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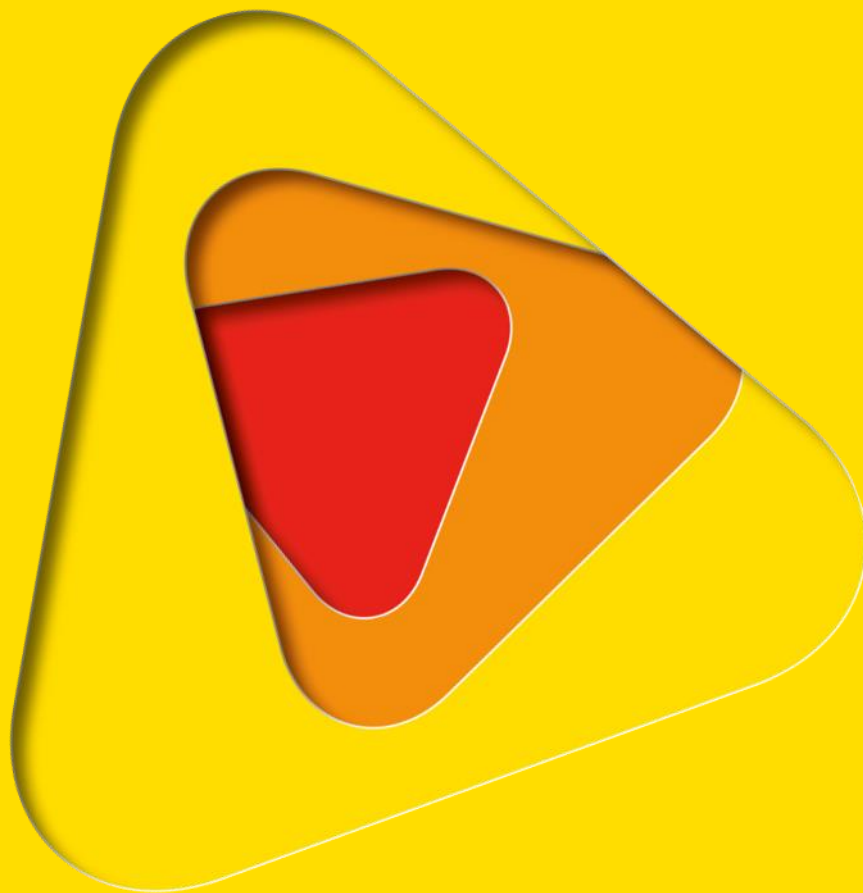
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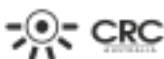
THE AUSTRALIAN NATURAL DISASTER RESILIENCE INDEX

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University of New England
Bushfire and Natural Hazards CRC

Annual Report 2014





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1. Broad overview of the project

What is the problem?

While there are many different definitions of resilience in relation to natural hazards, broadly speaking, resilience to natural hazards is the ability of individuals and communities to respond to and recover from natural hazard events. Building disaster resilience requires capacities to cope with the event and its aftermath, as well as a set of capacities to be able to learn about hazard risks, change behaviours, transform institutions and adapt to a changing environment.

This project is based on the premise that resilience to natural hazards - that is the capacities for coping with and adapting to the risks posed by natural hazards - can be measured using indices. Indices have been developed overseas, but these do not take account of Australian social circumstances, nor do they use indices explicitly related to the concepts of resilience, such as adaptation, learning, absorbing stress and functioning under stress. The Australian Natural Disaster Resilience Index that we are developing in this project will take an approach firmly embedded in resilience thinking to assess the recent state of disaster resilience across Australia.

Why is it important?

Natural hazards have always occurred, and will continue to occur in Australia. Indeed, natural processes such as bushfires and floods are important for maintaining healthy ecosystems and biodiversity, and many of Australia's native plant and animal species respond to the cues of fire or flood disturbance. It is the complex interaction between natural hazards and human systems that can create natural disasters. The sensitivity of human systems to natural hazards is influenced by the level of exposure to natural hazards and the capacities of the human actors in that system to avoid exposure, or to recover from exposure with minimal loss of life or livelihoods. Importantly, human systems can also exacerbate the impacts of natural hazards through locating people and infrastructure in high-risk areas, by removing natural buffering mechanisms or by altering the severity and frequency of natural hazards.

Australia is faced with an increasing severity and magnitude of natural hazards and increasing losses from these events. If communities can increase their disaster resilience, then they will be in a much better position to reduce losses, withstand adversity, return to a functioning state following a natural hazard event, and learn and adapt for the future.

How are you going to solve it?

In this project we will develop a Natural Disaster Resilience Index for Australia that takes into account Australia's unique geographical and climatic context, its governance structures, policy directions, emergency management systems, social-economic landscape, hazard profile, adaptive capacity and community structures. The Australian Natural Disaster Resilience Index is a tool for assessing, evaluating and reporting the

degree of natural hazard resilience in Australian communities, and will support planning and policy development for a disaster resilient Australia. Understanding resilience strengths and opportunities will help individuals, communities, governments and businesses to encourage the capacities needed for living with natural hazards. The major outputs from this project will be a State of Australia's Disaster Resilience report.

2. Background and research questions

Debate in the natural hazards literature currently highlights the relationship between resilience – the ability to recover from and adapt to natural hazards – and the inherent characteristics that make communities vulnerable to natural hazards. Australia's recently adopted National Strategy for Disaster Resilience takes a resilience approach to natural hazard management, recognizing four characteristics of disaster resilient communities: 1) they function well while under stress 2) they adapt successfully 3) they are self-reliant and 4) they have strong social capacity. This approach gives communities greater options and diversity in managing natural hazards, and places preparation, prevention, response and recovery in the context of societies adapting to and learning from change.

However important questions are raised. How would disaster resilience be assessed and how should investments to develop disaster resilience be prioritized, evaluated and reported? There is a burgeoning literature on using indices to assess community vulnerability: Susan Cutter's Index of Social Vulnerability, the Prevalent Vulnerability Index, the Disaster Risk Index, and the Predictive Indicator of Vulnerability, to name a few. Indices of climate change vulnerability have also been produced in Australia including those by the Institute for Rural Futures at UNE for the Hunter region of NSW and for the Northern Rivers Region of NSW. More recently, indices have been developed to assess disaster resilience, rather than disaster vulnerability. For example, Susan Cutter developed the Disaster Resilience of Place (DROP) model and aligned set of resilience indicators, to assess disaster resilience in South Eastern United States.

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The objectives of the project are:

1. Develop and test an Australian Natural Disaster Resilience Index.

2. Report on the current state of disaster resilience in Australia, using the Australian Natural Disaster Resilience Index.
3. Develop guidelines for applying the Australian Natural Disaster Resilience Index in a local planning context.
4. Contribute to national, state and local policy development through multiple BNHCRC priorities.

The major output from this project will be a State of Australia's Disaster Resilience report, and associated map layers.

3. What's been happening in the project?

3.1 Overview

In the first phase of the project (March-September 2014) we are focused on developing a conceptual framework and themes for potential indicators of disaster resilience. The indicators are related to the framework: the framework for how we look at disaster resilience will set the types of indicators that we use to assess disaster resilience.

The first phase of the project will conclude in September 2014, before moving into the data collection phase:



3.2 List of activities

- The project commenced on 4 March 2013 with the appointment to the project of Dr Melissa Parsons (0.7 FTE) onto the project.
- A project team meeting was held at UNE on 6-7 March to initiate the project and plan the conceptual framework (Milestone 2).
- The project leaders attended the Research Advisory Forum in Adelaide, 18-20th March.
- The project team have been working through several iterations of a conceptual model on the following schedule:
 - a. Conceptual model discussion paper to the research team 30 May 2014
 - b. Team meeting to refine the conceptual model 10 June 2014

- c. Second model discussion paper to research team 2 July 2014
- d. Indicator themes discussion paper to project team 9 July 2014
- The model and indicator themes will be further reviewed with end users in a workshop to be held in Armidale on the 28-29th July 2014. The purpose of the workshop is to reach shared understanding of the approach to the Australian Disaster Resilience Index in a way that incorporates both end-user and project team perspectives.
- Abstracts submitted for participation in two conferences:
 - a. 5th International Disaster and Risk Conference, Davos, Switzerland
 - b. AFAC-14, Wellington, New Zealand
- Members of the project team contributed to the BNHCRC submission to the International Council for Science survey on Disaster Risk Reduction.
- Members of the project team met with our BNHCRC colleague Dr Michael Eburn while he was at UNE delivering an invited lecture.

3.3 Milestone variation

The original project plan was to send out draft documents for comment to the end users. However, as we moved through the development of the conceptual model we wanted the options and model to be aligned with the expectations of end users. To achieve shared learning we decided that the discussion paper approach was not ideal, and a face to face workshop would be a better forum for agency input into the project. This workshop is organized for the 28-29th July.

The following milestone variation was requested and approved by Dr Michael Rumsewicz (BNHCRC Research Manager) on 25 June 2014:

- 1) That milestone 1.4.1 is moved into period 2 with a due date of 31 July 2014
- 2) That the due date for milestone 2.1.1 changes to 15 September 2014

4. Publication list

There are no publications arising from the research project this reporting year.

5. List of current integrated project team members

Research team	End users
Dr Sonya Glavac Geography and Planning, UNE	Sandra Barber Manager – Community Education, Tasmania Fire Service
Dr Peter Hastings Queensland University of Technology	Gwynne Brennan Manager – Community Resilience, Country Fire Authority Victoria
Associate Professor Graham Marshall Institute for Rural Futures, UNE	Trent Curtin Commander – Community Development, Metropolitan Fire Brigade, Melbourne
James McGregor Geography and Planning, UNE	Karen Enbom Team Leader – Community Resilience, Country Fire Authority Victoria
Dr Judith McNeill Geography and Planning, UNE	Sunara Fernando Community Engagement Manager, NSW Rural Fire Service
Dr Phil Morley Institute for Rural Futures, UNE	Paul Fletcher Assistant Chief Fire Officer, Metropolitan Fire Service, SA
Dr Melissa Parsons Geography and Planning, UNE	Suellen Flint Manager Community Engagement, Dept. of Fire and Emergency Services WA
Dr Ian Reeve Institute for Rural Futures, UNE	Dr Holly Foster Senior Researcher, Fire Services Commissioner, Victoria
Dr Richard Stayner Institute for Rural Futures, UNE	Andrew Richards Manager – Community Engagement, NSW SES
Professor Martin Thoms Riverine Landscapes Research Laboratory, UNE	John Richardson Red Cross
	Colleen Ridge Senior Officer – Planning and Education, State Emergency Service, Tasmania
	Raelene Thompson Executive Director – Australian Emergency Management Institute, Attorney General's Department, Melbourne