

1. Introduction

Key Points

- The financial and emotional burden of natural disasters in Australia is large and set to rise. As recognised in the National Strategy for Disaster Resilience, building more resilient communities is complex and challenging, but possible to achieve
- This paper focuses on pre-disaster resilience measures to resist the impacts of natural disasters rather than measures during and in the aftermath of disaster
- The greatest benefit from disaster resilience measures but arguably the biggest coordination challenge involves existing residential buildings (retrofit, compliance and relocation).

The financial and emotional burden of natural disasters in Australia has been great and the cost of extreme weather events has continued to increase over time. Protecting lives and property is an enduring issue for all Australians and the opportunity remains to develop a national, long-term approach to managing natural disasters and protecting our communities.

Australia is exposed to a broad range of natural disasters including storms, cyclones, floods, bushfires and earthquakes. Over the period from 1967 to 2012, Australia experienced on average, at least four major natural disasters per year where the insured loss exceeded \$10 million (Insurance Council of Australia, 2013). These disasters have caused widespread destruction, threatened human lives and homes, damaged the broader natural environment and impacted key infrastructure. In addition, there have been numerous smaller scale disasters with equally devastating local consequences.

Some of the worst natural disasters have occurred in the last few years, including the 2009 Black Saturday bushfires, which claimed numerous lives and destroyed homes in Victoria; Cyclone Yasi, which hit northern Queensland in February of 2011; and the widespread flooding across Queensland that same year. Over the three years 2009–2011, more than 200 lives were lost and hundreds of thousands of people were directly affected by natural disasters around Australia.

Evidence from climate change research suggests that some natural disasters can be expected to increase in incidence and severity in future years, with geographical changes in at-risk areas (Intergovernmental Panel on Climate Change, 2012).

The research presented in this paper, however, is based on the current incidence of natural disasters only, and does not reflect any expected increase or shift in the currently observed level and severity of natural disasters. The potential impacts of climate change will serve to make this research more compelling and strengthen the case for preparedness now.

What does a resilient community look like?

A resilient community is one which has procedures in place to minimise the impact of a disruptive event and to ensure that recovery is timely and effective. To be resilient is to be prepared but also dynamic, flexible and quick to respond.

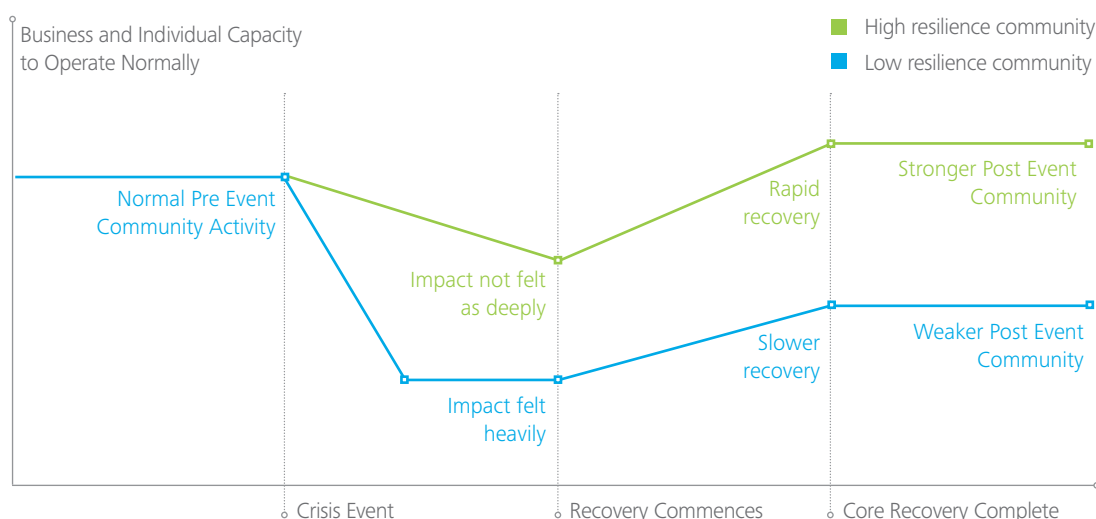
Figure 1.1 demonstrates the difference in capacity to operate normally following a disaster for a high and low resilience community. The focus of the research in this paper is on measures that can be taken before a natural disaster happens, or **pre-disaster** resilience, rather than relief and recovery from disasters.

The National Strategy for Disaster Resilience (NSDR) (Commonwealth of Australian Governments (COAG) 2011) is the core Australian Government policy which deals with the issue of natural disasters. The NSDR lays a clear pathway for what needs to be done. The strategy builds from the Council of Australian Governments (COAG) agreement in 2009 to adopt a whole-of-nation approach to disaster resilience and management. It recognises that a national, coordinated and cooperative effort is needed to enhance Australia's capacity to withstand and recover from emergencies and disasters. The strategy clearly acknowledges the roles of businesses, community organisations and individuals, as well as government.

The Australian Government approach to emergency management has four key focus areas which encapsulate the elements of prevention, preparedness, response and recovery. While each area is important, the focus of the research in this paper explores the pre-disaster aspects of resilience that fall under the notion of prevention.

Over the past five years there has been greater recognition of the need to build a more resilient Australia. In addition to the NSDR, this is also evident in a number of government programs, reports and inquiries. For example, in November 2012, the COAG Select Council on Climate Change (SCCC) adopted a document outlining the roles and responsibilities of different groups within Australia as a 'statement of common understanding' (SCCC, 2012).

Figure 1.1: Impact of high/low resilience community post crisis event



Source: Insurance Council of Australia (2008)

The responsibilities outlined by the SCCC, whilst specific to climate change, are also highly relevant to the case for natural disaster resilience. This paper aligns with the SCCC 'statement of common understanding' and seeks to explore how this might be implemented. Tackling the coordination challenges and alignment of incentives across all stakeholders is the key to unlocking a more resilient Australia.

The nature of the issues faced is laid out in **Appendix A**. This analysis points clearly to areas which deserve greater focus for government, business, communities and individuals. The analysis has an initial focus on 'hard adaptation' activities required. It then looks at what is necessary from a 'soft adaptation'³ perspective to better understand the coordination issue to be addressed in developing a more resilient and safer community.

The critical role for government is to develop and share appropriate information and develop high-level awareness of risks. While planning reform and enhanced building codes are an important element of building resilience, they only affect new and renovated homes. The greatest impact of resilience measures but arguably the biggest coordination challenge, lies with existing residential buildings (retrofit, compliance and relocation). It is often more technically difficult and costly to retro-fit an existing property to be disaster resilient. Further, over time resilience measures may deteriorate (e.g. clearing vegetation around homes in bush fire risk areas) and so the property and surrounding environment must be appropriately maintained to ensure ongoing resilience. This is challenging as it requires sustained and consistent localised management.

What is also well recognised is the importance of ground-up involvement and empowerment of communities in understanding the unique risks that they face in their particular circumstances. The concept of social capital is one that is difficult to measure from an economic perspective but is a critical attribute of a resilient Australia.

3 'Hard' adaptation measures usually imply the use of specific technologies and actions involving capital goods, such as levees, seawalls and reinforced buildings, whereas 'soft' adaptation measures focus on information, capacity building, policy and strategy development, and institutional arrangements.

Resilience and social capital

Social capital refers to networks of formal and informal organisations, combined with strong community leadership, which can be drawn on in times of need. It has been shown to save lives, encourage the sharing of information and resources, provide a basis for the planning and implementation of tasks and ensure appropriate self-advocacy on the basis of need. Social capital can be invested in and drawn on in times of need.

The concept of social capital has been incorporated in the Red Cross' Emergency REDiPlan – a community education program which helps people prepare for, respond to and recover from natural disasters.

Source: Australian Red Cross (2013)

The attention to, and progress on, resilience issues is not unique to Australia. International action in this area is explored in **Appendix B**.

For example, Australia is an active participant in the UNISDR program, the Hyogo Framework for Action (HFA) (2005–2015). The Hyogo framework, adopted in 2005, aims to substantially reduce losses from natural disasters by 2015. More recently, in April 2013, the European Commission announced a package to advance action on adaptation to climate change in the European Union (EU). This package sets out a framework and mechanisms for taking the EU's preparedness for current and future climate impacts to a new level. This framework points clearly to the need for better informed decision-making to address gaps in knowledge about adaptation and the need to collate, build and share that adaptation knowledge.

Structure of this paper

This paper is set out as follows:

Chapter 2: Quantifies and forecasts total economic costs of natural disasters in Australia and considers the budget implications of these costs.

Chapter 3: Considers the current roles and responsibilities in disaster management in Australia.

Chapter 4: Provides three case studies which indicate how carefully coordinated pre-disaster investment has the potential to reduce future economic costs of disasters.

Chapter 5: Provides recommendations for future action in the area of pre-disaster resilience.

Supporting information is provided in six Appendices:

Appendix A: Sets out the structure of the problem to provide a clearer view on where the greatest problems lie and what the potential roles for all stakeholders could be.

Appendix B: Looks at some key overseas examples (the Netherlands, US and the UK) to explore how they are dealing with similar issues and to draw lessons for Australia.

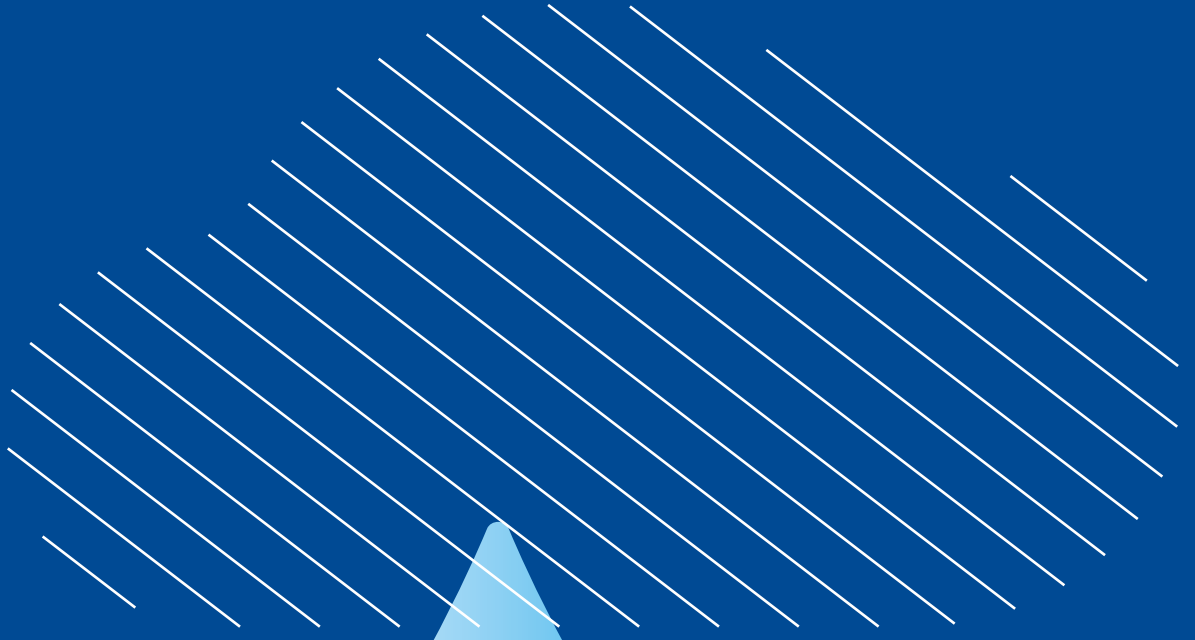
Appendix C: Provides the methodology for forecasting natural disaster costs.

Appendix D: Highlights relevant recommendations from the recent Productivity Commission report into Climate Change Adaptation, along with the responses from the Australian Government.

Appendix E: Outlines the cost-benefit methodology used for the case studies.

Appendix F: Provides a detailed Benefit-Cost Handbook for Local Governments.

2050



BY 2050 COSTS OF
\$23 BILLION
EACH YEAR



COULD BE REDUCED
BY 50%