

Executive summary

Natural disasters affect all states and territories in Australia. They have an enormous impact on people, the environment and our communities

In Australia, natural disasters have incurred billions of dollars in tangible costs¹ to individuals, businesses and governments.

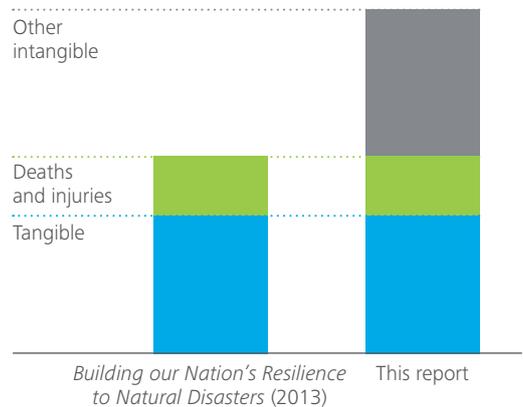
Beyond the known economic costs, it is well recognised that natural disasters have wide-ranging social impacts that are not only high in immediate impact, but often persist for the rest of people’s lives. While there is considerable evidence of social impacts, our knowledge of their economic cost is not well understood.

Where data permits, this report identifies and quantifies the social impacts of natural disasters, including those on health and wellbeing, education, employment and community networks. When considered alongside the tangible costs highlighted in *Building our Nation’s Resilience to Natural Disasters* (2013), a much richer picture emerges of the total economic cost of natural disasters to Australia.

This report finds that in 2015, the total economic cost of natural disasters in an average year– including tangible and intangible costs – exceeded \$9 billion, which is equivalent to about 0.6% of gross domestic product (GDP) in the same year. This is expected to almost double by 2030 and to average \$33 billion per year by 2050 in real terms (Chart ii), even without considering the potential impact of climate change.

Clearly comprehensive information on all costs of natural disasters is required to understand the full impact of natural disasters on our communities and economy and; to also understand the extent to which expenditure on mitigation and resilience measures is effective.

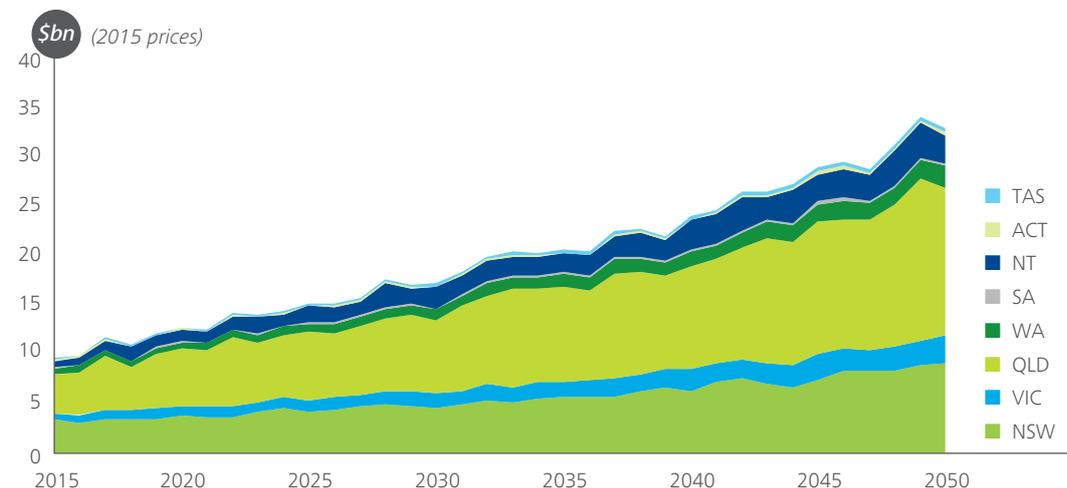
Chart i: Breakdown of costs between reports



1. In line with the Productivity Commission report, costs in this report are defined as:

- **Direct tangible costs:** those incurred as a result of the hazard event and have a market value such as damage to private properties and infrastructure
- **Indirect tangible costs:** the flow-on effects that are not directly caused by the natural disaster itself, but arise from the consequences of the damage and destruction such as business and network disruptions
- **Intangible costs:** capture direct and indirect damages that cannot be easily priced such as death and injury, impacts on health and wellbeing, and community connectedness.

Chart ii: 2015–50 forecast of the total economic cost of natural disasters, identifying costs for each state



Source: Deloitte Access Economics analysis

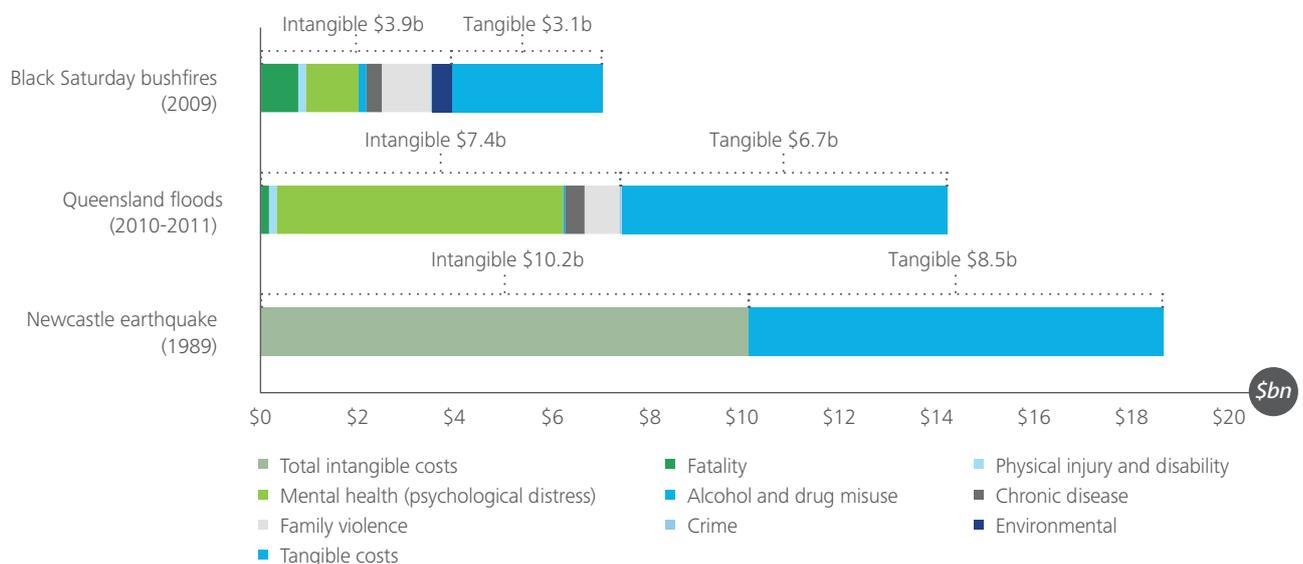
- Traditionally natural disaster costs have been a measure of tangible impacts. This paper identifies both tangible and intangible impacts and demonstrates that the economic cost of natural disasters may be underestimated by at least 50%
- Better understanding of the full costs of natural disasters further strengthens the case for increased mitigation measures and highlights the importance of coordinated, broad based recovery activities.

This report uses three case studies from different regions and periods – the 2010–2011 Queensland floods, the 2009 Victoria Black Saturday bushfires and the 1989 Newcastle earthquake – and assesses the tangible and intangible costs of the most recent two events. The report estimates the intangible costs to be as high as the tangible costs, and possibly higher. **In fact, the long term economic cost of natural disasters may be underestimated by more than 50%.**

This report only quantifies those intangible social impacts where there is sufficient data to do so, thus it provides a conservative estimate. Regardless of if they can be quantified, all identified outcomes are important and should be considered in any disaster mitigation decision-making process. Between 2009–10 and 2012–13, \$11.0 billion was spent on disaster recovery, while only \$225 million was spent on mitigation (Productivity Commission, 2015). The majority of relief and recovery assistance was provided through the Natural Disaster Relief and Recovery Arrangements (NDRRA), and in particular Category B payments which relate to essential public assets, financial support to small business and primary producers, and counter disaster operations.

The report demonstrates that the social costs of natural disasters equal the more traditionally defined economic costs – and are sometimes even higher. It is clear that a greater effort should be invested in the preparedness of individuals, in particular long-term psycho-social recovery. This would include community development programs and support for areas such as health and wellbeing, employment and education.

Chart iii: Total economic cost of Queensland floods, Black Saturday bushfires and Newcastle earthquake'



Source: Deloitte Access Economics analysis.

Note: Due to insufficient data, the total economic cost of the 1989 Newcastle earthquake was estimated using the tangible to intangible cost ratio of the 2010-11 Queensland floods and 2009 Black Saturday bushfires.

Executive summary

Our research leads to four recommendations to help reduce the long-term social impacts and economic costs of natural disasters.

1 Pre- and post-disaster funding should better reflect the long-term nature of social impacts

The analysis shows that the intangible costs of natural disasters are at least as high as the tangible costs. Significantly, they may persist over a person's lifetime and profoundly affect communities.

While building resilience into infrastructure is important, it should be accompanied by measures to ensure social and psychological wellbeing. **It is crucial that funding and policies** acknowledge the long-term social impacts of natural disasters.

As well as funding emergency services during disasters, infrastructure and recovery after disasters, government, business and the not-for-profit sector must also invest in services to support people, small businesses and communities well after the debris is cleared. These services are most effective when coordinated across sectors and when communities connect to foster a culture of resilience.

This report supports a national, long-term preventative approach to managing natural disasters and protecting our communities. This will require long-term commitment and multi-year funding to achieve. Critical to ensuring long-term impacts are minimised is "strengthening local capacity and capability, with greater emphasis on community engagement and a better understanding of the diversity, needs, strengths and vulnerabilities within communities" (COAG's *National Strategy for Disaster Resilience*, 2011).

A significant body of evidence shows that resilient and prepared communities are more likely to withstand the negative impacts of natural disasters. Likewise, strong social capital correlates to a more effective recovery.

2 A collaborative approach involving government, business, not-for-profits and community is needed to address the medium- and long-term economic costs of the social impacts of natural disasters.

Individuals, businesses, governments and communities all feel the social impacts of natural disasters. These impacts are complex and touch all levels of government and cross all portfolios, from infrastructure and planning to health and education.

This highlights the importance of a collaborative effort to build resilience, including coordinated approaches that consider all aspects of natural disasters: direct and indirect, tangible and intangible. This collaborative perspective should be considered within planning processes, to ensure disaster resilience is integrated across various portfolios in accordance with the National Strategy for Disaster Resilience (NSDR).

A coordinated approach with sustained resourcing makes community awareness education and engagement programs more effective. Such programs help communities to work together to better manage the risks they confront (NSDR). This promotes communities that are better able to withstand and recover from a crisis.

3 Governments, businesses and communities need to further invest in community resilience programs that drive learning and sustained behaviour change.

It is clear that funding of disaster mitigation measures should not only focus on building physical infrastructure such as flood levees, but include funding for social and psychological measures too. This would include community awareness, education and engagement programs that enhance social capital by building social networks and connections. While these preventative measures require up-front funding, they yield a return on investment by lessening the overall impact of a natural disaster on individuals, businesses, governments and communities.

Key considerations for program design include:

- Implementing appropriate incentives
- Programs that focus on learning and behaviour modification, in addition to general awareness
- The need for psychological preparedness
- Local solutions
- The need for solid data and evaluation
- Community connection to foster a culture of resilience.

Given how widespread the social impacts are after a natural disaster, it is important that communities, not-for-profits, emergency management agencies, businesses and governments collaborate to design and deliver preparedness programs and campaigns. These programs must educate communities as well as encourage and foster a culture of connectedness and resilience.

It is critical they be evidence-based to ensure cost-effective investment and continual improvement. It is important, too, to evaluate their effectiveness and draw out their key learnings.

4 Further research is needed into how to quantify the medium- and long-term costs of the social impacts of natural disasters.

While the complex social impacts of natural disasters are undisputed, there is currently a lack of consistent data to reliably quantify the cost. Direct and tangible impacts are usually considered as 'one-offs' but intangible social impacts tend to persist over time. Hence, data collection needs to better incorporate this temporal component to track and fully appreciate the long-term effects of natural disasters.

This report shows that the social impacts of natural disasters tend to be multiple and interrelated. Importantly, the experience of grief and trauma varies from person to person. It is therefore necessary to understand both the primary and secondary impacts of natural disasters on individuals and communities.

In *Building an Open Platform for Natural Disaster Resilience Decisions* we proposed a national platform to facilitate access to foundational data. In addition to this, there is a need to incorporate consistent longitudinal data to track social impacts. Areas that could benefit from better data collection include health and wellbeing, education, employment and communities. For example, datasets could incorporate information about people's experience of natural disasters such as timing and type.

Concluding remarks

This report highlights the significant economic costs of the social impacts of disasters. It provides four key recommendations in the form of strategies to help to reduce the long term impacts and costs of future natural disasters.

These recommendations reaffirm those made in *Building our Nation's Resilience to Natural Disasters* (2013) and *Building an Open Platform for Natural Disaster Resilience Decisions* (2014). Particularly, with regard to the need for national coordination and long-term, annual consolidated funding for pre disaster resilience, an open platform for foundational data, and for removing barriers to accessing data and research.

This report also supports the need to consider the social impacts of natural disasters when evaluating the benefits of resilient infrastructure in the investment decision-making process, as explored in *Building Resilient Infrastructure* (2016) and the need to build resilience before natural disasters happen.

“We will not be measured by the kilometres of road and pipes that we replace, we will be measured by how our people come through this”

Jim Palmer from Waimakiriri District Council after the Christchurch Earthquake, 2011



2009 Victorian Bushfires Relief Centre (Australian Red Cross)

"Grantham local, Derek Schulz, was known for his good humour and larrikin antics, always having a joke and looking on the bright side of life on the land. He had endured numerous major floods and droughts, suffered hail damage to his crops, empty water bores and devastating market prices. But like most farmers, he was bred tough and had a resilient spirit.

After the January 2011 floods that claimed the lives of friends and neighbours and destroyed almost everything he had ever known as 'home', Derek, on returning to his property, broke down in tears, his spirit was broken. The physical and emotional ramifications proved too hard to bear." *Cathy Finch, photographer, Queensland.*



January 10, 2012: Grantham, QLD. Local residents, friends and family attend the dawn unveiling of a memorial to victims killed in the floods in Grantham, Queensland on the morning of the first anniversary of the devastating 2011 Queensland floods (*Lyndon Mechielsen / Newspix*)

