

3. Roles and responsibilities in disaster management

Key Points

- Disaster management in Australia involves a complex range of stakeholders and activities
- There have been a number of reviews and inquiries undertaken at the federal and state government levels producing a wealth of information and insight into specific disaster events
- However, implementing recommendations related to pre-disaster resilience has been slow
- While some funding has been provided for pre-disaster resilience, the ratio of pre-disaster resilience funding to funding during and following disasters is low.

3.1 Recent inquiries and reviews

The prevailing principles of disaster management in Australia (prevention, preparedness, response and recovery) are evolving. Recent inquiries and reviews have highlighted the vital role of resilience in disaster management planning.

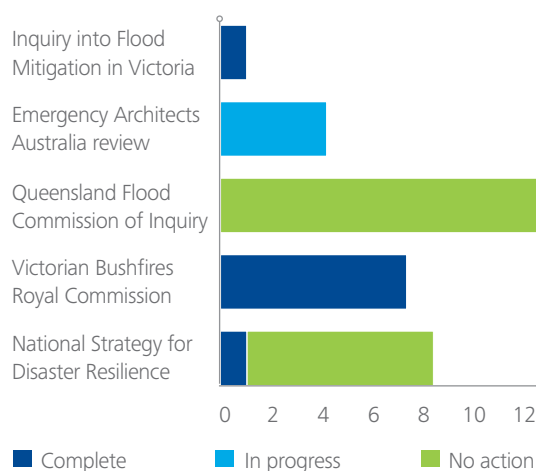
Since 2009 there have been a number of Inquiries/ Reviews related to Natural Disasters, including:

- The Victorian Bushfires Royal Commission
- The Queensland Floods Commission of Inquiry
- The Australian Government's Natural Disaster Insurance Review
- Productivity Commission Inquiry into Regulatory and Policy Barriers to Effective Climate Change Adaptation
- Treasury Consultation Paper Reforming Flood Insurance: Clearing the Waters
- The Australian Government's Consultation Paper, Reforming flood insurance: A proposal to improve availability and transparency
- The Federal Parliamentary Inquiry into the operation of the insurance industry during disaster events
- The Federal Parliamentary Inquiry into Residential Strata Title Insurance
- Australian Government Actuary Report On Investigation into Strata Title Insurance Price Rises in North Queensland
- Senate Inquiry into Extreme Weather Frequency and Preparedness.

These reviews and inquiries outline an extensive list of recommendations and suggested courses of action for the Australian Government, state and local governments, and communities. While some of the recommendations have already been accepted and implemented, many remain in the consultation and planning phases. This suggests that, while disaster resilience is placed high on the agenda for future action, the issues are challenging and take time to resolve. In particular, actions which require the coordination of communities, local governments, state and the Australian Governments are less likely to have been completed.

Chart 3.1 demonstrates that, while most of the recommendations of inquiries have been considered and many are in progress, a majority remain incomplete⁶.

Chart 3.1: Reviews and Inquiries: recommendations yet to be completed



⁶ The recommendations highlighted in the above chart include those that are related to the case studies outlined in Chapter 4. The reviews that were included in this analysis are: National Strategy for Disaster Resilience, National Disaster Insurance Review, Victorian Bushfires Royal Commission, Queensland Flood Commission of Inquiry, Queensland Flood Relief – Emergency Architects Australia, Brisbane backflow prevention measures investigation, Inquiry into Flood Mitigation in Victoria, Cyclone Testing Station. The bulk of the recommendations included in the Reviews and Inquiries relate to improvements in dealing with the disaster response and disaster recovery matters, only some of the recommendations are directly related to resilience. The Emergency Architects Australia report was an independent submission to the Queensland Floods Commission of Inquiry. The recommendations included in Chart 3.1 pertain to structures in flood prone areas, which are difficult to implement.

3.2 Current policy framework

COAG plays an important role in coordinating government responses to both natural disasters and human-caused risks to personal and community safety. 'Responding to disasters' is an existing issue under the COAG agenda for National Security and Community Safety. In 2011 COAG endorsed the resilience-based approach to emergency management, the National Strategy for Disaster Resilience.

However, there are also elements of pre-disaster resilience that reside within all current COAG reform agendas. Along with NSDR, there is the National Disaster Resilience Framework, Critical Infrastructure Resilience Strategy, and the National Climate Change Adaptation Action Plan as well as bodies such as the Australia New Zealand Emergency Management Committee, Trusted Information Sharing Network, the Climate Commission and the newly created National Insurance Affordability Council.

The fact that the scope of pre-disaster resilience spreads across a number of different agendas demonstrates the current fragmented nature of pre-disaster resilience and therefore the need for a fresh, sustainable and comprehensive national approach.

Through the NSDR, the current policy framework has recognised that disaster resilience is a shared responsibility for individuals, households, businesses and communities, as well as for governments. As outlined in the first chapter, the roles and responsibilities of the key stakeholders have been clearly articulated by government⁷:

- Building resilience should be assigned to those most appropriate to respond to local conditions; this will favour local initiatives and private responsibility where resilience has no external effects on third parties. That is, private parties will continue to take responsibility for their own actions, assets, investments and risks.
- Governments should respond to market failures and regulatory failures that prevent effective and efficient natural disaster risk management, focusing on:
 - Providing best available information about risks to facilitate adaptation by the private sector and making information accessible and useable
 - Ensuring that regulations, markets and institutions promote effective private risk management
 - Managing risks to public goods/assets and government service delivery
 - Taking account of disaster risk in policy and planning
 - Helping build capacity and resilience, where required, particularly to assist vulnerable individuals, groups, regions and communities.
- Decision-making should:
 - Be based on the best available research
 - Be cost-effective
 - Be regularly reviewed to meet changing circumstances
 - Enhance social inclusion.

Based on this approach, the remainder of this chapter outlines the roles and responsibilities of key stakeholders, focusing on the activities that they currently undertake.

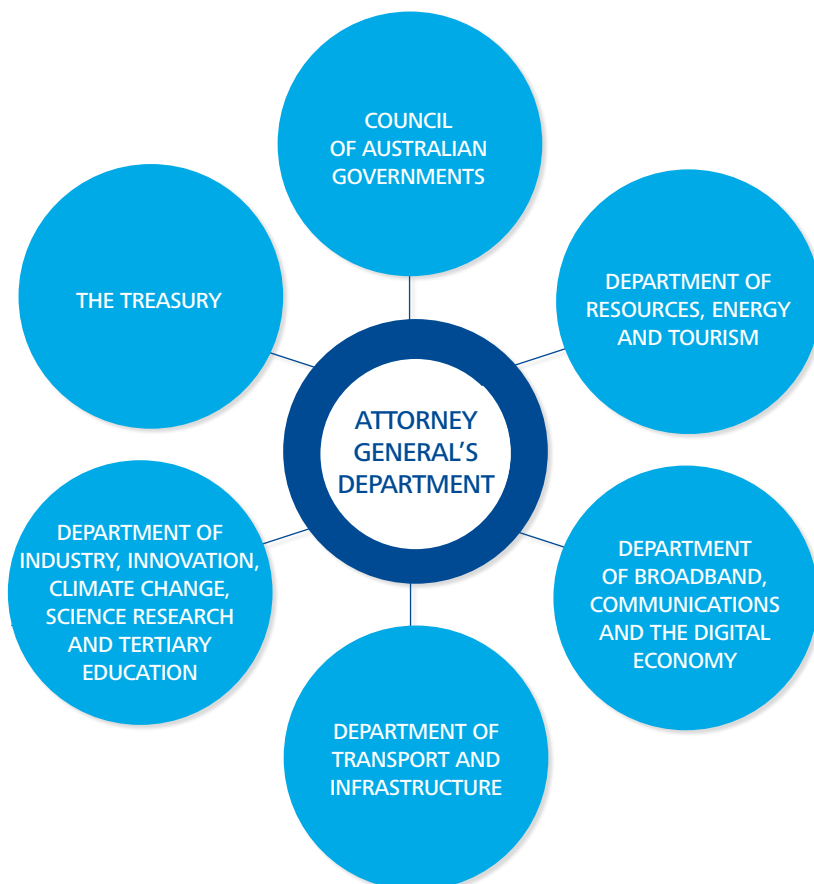
⁷ In November 2012, the COAG Select Council on Climate Change (SCCC) developed a set of guiding principles for the roles and responsibilities of key stakeholders that in this instance have been applied to pre-disaster resilience for natural disasters.

The range and breadth of activities attests to the importance of resilience in the broader policy agenda

3.3 Australian Government

Figure 3.1 demonstrates the current spread of Australian Government resilience activities across departments and governmental bodies. The range and breadth of activities attests to the importance of resilience in the broader policy agenda.

Figure 3.1: The current Australian Government approach to resilience in Australia



The Attorney General's Department, with its responsibility for Emergency Management Policy, is the core Australian Government department relating to disaster resilience. The **Responding to Disasters** COAG agenda is administered through the Standing Council on Police and Emergency Management (SCPEM) and the Australian New Zealand Emergency Management Committee (ANZEMC).

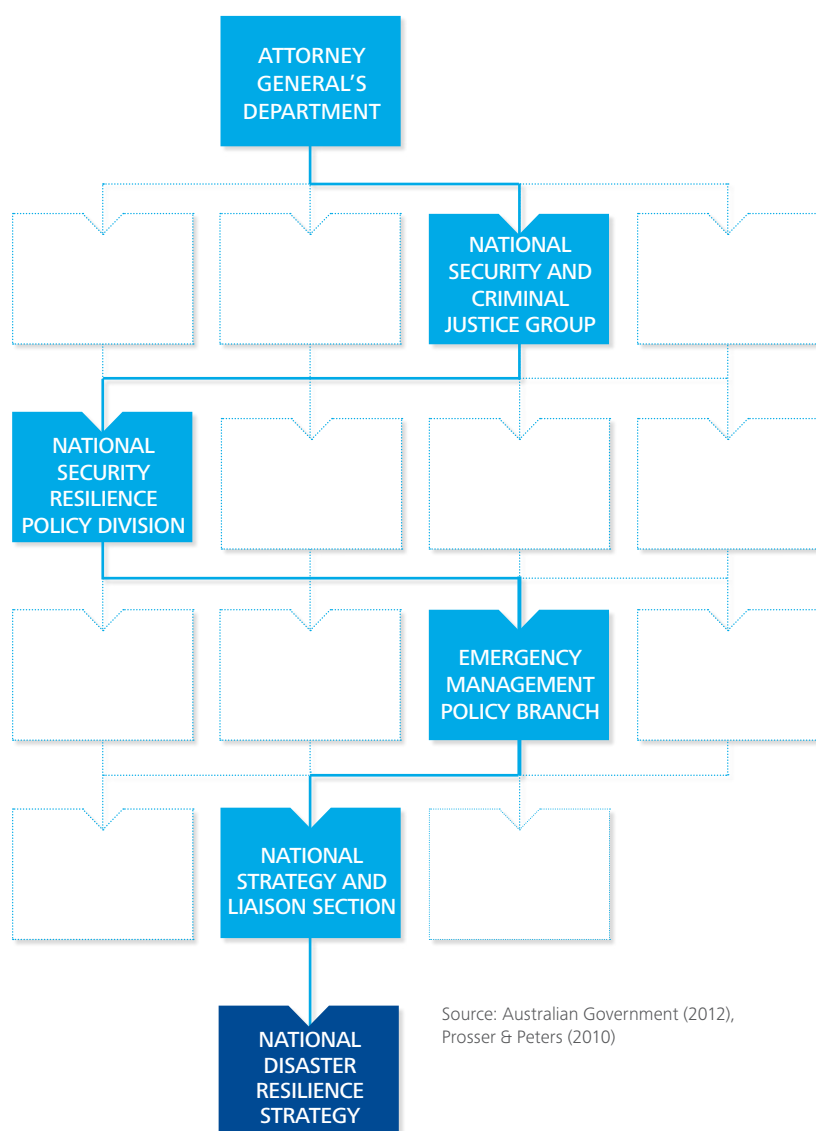
The ANZEMC meets twice yearly and reports to COAG through the Standing Council on Police and Emergency Management (SCPEM) whose focus is to:

- Promote a coordinated national response to law enforcement and emergency management issues
- Provide a framework for cooperation and shared strategic directions for the policing and emergency services of Australia and New Zealand
- Encourage and share best practice in police policy and operations, and in emergency management, across jurisdictions (Attorney General's Department, 2013).

Responsibility for driving the core strategy around disaster resilience – the NSDR – is housed in the Attorney General's Department, in the National Security Resilience Policy Division, Emergency Management Policy Branch, National Strategy and Liaison Section. The Division is responsible for policy, legislation, advice and programs related to developing resilience to all hazards, including the areas of critical infrastructure protection, electronic and identity security, and protective security policy.

Figure 3.2 illustrates this positioning of the NSDR within the Department.

Figure 3.2: Location of the National Disaster Resilience Strategy



Source: Australian Government (2012), Prosser & Peters (2010)

The Attorney General's Department's primary mechanism for pre-disaster resilience funding is the National Partnership Agreement on Natural Disaster Resilience (NPA-NDR)⁸ administered in partnership with the states and territories. The program provides approximately \$27 million per year to states and territories to fund disaster resilience programs (Australian Government – Attorney General's Department, 2011c). As the NPA-NDR is administered by the National Security Capability Development Division there is potential for further fragmentation of resilience policy and program delivery.

3.3.1 Natural Disaster Insurance Review/ National Insurance Affordability Council

Following the extreme weather events during the summer of 2010/11, the Natural Disaster Insurance Review was announced by the then Assistant Treasurer Bill Shorten. The review primarily focused on the availability and affordability of insurance offered by the private insurance market (Australian Government – Treasury, 2011). The review also addressed whether existing Australian and state government arrangements for natural disaster recovery and resilience require supplementation.

The proposal to establish a National Insurance Affordability Council (NIAC) is a recent outcome of this review (Australian Government – Department of Prime Minister and Cabinet, 2013). Although it is yet to receive Terms of Reference, the Council is expected to coordinate flood risk management and play a role in the collection of data and provision of mapping tools. It may also be involved in the identification of cost-effective mitigation investments. It is intended to broaden the program to include other natural disasters.

At least \$100 million over two years will be directed towards mitigation projects, such as funding flood levees in at-risk areas. The agency will bypass the state and territory governments and accept funding requests directly from local councils and community groups across Australia. At present it is unclear how the Council will be structured, and how it will interact with other agencies such as Geoscience Australia. Nevertheless, it is anticipated that the Council will make important contributions to pre-disaster resilience on a national scale.

⁸ The NPA is an amalgamation of previous Australian Government programs, the Bushfire Mitigation Program, the Natural Disaster Mitigation Program and the National Emergency Volunteer Support Fund.

3.3.2 The Australian Building Codes Board

The development and management of building codes in Australia is undertaken at the national level by the Australian Building Codes Board (ABCB). Building standards in Australia are implemented and regulated at the state and territory level.

The role of building codes in increasing resilience

Building standards have undergone constant review, particularly after major natural disaster events and via research, to ensure adequate levels of safety and health are maintained for the community. Where the building standards proved to be inadequate, as identified in the wake of Cyclones Althea in 1971 and Tracy in 1974, they were subsequently upgraded. These improved standards for high-wind design were later demonstrated to be satisfactory as evidenced by the small number of building failures resulting from Cyclones Vance in 1999, Larry in 2006 and Yasi in 2011.

Recent changes to the regulatory regime show an ongoing commitment by Governments to improve the community's disaster resilience by modernising the Building Code of Australia (BCA). This has included the planned introduction of new National Construction Code (NCC) provisions to apply in flood hazard areas (Australian Building Codes Board, 2012). The new regulations took effect from May 2013. The Australian Building Codes Board has also recently finalised non-regulatory Handbooks on Community Bushfire Shelters and Building in Flood Prone Areas.

However, the benefits of changes to building codes need to be understood in the broader context. **Changes to building codes which apply to new residential buildings will affect only about 1.3% of the housing stock. It would take approximately 44 years for these changes to affect the housing stock as a whole** (Deloitte Access Economics, 2013 based on Australian Bureau of Statistics, 2010).

The difficulty of implementing changes to building codes as they affect existing housing is demonstrated in the recent Australian Government response to the Productivity Commission report (Australian Government, 2013). As described in **Appendix D**, it is particularly important to note that Recommendation 11.1 regarding mitigation for existing settlements was only 'noted' by the government. Although one of the hardest to implement, this is also one of the most important areas for resilience action.

In addition, building codes have tended to focus primarily on regulatory and engineering issues rather than economic considerations. This approach does not necessarily ensure that building codes maximise overall economic benefits.

3.3.3 Critical Infrastructure Planning

Natural disasters cause disruption to electricity networks, food and water supplies, health services, and communications systems. This compounds the costs of recovery for society, as limited access to these essential services inhibits the ability of communities to get back on track. Mitigation measures are necessary to minimise the impact of a disaster on these basic services.

The Critical Infrastructure Resilience Strategy, published in 2010, aims to reduce the exposure of Australian communities to risks posed by natural disasters. The strategy focuses on developing a process to improve resilience for physical facilities, supply chains, information technologies and communications networks, the loss of which would have significant impacts on the wellbeing of Australian communities (Australian Government – Attorney General's Department, 2010).

This approach is targeting ways to improve resilience, allowing for greater operational sustainability and business continuity in the aftermath of future disasters. For instance, infrastructure owners and operators are encouraged to participate in research projects through the Critical Infrastructure Program for Modelling and Analysis. This program captures interactions between critical infrastructure systems.

A comprehensive review of the effectiveness of the strategy is due in 2015. The Critical Infrastructure Resilience Strategy provides an example of how businesses, governments and communities have successfully worked together to build resilience. Further work is required to assist local councils, business, individuals and other interested stakeholders to achieve funding-assisted programs which will further drive investment into resilience infrastructure more broadly, particularly in residential areas.

Work is needed to assist local councils, business and individuals to achieve funding-assisted programs which will drive resilience

3.3.4 Research into resilience

There are three main research bodies focused on pre-disaster resilience research: the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the National Climate Change Adaptation Research Facility (NCCARF) and the Bushfire Cooperative Research Centre (CRC). These are complemented by various universities focusing on resilience issues.

As Australia's national scientific agency, CSIRO undertakes research in relation to natural disasters. This plays a crucial role in supporting decisions into resilience investments. Specific examples of relevant activities include the use of 3D modelling techniques to simulate flood and storm surge behaviour, collection and analysis of bushfire data to target mitigation action, predicting the likelihood of disasters and associated financial losses to justify resilience investments and inform decision-making at the policy level.

Representatives from other national research bodies, including CSIRO and Geoscience Australia are actively involved with the NCCARF. Geoscience Australia also undertakes research into natural hazards and community safety including support for the National Work Program for Flood Mapping and operation of the Australian Tsunami Warning System and Sentinel bushfire monitoring system. Over the four years to 2015–16, enhancements of flood risk information will be allocated around \$12.4 million.

Climate Adaptation National Research Flagship

In response to Australia's increasing vulnerability to natural disasters, the CSIRO established the Climate Adaptation Flagship in 2007.

The Flagship is a collaborative research partnership between the CSIRO, leading Australian scientists, research institutions and commercial companies, including the Bureau of Meteorology and the Australian Greenhouse Office. Its objective is to provide scientific information and expertise to enable the implementation of successful adaptation responses.

Upon establishment, it was granted \$43.6 million to finance its first four years of operation. However, its funds are boosted from a number of sources on a project-by-project basis. For example, in 2010, the CSIRO Flagship Coastal Collaboration Cluster was launched, with \$11 million assigned for the three-year project between a number of universities, the Climate Adaptation Flagship and the Wealth from Oceans Flagship. The purpose of the cluster was to collate and disperse knowledge to policy makers and planners in vulnerable coastal regions in a practical way.

Other important contributions of the Flagship fall within the key themes of 'pathways to adaptation', which relates to provision of accurate information, and 'sustainable cities and coasts', which focuses on the design of realistic adaptation solutions. In particular, the Flagship's series of working papers discuss vulnerabilities to natural disasters such as floods and cyclones.

Source: CSIRO (2013)

The NCCARF was established in 2008 as a partnership between the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education and Griffith University. Its role is to direct national research into the risks associated with climate change in an interdisciplinary manner.

The NCCARF is jointly funded by government and participating universities. The Australian Government is contributing \$10 million, along with specific allowances under the Climate Change Adaptation Research Grants Program. However, the operations of the Facility expire in mid-2013. It has been proposed that the leadership of research be extended for another two years in the form of NCCARF2. It is estimated that this body will require government funding of \$2 million annually, with an additional \$1 million per year necessary to maintain the Adaptation Networks.

Specific research into bushfire hazards has also been undertaken by the Bushfire Cooperative Research Centre (Bushfire CRC), funded by the Australian Government's CRC Program since 2003. It concentrates its activities within three programs, aimed at understanding, communicating and managing risks.

In February this year, the Government announced that it would supply up to \$47 million for the establishment of a new Bushfire and Natural Hazards Cooperative Research Centre. This organisation will lead further interdisciplinary research into the risks of floods, earthquakes, cyclones and tsunamis, as well as bushfires, to assist with policy and resource allocation decisions. With continued support, the Bushfire and Natural Hazards CRC will enable the application of pre-disaster measures for a variety of risks in a targeted, effective manner across the country.

3.4 State and territory governments

At the state and territory level, governments reinforce the national agenda on resilience matters, supporting the lead of the Australian Government and prioritising efforts on those resilience activities that will have the highest benefit within their jurisdictions. Whilst the overall approach needs to be consistent, the risks and responses will vary according to local conditions.

This proposed role should involve:

- Provision of local and regional science and information in a manner that is consistent with the rest of the country, and that also captures the risks of natural disasters at the regional level
- Implementing resilience measures to better protect public assets owned directly by the state/territory governments
- Working in conjunction with the Australian Government, and other states and territories, to protect assets that are located across borders
- Ensuring that resilience is adequately addressed in services such as emergency management, transport, land-use planning, environment, health services and public housing
- Establishing appropriate incentives, or regulatory requirements for resilience investment through legislation relating to state planning, property and environmental policies, such as building codes and engineering standards
- Supporting local governments with their role of promoting resilience at a community level.

In a number of instances, the implementation at the state level of the National Strategy for Disaster Resilience (NSDR) remains with departments largely responsible for Police and Emergency Management. It is important that resilience be raised in profile at the state and territory government level.

3.4.1 Land use planning

Land use planning is a key measure of resilience that is undertaken at the state level, and as such there are different principles applied across Australia. Appropriate planning prior to a natural disaster has the potential to significantly reduce the impact of natural disasters during and after an event. Careful consideration needs to be given to zoning land for residential or commercial use which is, or becomes, vulnerable to threats posed by natural disasters. Of particular concern is the ongoing use and development of land in areas that are continuously affected by natural disaster events.

Land use planning

State, territory and local governments should incorporate consideration of the impacts of weather volatility in land use planning decisions.

Land use planning regulation should: facilitate a risk management approach that promotes planning decisions that are robust across a range of climate change outcomes and are proportionate to the risks involved; moderate activities which retard adaptation by the community; and facilitate the provision of public goods.

Source: Productivity Commission (2012, p. 241)

In particular, a consistent framework for data collection and provision of regionally and locally relevant and accurate information is essential for land use planning and development decisions which promote effective pre-disaster resilience.

A national framework for data collection and management, established in consultation with the state and territories would be of assistance in implementing pre-disaster resilience in land development processes. Greater attention should be directed towards specifying how data will underpin planning outcomes, which modelling or mapping techniques should be used, and how these relate to zoning classifications.

3.5 Local government

Local governments are best placed to understand their localised circumstances and, provided they are equipped with the knowledge and skills required, can help to deliver the appropriately tailored resilience solution. On the frontline, local governments must cooperate effectively with members of the community; advise the states and territories on risk exposure; and work to implement suitable resilience measures in a timely and efficient manner. They are responsible for mobilising local resources and ensuring that households within their jurisdiction are well informed on how resilience relates to them.

Following consultation with local governments, it is clear that there is confusion as to where they can most appropriately apply for complementary funds in order to:

- Access information to prepare business cases and undertake community consultation
- Develop capabilities
- Appropriately and efficiently invest in mitigation activities.

Greater involvement of local governments during the planning stages of disaster resilience and improved access to better planning information will assist effective decision making to build resilient communities. Without clear guidelines on what data is available and how it should be used, the ability of local governments to promote pre-disaster resilience through land use planning and development will be reduced. Clear support for local government councillors and officials in understanding natural disasters risks, resilience adaptation options will support better decision making at the local level.

3.6 Businesses

Whilst governments have a responsibility to establish overarching policies and information to support resilience activities, business is best placed to develop market-based incentives to support resilience solutions.

Adding to the Guiding Principles generated by the Select Committee on Climate Change, business is well placed to assist government in the five key areas.

- **Education: Developing public awareness and education campaigns**
Business has strong networks and a range of communication channels to provide tailored messages to individuals and communities to raise awareness at the local level.
- **Information: Developing appropriate information sets**
Business has well developed information sets and can support government efforts to improve risk awareness and develop open platforms for risk information.
- **Adaptation Research: Developing Best Practice**
Business expertise can support research efforts to develop best practice adaptation.
- **Pre-disaster resilience Infrastructure: Supporting Incentives**
Business is well placed to develop and incorporate appropriate incentive structures into products and pricing to support efforts by governments to enhance resilience through public infrastructure.
- **Alliances: Supporting business resilience and continuity**
Business has natural alliances through existing relationships and activities that are replicated at a local level.

3.7 Communities and individuals

Individuals are best placed to take responsibility for their own actions, assets, investments and risks. However, a socially responsible approach to building resilience would ensure that appropriate assistance is provided to particularly vulnerable individuals, groups, regions and communities⁹.

Community and not-for-profit organisations are often the first responders in an emergency situation. It is these groups that are keenly aware of the disastrous impact that natural disasters can have on individuals and communities, and as such have been working with these groups to build resilience to natural disasters in Australia for a number of years.

Community action

In acknowledging the devastating impact that these events have had, community groups have developed innovative programs which focus on assisting individuals and communities prepare for natural disasters across Australia.

These include:

State Emergency Services: Throughout Australia, the State Emergency Services provide essential services during and after natural disasters.

The State Emergency Services are also committed to assisting the community with building resilience to natural disasters in Australian communities. For example, the Victorian SES has developed a number of community education campaigns, such as FloodSafe, StormSafe and TsunamiSafe which help individuals and communities to prepare for natural disaster, while Queensland SES has developed 'Get Ready Guide' to help households prepare for floods and storm surge events.

Australian Red Cross: The Australian Red Cross undertakes a variety of community resilience activities. For example, Emergency REDiPlan is a national community education program run by Australian Red Cross. REDiPlan helps people prepare for, respond to, and recover from, emergencies. In the event of an emergency, individuals and communities are better able to respond to and manage their own recovery, thereby improving their overall wellbeing and reducing pressure on support services.

3.8 Summary

Australian, state and territory governments are increasingly engaging in resilience activities to reduce the impact of natural hazards on individuals, communities and businesses. There is a great deal of positive activity in this space across all stakeholders.

However, considering the current roles and responsibilities in pre-disaster resilience, activities and funding could be better coordinated across all sectors.

The main responsibility for driving the core resilience strategy rests in a traditional emergency management policy focus, while many other departments of the Australian Government have pre-disaster resilience responsibilities through COAG agendas and program delivery.

The development of the NSDR is to be commended as an important step in enhancing Australia's resilience. However, whilst ongoing coordination and integration of activities in terms of preparedness, response and recovery activities of emergency management will continue to be critical, it is apparent that a fresh approach to delivering a coordinated pre-disaster resilience investment across all stakeholders is required.

The Senate Inquiry into Climate Change adaptation illustrates the issue.

"Almost every single witness at this inquiry has said that what we need is a nationally coordinated response, and what I am seeing is not a nationally coordinated response at all." Senator Milne, 2013 (Senate Environment and Communications References Committee, 2013, p.65)

In addition to the NPA–NDR managed in the Attorney General's Department, there are a number of other funded programs and activities that sit in other Departments or funded bodies. The elements of this spending are set out in Table 3.1.

9 Information in this section draws on consultations undertaken with organisations in the References section

Table 3.1: Australian Government pre-disaster funding

Agency	Program	Funding
Attorney General's Department	National Emergency Management Projects Grant Program	\$3.8 million in 2012–2013
Attorney General's Department	National Partnership Agreement on Natural Disaster Resilience	Around \$27 million annually
Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education	Cooperative Research Centres Program – from 1 July 2013, the Program will support the Bushfire and Natural Hazards CRC.	\$47 million over eight years*
CSIRO through the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education	National Climate Change Adaptation Research Facility	\$43.6 million over four years.
Department of Resources, Energy and Tourism	Geoscience Australia – Flood information enhancements.	\$12.4 million over four years**

* Contingent on further state and territory financial support

** Total funding for the Geoscience Australia in 2012–13 was \$117.9 million.

The above demonstrates an apparent lack of co-ordination of the Australian Government spending on pre-disaster resilience. Whilst it is a difficult task to fully assess all the Australian Government funding spent on pre-disaster mitigation activities, a reasonable estimate of consistent annual expenditure based on available information is in the order of \$50 million per annum. It is possible that this figure will increase, with the allocation of \$50 million per year, for two years, to the new National Insurance Affordability Council and associated mitigation initiatives. However, the provision of this additional funding is conditional on contributions from state and territory governments. The amount that might be provided beyond the proposed two-year commitment is uncertain.

This estimated \$50 million spent on pre-disaster resilience compares with the Australian Government expenditure on disaster relief and recovery of around \$560 million per year, as outlined in Chapter 2. Hence, 10 times more is spent after a disaster than on building resilience beforehand. If this disparity is not addressed, the gap will widen as disaster bills increase.

'Broader emergency management arrangements may not be achieving the right balance between government expenditure on disaster prevention and expenditure on recovery. There appears to be an inadequate focus on preventing damages from natural disasters.'

Source: Productivity Commission (2012, p. 241)

Based on the analysis provided in Chapter 2, there is a good case for greater expenditure on pre-disaster investment relative to post-disaster relief and recovery. Further, it is clear that greater emphases on activities directed at a nation-wide, co-ordinated approach to disaster resilience are likely to be more successful.

'It is not clear if the current funding process underlying the NPA–NDR is the most appropriate way to support disaster mitigation. ...A better criterion would be to allocate national funding to projects where the biggest expected net benefit can be gained.'

Source: Productivity Commission (2012, p. 254)

The next chapter considers specific case studies to illustrate where opportunities for greater, targeted investment in pre-disaster resilience could result in an overall benefit to Australia.

Melbourne fringe benefits

\$51
MILLION

AVERAGE
ANNUAL COST
2013

\$1,562
MILLION

1 IN 100
YEAR EVENT

\$15,862
MILLION

1 IN 1000
YEAR EVENT