The role of post-disaster institutions in recovery and resilience: a comparative study of three recent disasters – Victorian Bushfires (2009), Queensland Floods (2010-11), and Canterbury Earthquakes (2010-12)

James Smart

Working Paper 12/02

June 2012

VICTORIA
UNIVERSITY OF WELLINGTON
TE WHARE WĀNANGA
O TE ŪPOKO O TE IKA A MĀUI

Institute for Governance and Policy Studies
A research institute of the School of Government

INSTITUTE FOR GOVERNANCE AND POLICY STUDIES WORKING PAPER 12/02

MONTH/YEAR June 2012

AUTHOR James Smart

ACKNOWLEDGEMENTS The author would like to acknowledge Jonathan Boston for his support during the research process, Janet Tyson and Tracey Arklay for their comments on an earlier version of the paper and Vic Lipski for copy-editing. He would also like to the Summer Scholar Scheme at Victoria University of Wellington for providing the funding to make the research possible and Berys Cuncannon for administrative support.

INSTITUTE FOR GOVERNANCE AND POLICY STUDIES
School of Government
Victoria University of Wellington
PO Box 600
Wellington
NEW ZEALAND

For any queries relating to this working paper please contact berys.cuncannon@vuw.ac.nz

Contents

Introduction

Dealing with natural disasters and their after-effects are among the most difficult tasks governments face. Such disasters can seriously harm the financial, social, environmental, and human welfare of a country, and managing them often requires co-ordination between local authorities, businesses, neighbourhood groups, and volunteer organisations. Public policy makers and theorists are aware that effective management of natural hazards reduces their potential impact.

Four areas of disaster management, commonly known as the 'four Rs', concern policy makers. First, governments can reduce societal vulnerability and build resilience by mitigating known risks. Second, governments can prepare for potential disasters by planning their response and ensuring that sufficient capabilities are in place. Third, governments can effectively respond to natural disasters by providing basic human needs. Fourth, recovery from natural disasters is important both in the alleviation of immediate societal suffering and in improving citizens' long-term prospects by building resilience against future disasters. Government decisions are critical in determining whether these objectives are achieved.

This paper addresses the fourth area of disaster management: recovery and resilience. Disasters are focusing events that can drive immediate policy change. It argues that good recovery institutions provide the adaptive capacity that enables communities to recover from natural disasters. This paper briefly describes recovery processes after three natural disasters in Australia and New Zealand between 2009 and 2011: bushfires in Victoria in 2009, flooding in Queensland from 2010-2011 and earthquakes in the Canterbury region from 2010. These cases demonstrate the importance of flexible governance arrangements. This is shown through the choice of recovery institution, evidence of institutional learning before and after disasters, the role of community engagement, response to insurance issues, and the building of resilience. Particularly important for resilience is the building of relationships between recovery institutions and local governments and communities.

Focusing Events and Institutional Feedback

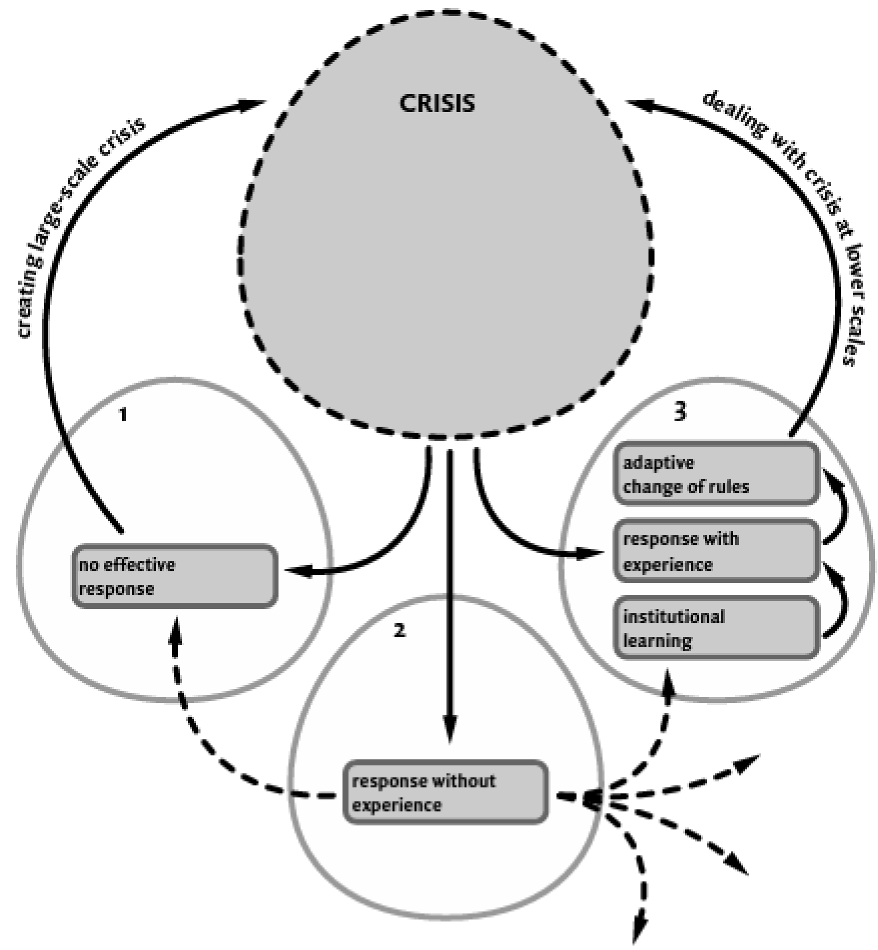
Disasters quickly become focusing events for citizens. As Birkland (1997: 22) explains, 'potential focusing events are [...] sudden, relatively rare, can be reasonably defined as harmful, inflict harms that are or could be concentrated on a definable geographical [area] and that is [sic] known to policy makers and the public virtually simultaneously.' Citizens pay little attention to earthquakes, floods or fires until one actually occurs. Communities may be unable to cope with the effects of a disaster or find that their adaptive capacity is rapidly exhausted. Policy makers in representative democracies are then pressured to respond quickly and effectively. Their primary objective should be to deal with the immediate crisis that prevents communities from functioning. Augmenting community capacity is a basic prerequisite that enables reconstruction and recovery. In large disasters, existing government agencies may be unable to steer the recovery process. Governments will be required to introduce new institutions that increase their overall capacity to enable recovery at community levels.

New institutions, often needed to cope with disasters, change the environment for decision making. Lin and Nugent (cited in Rodrik, 2011: 4) define institutions as 'a set of humanly devised behavioural rules that govern and shape the interactions of human beings, in part by helping them to form expectations of what other people will do.' These rules affect how individuals and groups make decisions. However, an authority exposed to a focusing event may be unable to enforce those institutional rules, increasing citizen uncertainty and pessimism about recovery. Individuals and businesses may leave the area and financial intermediaries may no longer provide insurance and loans. Declining institutional quality presents greater challenges to governments already unable to effectively drive the recovery process. New institutions that reinforce community capacity are vital to restoring functionality quickly.

The feedback loop between crisis scale and institutional type is shown in Figure One. An ineffective response may be due to (1) a total lack of capacity, or (2) no experience of how to respond. In either case, the challenge facing policy makers is increased, further exhausting response capacity. However, the scale of the crisis can be minimised and dealt with effectively if institutions are flexible to circumstance (3). They should be able to learn from their operational environment, integrate experience as it is accrued, and adapt accordingly.

Disasters are exacerbated by policy failure (Birkland, 2006). Retrospective inquiries that examine the relationship of policy decisions linked to disasters often provide a critical source of learning for governments. The inquiry process is also important for catharsis and to relieve perceived injustice among affected citizens (Bovens, 2007). Australia and New Zealand enact Commissions of Inquiry or Royal Commissions for these purposes. If their recommendations are taken seriously, lessons learned can inform decisions made by communities in their recovery, both in the immediate and longer term, and for reducing effects of future natural disasters.

Figure One: Generic responses to crisis

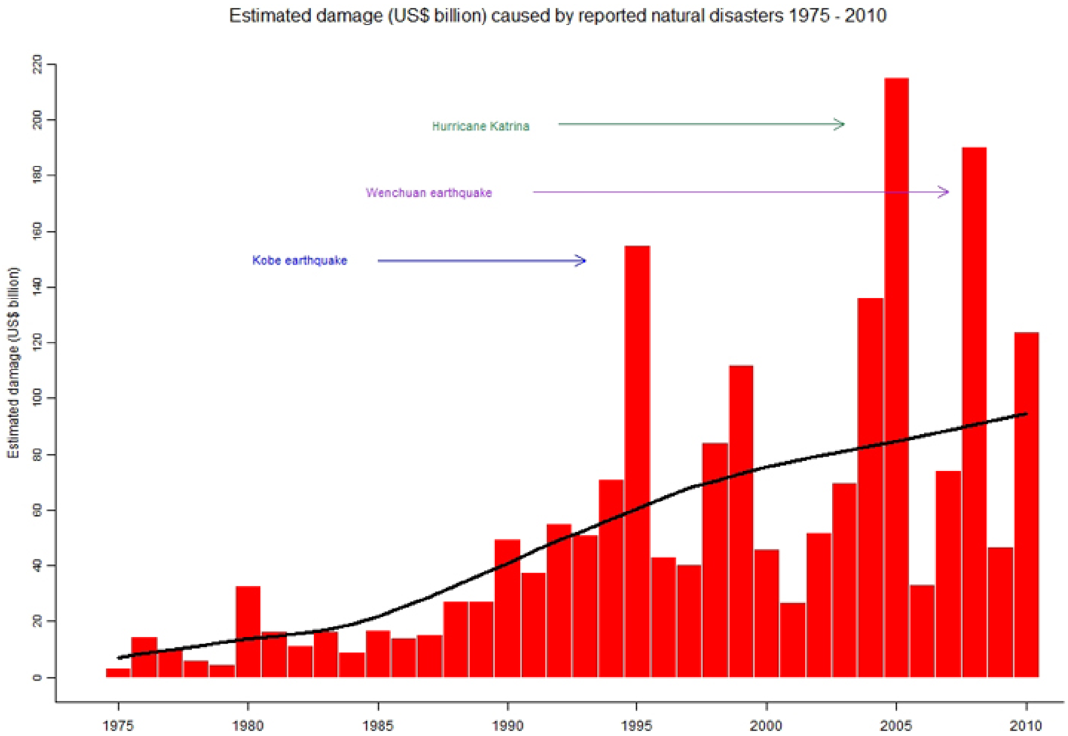


Source: Folke, Colding and Berkes, 2003

Large disasters are more likely to become focusing events, but disaster scale is difficult to quantify. Further, the length of a focussing event is not made clear by physical destruction and its proportion to the overall output of an economy. Two dynamics are important in the short run. First, capital stock is usually required to produce goods and services. Output will be lower if capital is destroyed. However, rebuilding that capital will increase output. These two effects offset, though the net effect is ambiguous. What is clearer is that their timing will differ. Reconstruction is likely to be uneven and much delayed after the initial loss. Further, the mixture of outputs being produced will differ. This is easily seen in labour markets. After a disaster, a bakery that loses its shop will be unable to produce bread, but may employ a builder to replace the damaged building.

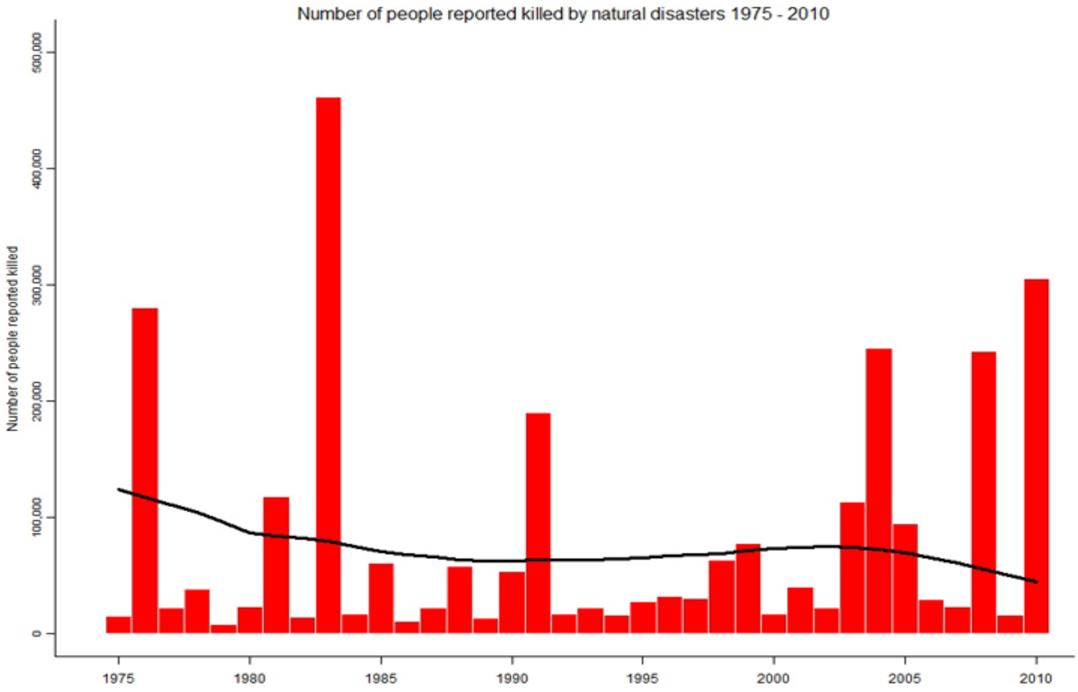
Economic models offer several narratives about the medium run. Traditional neo-classical models suggest that the destruction of physical capital has no impact on medium-run overall economic output. All else remaining equal, reinvestment would continue until capital is restored to pre-event levels. This holds true internationally, also. Carvallo, *et al.,* (2011) find no significant effect on the long-run economic growth of disaster affected countries. However, a disaster may increase the perceived risk of investing in an area it affects. In such a case it is unlikely that investment will fully replace lost capital stock, as the expected returns to capital are lower than before the disaster. In Schumpeterian models, however, this may be offset if newly constructed capital is of superior quality to lost capital. Skidmore and Toya (2002) find evidence to support this model cross-nationally in the aftermath of climatic disasters.

Figure Two



Source: CRED, 2011

Figure Three



Source: CRED, 2011

In any case, GDP provides an incomplete picture of disaster impact, as is evident in the broken window fallacy, which speaks to what the measure does not show.[1] It also fails to capture adequately the human costs of disaster. Figures Two and Three show that while the estimated damage caused by natural disasters has trended upwards since 1975, the death rate trend has been negative. It also hides the long-term effects of population loss. Seventeen years after Hurricane Iniki hit the Hawaiian island of Kauai in 1992, the island's population had not recovered from post-disaster emigration (Coffman and Noy, 2009). The fiscal cost of reconstruction borne by governments can lead to major financial challenges, particularly if pre-disaster debt is high and capital flight is a genuine risk (Noy, 2011). Governments facing such issues may not have the capacity to assist community recovery. For example, Haiti and New Zealand experienced earthquakes of a similar magnitude within a year of each other. Yet, due to broader institutional reasons, investing in Port-au-Prince is far riskier than investing in Christchurch.

[1] The broken window fallacy is described by Frédéric Bastiat through the parable of a shopkeeper's window broken by his son. If the father pays $100 to a glazier to replace the window, then the glazier can buy more things. That increases economic output. However, that $100 could have been spent on something that the shopkeeper might have otherwise wanted. Instead, that $100 goes to replace an otherwise sufficient window. Hence, there is no increase in well-being despite an increase in economic output.

Insurance is important for successful recovery as major disasters often result in high stock costs. Insurers may assume that the risk of a high-cost event in the near future is very low. However, the probability of experiencing a disaster is difficult to integrate into actuarial models. Individual events expected to occur with a very low probability, such as hundreds of thousands of damaged homes, cars, multiple fatalities, and sudden increases in health requirements, occur simultaneously during a natural disaster. The concurrent timing of these 'tail events'[2] challenge actuarial models, which results in higher than anticipated losses for an individual insurance company. This increases its solvency risk (Kousky and Cooke, 2009).

Insurance should smooth out financial costs over a lifetime and improve individual welfare. Individuals who neglect to take out insurance will face immediate high costs after a disaster. Governments may be tempted to improve their welfare through direct assistance. However, this changes the expectations of some individuals, who may see such assistance as a quasi-permanent replacement for private insurance. Insurance take-up would be discouraged, and dependency on the state would grow—behaviour known as *moral hazard*. As will be seen in the Queensland and New Zealand cases, moral hazard may affect the relationship between institutions as well as individuals. Reconciling the desire to assist risk takers and the cost of moral hazard is a phenomenon James Buchanan (1975) described as the 'Samaritan's dilemma.'

The Samaritan's dilemma shows that complex recovery efforts highlight a lack of consensus on values (Hischemoller & Hoppe, 1996). It is not clear whether the immediate suffering of citizens is a greater issue than future welfare loss created by moral hazard. Such 'wicked problems' demand political solutions, but building consensus requires time. Governments may be unwilling or unable to provide that time, reducing the effectiveness of new institutions.

Accordingly, quality institutional response is essential regardless of disaster magnitude. Further, what is illustrated in the Australian and New Zealand cases is that the process of recovery is context dependent, requiring flexibility in approach. What may work in one scenario may be inadequate in another due to the unique circumstances of each disaster. This dynamic is made clear in the Australian and New Zealand cases.

[2] Named for their location on the extremity, or 'tail', of a distribution curve

Institutional responses in Victoria, Queensland and New Zealand

Australia and New Zealand have similar institutions. Both are developed economies and their shared British heritage lends them similar political and legal institutions, most notably the Westminster parliamentary system. However, there is an important difference between Australia's and New Zealand's constitutions. Australia's provides defined roles and responsibilities for federal and state governments. Local governments, which are closest to the communities, provide a third tier of authority. All three levels have designated responsibilities and roles during disasters. New Zealand's unitary system has no level between central and local (or regional) government. Local governments raise a modest level of revenue, mostly through rates, a form of property tax. This concentrates most of New Zealand's capacity to recover from large natural disasters at the central government level.

Since 2009 both countries have experienced large natural disasters. Bushfires burned across the State of Victoria for over a month in early 2009, culminating in the 'Black Saturday' bushfires of early February, particularly affecting rural communities. For three months through the summer of 2010-11, heavy rains brought extensive flooding to Queensland, compounded by damage from Cyclone Yasi in February 2011. Meanwhile, for over 18 months, New Zealand has been faced with a series of seismic events in the Canterbury region, beginning on September 4, 2010, followed by a more damaging earthquake on February 22, 2011. As detailed below, institutional changes in the aftermath of these disasters were designed to expedite the recovery process.

Table One: Scale of disasters

	Killed	Estimated Damage (US$)[3]	Affected People
Victorian bushfires	173	1.3bn (0.1% of GDP)	9,954
Queensland floods	35	15.9bn (1.1% of GDP)	200,000
Canterbury earthquakes	185	16.5bn (9.8% of GDP)	301,500

Sources: CRED (2011); IMF (2011); World Bank (2011); VBRRA (2011)

Table One exhibits the key quantitative differences between the three disasters. The Victorian bushfires had a very high human cost among those directly affected, but judged by purely economic measures this disaster had significantly less impact than the others. The Queensland

[3] CRED (2011) defines estimated damage as direct (e.g. damage to infrastructure, crops, housing) and indirect (e.g. loss of revenues, unemployment and market destabilisation)

floods had a far lower human cost, but affected many more individuals across a wide area and caused far greater damage. The Canterbury earthquakes and the associated aftershocks – over 10,000 by February 2012 – not only had a high human cost, but also high levels of damage in absolute terms and particularly in comparison to the size of the New Zealand economy.

Geological disasters are likely to produce high levels of medium-term uncertainty due to aftershocks and geotechnical uncertainty. Skidmore and Toya's (2002) analysis suggests that geological disasters appear to have a negative, albeit negligible, impact on growth rates.

Australia

Australia's states each have their own constitutions. State governments are responsible for emergency services, public schools, infrastructure and policing. However, the most significant source of public revenue in Australia, income taxes, is collected by federal government. State revenue is largely comprised of other taxes, particularly sales taxes. State expenditures are far larger than their respective revenue bases, resulting in high levels of vertical fiscal imbalance, compensated by large grants from the federal government.

Federal and state governments negotiate the funding arrangements that are activated by disasters. The National Disaster Relief and Recovery Arrangements (NDRRA), an agreement that specifies the funding categories between state and federal governments, deals with four categories of emergency assistance. These are individual relief (Category A), restoration of public assets (Category B), a community recovery package (Category C) and acts of relief or recovery that alleviate damage in 'exceptional' circumstances (Category D). Federal assistance is dependent on the scale of the fiscal cost of relief. For Categories A, B and C, if the first threshold[4] is passed, then the Commonwealth provides 50% of state expenditure. For expenditure exceeding the second threshold[5], the Commonwealth provides 75% in excess of the second threshold. For Category D measures, the Commonwealth has discretion over the rate of its assistance.

The Australian Emergency Management Handbook Series includes a book on 'Community Recovery'. Community recovery focuses on five environments: social, built, economic, financial, and natural. It argues that successful recovery is dependent on understanding the context, recognising complexity, using community-led approaches, ensuring coordination of all

[4] 0.225% of the state's total general government sector revenue and grants in the financial year two years prior to the relevant financial year

[5] 1.75 times the first threshold

activities, employing effective communication, and acknowledging capacity limits. The interaction between these principles is shown in Figure Four.

Figure Four: Australian principles of disaster recovery

Source: From Australian Emergency Management Handbook (2011).

Victoria

The State of Victoria has a long history of bushfires. In early 2009, a heat wave spread across much of southern Australia. On Saturday, February 7th, the temperature in Melbourne surpassed 45°C, with low humidity and high winds; ideal conditions for bushfire spread. That day's bushfires quickly spread and rapidly intensified, devastating several communities across Victoria. Worst affected were the towns of Kinglake and Marysville, both in Murrindindi Shire. With 173 deaths and 4,300 buildings destroyed, it was the worst bushfire in Victorian history (VBRRA, 2011).

By February 10th, the Victorian Government set up the Victorian Bushfire Reconstruction and Recovery Authority (VBRRA) to coordinate reconstruction. There was no enabling legislation. Instead, an Order-in-Council, a mechanism that lets the executive modify existing legislation, established the Authority. It would act as a unit under the Department of Premier and Cabinet.

VBRRA had a sunset clause but this was not widely publicised, so as not to detract from the Authority's work (VBRRA, 2011). The Authority was given broad terms of reference. Policies were formed by a new committee in the Victorian Cabinet, the Bushfire Reconstruction and Recovery Cabinet Committee.

Without the Authority's establishment, the Victorian Department of Human Services (DHS) would have been responsible for the provision of assistance across 109 towns, in addition to coordinating stakeholders involved in the recovery process (VBRRA, 2011). The VBRRA could not exert direct influence as it did not have enabling legislation. The Authority's main function was to coordinate the DHS and other existing Victorian service delivery departments[6] by delegating specific services under the recovery plan. The VBRRA worked with all levels of government: Commonwealth Government agencies, Victorian Government, local councils, especially the Murrindindi Shire Council, and non-governmental organisations.

The quick establishment of the VBRRA increased the tempo of recovery. But this advantage would have been lost if staffing requirements were not quickly satisfied. Fewer than 20 staff comprised the initial start-up team sourced from the Australian Defence Force (ADF) and Victorian Government departments. On March 2, 2009 the interim head of the VBRRA, Major General John Cantwell, gave way to Christine Nixon, who had been the Chief Commissioner of the Victorian Police during the time of the fires.

Approximately A$1bn was made immediately available for the recovery (Department of Treasury and Finance, 2009). Approximately A$266m of this was funded by the federal government under the NDRRA. Private donations to the Victorian Bushfire Appeal Fund totalled A$395m (DHS, 2012). The total budget for the VBRRA over its life was A$21.2m. The majority of the recovery funding went to Victoria's service delivery agencies. As a coordinating agency, the VBRRA provided quarterly updates on the progress of recovery and a legacy report on the Authority's termination.

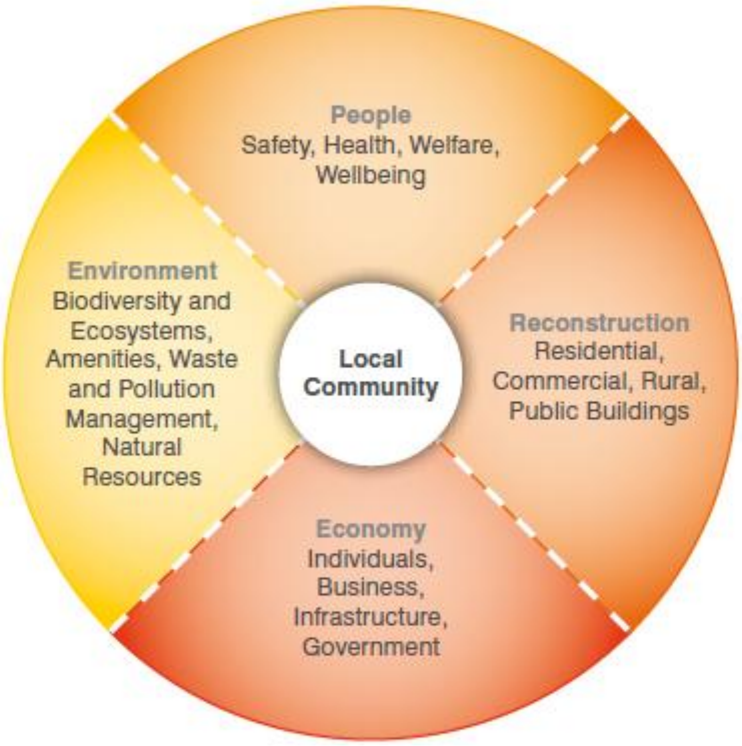
The strategic recovery framework was developed from both Australian and international experience. In line with best practice, the recovery plan focused on local communities, with four broad headings (Figure Five). The 'people' area included rebuilding community assets, such as recreational facilities and halls, temporary housing and counselling. 'Reconstruction' included community and state-owned buildings, infrastructure and provision of building advice

[6] DHS, Department of Health (DH), Department of Education and Early Childhood Development (DEECD) and Department of Planning and Community Development (DPCD)

to residents. ‘Economy’ combined a number of support packages for businesses into a business investment stimulus. ‘Environment’ aimed to restore the natural environment to its pre-bushfire condition, protect endangered animals and stabilise land.

The VBRRA (2011) cited evidence that community involvement could improve individual health and well-being in the aftermath of a psychologically damaging event. In line with the community focus, the Authority conducted 29 community meetings, attended by approximately 4,400 people (VBRRA, 2011). These meetings gave the authority legitimacy and established recovery requirements. The Authority encouraged the formation of community groups, Community Recovery Committees (CRCs), to develop recovery plans for their areas. While the VBRRA would provide guidance and templates for CRC planning, CRCS were responsible for establishing priorities and authorship of recovery plans. The task of the VBRRA would be to combine their outputs into a state-wide plan for recovery. Of more than 1,100 projects identified by CRCs, nearly 800 were funded.

Figure Five: The VBRRA’s strategic framework



Source: VBRRA, 2011

The rebuild of Marysville received particular focus, and showcases the recovery process undertaken in Victoria (VBRRA, 2009b). The Victorian Bushfire Appeal Fund disbursed A$29m in grants to Marysville within eight months. Temporary housing was established to ensure the community had local accommodation while other housing arrangements were made, while a 'Rebuilding Advisory Centre' advised residents on house rebuilding. To speed up residential reconstruction, the Victorian Government amended the Victorian Building Regulations 2006 to let homes destroyed by bushfire be rebuilt without planning permits. The residential building standards were changed to ensure new structures could withstand a severe bushfire event. A temporary marketplace provided businesses with interim trading facilities. Around 600 people from the area contributed to the town's Urban Design Framework. The framework identified immediate needs, such as regenerating commerce on the main street and locating a site for a petrol station, and 'Catalyst Projects' that would stimulate economic recovery in the area.

After February 7th, the Premier of Victoria announced the formation of a Royal Commission to investigate the causes and immediate response to the disaster. The Commission's Terms of Reference required it to improve the resilience of Victoria to future bushfire events. It was chaired by Bernard Teague, a former Judge of the Supreme Court of Victoria. Other members were Ron McLeod, who led the inquiry into the 2003 Canberra bushfire response, and Susan Pascoe, a former Commissioner with the Victorian State Services Authority. On July 31st 2010, the Commission delivered its final report with 67 recommendations. They spanned from Victorian bushfire safety policy, emergency management, fireground response, and fires ignited by electric wires, to planning and building, land management and the organisational structure of fire services. These recommendations impacted on State institutions, for instance the Country Fire Authority and State regulations, and access to Commonwealth resources, such as aerial resources owned by Emergency Management Australia and the Department of Defence. In areas of high fire-risk, the Commission recommended a 'retreat and resettlement' plan for affected communities.

A pressing issue was the distribution of donations received through the relief effort, in particular for uninsured home owners. These funds were distributed through DHS at the direction of an independent advisory panel. However, there was no consensus on whether the uninsured should receive more from the fund than insured home owners. Some insured homeowners questioned whether the uninsured deserved greater pity. One homeowner argued that 'I don't think they should get more. I think we should all get the same. I think that should be fair,' (Lauder, 2009).

Insurance status did not affect fund pay-out eligibility for damaged and destroyed homes. However, pay-outs were partially dependent on the circumstances of the applicant. For destroyed homes and contents, pay-outs were a maximum of A$45,000, with an additional A$40,000 depending on need. For damaged homes pay-outs were a maximum of A$35,000, of which A$20,000 was based on need. Other pay-outs were available, such as transitional support, psychological support packages, exceptional hardship and severe injury.

Planning for the eventual termination of the VBRRA was important from the beginning of the its operations. While the Authority's termination date was not specified in the Order-in-Council, the Victorian Government intended the Authority's life to be approximately 18 months (VBRRA, 2011), which was soon lengthened to two years. Transition risks were identified and mitigation plans were put in place. One particular risk was the expiration of staffing contracts that might disrupt the work of the Authority in its final months. Staff retention, followed by planned redeployment, was one method of avoiding this scenario. The closedown of the Authority required an effective framework to be enacted that let permanent government agencies complete the recovery plan. The VBRRA was officially disbanded on June 30, 2011.

Prior to the VBRRA's closedown, there were concerns that the pace of reconstruction was slow. Two years after Black Saturday, 41% of homes had been rebuilt. David Stirling, chairman of the Marysville Chamber of Commerce, said 'we're expecting recovery to take another three [to] five years at least,' (Johanson, 2011). Stelling *et al.,* (2011) conducted a number of interviews with informants and focus groups in the Beechworth region of Victoria in 2010-2011. Communities felt they had been brought together and their networks were strengthened after the fires. However, they also believed that over time they would become weaker due to loss of members and resentment against community decisions taken during and after the fires. Nevertheless, community resilience against future event appears to have been successfully built. Participants in the study believed their communities were far better prepared for bushfire events than before 2009.

Queensland

Meteorological disasters are not rare in Queensland. When the Brisbane River burst its banks in 1974 nearly 10,000 homes were flooded in Brisbane. In 2006, Cyclone Larry hit northern parts of Queensland and caused A$1.5bn of damage. Recovery from Cyclone Larry was steered by a taskforce, led by General Peter Cosgrove, former Chief of the Australian Defence Force

(ADF). General Cosgrove was also an internationally recognised logistics expert, whose arrival in the area instantly lifted morale. In 2010, the El Niño-Southern Oscillation climate pattern saw the strongest La Niña pattern since 1976, bringing above-normal wet weather to Queensland. Flooding in the State began in December 2010 and increased in intensity after torrential rain on December 23rd. Cyclone Tasha, a Category One[7] cyclone, brought further rain and damage on December 24th-25th. By the end of the rains, more than 99% of Queensland was declared 'disaster affected'. Cyclone Yasi, a Category Five cyclone, compounded flood damage in northern Queensland after its landfall on February 3, 2011.

The Disaster Management Act 2003 was amended in 2010 following a review of Queensland's disaster management arrangements (Queensland Government, 2011). The State Disaster Management Group (SMDG) is the key policy and decision-making body for Queensland's disaster management.[8] Recovery from the vast damage caused between December and February required state-wide coordination and management of large resources. The amendments to the 2003 Act enabled the Queensland Government to augment existing agencies with a designated recovery authority to prioritise agency response and recovery funding.

The initial institutional response came soon in the aftermath of the December flooding, and was at first similar to the Victorian example. The State government established a Flood Recovery Taskforce and a special Cabinet Committee in the Queensland executive branch. The taskforce was headed by Major General Mick Slater, then commander of the Australian 1st Division, based in Brisbane. The choice of non-political, military leadership echoed Queensland's last recovery taskforce in the aftermath of Cyclone Larry, and enabled operational lessons to be transferred from that event.

However, enabling legislation soon followed. On February 21, 2011, the taskforce was absorbed into a new statutory authority, the Queensland Reconstruction Authority (QldRA), with the passing of the Queensland Reconstruction Authority Act (QldRA Act). The QldRA had clear functions. It was to decide recovery priorities, work closely with communities, collect information about property and infrastructure, share data with all levels of government, coordinate and distribute financial assistance, put into effect the strategic priorities of the board, and facilitate flood mitigation.

---

7 Australian scale.

8 See Arklay (2011) for a summary of the SMDG's role in the 2010-11 flood response

The QldRA was overseen by a board, headed by Major General Slater, and comprised of two members nominated by the Australian Government,[9] one person nominated by the Local Government Association of Queensland[10] and three other persons with expertise and experience in engineering and planning.[11] The Authority's chief executive was Graeme Newton, a former chief executive of Queensland Water Infrastructure. It reported directly to the Premier of Queensland, Anna Bligh, as she took on the new Minister for Reconstruction portfolio and chaired the Disaster Reconstruction Cabinet Committee. The QldRA estimated the rebuild cost at A$6.8bn (QldRA, 2011a); 75% would be provided by the Federal government under the NDRRA and 25% from the State government. Road reconstruction took 70% of the QldRA's budget, with the majority of the residual going to grants aimed at primary producers, small businesses and non-profit organisations.[12]

The QldRA's functions were to 'approve, verify, monitor, assist and influence the expenditure of reconstruction funds,' prioritise 'the requirements for economic growth, development and rebuilding', optimise 'resource usage and prioritise reconstruction,' and focus on implementing reconstruction rather than making policy (QldRA, 2011: 9). The QldRA reconstruction framework was based along six lines: human and social; economic; environment; building recovery; roads and transport; community liaison and communication. Six sub-committees in these areas were established with unique concepts of operations.

The QldRA was directed by its enabling legislation to ensure 'Queensland and its communities effectively and efficiently recover from the impacts of disaster events' (QldRA, 2011a, p.47). Disaster events were not restricted to the floods of 2010-11. The QldRA's powers were also broad. It had the power to acquire land, to carry out works, and implement development schemes for declared projects. It could also close roads, overrule council development decisions and could decide the fate of damaged infrastructure. The QldRA was mandated to provide a monthly report to the Minister.

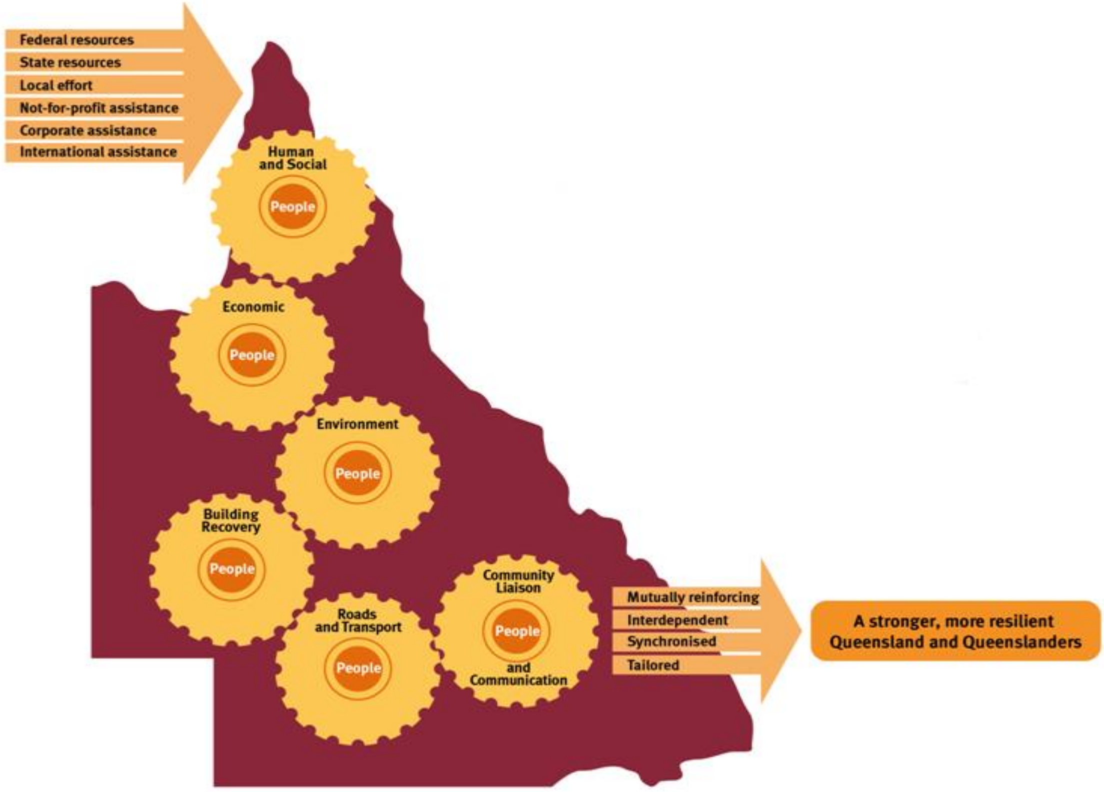
[9] Brad Orgill, head of the 'Building the Education Revolution Implementation Taskforce' and Glenys Beauchamp, Secretary of the Department of Regional Australia, Regional Development and Local Government

[10] Brian Guthrie, former CEO of Townsville City Council

[11] Kathy Hirschfeld, a former oil executive, Steve Golding, former Director-General Main Roads, and Jim McKnoulty, a local government planning expert.

[12] Provided by the Queensland Rural Adjustment Authority (QRAA)

Figure Six: QldRA strategic framework



Source: QldRA, 2011a

The QldRA's concept of operations was divided into recovery and reconstruction phases. Clear timelines were set in the QldRA's performance statement: the recovery process would be completed by June 30th 2011 and the reconstruction phase would be completed by the end of 2012 (Queensland State Budget, 2011). The QldRA had a sunset clause of two years, at which point its operations were to be transferred to other agencies. [13]

The recovery effort made substantial progress in the first six months of its operations (see Table Two). Most work was to repair damaged infrastructure. The QldRA also focused on increasing the capability of affected areas to withstand future flooding. One report (QldRA, 2011b) gives examples of building resilience, improving damaged structures and incorporating local government in the rebuild effort in all six reconstruction areas. More specific plans included storm tide prone area reconstruction (QldRA, 2011c) and improvements to electrical infrastructure (QldRA, 2011d).

[13] Section 139 of the QldRA Act

Table Two: Damage Impact and Recovery Statistics

	November 2010 – March 2011	As at September 2011
Roads	9,170km of Queensland's state-owned road network affected	8,482km of Queensland's state-owned road network recovered
Rail	4,748km of Queensland's Rail network affected	4,596km of Queensland's Rail network recovered
Bridges and Culverts	89 state-owned bridges and culverts with major damage	89 state-owned bridges and culverts with major damage recovered
Schools	411 Queensland schools affected	411 Queensland schools operating from original location
National Parks	138 National Parks closed due to natural disaster	123 National Parks reopened
Premier's Disaster Relief Appeal	More than A$276m donated with more than A$251m distributed to individuals	
Personal Hardship and Assistance Grants	More than A$121m in grants paid to small businesses, primary producers and non-profit organisations. More than A$12m in concessional loans to small businesses and primary producers	
Sport Flood Fight Back Scheme	More than A$13m in funding for infrastructure and/or equipment to assist organisations to re-establish sport and recreation services	

Source: Adapted from QldRA, 2011b

The QldRA exercised its powers most visibly in the reconstruction of Grantham, a small town west of Brisbane, which suffered major damage from flash flooding on January 10, 2011. In April 2011 the QldRA declared Grantham a 'reconstruction area', which required the Authority to create a 'development scheme' for the town in consultation with local residents.[14] The scheme enabled the QldRA to override planning instruments and plans and policies made under any Act. In May 2011, the Lockyer Valley Regional Council purchased 937 hectares of land on higher ground and offered a 'swap deal' to Grantham residents. By December 2011, the Grantham Reconstruction Area was in effect, with the QldRA arguing the scheme would sweep away 'regulatory hurdles' that would otherwise hinder progress.

The State-wide flooding led to a significant rise in insurance premiums. According to one estimate, average home and contents premiums rose by 12% with flood-affected areas seeing

[14] Per sections 62-65 of its enabling legislation

average increases of up to 41% (Insurance News, 2011). Some homeowners were surprised to discover they were not covered for flood damage. Insurers did not have a common definition of a flood event, with definitions ranging from ‘the inundation of normally dry land by water that has ... escaped or released from a natural water course,’ excessive amounts of rainfall, or flooding from previously dammed water (Nancarrow, 2011). This uncertainty left some homeowners surprised to discover they were not covered by insurance. The Federal Government subsequently responded by mandating a standard definition for flooding that applied to all insurance policies.

The Federal Government funded approximately A$5bn of the reconstruction fund, some 50% of the total, which could be funded through debt issuances or by the government expanding its revenue base through additional taxation. The latter course was chosen, introducing a flood levy on individuals with incomes over A$50,000. The deciding vote in the upper house was held by Nick Xenophon, an independent senator. Mr Xenophon cited moral hazard as reason for initially withholding his support because the Queensland Government’s insurance fund did not have reinsurance. Mr Xenophon argued that ‘knowing the Federal Government would pick up the tab if disaster struck, the Queensland Government decided to gamble with the nation’s money, and now we are all being asked to pay for that bad bet,’ (Thompson, 2011). His eventual support was conditional on mandatory insurance for state governments against disasters, and states losing access to NDRRA funding if insurance cover for state assets was deemed inadequate.

A Commission of Inquiry was established in January 2011. It is investigating the preparation and planning by all levels of government, emergency services and the community during the 2010-11 floods, the performance of private insurers in meeting claims responsibilities, all aspects of the response to the flood events, and land use planning to reduce risk of damage from future floods. An interim report was delivered on August 1, 2011, as explicitly required in the Commission’s Terms of Reference, so that recommendations could be implemented before the 2011-12 summer.

In June 2011, the World Bank (2011) compiled a report on the Queensland reconstruction effort. It concluded that the effort met many good practice standards. The response saved lives effectively, funding was provided to individuals and communities quickly, and institutions were established that managed the recovery and reconstruction. It commended Queensland on its ‘build back better’ focus designed to mitigate risk of future flooding.

New Zealand

New Zealand has two key institutions designed to deal automatically with disaster recovery. First, there is the Earthquake Commission (EQC), a Crown entity, which provides partial insurance for natural disasters. The EQC is funded by levies on home insurance and also takes out cover with reinsurance companies. In the event of a natural disaster, the EQC pays out the first NZ$100,000[15] of damage suffered on insured houses, with private insurers covering the residual.[16] Prior to the first Canterbury earthquake, the EQC's assets were approximately NZ$6bn (EQC, 2010). The second institution, Civil Defence and Emergency Management (CDEM), a Ministry within the Department of Internal Affairs, coordinates the initial response after a state of emergency is declared by CDEM or one of its groups. The Ministry is organised into 16 territorial groups.

CDEM may declare two types of emergency. In a 'local emergency', declared by a nominated member of a territorial group, only the groups in the affected area are empowered to respond. A 'national emergency' provides response powers to all CDEM groups simultaneously. Until 2010 this latter mechanism had never been used.

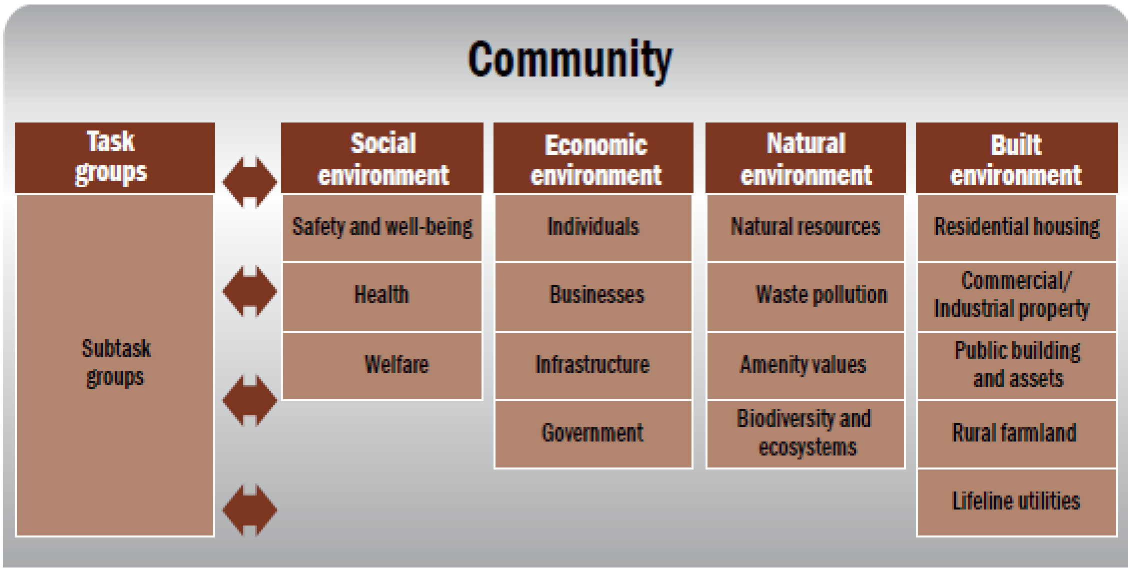
CDEM has a recovery framework, which focuses on four areas. This informs the overall generic recovery structure in the framework (see Figure Seven).

The first major earthquake to hit the Canterbury region struck at 4:35am on September 4th 2010. It was the most damaging earthquake to hit New Zealand since the 1931 Napier earthquake, but caused no reported deaths as it struck at a time when the city centre of Christchurch was largely deserted. A state of local emergency was subsequently declared. The event nevertheless had substantial economic significance, with damage of approximately NZ$5bn (Treasury, 2011). Insured homeowners were eligible to lodge damage claims with the EQC immediately after this event.

[15] Plus goods and services tax

[16] The EQC's cover does not apply to businesses

Figure Seven: Civil Defence Generic Recovery Framework



Source: CDEM, 2009

Fears that existing legislation would slow down the recovery process encouraged the government to seek an expansion of its powers. Unlike Australia, New Zealand lacks an entrenched constitution and is a unitary state. Accordingly, there are few constraints on the central government's capacity to amend legislation or intervene in the affairs of specific localities. The government's initial move was the formation of a Cabinet committee to coordinate the recovery process. This was headed by a newly appointed Minister for Earthquake Recovery, Gerry Brownlee. Within two weeks, legislation was passed in the form of the Canterbury Earthquake Response and Recovery (CERR) Act. It provided for Orders-in-Council in the recovery process, although Orders could not be applied to core constitutional legislation.[17] Like the QldRA, Brownlee argued this power was necessary to remove 'bureaucracy' and speed up the recovery process (Bennett, 2010).

On September 14, 2010, the Canterbury Earthquake Recovery Commission (CERC) was established under the Act with the purpose of enabling better coordination between local and central governments. CERC advised on potential Orders-in-Council to the Minister, but because it was an advisory body, there was no legal requirement for it to be consulted before Orders were made. CERC had a decidedly local flavour. It was made up of seven commissioners, three of whom were the mayors of Christchurch city, Selwyn District and Waimakariri District; one

[17] The Bill of Rights 1688, the Constitution Act 1986, the Electoral Act 1993, the Judicature Amendment Act 1972 and the New Zealand Bill of Rights Act 1990.

from Environment Canterbury, the regional authority, with the other three appointed by the Minister. The CERR Act included a clause that limited its life to around 18 months, at which point CERC would disband and Orders-in-Council applying to Canterbury would expire.

This response was challenged by the subsequent major earthquake that occurred in the middle of a working day on February 22, 2011 resulting in 183 fatalities, most due to building collapses. The shallowness of the earthquake and its proximity to the city ensured it was more damaging to buildings than the September earthquake, while liquefaction damaged land to a far greater extent.[18] Unlike September, the damage was sufficient for the Civil Defence Minister John Carter to declare a state of national emergency within 24 hours. Damage from this earthquake was approximately NZ$12bn (Treasury, 2011). The EQC determined that the February earthquake was a new event[19], enabling home owners to claim against new damage suffered. In the typology of Figure One, the second earthquake scaled up the challenge facing the government and further burdened the institutions formed after September 2010. As in Victoria and Queensland, businesses were provided with immediate financial support.

The government was concerned that existing Orders-in-Council were scheduled to expire in April 2012 under the CERR Act. On 28th March, Cabinet agreed that the CERR Act was insufficient and would be replaced with new legislation: the Canterbury Earthquake Recovery Act (CER Act) (Cabinet, 2011). This legislation provided much wider and more significant powers than its predecessor. First, the Act and associated Orders-in-Council extended the period in force to 2016, rather than expire in 2012. Second, the Minister for Earthquake Recovery was empowered to 'suspend, amend or revoke' a number of local council plans and 'suspect or cancel' resource consents previously granted under the Resource Management Act. These powers enabled a recovery strategy for greater Christchurch to be implemented. Under the CERA Act, the strategy was to be developed by November 2011 in conjunction with Christchurch City Council, Selwyn and Waimakariri District Councils and Environment Canterbury.

The most important change was the establishment of a new government department on March 24, 2011 to replace CERC: the Canterbury Earthquake Recovery Authority (CERA). Similar to the QldRA Act, the CERA Act gave strong powers to the recovery agency. CERA would

---

[18] Liquefaction is the surfacing of liquefied sand and water from below the ground due to shaking during an earthquake.

[19] Prior to the February earthquake, there had been four such 'new events' including the initial September earthquake

have a budget of NZ$25.5m over two years. Six weeks after its formation, Roger Sutton, previously chief executive of an electricity distribution company in the region, was appointed to head the Authority.[20] CERA used its power to decide reconstruction priorities, compulsorily acquire land with compensation, enter premises with notice to undertake works, and close roads. It also used its power to demolish and dispose of buildings. The Authority took control of public works from Civil Defence on the expiration of the state of national emergency on May 1, 2011. CERA coordinated drafting of the recovery strategy for greater Christchurch, which complemented Christchurch City Council's draft recovery plan for the CBD. The recovery strategy for greater Christchurch was released in early October, 2011. It referred to 15 plans along four lines of reconstruction: economic, social, natural and buildings. Each plan would have the involvement of several stakeholders, including government organisations (both central and local), non-governmental organisations, such as the principal iwi for the region Ngai Tahu, and business organisations.

Figure Eight: CERA strategic framework

Source: from CERA, 2011a

[20] CERA was immediately active with Deputy State Service Commissioner John Ombler as Acting Chief Executive

Damaged housing in several areas of Christchurch was an immediate concern for CERA. Many residents questioned the soundness of rebuilding on land that had suffered liquefaction. Geotechnical information needed refreshing after the earthquake, a problem unique to geological disasters. The risk of significant aftershocks deterred rebuilding in the short-term and an increased reluctance by insurance companies to offer new policies compounded the issue. CERA's response was to divide the city's land into several areas. Most areas were designated 'green', with lesser degrees of risk for future liquefaction, which allowed for rebuilding. However, land repair in 'red' areas would be 'prolonged and uneconomic'. The Crown would compensate residents in red areas for the loss of their homes at the council's last valuation of their property.[21]

Continuing seismic activity has seriously impeded recovery operations. Since September 2010, the concentration of earthquakes has shifted eastward, with several damaging more buildings. Liquefaction continued to cause problems near the Avon River, despite many areas being designated by CERA as suitable for rebuilding (Heather, 2011). As at February 8, 2012, the EQC has recognised a total of 15 different events, allowing affected insurance holders to claim against new damage. However, the region has not suffered further damage on a comparable level to that of the September or February earthquakes.

Seismic uncertainty has had an ongoing depressing effect on the supply of insurance, which has prevented full home and business reconstruction. Alan Bollard, Governor of the Reserve Bank of New Zealand (RBNZ), and Mike Hannah (2011) argued that the closure of the CBD, building code changes, land remediation and reassessment of damage on previously damaged buildings complicated the insurance process. This mixture of geotechnical and policy uncertainty has discouraged insurers from increasing their overall exposure to Canterbury.

Excessive claims from the February earthquake resulted in one domestic provider, AMI, requiring effective nationalisation. Other insurers such as Vero, Tower and AA anticipated higher reinsurance costs and increased their premiums. In September 2011 Hannover Re, a reinsurer, argued 'sharp rates hikes and improved conditions were obtained here on the back of costly natural disasters.' For 2012, Hannover Re expects to see 'further appreciable price increases,' (Ladbury, 2011). In January 2012 Gary Dransfield, chief executive of Vero, claimed that the long period of seismic activity discouraged insurers from exposing themselves to the

[21] 2007 for Christchurch, 2008 for Waimakariri

rebuild. Bad loans and the risk of business disruption created uncertainty for other financial institutions, such as banks.

Multiple tail events challenged the EQC's capacity to perform its function. Several additional claims from individual claimants were made as previously damaged homes suffered more damage from aftershocks. Cowan and Simpson (2011) argue liability estimates and loss allocation was complex because no existing models were calibrated for events of this type. They also argue that the EQC's liability for land damage was difficult to estimate. Furthermore, the EQC was forced to meet complex legal requirements and the geotechnical demands of recovery required the EQC to coordinate more than a dozen agencies from the private sector and across different levels of government. On October 11, 2011, the government announced that the insurance levy used to finance EQC would be tripled.

The earthquake also affected public finances. Earthquake-related public expenditure was approximately NZ$13.6bn in the 2010-11 financial year[22] (Bollard and Hannah, 2011). Standard and Poor's, a credit rating agency, downgraded New Zealand's long-term sovereign rating to AA, citing the increase in New Zealand's fiscal deficit. The policy response has been to consolidate public finances over the medium-term, particularly in discretionary spending. The RBNZ decreased its set interest rate, the Official Cash Rate, by 50 basis points in the immediate aftermath of the February earthquake.[23]

The government established a Royal Commission of Inquiry to investigate buildings that caused injury on February 22nd, especially the CTV building and PGC House, and those that failed after being deemed safe following September's earthquake. Furthermore, the government is investigating the adequacy of current legal and best-practice requirements, though it is not investigating issues under the responsibility of the Minister for Canterbury Earthquake Recovery or CERA. In October 2011, an interim report with geotechnical and building design recommendations was released. The final report, initially expected to be released on April 11, 2012, is now due November 12, 2012.

Following a scheduled general election in November 2011, the National party, which headed a minority government before the election, was returned to parliament in coalition with several other minor parties. As is normal for public sector agencies at a change of government, CERA

---

[22] Year ended 30th June, 2011

[23] It should be noted that RBNZ policy is independent of Government discretionary policy. Its objectives, as set out in its Policy Targets Agreement, are focussed on price stability.

compiled a Briefing to the Incoming Minister (BIM) that summarised the recovery process and future challenges. It identified seismic uncertainty as a major issue in recovery of the CBD and the primary cause of landowners delaying decisions to repair or rebuild. It acknowledged that 'managing the pace and timing of its contribution to the recovery is the single greatest risk CERA faces' (CERA, 2012). The BIM also noted that CERA had faced a greater than anticipated work programme that might require increased funding in future budgets. However, it defended the recovery process to date. It argued that economic activity and employment were above expectations and that the foundation was well set for recovery.

Discussion

The three cases highlight interesting points of similarity and difference. While all three governments created new recovery agencies to coordinate the recovery, they were given different functions and powers. Those agencies were all tasked with community engagement yet the extent to which citizens were empowered to make decisions was not consistent. The cases display clear evidence of institutional learning as recovery progressed and display the complexity of insurance issues after disaster.

Choice of agency type

The recovery agency in Victoria, unique among the three cases, was not complemented with legislative powers. This appears to have been a deliberate strategic decision that let the government coordinate recovery quickly as new powers were not required (VBRRA, 2011). The Black Saturday bushfires took place over a relatively short span of time compared to the disasters in Queensland, and in particular, Canterbury. Given the suddenness of the Victorian disaster, the marginal benefits of waiting for new legislation to be drafted, passed and enacted clearly justified the immediate establishment of a recovery authority. It is also clear that there was considerable goodwill for the VBRRA in the initial stages of recovery. In contrast, Queensland and Canterbury experienced repeated events that exhausted the institutions set up to cope with them: the Flood Recovery Taskforce, CDEM and CERC. Recovery authorities with more and greater powers were deemed necessary in those cases.

Queensland and New Zealand designed recovery authorities with strong powers that circumvented existing regulations. This was not accidental; Queensland's institutional response was specifically cited in a New Zealand Cabinet minute proposing the creation of CERA (Cabinet, 2011b). The agencies' powers are remarkably similar. Both could undertake works, enter and acquire land, decide the priorities for reconstruction and override local government plans and policies. Both had legislated sunset clauses.

However there were important differences. CERA was a government department while the QldRA was created as a statutory body. The QldRA had a board, unlike CERA, and its Minister was the Premier rather than a dedicated Cabinet member. Mr Brownlee had the advantage of being a senior local MP in Cabinet, indicating more direct control than delegation to a non-political board. The New Zealand arrangement lets the government exert more direct influence over the recovery process.

Although both agencies faced big reconstruction challenges, they faced very different issues. With the exception of small towns like Grantham, the QldRA's funding was primarily focused on the restoration of services and rebuilding infrastructure. Canterbury faced more complex recovery demands. Christchurch was a city of over 350,000 and had suffered damage to infrastructure and to many types of buildings in a very compact area that included the CBD. The Minister for Earthquake Recovery could change resource consents granted under the RMA. In contrast, the QldRA Act explicitly provided in section 89 that the QldRA's development schemes could not stop, regulate, or change lawful use of premises.

An effective command structure requires a deliberate choice of leadership, particularly the rapport required with the affected community. All three cases revealed a similar preference. An outstanding example for the Australian responses to draw on was the Queensland Government's appointment of General Cosgrove, former Chief of the Defence Force, to lead its response to Cyclone Larry in 2006. In 2011, the Queensland Government appointed another high-level ADF officer to head recovery coordination. On Major General Slater's departure, his role was filled by Major General Richard Wilson. Military involvement has additional benefits, such as signalling an effective response to a traumatised community and managing the logistics of recovery. In Victoria the appointment of a public figure in Christine Nixon gave the VBRRA significant capital, which was important given the lack of enabling legislation. In New Zealand, Roger Sutton had become a high-profile figure as the restoration of electricity services after the February earthquake was critical in the immediate response phase.

Community engagement

All three approaches involve the public in decision making, an approach at the core of the disaster frameworks used in all three cases. Yet public participation does not always diffuse power from government to citizens. Arnstein's (1969) ladder of citizen participation describes eight ‘rungs’ ranging from non-participation, tokenism to ‘citizen power’. In Hirschman’s (1970) framework of ‘exit, voice and loyalty’, participation that does not empower citizens may lead them to ‘exit’ the process, impoverishing decision-makers’ information base.

The VBRRA integrated community desire for involvement into its recovery strategy. It acknowledged that community-led recovery was difficult when individuals were still undergoing personal recovery. Nevertheless, within a few months the VBRRA changed its mode of community engagement from consultation, a token form of participation in Arnstein’s framework, to creating partnerships with Community Recovery Committees and delegating some power. The VBRRA adopted most of the projects identified and prioritised by CRCs.

Community engagement was critical in Christchurch. The CER Act mandates the Minister to appoint a community forum and ‘have regard’ to their information and advice. This has not yet been sufficient to build consensus on complex issues in Christchurch. Ostrom (1986) outlines a consultative institutional model with several ‘rules’ under which the participatory game is played. When ‘authority rules’ constrain decision-makers, this is likely to result in a more effective process. Merely ‘having regard’ to a forum’s information and advice clearly concentrates power with the central government. ‘Boundary rules’ specify how participants are selected. Unlike Victoria, where the membership of CRCs was self-selecting, Christchurch’s sole community forum was appointed by the Minister. Additionally, membership of the community forum was relatively small at 38 individuals. The ‘pay-off rules’ distribute cost and benefits to participants. The draft CERA recovery plan for greater Christchurch received 304 submissions and it is unclear if it was influenced by other means of community participation. Community forum minutes record participants reported an ‘attitudinal problem’ within Christchurch City Council that left them feeling disempowered (CERA, 2011).

It is also unclear if the participatory process has effectively built consensus. Hisschemoller and Hoppe (1996) describe a lack of consensus on knowledge, norms and values as an ‘intractable controversy.’ They observe that ‘intractable controversies come into existence if viewpoints of certain groups or interests are not taken seriously by policy makers’ (1996:49). Intractable controversies become serious if there is already considerable policy and geotechnical uncertainty. Community engagement was mandated in the CER Act to develop the recovery plan for greater Christchurch. It is unlikely that this timeframe was sufficient to build consensus on some of the more complex issues facing the region.

In Queensland, Grantham's land swap deal was also contentious. Some residents preferred to remain in the previously flooded valley despite the known risks (Black, 2011). However residents were not compelled to accept the deal offered by the Lockyer Valley Regional Council. In Christchurch, issues were acute when compulsion was used. This ranged from dissatisfaction over building restrictions (McDonald, 2012) to individuals being unhappy with the land zoning of their homes. Such intractable controversies are a starting point for institutions to solve (Hischemoller and Hoppe, 1996). This is a serious obstacle that New Zealand has yet to overcome.

Institutional learning and adaptive change of rules

The VBRRA Legacy Report (2011) outlines a number of lessons arising from the Authority's operations. It identifies aligning the recovery body with the highest level of government (i.e. Premier or Prime Minister) to provide authority. It argues that statutory powers can speed up progress on unanticipated issues, especially if it cannot use other government agencies' existing powers. It also argues that broad terms of reference, though necessary in complex recovery situations, generate considerable uncertainty. Finally, it identifies that the recovery body must be flexible as recovery moves away from immediate issues towards more enduring, long-term issues.

The QldRA appeared to take on some of these lessons. First, it was given enabling legislation that clearly defined its functions and gave it considerable powers. Second, its board reported directly to the Premier of Queensland. Third, the initial planning for the QldRA had clear steps to move from recovery to reconstruction before transitioning to other agencies. Permanent government agencies were involved in sub-committees in the six areas of reconstruction and their priorities were decided by the QldRA.

New Zealand's initial adaptation did not come until the February earthquake. CERC, appointed after the September earthquake, was an advisory body rather than a government department and did not have the powers of CERA. It is worth noting that this was the first time a department was established outside Wellington, indicating the recognition by the government that in times of crisis it is important to be close to the people affected. After the much more damaging February 22nd event, New Zealand followed Queensland's lead in providing CERA with enabling legislation. However, CERA was not linked directly to the Prime Minister as were the VBRRA and the QldRA to the state premiers. This may reflect New Zealand's unitary system of government, where a senior minister in the cabinet, also a local MP, was best positioned to lead the government's coordination. CERA (2011) made explicit note of lessons it had learned from local and international experience, including: building the capacity of the community-led response, devolving decision making to the local level, focusing on those most affected by the disaster and ensuring government agencies worked in a holistic, 'joined up' way. These lessons are equally true from Victoria and Queensland.

Insurance issues and building resilience

Moral hazard was a clear problem in Victoria and Queensland. In Victoria, the high level of donations made distribution a complicated process. In the end, the uninsured did not receive explicit special treatment, though increased need among those individuals may have led to greater access to funding. This approach has far less potential to distort individual incentives than alternatives. The Queensland floods highlighted moral hazard among intra-governmental actors, with the federal government resorting to compulsory state disaster insurance.

New Zealand's permanent disaster institutions adequately coped with the issue of moral hazard for home insurance. The EQC reduced risk exposure for private insurers without encouraging homeowners to neglect taking up insurance. The government was steadfast in refusing to extend the EQC's coverage to those without insurance. Further, it has not yet offered compensation for uninsured red-zoned land. It is not yet clear if moral hazard issues will result from the nationalisation of AMI. Nevertheless, the reduced supply of private insurance in the Canterbury region has clearly slowed the pace of recovery. While lack of private insurance was also an issue in Queensland, an immediate issue was residents wrongly believing they were covered for flood events due to ambiguous definitions.

All three cases show a clear commitment to mitigating risk of future disasters. Inquiries investigated the causes of and response to the disaster, the failure of buildings and infrastructure, and all delivered recommendations to reduce the risk of reoccurrence. In response to the Victorian bushfires, building codes were strengthened and the capacity of standing institutions for disaster response was increased. In Queensland, issues relating to flood preparedness were delivered quickly. In New Zealand, the Royal Commission has yet to release its final report which will include recommendations arising from the failures of the CTV and PGC building. However, its interim report delivered recommendations that inform early-decision making on rebuilding and repair work in Christchurch.

Conclusion

Despite differences in the three approaches to disaster recovery, it is important to appreciate their similarities. In all three cases, the institutional responses were effective in dealing with the disaster quickly and avoided the feedback loop between poor institutions and higher levels of crisis. While it is too early to judge fully the success of the recovery effort in Christchurch, it is nevertheless important that more than a year after the February earthquake, large-scale unemployment, homelessness and poverty have been avoided. Despite parts of the CBD remaining closed to the general public the area continues to function relatively well. It is reasonable to expect that once reconstruction is well underway individuals will return to the Canterbury region.

In its evaluation of the Queensland recovery effort, the World Bank (2011) highlighted a number of features important in good recovery practice. First, the recovery effort built on planned responses to disaster. Second, governments introduced specific agencies to deal with recovery. Third, they showed a commitment to community engagement, particularly in longer-term strategic planning. Fourth, all worked with local government in recovery planning. Fifth, relief and recovery arrangements were already in place, with the World Bank specifically citing the NDRRA. Sixth, the recovery effort attempted to ensure that mitigation of risk was incentivised and moral hazard was avoided. Seventh, technical advice was provided to individuals trying to rebuild. Eighth, efforts were made to understand policy failures that exacerbated the disaster, and recommend changes to mitigate future risk. Many of the good practice principles are also evident in the Victorian and Canterbury recovery efforts.

Key differences between the three have been discussed. What is clear is that institutions work best when they account for the context within which they operate. Governance arrangements in the three cases were flexible to circumstance and adapted when required. Governments showed an ability to learn from past experiences, particularly foreign examples, and learning as the recovery process moved forwards. Where institutions, both public and private, struggle to cope with the demands disasters place on their capacity, it is important that these institutions are augmented with additional resources or adapted to cope. This maintains the tempo of recovery and ensures that the demands on government are kept to a manageable level, the clearest lesson of the three cases.

References

Arnstein, S. (1969). A ladder of citizen participation. *AIP Journal*, 35(4): 216-224.

Bennett, A. (2010). 'Concerns over power new law gives ministers'. *NZ Herald* [online] (Last updated 5:30AM on 15th September 2010). Available at: http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10673506

Birkland, T.A. (1997). *After Disaster: Agenda setting, public policy and focusing events*. Washington, D.C.: Georgetown University Press.

Birkland, T.A. (2006). *Lessons of Disaster: Policy change after catastrophic events*. Washington, D.C.: Georgetown University Press.

Black, J. (2011). 'Grantham divided over moving uphill'. *Sydney Morning Herald* [online] (Last updated 11th December, 2011). Available at: http://www.smh.com.au/queensland/grantham-divided-over-moving-uphill-20111210-1op2j.html

Bollard and Hannah (2011). 'Tale of two crises'. Speech to Canterbury Employers' Chamber of Commerce, Christchurch. Available at: http://www.rbnz.govt.nz/speeches/4659119.html

Bovens, M. (2007). 'Public Accountability', in E. Ferlie, L.E. Lynn & C. Pollitt, eds., *The Oxford Handbook of Public Administration*. Oxford: Oxford University Press.

Buchanan, J.M. (1975). 'The Samaritan's Dilemma', in E. Phelps, ed. 1975. *Altruism, morality and Economic Theory*. New York: Russell Sage Foundation, pp.71-87.

Cabinet (2011). Paper 1. Canterbury Earthquake Recovery: Proposed governance arrangements. Available at: http://cera.govt.nz/sites/cera.govt.nz/files/common/cabinet-paper-1-proposed-governance-arrangements-march-2011.pdf

Carvallo, E., Galiani, S., Noy, I., & Pantano, J. (2011), *Catastrophic Natural Disasters and Economic Growth*. IDB WP Series No. IDB-WP-183, Inter-American Development Bank.

CDEM (2009). Focus on Recovery. Available at: http://www.civildefence.govt.nz/memwebsite.nsf/Files/FocusOnRecovery/$file/FocusOnRecovery.pdf

CERA (2011a). 'Draft Recovery Strategy for Greater Christchurch'. Available at: http://cera.govt.nz/sites/cera.govt.nz/files/common/draft-recovery-strategy-for-greater-christchurch.pdf

CERA (2011b). 'Community Forum meeting notes', Tuesday 11 October 2011. Available at: http://cera.govt.nz/sites/cera.govt.nz/files/common/community-forum-meeting-notes-20111011.pdf

CERA (2012). *Briefing to the Incoming Minister*. Available at: http://cera.govt.nz/about-cera/briefing-for-incoming-minister

Coffman, M., & Noy, I. (2009). *A Hurricane's Long-Term Economic Impact: the case of Hawaii's Iniki*. Department of Economics, University of Hawaii at Manoa, Working Paper No. 09-5, June at http://www.economics.hawaii.edu/research/workingpapers/workingpapers.html

Cowan, H., and Simpson, I. (2011). 'Planning for disasters and responding to unforeseen complexity: the first large test for the New Zealand Earthquake Commission'. *12th Hazards Conference*. 29 Surfer's Paradise. September – 1 October 2011.

CRED (2011). EM-DAT: The International Disaster Database. Retrieved from www.emdat.be

Department of Treasury and Finance (2009). *Budget 2009-2010*. Available at: www.dtf.vic.gov.au

DHS (2012). Victorian Bushfire Appeal Fund. Retrieved from: http://www.dhs.vic.gov.au/bushfireappeal

EQC (2011). *Earthquake Commission Annual Report 2009-2010.* Wellington.

Folke, C., Colding, J., & Berkes, F. (2003). *Synthesis: building resilience and adaptive capacity in social-ecological systems.* Cambridge: Cambridge University Press.

Heather, B. (2011). 'Residents in east lose faith in zoning', *The Press* [online] (last updated 28th December 2011). Available at: http://www.stuff.co.nz/the-press/news/christchurch-earthquake-2011/6193733/Residents-in-east-lose-faith-in-zoning

Heidenheimer, A.J., Heclo, H., & Adams, C.T. (1990). *Comparative Public Policy: The politics of social choice in America, Europe, and Japan*. New York: St. Martin's Press.

Hirschman, A.O. (1970). *Exit, Voice and Loyalty: Responses to decline in firms, organisations, and states*. Cambridge: Harvard University Press, 1970.

Hisschemoller, M. and Hoppe, R. (1996). Coping with Intractable Controversies: The case for problem structuring in policy design and analysis, *Knowledge and Policy* 8(4): 40 – 60.

Kousky, C. and Cooke, R.M. (2009) *Climate Change and Risk Management: Challenges for insurance, adaptation and loss estimation,* RFF Discussion Paper No. 09-03-REV. Washington: RFF.

Johanson, S. (2011). 'Recovery a painfully slow path', *The Age* [online] (last updated 7th February 2011). Available at: http://www.theage.com.au/victoria/recovery-a-painfully-slow-path-20110206-1aigz.html

Ladbury, A. (2011). 'Brownlee gives reinsurers the facts', *The Press* [online] (last updated 22nd September 2011). Available at: http://www.stuff.co.nz/the-press/opinion/perspective /5665147/Brownlee-gives-reinsurers-the-facts

Lauder, S. (2009). 'Money for bushfire rebuilding to include uninsured', *ABC News*, http://www.abc.net.au/pm/content/2008/s2514736.htm

McDonald, L. (2012). 'Rebuild 'at risk' in new city plan', *The Press* [online] (last updated 8th February 2012). Available at: http://www.stuff.co.nz/national/christchurch-earthquake/6379604/Rebuild-at-risk-in-new-city-plan

Nancarrow, D. (2011). 'When is a flood not a flood?', *Brisbane Times* [online] (last updated 6th January 2011). Available at: http://www.brisbanetimes.com.au/environment/weather/when-is-a-flood-not-a-flood-20110105-19g0p.html

Noy, I. (2009). The macroeconomic consequences of disasters. *Journal of Development Economics*, 88, 221-231.

IMF (2011). World Economic Outlook Database. Available at: http://www.imf.org/external/pubs/ft/weo/2011/02/weodata/index.aspx

Ostrom, E. (1986). An Agenda for the Study of Institutions. *Public Choice*, 48(1):3 – 35.

QldRA (2011a). Operation Queenslander: The State community, economic and environmental recovery and reconstruction implementation plan 2011-2013*.* Queensland Reconstruction Authority.

QldRA (2011b). Rebuilding a stronger, more resilient Queensland. Queensland Reconstruction Authority.

QldRA (2011c). Planning for a stronger, more resilient North Queensland. Part 1 – Rebuilding in storm tide prone areas: Tully Heads and Hull Heads. Queensland Reconstruction Authority.

QldRA (2011d). Planning for a stronger, more resilient electrical infrastructure. Improving the resilience of electrical infrastructure during flooding and cyclones. Queensland Reconstruction Authority.

QldRA (2011e). *December 2011.* Monthly Report. Available at: http://www.qldreconstruction.org.au/publications-guides/reports/december-2011-monthly-report

Queensland Government (2011). *Disaster Readiness Report Card*. Available at: http://www.premiers.qld.gov.au/publications/categories/reports/assets/disaster-readiness-update.pdf

Queensland Government (2012). *Complete Budget Paper 5 – Service Delivery Statements.* Available at: http://www.budget.qld.gov.au/budget-papers/2011-12/bp5-2011-12.pdf

Rodrik, D. (2001). Institutions for High-Quality Growth: What They Are and How to Acquire Them, *Studies in Comparative International Development*, 35(3), 3-31.

Skidmore, M., & Toya, H. (2002). Do natural disasters promote long-run growth? *Economic Inquiry*; 40(4), 664-687.

Stelling, A., Millar, J., Boon, H., Cottrell, A., King, D. and Stevenson, B. (2011). Recovery from Natural Disasters: Community experiences of bushfires in North East Victoria 2003 to 2009. Retrieved from: http://www.riv.csu.edu.au/research/ilws/research/reports/docs/65_Bushfire_Recovery.pdf

The Treasury (2011). Budget Economic and Fiscal Update. Available at: http://treasury.govt.nz/budget/forecasts/befu2011

Thompson, J. (2011). 'Xenophon strikes deal on flood levy,' *ABC News* [online] (last updated 4th March, 2011). Available at: http://www.abc.net.au/news/2011-03-03/xenophon-strikes-deal-on-flood-levy/1965964

World Bank (2011). *Queensland: Recovery and Reconstruction in the Aftermath of the 2010/2011 Flood Events and Cyclone Yasi*. The World Bank.

VBRRA (2009a). 100 day report. Victorian Bushfire Reconstruction and Recovery Authority.

VBRRA (2009b). Rebuilding Marysville & Triangle. Victorian Bushfire Reconstruction and Recovery Authority.

VBRRA (2009c). Marysville Urban Design Framework. Victorian Bushfire Reconstruction and Recovery Authority.

VBRRA (2011). Legacy Report. Victorian Bushfire Reconstruction and Recovery Authority.