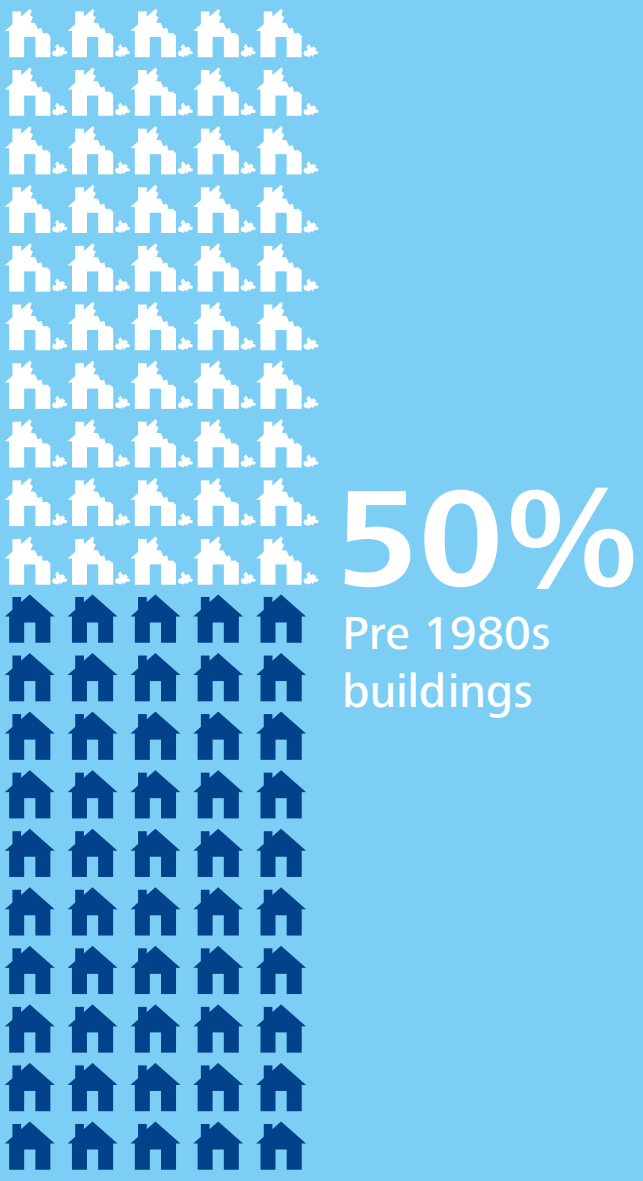
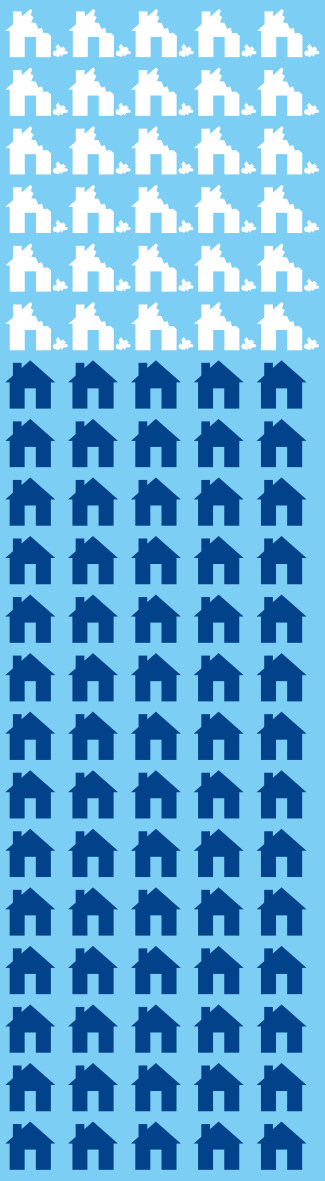
Cyclone Testing Station post event analysis of Tropical Cyclone Yasi – no roof damage



50%
Pre 1980s buildings



70%
Post 1980s buildings

6. Recommendations

Key points

This report makes three recommendations for natural disaster data and research to address the decision-making challenge:

1. Efficient and open – deliver a national platform for foundational data
2. Transparent and available – remove barriers to accessibility of data and research
3. Enabling effective decision-making – establish a prioritisation framework

This report has highlighted the gaps and disparities that exist in Australia's approach to data and research on natural disasters, along with barriers that prevent full use of information by end users for optimal resilience investments. The following recommendations outline the steps required to address the decision-making challenge.

1. Efficient and open – deliver a national platform for foundational data

Given that foundational data is used for a broad range of purposes beyond the scope of natural disaster issues, it is critical that the Australian Government provide a single point of access for all Australians. This would provide a valuable, base level of information upon which research and decisions around disaster resilience could be made on a consistent basis, while reducing search costs for a range of other broader uses.

This platform should facilitate access to data on community demographics and weather currently produced and published by the Australian Bureau of Statistics and the BoM.

Responsibility for consistent topography and geocoded asset data is required at the national level. Currently, this data is held by a mix of agencies across the public and private sector, with limited public access. This has generated high search costs and duplication of activity.

This action must overcome the barriers encountered in past, similar efforts, such as the Australian and New Zealand Land Information Council's development of a Foundation Spatial Data Framework. The Terrestrial Ecosystem Research Network Data Discovery Platform provides an example of how this foundational data platform might be designed and implemented.

2. Transparent and available – remove barriers to accessibility of data and research

This report has highlighted key examples of where access to data and research is restricted. Greater transparency across the system is required to identify the full range of end users and allow for development of a system of optimal access which weighs up overall costs and benefits.

Data

There is a need for clear delegation of responsibility for hazard and impact data, such as hazard mapping. This should address concerns with legal liability, unnecessarily restrictive licensing and ensure standardisation across jurisdictions. While data provision may continue to be undertaken by a range of stakeholders across government agencies, academia and businesses to allow for specialisation, it is important these activities are transparent and the data is accessible.

There is also potential for more involvement by the private sector in data sharing. For example, due to a lack of government centralisation of flood data, the Insurance Council of Australia has co-ordinated central flood risk information in the National Flood Information Database. It is recognised that while commercial interests need to be protected to encourage the continued development of such information sources, there are benefits from promoting a level of access to researchers and local decision-makers. The National Observatory for Natural Hazards in France[6] provides a model for a partnership between the insurance industry and government, which could be replicated in Australia.

In doing so, it might be useful to explore the opportunities to leverage the existing data.gov.au and the Australian National Data Service infrastructure (ANDS). The ANDS is currently funded by the Australian Government and administered by Monash University, Australian National University and the CSIRO (ANDS, n.d.).

Research

There is a need to establish better opportunities for end users to be involved in natural disaster research.

This analysis highlights that greater transparency is required around past and present research activities related to natural disaster resilience. This would foster valuable links between groups with common interests and motivate new streams of research responsive to the needs of Australian communities. This is consistent with the 2011 'Focusing Australia's Publically Funded Research Review', which called for greater co-ordination to maximise returns from investment and also builds on the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) approach of linking with end users.

Ideally, a complete stocktake of natural disaster information would encompass the dimensions identified in Table 6.1. This stocktake could be easily maintained as part of a co-ordinated funding process for research projects. The recent stocktake of mitigation investment decision work for the disaster mitigation workshop hosted by the Attorney-General's Department and CSIRO could be included. In the interests of transparency, as much of the stocktake as possible should be made publically available, accompanied by an easy-to-use search capability. However, database or project files could be held internally by the National Resilience Advisor in cases where private information was provided in confidence.

Table 6.1: Elements of a complete natural disaster information stocktake

Elements for databases	Elements for research projects
• Data category (see Chapter 3)	• Research theme
• Data format (time series, maps etc.)	• Research objective and outputs
• Time period collected	• Relevant time period
• Location collected for	• Relevant geographic location
• Relevant type/s of disaster	• Relevant type/s of disaster
• Agencies involved in collecting data	• Agencies involved in project
• Contact details for data set manager	• Contact details for project manager

6 The National Observatory for Natural Hazards in France facilitates data sharing and pools information and studies produced by different stakeholders. Access is provided to hazard maps, assets at risk, vulnerability and resilience at a local level, loss records and lessons learnt, and public risk prevention programmes and procedures. Insurers provide detailed frequency and cost-of-claim information to the observatory while the public sector provides the rest of the information (ONRN, 2013).

A national resilience research agenda should be established to promote greater application of research in decision-making. A national agenda would identify the key issues that need to be resolved to assist decision-makers with the prioritisation of research investments. The mechanisms used by the Natural Hazards Research Platform in New Zealand and the National Health and Medical Research Council in Australia provide examples of how this agenda might be implemented.

In setting the agenda, it would be important to balance the need for competitive funding, to incentivise high quality, innovative research ideas, and targeted funding, in relation to known issues and challenges.

To allow for greater accountability of research and to help shape this agenda, completion of an impact evaluation framework could be established as a condition for research grants. The nature of this evaluation is described in Box 13.

Box 13: Research impact evaluation

To ensure funds are allocated efficiently, effectively and in a manner consistent with the achievement of policy objectives the outcomes of research programs require monitoring, evaluation and reporting.

The monitoring and evaluation process typically starts with a program logic map outlining the conceptual framework for a research program and detailing the hypothesised cause and effect relationships between inputs, outputs and outcomes, and the overarching program objectives. The logic map then guides the development of a monitoring and evaluation plan and aids effective program implementation, enabling stakeholders to reach clarity and consensus as to the links between program inputs, activities, outputs and outcomes.

The development of a monitoring and evaluation plan early in the research process helps to ensure that research outcomes can be fully evaluated later, and interim assessments can be made, e.g. to assess whether the research is on track to delivering a longer-term outcome. A good evaluation plan is structured, systematic and coherent and ensures the right questions are asked, the right information is collected and an evidence-base is established for ongoing evaluation.

Finally, following research completion, research outcomes need to be evaluated. In an environment of limited resources, rigorous ex post impact evaluation gives research organisations firm evidence of the effects of research on the economy, environment and society. Ex post impact evaluation is an important mechanism to assess the effects of a program of work, including the fulfilment of its goals and objectives and possibly its unintended outcomes.

It can provide evidence to inform funders, policy makers, research teams and other stakeholders for reasons of accountability, allocation of future funds, analysis to inform investment decision-making and to build advocacy with funders and the general public. To ensure the evaluation is consistent across different works, an evaluation framework is required. Steps would include identification, measurement and aggregation of research outcomes, so that outcomes can be compared across a range of research programs.

In an environment where there is an increasing requirement for accountability, most research organisations have implemented, or are implementing, structured approaches to monitoring and evaluation to improve transparency, ensure more efficient use of resources and drive better research outcomes.

3. Enabling effective decision-making – establish a prioritisation framework

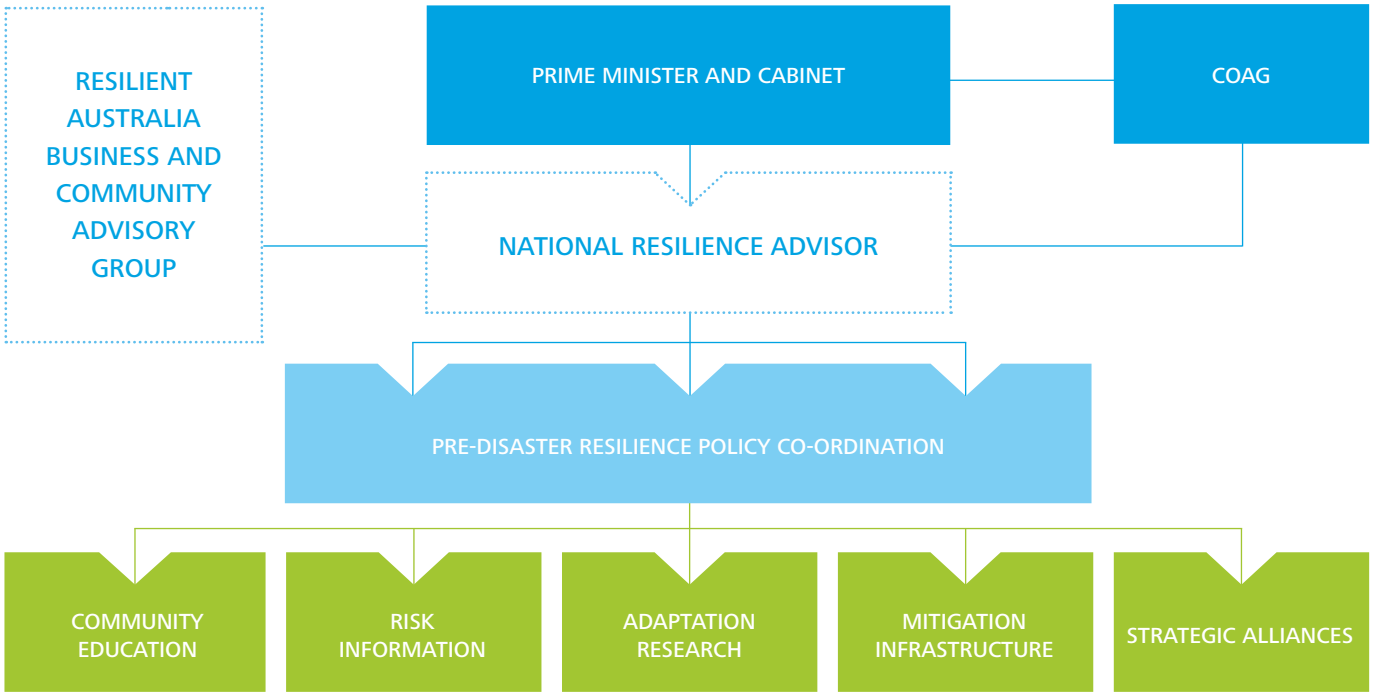
Finally, to support the broader, consistent application of data and research in decision-making, a national prioritisation framework for investment in resilience should be established. This framework would be similar to Infrastructure Australia's Priority List, by providing guidelines for cost-benefit analysis of resilience investment options, including links to standardised data sources and step-by-step methodologies for different investment types. This would allow comparison of different projects on a consistent basis and enable transparent, evidence based decision-making through prioritisation of funding based on benefit-cost ratios.

This approach would enable best practice use of natural hazard data and research to be collected and disseminated and ensure an optimal outcome on resilience investment decisions in Australia.

Through the collation of analysis, the framework would also build the common understanding of the nation's areas of highest risk and the most effective measures to reduce that risk and assist in prioritising the research agenda.

Consistent with the recommendation of *'Building our Nation's Resilience to Natural Disasters'*, a National Resilience Advisor within the Department of Prime Minister and Cabinet would be well placed to address these issues. Developing resilient communities should be elevated to the centre of government decision-making to deliver effective and efficient co-ordination of activities across all levels of government, business, communities and individuals. This should be directly supported by a Business and Community Advisory Group to help facilitate a more co-ordinated response and ensure that business and the not-for-profit sector are represented at the highest levels of policy development and decision-making.

Figure 6.1: Building a more resilient Australia



PRINCIPLE: CENTRAL GOVERNMENT FOCUS WITH STRONG SUPPORT FROM BUSINESS TO ADDRESS THE CO-ORDINATION CHALLENGE

Source: Deloitte Access Economics, *Australian Business Roundtable for Disaster Resilience and Safer Communities* (2013)

Concluding remarks

Many stakeholders across Australia are making valuable contributions to knowledge about natural disasters and resilience, across governments, businesses and communities. However, significant barriers remain to optimal decision-making that is informed by data and research, and this is limiting our progress towards a resilient Australia.

The three recommendations we offer will help to unlock the full potential of data and research and to reduce the burden of natural disasters on the Australian economy and our communities. This can only be achieved if there is a shared effort between governments, businesses and communities.

A prop plane dropping fire retardant material over bushfires in the Grampians, Victoria. January, 2014.