigations across five contrasting urban settlements (Bendigo, Canberra, Cooma, Darwin, Queanbeyan), each involving multiple partnerships across and within several of the above categories, a number of challenges in maintaining such partnerships are further discussed in this paper, including the following:

- Scoping & problem definition of what issues and priorities should be focused on in an assessment require thoughtfully designed and genuinely participatory processes that cater for different values, expectations and aspirations.
- The interests and capacities of different categories of partners will vary from place to place, according to cultural and social variation and the issues faced.
- Local contexts also vary in the nature of policy and decision making processes, and which organizations and interests are involved or influential in these. This is particularly relevant to adaptation options and adaptive capacity in the face of climate-driven disaster events.
- Data acquisition may involve multiple negotiations with many partners. Private or corporatized organizations are likely to have different rules of access to data than purely public ones, where data may be withheld or be very expensive.
- The skills required for IA (of risks, climate impacts, adaptation options) are multiple and demanding (economic and demographic analysis, infrastructure appraisal, flood hydrology, climate science, etc), and vary between contexts. With multiple partners, it also demands skills such as liaison, data agreement negotiation, contract management, qualitative interviewing, and so on.

This paper demonstrates the complexity that lies behind the term 'Public-Private Partnerships', a complexity that will be encountered and have to be managed in assessing place-based implications and impacts of climate change and variability on communities, and discusses some key challenges that arise in such assessment exercises.

REFERENCES

- Handmer, J. and Dovers, S., 2007. *Handbook of Disaster and Emergency Policies and Institutions*, Earthscan, London.
- IPCC, 2007. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policy Makers. *Intergovernmental Panel on Climate Change* [online]. Available from: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf>. (Accessed 8 May 2008).
- Li, G. M., 2008. A Methodology for Integrated Assessment of Climate Change Impacts on Urban Settlements: Draft May 2008, Fenner School of Environment and Society, Australian National University, Canberra.
- Li, G. M., Dovers, S., Sutton, P., Guillaume, J., Hutchinson, M., Dyball, R., Proust, K., Carroll, L. and Troy, P., 2008. IACCIUS: Synthesis Report on Integrated Assessment of Climate Change Impacts on Urban Settlements. Report to Australian Government Department of Climate Change - Draft May 2008, Fenner School of Environment and Society, Australian National University, Canberra.