

Assessing resilient urban systems to support long term adaptation to climate change

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For

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VCCCAR theme:

Opportunities and needs for long term adaptation in the short term

Project team

- **Project leaders:**
 - Prof Ralph Horne (RMIT Uni)**
 - Prof Chris Ryan (Uni Melb)**

- **Project team:**
 - Prof John Wiseman (Uni Melb)**
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 - Dr Kevin Zhang (RMIT)**
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 - Dr Julia Werner (RMIT)**
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Research gaps

- No studies of adaptive and maladaptive practices developing in Victorian communities in response to new energy and water supply systems
- Little known about how and why 'local' stakeholders develop 'resilient' energy and water systems
- Lack of knowledge regarding innovation models, opportunities and implications of developing resilient systems

EVIDENCE BASE lacking to inform adaptive rather than maladaptive policy-making in the context of resilient urban energy and water systems.



Technical and social resilience

- Technical resilience: The physical energy and water infrastructure is able to cope with, and adapt to, climate change.
- Social resilience (Berkes et al. 2003):
 - (1) the household and community is able to absorb or buffer disturbances whilst maintaining or adapting their day-to-day practices;
 - (2) the household and community is capable of, and demonstrates evidence of, self-organisation (around the energy or water system);
 - (3) the household and community is capable of learning and adapting in the context of change.

Project objectives

- Analyse innovative climate-adaptive practices emerging out of new energy and water systems
- Evaluate resilient urban energy and water systems, including social and technical innovations
- Develop relevant evaluation criteria and an evidence base for policy-making and programs



Research question

- How do different designs for resilient energy and water systems shape the adaptive capacity of Victorian urban communities, and what policy innovations and initiatives would encourage the spread of long term adaptive systems in the short term?



Phase 1: Mapping existing resilient energy and water systems; selecting case studies

- Development of a database of existing resilient energy and water systems in Victoria
- Establishment of a Project Reference Group to pick two Victorian urban case studies
- Bid to NCCARF for funding to expand project to wider Victorian and national context
- Short policy brief describing examples of energy and water systems and their potential for facilitating climate change adaptation and urban resilience.



Phase 2: Adaptive and maladaptive practices

- Qualitative research activities (interviews and focus groups) with households from case study communities to identify:
 - Adaptive and maladaptive practices resulting from urban energy and/or water system
 - Perceptions of risk, adaptation and resilience in relation to energy and water
 - Perceived and actual vulnerabilities
 - Opportunities to improve resilience
- Project report on 'Victorian experiences with resilient energy and water systems'



Phase 3: Stakeholder and technical analysis

- *Concurrently with Phase 2*, qualitative research activities with key stakeholders and actors in the two Victorian pilot study communities to identify:
 - What motivates stakeholders in developing and maintaining innovative, resilient communities
 - Innovations involved in developing and maintaining resilient communities
 - Institutional arrangements facilitating innovative adaptive community responses
 - Technical innovation constraints and opportunities for wider uptake of resilient urban systems
- Project report on ‘Motivating and facilitating changes to more adaptive and resilient systems for essential services in Victoria’.

Phase 4: Preliminary assessment criteria and recommendations for policy makers

- Preliminary assessment criteria for evaluating resilient urban systems to address Victoria's long term climate change vulnerabilities in the short term
- Presentation and project report of research evidence base, study outcomes and preliminary assessment criteria to relevant stakeholders
- Policy brief on project findings
- Journal papers and conference presentations



First steps

- Database of existing energy and water supply systems in Victoria developed in response to climate change concerns (mitigation or adaptation)
- Proforma in circulation
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