

Understanding the resilience of lifelines for regional and remote communities

RESEARCH TEAM

Lauren Rickards¹, Sujeeva Setunge¹, Kevin Zhang¹, Prem Chhetri¹, Shahrooz Shahpavari¹, Xinghuo Yu¹, Iman Roozbeh¹, Akvan Gajanayake¹, Mayeda Rashid^{1,2}, Briony Rogers², Adriana Keating², Paul Ryan³.

¹ RMIT University; ² Monash University; ³ Australian Resilience Centre

Background

In this time of intensifying, simultaneous and distributed climate-related hazards, and COVID-19 pandemic, as well as increasingly intensive cyber-attacks, and compounding interconnections between systems and networks, the potential for cascading disasters is escalating dangerously.^{1,2}

For communities, it is often the way hazards disrupt and degrade their lifelines that generate the worst impacts. Conversely, it is the effective functioning of established lifelines - and sometimes the unexpected emergence of informal lifelines - within disaster situations that often saves lives and reduces impacts.

Addressing these challenges requires approaches that understand critical infrastructure as part of complex, co-evolving social-ecological-technical systems that have the potential for unpredictable, non-linear change. As Infrastructure Australia has noted, there is a need for a shift in focus 'from the resilience of [infrastructure] assets themselves to the contribution of assets to the resilience of the system'³.

¹ Gissing, A., Eburn, M., & McAneney, J. (2020). Planning and capability requirements for catastrophic and cascading events. Literature review. Melbourne: Risk Frontiers and Bushfire and Natural Hazards Cooperative Research Centre, p.16.

² Australian Government, Department of Home Affairs. 2018. Profiling Australia's Vulnerability: the interconnected causes and cascading effects of systemic disaster risk.

³ Infrastructure Australia (2022). Resilience Principles: Infrastructure Australia's approach to resilience.

SUPPORTING ORGANISATIONS

NRRA, East Gippsland Shire, Australian Red Cross, Energy Networks Australia, VCOSS

Project duration: 12 months

Project description

This exploratory project will develop an Australian research agenda and conceptual framework of lifeline resilience to facilitate cross-sectoral dialogue, research and action. Informed by a cross-disciplinary, international literature review, stakeholder engagement and testing of methods in a case study setting, the project will help establish common understanding of lifeline resilience and the knowledge needed to improve it.

It addresses the following questions:

- What is known about lifelines in general and in the Australian context specifically? What are the key issues?
- How can lifeline resilience be conceptualised? What elements need to be incorporated?
- How can lifeline resilience be analysed? What do different disciplines, approaches and methods offer?
- Overall, what are the key research questions and needs around lifeline resilience in Australia?

Intended outcomes

Through the collaborative development of a framework for lifeline resilience, this project will deliver five main outcomes:

1. Increased knowledge about Australia's lifeline characteristics, interconnections, vulnerabilities, strengths, needs and opportunities for improving resilience, of relevance to practitioners and researchers.
2. New connections and conversations between professionals in diverse sectors and areas about their shared role within and reliance upon lifelines, improving resilience literacy and enhancing the potential for collaborative solutions.
3. New understanding of the insights that different research approaches and disciplines can provide around lifeline resilience.
4. New insights about the case study region (proposed to be NE Victoria) and the relationship between critical infrastructure and the main hazards recently experienced in the area.
5. Understanding of the primary research needs and opportunities around lifeline resilience in Australia to strategically inform future work at NHRA and other organisations.

Translation and implementation

Specific translation/implementation pathways and potential will be determined with advisory groups. At this stage, it is possible to identify three main specific translation pathways:

1. Written and multimedia pieces for practitioners (e.g. policy/practice brief, publications in infrastructure sector magazines)
2. Presentations and meetings, including with practitioners, stakeholders and researchers to share and discuss findings and insights and foster conversation among all interested parties
3. Academic journal article/s and possible conference presentations to reach an international researcher audience.

Further information

For full project details head to: <https://www.naturalhazards.com.au/research/research-projects/understanding-resilience-lifelines-regional-and-remote-communities>

Or contact lauren.rickards@rmit.edu.au

© Natural Hazards Research Australia, 2022
Disclaimer:

Natural Hazards Research Australia advise that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, Natural Hazards Research Australia (including its employees and consultants) exclude all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

All material in this document, except as identified below, is licensed under the Creative Commons Attribution-Non-Commercial 4.0 International Licence.

Material not licensed under the Creative Commons licence:

- Natural Hazards Research Australia logo
- Any other logos
- All photographs, graphics and figures

All content not licensed under the Creative Commons licence is all rights reserved. Permission must be sought from the copyright owner to use this material.

