SPECIAL REPORT

A S P I

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Sharing risk

Financing Australia's disaster resilience

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On average, the Australian community spends $1.58 billion each year in recovering from natural disasters, including the costs of injury and death.[1] As tragically demonstrated by the 2009 Victorian bushfires and the Queensland floods in January this year, many of these events cause great personal and economic hardship. Future disaster losses are likely to increase as a result of societal factors and economic development, irrespective of the impacts of climate change.

This paper argues that insurance should be a key instrument that supports any effort to maximise national resilience. This observation isn't new: insurance was identified as a an important mechanism for building resilience in the 2002 Council of Australian Governments (COAG) report, *Natural disasters in Australia*.[2] In the nine years that have followed, the issue has been largely dormant.

On 7 December 2009, COAG agreed to adopt a whole-of-nation resilience-based approach to disaster management that calls for an integrated effort encompassing enhanced partnerships, shared responsibility, a better understanding of the risk environment and disaster impacts, and an adaptive and empowered community that acts on that understanding.

A new National Strategy for Disaster Resilience has been developed by the National Emergency Management Committee and will soon be considered by COAG.

With the forthcoming release of the new national strategy and the devastation caused by the recent flooding in eastern Australia, it's now timely to consider how insurance can be incorporated as part of a strategic approach to meeting Australia's post-disaster costs.

This paper examines how Australia can reduce future losses from natural disasters and most effectively aid victims in recovery. It focuses on post-disaster outcomes, although it recognises that those outcomes can encourage effective ways to mitigate the impacts of disasters.[3]

Time for a fresh approach

Structures that provide incentives for individuals and communities to effectively manage the risks they face are likely to be more flexible and cost-effective than those that rely solely on government support.

The approach in Australia has generally encouraged individuals to look after themselves. Insurance is an important tool that individuals can use to increase their own resilience to natural disasters and to reduce the welfare losses they suffer as a result of those disasters (or of the risk of such disasters). But, for a number of reasons, many

people haven't taken up insurance as a way to cover their losses.

There's also a broader problem of the complex relationship between climate change uncertainty, adaptation, disaster mitigation and insurance.

Climate change places new pressure on governments to reconsider how to create policies that lead to sustainable community outcomes.[4] Insurance and possibly insurance style risk-sharing alternatives[5] will play an increasingly important role in government planning due to the potential for climate change to add to disaster losses.

We need a fresh approach in Australia to financing the costs of natural disasters and finding ways to reduce the costs of recovery by providing incentives to those in hazard-prone areas to take mitigation measures.

Any attempt to foster self-reliance must, however, understand why insurance isn't being fully utilised. For affordability and other reasons (see below), not all individuals are able to insure against risk. Others either may not realise the importance of insurance, since the risks are poorly communicated, or may not have made an accurate calculation of the value of their insured property and contents.

There may also be difficulties in supplying coverage. Private insurers can only offer insurance if it's economic to do so. They must give consideration to a number of factors, including the investment yield from their premium pool, their net combined operating ratio and the cost of reinsurance products. Accurate information on particular risks is essential for insurers to offer competitive premiums. Where that isn't the case, the insurance sector finds it difficult to cover certain risks and determine their potential liability; this may lead to limited coverage.

Governments encounter pressures to provide a degree of financial support to those affected by natural disasters and often act as an 'insurer of last resort'. They have provided basic disaster relief to assist in community recovery and to ensure regional economic stability.

Resources are limited, so it's essential to examine how government funding can be most effectively allocated. It's both impractical and unreasonable on equity grounds for governments to fully withdraw from the provision of disaster relief.

On the other hand, it's critical to recognise that the absence of government assistance is an incentive for self-help through individual, family and community preparedness. By exactly the same logic, if government assistance is expected to be readily available, that will reduce the incentive for private insurance and increase the willingness of individuals to expose themselves to the risks of disaster (for instance, by moving to bushfire-prone areas).

The key policy challenge, therefore, is striking a balance between the limits of insurability and the role of governments in supporting community self-reliance.

Insurance and national resilience

The insurance market in Australia is one of the most advanced in the Western world, with strong prudential supervision, corporate regulator supervision and industry codes of practice.

Australia's insurance sector represents 1.5% of the global market.[6] However, the level of private insurance penetration is low compared to other countries in the Organisation for Economic Co-operation and Development (OECD).[7]

Historically, the insurance market has been concentrated among three or four major providers, although there’s been recent growth outside of this top tier, with a number of smaller providers gaining greater market share. The top ten general insurance providers, as well as trends in their growth, are shown in Table 1.

Resilience implies that individuals and communities are able to reduce their exposure to risks, while at the same time enhancing their ability to recover. Communities often accept a level of risk to permit activities that give a benefit to the wider society. Much risk-bearing is highly desirable and efficient: stronger communities can generate long-term social and economic benefits.

Insurance products allow individuals and businesses to hedge against the risks of future disasters. They act as a means by which individuals and businesses can trade a small, certain cost (the premiums they pay) for protection against a potentially much larger uncertain loss. As most people are risk averse (in the sense that they prefer a small but certain loss to a large, uncertain one, even if the two have the same actuarial value), insurance can increase welfare by enough to justify the costs involved in its provision.

Efficient insurance products have two key characteristics.

First, insurance takes individual risks and pools them. While an event might have a reasonable chance of impacting one policyholder, insurance companies calculate that the likelihood that multiple policyholders will be simultaneously affected is relatively low. By aggregating risk, purchasing private insurance often becomes a more financially attractive option than self-insurance. A large market of policyholders is typically necessary if risk pooling is to occur. (Of course, even then it may not be sufficient if the risks affecting the individuals are correlated—that is, all members of the pool are likely to experience the loss simultaneously. This can be the case for some disasters, making risk pooling difficult).

An efficient insurance product should also encourage individuals to manage risks and reduce their exposure to them; if the price of the insurance product reflects a specific level of risk, individuals and communities have an incentive to manage that risk and reduce their

Table 1: The state of the general insurance industry in Australia

		Ranking measure				
		Net earned premium revenue				
Current rank	Insurance Company	Year end	Current ($m)	Prior ($m)	Prior rank	% change
1	QBE Insurance Group	12/09	12,149	11,087	1	10
2	Insurance Australia Group	06/09	7,233	7,295	2	–1
3	Suncorp	06/09	5,980	5,867	3	2
4	Allianz Australia	12/09	2,071	1,983	4	4
5	Wesfarmers	06/09	1,061	993	5	7
6	Munich Reinsurance Company Australia	12/09	877	739	7	19
7	Zurich Australian Insurance	12/09	780	741	6	5
8	Genworth Financial Mortgage Insurance	12/09	490	367	8	34
9	Swiss Re	12/09	414	325	9	27
10	Westpac Insurance	09/09	299	217	13	38

Source: PricewaterhouseCoopers, Insurance facts and figures 2010*, April 2010*

exposure to it. This directly links insurance to a broader national resilience approach to disaster mitigation and response.

In the aftermath of a natural disaster, individuals and businesses require finance to restore their livelihoods and commercial operations. Insurance companies are directly involved in relief assistance: they act as frontline providers of finance to their customers.

The availability of insurance is thus a key aspect in fostering resilient communities; without insurance, communities must bear the costs of recovery themselves, or rely on government assistance and public benevolence.[8]

Insurance as an underutilised tool

Non-insurance and the cost of insurance

Approximately 23% of Australian residential properties don't have a building or contents policy. The situation is bleaker for renters; as many as 52% have no contents coverage. There are several factors that have inhibited the take-up of insurance.

Affordability has a profound impact on the levels of private insurance. There are distinct correlations between non-insurance and social demographics: younger age groups and low-income households are less likely to have insurance coverage than other groups. Many of these groups are transient—up to 56% of renters claim that they're unable to insure their contents.[9] One of the main problems in offering insurance for individuals with few assets is that the administrative costs of an insurance policy are relatively high compared to the value of the coverage.

The consequence of having a large number of people who can't afford insurance is that they're in a poor financial position to manage their own risks.[10] This leaves them vulnerable to the social and economic impacts created by natural disasters and reliant on assistance from the government and the community.

Although risk is an important factor determining prices, insurance premiums are often subject to considerable levels of taxation. Those taxes increase the cost of insurance to policyholders. The goods and services tax, state government stamp duties and, in New South Wales and Victoria, fire services levies are applied to insurance premiums. The highly varied approaches to insurance taxation and emergency services funding between state jurisdictions lead to substantially different outcomes throughout Australia (see Table 2). States using an insurance-based fire levy system charge insurance companies for between 73% and 78% of the fire services' funding costs.[11]

In addition, many of these taxes compound. This can raise the price of insurance by up to 123% more than it would be otherwise. However, the impact on insurance premiums is non-transparent and poorly understood by the public and policyholders. Insurance Council of Australia (ICA) data indicates that

Table 2: State fire services funding

Insurance based levy	Property based levy	Hybrid system	Consolidated revenue
Victoria	Queensland	Tasmania	Northern Territory
New South Wales	Western Australia		
	South Australia		
	Australian Capital Territory		

Source: Carter 2010

insurance taxes have a substantial impact on consumption; in other words, an individual's decision to purchase insurance is highly sensitive to changes in price.[12]

These taxes could be regressive. Low-income people are likely to value insurance highly, as a loss that amounts to the same proportion of income will have a greater effect in reducing welfare for a low-income than a high-income person. Taxing insurance therefore raises the price of a product that, all else being equal, is more valued by low-income people. Second, because issuing an insurance policy involves a fixed cost, many low-income people are likely to be close to the cusp where the benefit of insurance is very close to that fixed cost. Because taxes increase the entry price of insurance to the point at which they exceed that benefit, they'll disproportionately reduce coverage among low-income groups.

Insurance levy systems also raise concerns about sustainability, since fire services are provided to the entire community but are funded by a much smaller base. The Victorian Bushfires Royal Commission addressed the issue of insurance and taxation following the aftermath of the 2009 fires (see Box 1).[13]

Risk signalling

Price isn't the only factor influencing behaviour; many individuals don't understand the risks posed by natural disasters. Large numbers of people won't base an insurance

Box 1: The 2009 Victorian Black Saturday bushfires and the fire services levy

Climatic conditions and Australia's native vegetation make large areas of the country vulnerable to bushfires. Extreme weather conditions on 7 February 2009 caused fires in southeastern Victoria to spread rapidly and led to the widespread destruction of rural and regional communities.

The economic and human toll was considerable, and included the deaths of 173 people. Insured losses were approximately $1340 million.

The Bushfires Royal Commission considered the impact of the fire services levy on insurance. The commission identified several problems with the existing insurance levy system. The public had a poor understanding of the fire services levy and didn't know what component of their premiums represented the cost of the levy.

There's no agreed standard for collecting the levy; insurance companies are only obliged to collect their specified contribution. The system was found to be inequitable; the emergency services supported the entire community, but they were funded only by those who took out insurance.

One of the key Royal Commission recommendations was to abolish the fire services levy and replace it with a property-based system, similar to that used in other states. The commission reported that a property-based system would lead to substantial decreases in insurance costs for businesses and homeowners. The Victorian Government has accepted this recommendation.

Sources: PricewaterhouseCoopers, Insurance facts and figures 2010, *April 2010; Victorian Bushfires Royal Commission, 'Relief and recovery',* Final report, *volume 2, 2009 Victorian Bushfires Royal Commission, 2010, pp. 331–349.*

decision on weighing up the costs and benefits in a calculated way.[14] Sometimes property owners will wrongly believe they're insured for certain disasters if they haven't examined their policies thoroughly. This is particularly the case for flooding: each insurer defines different types of floods, and there's no common set of definitions. Many individuals recovering from floods in eastern Australia are now discovering that their policies don't provide standard coverage for riverine flooding, as opposed to damage caused by flash flooding.

As noted above, insurance brings the advantage of pooling of risk. By spreading the risk of an event across a larger group of people, insurance makes the loss manageable. But insurance is an *intangible* product. Unlike other goods, its value to the individual may only be apparent following a disaster. Even if a home or business has insurance, it's often difficult to accurately gauge the value of the insured premises or its contents, and to determine the required level of coverage.

This can lead to *underinsurance*, when the value insured is below the actual replacement value. This is especially a problem when the costs of rebuilding dramatically increase following a disaster. A further issue, often forgotten until the occurrence of a natural disaster, is the additional cost of site clearance after a fire, flood or cyclone. These expenses often surprise individuals who believe that they're fully insured for all losses, and then realise that there are still some substantial out-of-pocket expenses that they're not covered for.

Studies on underinsurance have indicated that as many as 59% of homes may be underinsured by at least 30%.[15] Many individuals experience a false sense of financial security, only discovering that they're significantly underinsured when it's too late.

Knowing the risks

Insurance is a product built on risk and uncertainty, but there are instances where the insurance sector faces difficulty in providing a product for a specific risk. In those circumstances, insurance may only be available at very high prices. This situation arises when there's not enough information for insurance companies to accurately predict the probability of an event occurring. In such circumstances, it's difficult for insurers to use statistical methods to price the risk across their pool of customers.

The National Flood Information Database, a $6.5 million insurance industry scheme, is an attempt to improve the industry's ability to determine flood risk.[16] The database aims to pool government flood mapping throughout Australia and facilitate the provision of flood coverage. Local authorities participate to varying degrees, but many haven't released information on the level of risk posed to their communities. As a result, the database remains incomplete. Many households recovering from the recent floods in Queensland are finding that they're only insured for storm damage and flash flooding, and not for riverine floods. Only a few providers in Queensland offer riverine flood insurance to all their policyholders. In some countries, such as the United Kingdom, flood mapping is far more comprehensive, though not without its own difficulties (see Box 2).

The impacts of sea-level rise, particularly saltwater inundation and coastal erosion, are excluded from most insurance policies because the localised impacts are poorly understood. These threats are likely to become more important with the predicted impacts of climate change and the increasing population of coastal zones.

In some instances, the financial exposure of the uninsured and underinsured may be partially transferred to other private

Box 2: The Pitt Review and the 2007 floods in the UK

During the summer of 2007, the UK experienced extensive flooding, resulting in thirteen deaths and insured losses of £3 billion (A$4.6 billion). The Pitt Review was commissioned to undertake a widespread analysis of the preparation, management and recovery phases of the flooding events. Flood insurance is generally a standard policy inclusion for homeowners and small businesses, so the British Government wasn't the insurer of last resort. Recent figures from the Association of British Insurers show that the cost of flood damage has jumped 200% in a decade. Insurers have paid out £4.5 billion (A$6.9 billion) on flood damage claims since 2000, and they estimate that one in six homes in England is currently at risk from flooding.

Under a voluntary agreement between the government and the Association of British Insurers, insurers agree to offer flood insurance for those properties facing a 1 in 75 year risk of flood, or less. For risks greater than that, insurers make more thorough individual assessments as to the price of premiums or the availability of coverage. The insurance industry's flood insurance agreement with the government expires at the end of June 2013.

In the UK, flood maps are highly comprehensive, standardised and publicly available. The cash-strapped British Government has recently announced a cut in investment in flood defences.

The situation in the UK differs from the Australian experience, since the private market is deeply involved in providing flood insurance and public access to information is substantially greater. On 16 December 2010, the Australian Government released new maps that identify the future impacts of climate change on low-lying areas in Melbourne, Sydney, Perth, the Hunter and Central Coast, and southeast Queensland.

Source: Pitt M, The Pitt Review: lessons learned from the 2007 floods, United Kingdom Government, June 2008.

actors. This is particularly the case when individuals have little wealth or when their income stream has been disrupted. Although lenders may require individuals to take out insurance as a condition of their mortgage, (depending on the property's location and other variables), there's often no will on the part of lenders to enforce the renewal of that insurance cover.

In the aftermath of a natural disaster, individuals may not be able to meet their financial obligations to their lenders. Banks may discover that they can't fully recover their losses. This imposes financial costs on both lenders and borrowers and poses a significant dilemma for governments, which face strong expectations to assist those affected by disaster.

Commonwealth disaster relief

In Australia, the state and federal governments face considerable political pressures to assist in community reconstruction efforts. The Commonwealth, with the states and territories, provides relief assistance under the Natural Disaster Relief and Recovery Arrangements (NDRRA). In addition, the federal government can and often does deploy military personnel for disaster clean-ups.

Much of this support is means tested (see Appendix). While government relief and recovery funding is unlikely to affect insurance rates for high-value assets, it may act as a disincentive for individuals to insure low-value losses. In effect, government relief funding may be seen to constitute a form of implied public insurance. However, relief and recovery funding is funded from society as a whole; individual property owners don't pay a 'premium' based on their own exposure to risk. This prevents premiums from playing a risk-signalling role, and may lead to more risk exposure than is socially desirable.

The Commonwealth has a key role in supplementing state relief and recovery efforts through the NDRRA, under which the Commonwealth reimburses the states for 50% of their costs when their expenditure exceeds $240,000 on certain eligible measures for a specific natural disaster. Additionally, the Commonwealth co-contributes to state recovery expenditure (up to 75%) on a broader range of eligible measures when they exceed specified annual thresholds. Since 2005–06, the Commonwealth has co-contributed an annual average of approximately $136 million (2010 dollars).[17] With recent events, such as the Queensland floods, this average annual relief and recovery bill could become much higher.

The Commonwealth also provides direct assistance to individuals through the Australian Government Disaster Recovery Payment (AGDRP). AGDRPs aren't means tested and are made to those who've been adversely affected by a major human or natural disaster and who meet specific eligibility criteria. A selection of AGDRPs, listed according to recent natural disasters, is presented in Table 3. There's likely to be further significant Commonwealth assistance in 2011 following the floods in eastern Australia and Cyclone Yasi.

The Commonwealth's summer 2010-11 flood relief and recovery contribution is uncertain—the preliminary cost estimate (including $1 billion in flood costs for states other than Queensland) is $5.6 billion. The financial scale has led the Australian Government to propose a one-off flood levy to help meet the costs.

Disaster mitigation funding is collectively funded by local, state and federal governments. The three key programs that the Commonwealth has administered include the Bushfire Mitigation Program, the Regional Flood Mitigation Program and the Natural Disaster Mitigation Program. Under those schemes, the Commonwealth has provided a co-contribution towards certain projects. The annual average expenditure for the programs since 2005 has been approximately $32 million (2010 dollars).[18] From 2009–10 these programs, and the National Emergency Volunteer Support Fund, will have been incorporated into the new Natural Disaster Resilience Program. The projected Commonwealth expenditure on mitigation works for the four years from 2009–10 totals $110 million.

Mitigation is often a cost-effective way of reducing a community's exposure to natural hazards. Mitigation can also reduce an insurer's exposure to, and increase their understanding of, those same risks. In turn, this should encourage a competitive insurance market to offer more affordable coverage to policyholders.

Although the Commonwealth's expenditure on mitigation programs is about a quarter of the funding provided through NDRRA assistance, through its 'betterment' provision the NDRRA itself can become a mitigation and community resilience platform. Planning allows governments to share the costs of rebuilding infrastructure damaged by disasters to better than a pre-disaster standard. That's why it's called

Table 3: Selection of AGDRP expenditure

AGDRP Payment Activations	Claims granted	Total expenditure (nominal $'000)
Victorian storms, March 2010	12,869	14,802
Southwest Queensland floods, March 2010	9,568	11,167
Western Australian bushfire, December 2009	443	482
New South Wales floods, November 2009	8,953	10,562
Queensland/New South Wales storms and flooding, May 2009	16,150	20,263
Victorian bushfires, January–February 2009	57,100	65,396
Far North Queensland floods, January–February 2009	37,169	44,846
Southeast Queensland storms, November 2008	15,629	19,179
Queensland floods, February 2008	8,429	9,626
Queensland floods, January 2008	802	992

Source: Emergency Management Australia 2010

betterment. Betterment investments can be applied to key pieces of public infrastructure to render them more resilient to future disaster impacts. Betterment will become increasingly important as governments look for existing mechanisms to reduce the costs of disaster recovery.

Key challenges ahead

There are political and legal obstacles in making more information publicly available. Risk information generates both winners and losers. A local risk assessment may reveal that certain property owners are more vulnerable to the effects of flooding than they previously assumed. This information is likely to make insurance more costly, and may reduce a property's value. Therefore, there's a strong disincentive for local authorities to release information that may adversely affect ratepayers.

Local governments may fear litigation from either property owners, if their property values decline, or from insurers, if information is shown to be inaccurate. The very risk of litigation, even when it has only a narrow chance of succeeding, can cause councils and other authorities to be overcautious in their decisions to publicly release risk information.[19]

Those responsible for implementing mitigation programs face similar challenges.

The expansion of the Australian economy and an increase in population have amplified the effects of natural hazards.[20] Urban consolidation in Australia's largest cities has increased the concentration of assets that could be affected by a major natural disaster. The 1999 Sydney hailstorm, for example, led to insured losses of $2.38 billion (adjusted to 2010 dollars) and was the most costly meteorological disaster since Cyclone Tracy, although the recent floods in Queensland will almost certainly surpass that amount.[21]

In many cases, the changing risk profile reflects individual decision-making, but governments have had a role in guiding some of that development through funding regional development programs. While such programs aim to distribute economic activity evenly across the country, they provide incentives for individuals to move into areas that may have a higher risk profile.

Governments face a dilemma, since they have a range of potentially incompatible policy goals. When development policies clash with resilience strategies, governments run the risk of achieving one set of outcomes at the expense of the other.

This can become a serious political problem if those with inadequate insurance perceive that the government has a continuing obligation to provide financial assistance for having exposed them to a particular hazard. That belief can become a self-fulfilling prophecy, in which individuals, confident that governments will provide, fail to take out insurance cover. Finding that individuals are un- or under-insured, governments then have little option but to provide the required financial support, confirming and hence perpetuating the original belief. Such a dynamic raises serious concerns about the long-term sustainability of disaster recovery funding. One way out of the problem of the spiralling costs of recovery is to seed resilience through relief and recovery arrangements and thereby reduce the magnitude of future relief and recovery claims.

Nine recommendations to enhance the role of insurance in building national disaster resilience

Everyone should have an interest in reducing the impact of natural disasters. There are a number of areas where insurance doesn't currently have a significant role or where it could be better leveraged. We suggest nine recommendations to enhance the role insurance plays as part of a comprehensive national approach to foster Australian community resilience. The key objective is to develop intelligent solutions to ensure that insurance and government relief and recovery share the same common goal: namely to provide incentives to individuals and communities to lessen the impact of disasters and maximise national resilience.

Recommendation 1: *Develop partnerships between the private and public sectors that educate individuals on risks, risk mitigation and the value of insurance.*

Individuals can't make accurate decisions unless they have access to information. The good news is that many insurers already provide information on potential risks to their policyholders. Partnerships within the private sector are commonplace. Recently, there have been collaborative efforts between the ICA, the Australian Bankers' Association and the Financial Services Council to educate households on the importance of insurance.

Public–private sector initiatives have generally been neglected. One successful example, however, is the New South Wales Fire Brigades and GIO's joint home safety audit, which can be used to rate a household's fire risk and provide advice on risk reduction.

At a national level, the National Emergency Management Committee and its supporting sub-committees could play a key role in coordinating the creation of new partnerships by providing a forum for discussions between governments, private sector interests and NGOs. A national stakeholders' conference on insurance, risk and innovation might be a starting point.

Governments and key stakeholders should develop programs that enhance awareness of how individuals can reduce their physical and financial exposure to risk. One way this might be done is through a school financial literacy program.

Government departments and agencies, at both the state and the federal levels, provide information on natural hazards and the potential risks to the community. The Australian Securities and Investment Commission provides valuable information on the role of insurance. However, much of the information is poorly integrated; this discourages individuals from identifying ways to increase their resilience. The integration of mechanisms to enrich the public's knowledge and understanding of the role of insurance needs to be an essential resilience strategy.

Governments and stakeholders should work towards establishing a single online portal that provides a point of first contact for a broad range of issues relating to natural disasters. The portal would be designed to link together information on natural disasters, emergency management and insurance. This would encourage individuals to view insurance as a tool that increases their capacity to prepare for, and recover from, natural disasters.

Recommendation 2: *Encourage the insurance sector, with the aid of governments, to expand the range of insurance products offered to consumers.*

Private insurers require access to detailed information in order to make accurate risk calculations and price their premiums accordingly. This is particularly the case for flood coverage. Although governments are steadily making more information available to insurers, the National Flood Information Database is not comprehensive. The data isn't nationally consistent; various state and local authorities are responsible for determining mapping standards; and individuals can't easily access the information and identify their level of exposure. Efforts to expand flood mapping, create unified standards and increase public transparency should be encouraged. Uniform international standards are currently under examination by the OECD.

Generally speaking, consumers should have access to site-specific information on the climatic and environmental risks to them, such as flood, wind, storm, hail and earthquake risks, all over the country, with insurance reflecting the actual risks in those locations. Underwriters must have access to sufficiently accurate and current risk and claim data. The National Claims and Policies Database administered by the Australian Prudential Regulatory Authority could be enhanced in order to allow insurance prices to better reflect risk.

Given the potentially serious impact of climate change on coastal communities, efforts should be made to accurately survey the risks of sea-level rise. This would encourage insurers to offer new products to those facing emerging threats. The state and federal governments should also work to clarify local government's legal position to reduce anxieties over the threat of litigation. This would encourage the release of risk information to insurers and the public.

Aside from specific threats, many individuals and businesses face special circumstances and require more tailored insurance products. Businesses may wish to insure only a selection of their most essential assets. The household contents of some individuals, often in rental situations, may not meet the minimum level of coverage of an insurance policy.

Some companies have already expanded the range of insurance products available, especially for renters. It's important to build on those foundations and explore ways that the insurance sector can further develop innovative insurance options, such as micro-insurance, that are economically viable for both the insurer and the insured.[22]

Recommendation 3: *Establish regular forums between the insurance industry and governments to examine programs to promote community resilience.*

The insurance industry and the Commonwealth currently participate in the Australian Financial Centre Forum, which seeks to promote Australia's financial sector and exploit opportunities in the region to increase cross-border trade and investment in financial services.

Public–private cooperation could be expanded with the development of a new forum relating to natural disasters. Both the insurance industry and government could benefit from regular dialogues that examine new ways to promote insurance take-up as

a way to enhance disaster resilience. Due to their central role it would be important to engage the banks and other lenders who provide finance to property owners. As mentioned, the National Emergency Management Committee could be instrumental here.

Those forums should include a wide variety of relevant stakeholders from the relevant industries and all levels of government. They should allow international collaboration to increase the pool of expertise and available policy options.

A key issue that the forums could examine is ways that individuals and communities can be rewarded—for example, through lower premiums—for taking appropriate risk mitigation measures. Insurers could have an important role in suggesting a range of activities that property owners can take to help them prepare for a possible natural disaster; this would expand on the existing efforts of many insurers.

Stakeholders should examine the feasibility of rewarding households for taking prudent measures to protect their assets. The cost of monitoring and compliance would need to be assessed. At the community level, it would be essential to include local government as part of this process.

Councils have a role in building community resilience; they have access to 'on the ground' community knowledge and are responsible for areas that face specific risks from natural hazards. Those factors should encourage communities and local government to develop innovative and agreed solutions to manage their risks. The forums would need to address the financial implications of local government playing a greater role in managing natural hazards.

Another issue that should be examined is the role of the insurance industry in mitigation programs. Insurance puts in place, before an event, the framework by which recovery efforts will be funded. In some countries, however, insurers are more actively

Box 3: Cloud seeding in Alberta, Canada

Hailstorms are an extraordinarily costly natural hazard. One that swept through Calgary in July 2010 resulted in estimated insured losses of C$400 million (A$406 million). To mitigate the effects of hailstorms, a consortium of insurance companies has jointly financed Weather Modification Incorporated (WMI), an enterprise specialising in atmospheric cloud seeding.

Every summer since 1996, WMI has identified severe storms and sent aircraft to disperse a chemical agent that reduces the storm's severity. This insurance industry initiative aims to minimise the extent of insured losses over densely populated areas of the province.

Some evidence indicates that the insurance industry saves as much as C$50 million (A$51 million) each year as a result of this program.

Sources: Watson B, 'Fire and ice: suppressing hailstorms in Alberta', WINGS Magazine, *May–June 2008; IBC (2010); Insurance Bureau of Canada,* Calgary's July hailstorm causes record amount of insured damage, *11 August 2010, available from http://www.ibc.ca/en/Media_Centre/News_Releases/2010/08-11-2010.asp.*

involved (see Box 3). Stakeholders should discuss whether mitigation efforts should be undertaken solely by governments, or whether specific property-owners and/or the insurance sector, as beneficiaries of mitigation works, have a role in making financial and technical contributions.

Recommendation 4: *Implement insurance taxation reform.*

Enhancing the individual take-up of adequate insurance cover should be a key policy driver to achieve national resilience.

Insisting on insurance premium taxes that drive a wedge between the actuarial price for insurance and the actual price paid by the consumer detracts from that objective.

The 2010 Australian Tax System Review (the Henry Review) noted that insurance taxes reduce the return for any given cost of an insurance policy, meaning that people and business must pay more to achieve the same level of risk reduction.

The Henry Review's recommendation that specific taxes on insurance products, including the fire services levy, be abolished and treated like most other services consumed within Australia (subject to only one broad-based tax on consumption) should be implemented.[23]

Recommendation 5: *Ensure sustainable and equitable funding arrangements for the emergency services.*

The emergency services perform a key role in lowering the risks and costs of natural disasters for both private and public actors. Fire services levies in NSW and Victoria are inequitable; they place a funding burden upon those who have prudently taken insurance, despite the whole community gaining a benefit. As a result, they can lead to the unwinding of coverage, as those who have coverage opt to reduce or eliminate it, so as to avoid contributing to the costs of providing for uninsured third parties.

Given this, it's unsurprising that the current funding base struggles to keep up with the expanding duties performed by the fire services. Developing a funding model under which all property owners contribute to fire services is more equitable, efficient and sustainable. There's some evidence that since the introduction of a property-based model in Western Australia the capacity of fire services has been enhanced.

A property-based system needs to be carefully implemented, as it's likely to affect individual wealth through changes in property values.

Carefully constructed schemes should reduce the overall financial disincentives to insure, thereby increasing community access to the insurance market and enhancing community resilience.

Recommendation 6: *Consider the role of mutual obligation arrangements, particularly to reduce the moral hazard problem in disaster assistance.*

Governments should, and will continue, to have a key role in 'owning' some disaster risk. But the long-term goal should be the provision of relief to those who are financially unable to take up their own insurance; governments should develop policies that ensure that disaster relief is increasingly oriented towards those most in need (and of course to ensure that the mechanisms that deliver disaster relief are effective and efficient).

Despite education, increased industry–government cooperation and the removal of financial disincentives, some financially able individuals will fail to take up insurance. In the aftermath of a disaster, it will be politically difficult for governments to refuse some level of financial support to those people.

Mutual obligation might provide a basis for once-off government assistance to an individual or business affected by a natural

disaster. The government would then require assistance recipients to take up their own insurance for all subsequent events.

This may be encouraged voluntarily through strong government signalling that financial relief will no longer be forthcoming. This may be difficult to enforce for future events. Alternatively, it may be achieved through a compulsory insurance obligation, such as the one used in the US under the National Flood Insurance Program (see Box 4).

Mutual obligation will also assist in making insurance more available and affordable by keeping moral hazard low and manageable. Moral hazard occurs when an individual's incentive to mitigate risk is lessened because they hold insurance against that risk.

In this case, the moral hazard arises out of the expectation that government will provide. Requiring explicit insurance not only eliminates that expectation but also exposes those taking out insurance to an explicit price signal that may lead them to mitigate their risk exposure. At the same time, formal insurance policies often involve deductibles and co-payments, which provide insured consumers with incentives to act responsibly.

The downside of mutual obligation arrangements is that they may discourage individuals who are unlikely to be affected by multiple natural disasters from taking up insurance. Any remaining commitments concerning the availability of public assistance would need to be set so that there's a continuing incentive for individuals to manage their own risks.

Box 4: The United States National Flood Insurance Program

In the US, flood insurance is underwritten by the federal government. Although there's some private sector involvement in brokering individual flood policies, the government acts as a primary insurance provider and has offered premiums as much as 60% below the market rate. While this has made insurance more affordable, it's greatly increased the exposure of the National Flood Insurance Program (NFIP) to financial risks. Since the 2005 hurricane season, the NFIP has become heavily indebted. In 2010 the program's debts were US$19 billion. Some 120,000 properties have received multiple payouts costing approximately US$7.25 billion. Of those, 26,000 properties have received four or more payouts.

The US approach is, however, designed to encourage natural disaster resilience. The NFIP ties flood coverage to compulsory community-based mitigation measures. It's a prerequisite that participating communities undertake cost-effective and government-approved mitigation measures before they're eligible to receive insurance coverage.

In circumstances where an uninsured property owner has received federal government assistance for a natural disaster, there may be an imposed requirement that the property be subsequently insured. These mutual obligation arrangements are aimed at reducing the financial pressures on the government's disaster relief programs.

Sources: Hyndman D and Hyndman D, Natural hazards and disasters*, Cengage, Canada, 2009; United States Government Accountability Office,* The National Flood Insurance Program: continued actions needed to address financial and operational issues*, statement of O Williams Brown before the US Senate, September 2010.*

Recommendation 7: *Embed mitigation efforts with disaster assistance funding to reduce risk exposure for individuals, communities and insurers.*

Mitigation can be a highly effective way to reduce the financial costs of relief and recovery operations. Governments should work towards enhancing mitigation efforts as part of a comprehensive approach to national resilience. One practical step on this path should be a review of the underlying design principles of the NDRRA. There's scope, for example, to make NDRRA payments *ex ante* disasters and bring together the various provisions of the NDRRA to achieve more holistic mitigation measures.

The NDRRA has a provision to fund the replacement of infrastructure so as to make it more resistant to future natural disasters, but the 'betterment' provision has never been enacted: short-term community relief and recovery has taken the focus off long-term community resilience.

There's a further anomaly in the current arrangements. If state expenditure exceeds the first threshold of funding, the Commonwealth will contribute proportionally more to a like-for-like replacement than it will to betterment works.[24] This is a considerable disincentive to upgrade damaged public assets.

The Commonwealth invests in mitigation measures under the newly formed Natural Disaster Resilience Program (NDRP), but the funding for the NDRP is only a fraction of what's available for relief and recovery efforts. Often it will be more financially sustainable and efficient to rebuild some communities, rather than eliminate every potential risk. However, for many situations mitigation is a cost-effective strategy.

Mitigation efforts should, where practicable, accompany relief and recovery programs. It's worth exploring how the NDRP can be activated when a natural disaster strikes and relief funding is being made available to distressed communities.

While natural disasters are costly and destructive, they present an economic and political opportunity to reduce the risks posed by future natural hazards. Governments should take advantage of those opportunities: effective mitigation efforts ultimately reduce the risk to everyone and enable insurers to offer more affordable products to the community.

Recommendation 8: *The Insurance Council of Australia should be invited to be a standing member of the National Emergency Management Committee.*

The ICA should be invited to be a standing member of the newly formed National Emergency Management Committee, (NEMC), which for the first time brings together agencies in all jurisdictions to coordinate national all-hazards policies and capability development in relation to emergency management.

The insurance sector is an important piece of the resilience agenda, and the NEMC's key focus is now on resilience. The ICA should therefore be included on the NEMC at an appropriate level of representation.

Recommendation 9: *COAG should commission an independent study to analyse societal and government policy initiatives that could enhance the take-up of insurance cover, and to examine various insurance schemes to encourage resilience.*

Improving existing insurance structures should significantly strengthen resilience. A COAG-commissioned independent review should consider whether there's an approach that can improve current outcomes in a more cost-effective manner, specifically by studying the ways that private insurance can strengthen resilience efforts in Australia.

These approaches have received some attention in the past, most notably in the 2009 Victorian Bushfires Royal Commission. However, there hasn't been a systematic national study of various insurance models.[25]

COAG should request the NEMC and the Ministerial Council for Police and Emergency Management to review the issue of disaster insurance and provide a report by December 2011.

Four possible schemes that might be the focus of the review are outlined below. It's important to note, however, that the schemes can to some extent overlap.

1. Government co-contribution schemes

Co-contribution schemes are designed to maximise equitable outcomes. Under this approach, the government would financially assist low-income households in purchasing a basic insurance product, through either a tied transfer payment or a tax rebate. To encourage individuals to manage their own risk and to seek a competitive product, the Commonwealth would finance a portion, rather than the full amount, of the insurance premium. A full insurance subsidy would remove the ability to communicate risk to individuals through the price of their insurance policies.

Targeted government assistance is already widely practised in Australia. Governments, as part of their environmental policies, provide specific rebates to households so that they can increase their energy and water efficiency. Government transfer payments are also increasingly subject to the fulfilment of certain conditions and obligations: in June 2010, the Australian Government announced that income management policies will be extended beyond vulnerable groups to a large section of welfare recipients.

2. Compulsory insurance schemes

The 2009 Victorian Bushfires Royal Commission raised the possibility of compulsory property insurance.[26] National compulsory schemes have also been suggested by some political figures at the state and federal level following the recent floods crisis in Queensland. Compulsory insurance schemes can be designed with three purposes in mind: to increase affordability; to reduce the likelihood that individuals will miscalculate their need for insurance; and to minimise the levels of underinsurance. One of the main advantages of compulsory insurance is that it clarifies the level of the government's financial commitment to relief and recovery exercises. A compulsory scheme also prevents free-riding.

Since these schemes increase the pool of policyholders, insurers can spread their risks further, making the schemes more financially viable. This may allow insurers to offer more affordable coverage for those who would otherwise be uninsured.

A compulsory scheme might focus on providing a basic level of coverage, rather than catering for the full spectrum of insurance losses. What constitutes a basic cover would need to be defined with reference to changing economic conditions.

There would be several options in deciding who runs the scheme, depending on specific requirements and the funding model: a closely regulated private market; a private company working under contract; or the government itself.

There are several challenges with compulsory coverage. In all cases the government must establish a separate entity that will run or closely regulate the scheme. Compulsory schemes provided by the government must be closely monitored to ensure that they

remain competitively neutral and don’t substantially duplicate the coverage that the private sector provides (or could more efficiently provide). And consideration must be given to how these schemes will affect consumption and land values.

There are two main options under this approach:

- *Compulsory insurance financed through a broad-based property levy*

  Governments could collectively apply a levy to property owners in order to fund basic insurance coverage. The levy, which could be ‘built into’ local government rates, could either be applied as a consistent flat charge or adjusted according to a property’s exposure to risk. This requires the government to establish an entity that can determine the levy payable.

  Governments may still need to provide targeted financial assistance to low-income groups. A more general subsidy may be unsustainable, as it increases the government’s exposure to risk and poses the potential of a ‘moral hazard’ whereby development is encouraged in higher risk areas.[27] A property-based system could be designed to allow users to opt out of the levy if they choose to purchase a superior level of coverage on the private market.

- *Compulsory insurance purchased as a legislative or regulatory requirement*

  Many Australian states require motorists to purchase third party personal injury insurance and have compulsory workplace compensation schemes. WorkSafe Victoria’s insurance scheme, for example, even has a mechanism for adjusting the distribution of the funding obtained through premiums according to a workplace’s safety performance. This encourages employers to better manage risks in the workplace.

  A mandated scheme would require all property owners to ‘buy in’ to a basic insurance product. But, as in a property-based model, such a scheme could allow individuals to opt out.

  A government body would need to administer the insurance directly, or closely regulate the private sector. Any financial assistance would need to be targeted at specific disadvantaged groups.

3. Catastrophic loss pool funded through a levy on insurance premiums

Under an insurance-based scheme, funding is obtained through a levy on a specified range of insurance products, with coverage extended only to those who are currently insured. Unlike the fire services levy, this insurance-based model doesn’t encourage substantial free-riding. This model has been implemented in New Zealand (see Box 5). In order to maximise sustainability, the government would augment such a scheme with other instruments, such as reinsurance products, or through a government-backed guarantee.

The disadvantage of this scheme is that individuals, through the levy on their insurance, may be purchasing a level of coverage that’s not precisely suited to their risks. It also raises the costs of insurance for policyholders, and there would need to be an analysis of whether the increasing rates of non-insurance would outweigh the reduced incidence of underinsurance. Because it only covers those currently insured, it doesn’t address non-insurance or equity concerns. As a result, it may simply aggravate the non-insurance problem, increasing the pressure on government to act as a de facto insurer of last resort.

Box 5: The Christchurch earthquake and the New Zealand Earthquake Commission

Earthquakes are a serious natural hazard in New Zealand. On 4 September 2010, the Canterbury region experienced a severe earthquake measuring 7.1 in magnitude. While only one person died during the quake, the damage to property was extensive. The New Zealand Treasury estimated that the damage costs would approach NZ$4 billion (A$3.05 billion). The impact upon both private and public infrastructure created an immediate need for the provision of finance to individuals and businesses.

New Zealand administers a disaster insurance scheme that's designed to cover residential property for many geological hazards, and residential land for storms and floods. The scheme operates by applying a compulsory levy on insurance policies, the funds from which are pooled into the New Zealand Earthquake Commission (EQC).

The EQC's funds are further supported through the purchase of international reinsurance products and a government guarantee. In the event of a natural disaster, the commission makes up to NZ$100,000 (A$77,000) available to those with insurance policies. The compulsory levy, guaranteed finance and universal coverage (of those who are insured) are aimed at minimising the effects of inadequate coverage for residential property.

Under the EQC, the New Zealand Government inherently assumes a degree of responsibility for the risks of events that are destructive but difficult to predict.

Sources: New Zealand Treasury, Monthly economic indicators September 2010, *Government of New Zealand, available from http://www.treasury.govt.nz/economy/mei/sep10/02.htm, September 2010; Earthquake Commission,* EQC home, *Government of New Zealand, available from http://www.eqc.govt.nz/home.aspx, November 2010.*

4. Insurance pool schemes and government reinsurance

The Australian Government made an in-principle decision to establish a national disaster insurance scheme after Cyclone Tracy in 1974. This would have created a common insurance pool for natural disasters.

At a recent Institute of Actuaries Australia conference, a slightly revised scheme was discussed: the government would work with all insurance companies to establish a common pool, which would cover the losses from natural disasters. It would be run on insurance principles, and premiums would be set by an advisory committee.

Since the scheme would pool all risks together, risks could be spread across a wider base. If the insurance is compulsory, the pool could be further enlarged. Therefore, insurance could be more affordable than it would be otherwise. The scheme could also cater for extreme disaster losses by allowing insurers to claim some of their losses against a government reinsurance scheme.[28]

One possible downside of this scheme is that it may reduce market competition and hinder product innovation.

Like individuals, primary insurers seek to reduce their financial exposure to natural disasters. One way for them to do that is by

Box 6: The Australian Reinsurance Pool for Terrorism

The September 2001 attacks in New York and Washington highlighted the importance of business insurance for major terrorist attacks.

Terrorism is an inherently difficult risk to calculate, since it is geographically widespread and poorly predicted. This creates uncertainty, and the reinsurance community withdrew terrorism cover following the attacks in 2001. Without the ability to purchase reinsurance for terrorism, primary insurers were forced to exclude terrorism from coverage.

The Australian Reinsurance Pool Corporation was established to provide primary insurance providers with terrorism cover for property loss. At the same time, the Commonwealth made the provision of cover mandatory.

In 2011, the pool provides cover of $13.1 billion that is financed by $350 million of retained premium, then $2.75 billion of reinsurance cover, followed by a Commonwealth indemnity of $10 billion. The continued need for the pool is subject to review every three years. Its overall objective is to foster business and investment certainty within the Australian economy.

Source: Australian Reinsurance Pool Corporation, Basis of the scheme, *Department of the Treasury, available from http://www.arpc.treasury.gov.au/content/basis.asp?NavID=2, November 2010.*

purchasing reinsurance products. Reinsurance limits the extent of losses incurred by a primary insurance provider. This cover is usually privately available through Australian and international providers.

For terrorist incidents, the Commonwealth established an entity in 2003 to provide government-backed reinsurance coverage (see Box 6). Pooling arrangements, like the Australian Reinsurance Pool Corporation for terrorism, can bring a focus to a particular risk, combining exposure information, modelling the overall risk, and also bringing a focus to mitigation. However, the cases of terrorism and natural disaster, it may be argued, are actuarially different, creating difficulties in transplanting the terrorism corporation model to natural disasters.

A reinsurance-style scheme might be established as a government, industry or jointly run body.[29] Such a scheme has several advantages. It's designed to cover losses only from primary insurers, which continue to administer claims. This greatly reduces the need for governments to establish costly management procedures. As the central reinsurance provider, it's also able to provide standardised and accurate information on risk exposure and the value of insured assets. This can attract private reinsurance participation. Finally, the scheme could be designed to allow the private sector to work with government and provide region-specific risk ratings.

Whether the reinsurance pool is voluntary or mandatory would have to be closely considered. Voluntary participation may lead to only some insurers participating, and would make the fund less viable. Mandatory participation would increase the fund's financial sustainability over time, but would necessarily limit the choices available to private insurers; this may lead to inefficiencies in the insurance market.

In particular, the scheme would need to avoid unnecessary duplication of private sector services. It would target those events for which the private sector faces a specific difficulty in calculating risk and offering adequate coverage.

Any expansion of the remit of the Australian Reinsurance Pool Corporation (ARPC) to include natural disasters as well as terrorism would need to accommodate fluctuations in the level of private sector participation. This could be done by simply adjusting the ARPC's level of involvement, which would avoid the need to dissolve and re-form the structures of the corporation as conditions change. Alternatively, the ARPC could administer a separate pool for natural disasters; this would avoid cross-subsidisation of risks.

Concluding remarks

Natural disasters will increasingly have adverse socioeconomic impacts on Australia, independent of the impacts of climate change. At present, most people get support by relying on government intervention after the disaster. And it's not clear to communities before disaster strikes what the level of support will be.

How Australia can reduce future losses from natural disasters and aid victims in their recovery efforts will become increasingly important issues.

Financing the costs of Australian natural disasters, while at the same time encouraging individuals in hazard-prone areas to undertake mitigation measures, will be ongoing challenges.

Insurance has a key role to play in enhancing Australia's resilience to natural disasters, particularly by ensuring that premiums are based on risk to encourage individuals to reduce their vulnerability.

There should be greater efforts to enhance cooperation between the Australian Government, the jurisdictions and the insurance industry. Innovative solutions should be preferred over zero-sum approaches.

Natural disasters won't stop happening, but rather than waiting for the next big disaster we should now be doing all we can to take steps to protect those who'll be in harm's way. The insurance industry has a critical role to play in working with policymakers to help Australian society share the physical and financial risks of natural disasters in this country.

Appendix: State government natural disaster relief and recovery programs

Most states administer a set of natural disaster assistance arrangements that provide emergency relief funding for individuals, small businesses and primary producers. In many states, individuals are eligible to receive a small government grant in the aftermath of a disaster, irrespective of their financial position. Individuals may also receive specific tax concessions when they're replacing lost assets. Longer term assistance is generally for basic repairs only, and is often subject to a means and/or assets test. Small businesses and primary producers are often eligible to receive low-interest loans and may be entitled to assistance for the repair of basic infrastructure, such as boundary fences. State and territory governments don't generally provide compensation for total disaster losses where insurance could have been purchased.

Main state and territory authorities administering relief funding to individuals, businesses and primary producers:

Australian Capital Territory

Department of Disability, Housing and Community Services.

New South Wales

Community Services; Rural Assistance Authority; Industry and Investment NSW; Office of State Revenue.

Northern Territory

Department of Health and Families; Department of Business and Employment.

Queensland

Department of Communities; Department of Employment, Economic Development and Innovation; Rural Adjustment Authority.

South Australia

Department for Families and Communities; Primary Industries and Resources South Australia.

Tasmania

Arrangements are made for each natural disaster. Current assistance can be found through Service Tasmania.

Victoria

Department of Human Services; Department of Business and Innovation; Victorian Bushfire Reconstruction and Recovery Authority.

Western Australia

Fire and Emergency Services Authority; Department of Agriculture and Food; Department for Child Protection.

Abbreviations and acronyms

AGDRP Australian Government Disaster Recovery Payment

ARPC Australian Reinsurance Pool Corporation

COAG Council of Australian Governments

EQC New Zealand Earthquake Commission

ICA Insurance Council of Australia

NEMC National Emergency Management Committee

NFIP National Flood Insurance Program (US)

NDRP Natural Disaster Resilience Program

NDRRA Natural Disaster Relief and Recovery Arrangements

OECD Organisation for Economic Co-operation and Development

WMI Weather Modification Incorporated

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