

Build back better: implementation in Victorian bushfire reconstruction

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The 'build back better' (BBB) concept signals an opportunity to decrease the vulnerability of communities to future disasters during post-disaster reconstruction and recovery. The 2009 Victorian bushfires in Australia serve as a case study for this assessment of the application of core BBB principles and their outcomes. The results show that several BBB measures were successfully implemented in Victoria and are relevant for any post-disaster reconstruction effort. The BBB initiatives taken in Victoria include: land-use planning determined by hazard risk-based zoning; enforcement of structural design improvements; facilitated permit procedures; regular consultations with stakeholders; and programmes conducted for social and economic recovery. Lessons from the Victorian recovery urge the avoidance of construction in high-risk zones; fairness and representativeness in community consultations; adequate support for economic recovery; the advance establishment of recovery frameworks; and empowerment of local councils.

Keywords: build back better, post-disaster reconstruction, recovery, risk reduction, Victorian bushfires, vulnerability

Introduction

On Black Saturday, 7 February 2009, the worst bushfires in Australia's history devastated the State of Victoria, sweeping through 78 communities, claiming 173 lives and destroying more than 430,000 hectares of land and 2,000 properties (VBRRA, 2009a). The Australian government and local authorities were faced with a large-scale rebuilding and recovery task to reconstruct the built environment and re-establish livelihoods.

Reconstruction and recovery projects after a disaster often focus on quick restoration of affected communities and can replicate and worsen existing vulnerabilities in the process (Johnson, Lizarralde and Davidson, 2006; Lyons, 2009; TEC, 2007). In this context, *vulnerability* is identified as the lack of capacity to anticipate, cope with, resist and recover from the impact of a hazard (Wisner et al., 2005). To ensure that reconstruction minimises the community's future vulnerabilities, certain measures must be taken.

This paper focuses on the theme of building back better in post-disaster reconstruction, showing how 'build back better' (BBB) was applied to the recovery in Victoria. In reviewing the related successes and shortcomings, it takes stock of lessons learned for BBB implementation in future post-disaster situations.

Build back better

The term 'build back better' emerged following the Indian Ocean tsunami in 2004 (Clinton, 2006; DRMU, 2006), largely as a way of underscoring that the opportunity

presented in the post-disaster reconstruction process should be utilised to improve a community's physical, social, environmental and economic conditions and to create a new, resilient state of 'normalcy' (Khasalamwa, 2009; Roberts, 2000). A broad, holistic approach to post-disaster reconstruction seeks to improve features that are commonly present in these environments. Such an approach may involve:

- balancing structural design improvements and land-use plans to reduce risk against cost, time, community preferences and local traditions (Baradan, 2006; Boano, 2009; Clinton, 2006; Tas, Tas and Cosgun, 2010);
- coordination between different stakeholders (2009 VBRC, 2010; Batteate, 2005; Khasalamwa, 2009);
- regeneration and re-establishment of livelihoods (Clinton, 2006; Khasalamwa, 2009); and
- the facilitation of reconstruction and recovery processes without compromising quality (Khasalamwa, 2009; Ozcevik et al., 2009).

Table 1. Reconstruction and recovery guidelines

Guidelines	Source	Focus
Key Propositions for Building Back Better	Office of the United Nations Secretary-General's Special Envoy for Tsunami Recovery	Defines the roles of local and national governments, donors and aid agencies in the recovery process, and stresses the importance of including and supporting the community and reducing future risks (Clinton, 2006).
Principles for Settlement and Shelter	United Nations Disaster Relief Organization	Addresses stakeholder role allocation, needs-based provision of resources to the community, planning and preparedness and risk reduction (UNDRO, 1982).
Build Back Better Guiding Principles	Established during post-tsunami reconstruction as part of the government-run Sri Lanka Post-Tsunami Recovery Strategy	Includes needs-based resource allocation, equity, provision of locally appropriate solutions, community consultation, transparency between stakeholders, risk reduction and a coordinated recovery effort (Khasalamwa, 2009; GoSL, 2005).
Rebuilding for a More Sustainable Future: An Operational Framework	US Federal Emergency Management Agency	Covers role allocation and coordination of stakeholders as well as community, hazard-based sustainability and risk reduction (FEMA, 2000).
Holistic Recovery Framework	Natural Hazards Research and Applications Information Center, University of Colorado at Boulder	Discusses enhancing the quality of life in the community, economic vitality and the quality of the environment, equity, risk reduction and participatory decision-making (Monday, 2002).
Bam's Reconstruction Charter	Bam's Reconstruction Supreme Supervisory and Policymaking Association	Includes policies for reconstruction management, community participation, financing, construction technology and materials, cultural and architectural heritage and stability of reconstruction (Omidvar, Zafari and Derakhshan, 2010).
Recovery and Reconstruction Framework	Victorian Bushfire Reconstruction and Recovery Authority	Concentrates on the safety and well-being of the people, needs-based resource allocation, community engagement, equity and tailored solutions for each community (VBRA, 2011).

Source: authors.

BBB guidelines

The first official international document to present the BBB concept was former US president Bill Clinton's Key Propositions for Building Back Better, which drew together observations from the Indian Ocean tsunami reconstruction and recovery effort (Clinton, 2006). Table 1 lists the Propositions along with other guidelines and frameworks that provide suggestions on how to improve reconstruction and recovery practices.

Key BBB concepts

Based on the aforementioned guidelines, the key BBB concepts may be grouped into three main categories: risk reduction, community recovery and implementation. Risk reduction relates to improving a community's physical resilience to natural hazards, while community recovery concerns enhancing the social and economic conditions of the community. Implementation refers to the means by which risk reduction and community recovery should take place.

Risk reduction

Clinton (2006) states that 'the key test of a successful recovery effort is whether it leaves survivors less vulnerable to natural hazards'. Indeed, insufficient attention to risk reduction has exacerbated the devastation faced by communities from natural disasters. Examples are numerous, including the lives lost in the Victorian bushfires as a result of living in high-risk areas with insufficient bushfire protection (2009 VBRC, 2010); the destruction of coastal communities affected by the 2004 Indian Ocean tsunami as a result of poor land-use planning and regulations and non-tsunami-resistant constructions (DN and PA, 2008); the collapse of inappropriately built structures in the 2005 Kashmir earthquake in Pakistan (Halvorson and Hamilton, 2010); and building damage and collapses in the 2010 Haiti earthquake due to a lack of building codes and enforced regulations in Port-au-Prince (Nathan, 2010). Recovery efforts have attempted to realise the goal of vulnerability reduction with recommendations to incorporate disaster risk reduction measures in reconstruction (Mora and Keipi, 2006; Pathiraja and Tombesi, 2009; IFRC, 2010). In line with BBB theories, risks can be reduced through improved structural designs and land-use planning.

Improvement of structural designs

The UN Disaster Relief Organization Principles for Settlement and Shelter, the Federal Emergency Management Agency (FEMA) Operational Framework and Bam's Reconstruction Charter all recommend revising and enforcing building codes and construction standards to improve resistance to natural disasters in the built environment.² In Australia the Building Code AS3959 was revised for better protection from bushfires (2009 VBRC, 2010; VBRRA, 2009a; Building Commission and CFA,

2010). In countries that have been subjected to earthquakes, such as Haiti, Indonesia, Japan, and Pakistan, earthquake-resistant designs have been promoted (Halvorson and Hamilton, 2010; McCurry, 2011). In Sri Lanka, the need to tie down structures and mitigate soil scouring to resist loads from tsunamis was recommended (Dias, Dissanayake and Chandratilake, 2006).

Land-use planning

Land-use planning based on hazard assessments to control developments also reduces risks (Batteate, 2005; Mora and Keipi, 2006). In Victoria, a 'bushfire attack level' (BAL) system was adopted to demarcate lands based on the level of bushfire risk (2009 VBRC, 2010; Building Commission and CFA, 2010). Countries affected by tsunamis, such as Indonesia, Samoa and Sri Lanka, enforced 'buffer zones' restricting construction along coastal strips during the rebuild. These strategies were difficult to implement as the lack of a proper relocation strategy led to the illegal settlement of people in the restricted areas (Boano, 2009; Kennedy et al., 2009; Potangaroa, 2009; Ruwanpura, 2009). The communities affected by the Kashmir earthquake in Pakistan opted to permanently relocate their townships to safer areas (Halvorson and Hamilton, 2010).

Community recovery

The second BBB category is community recovery, which entails improving the long-term sustainability of communities by considering economic and social development along with rebuilding efforts (2009 VBRC, 2010; Clinton, 2006; JLWA, 2005; Waugh and Smith, 2006). The cornerstones of this category are social and economic recovery.

Social recovery

Al-Nammari and Lindell (2009) comment that sustainable recovery involves ensuring that cultural resources are maintained for future generations. After the Bam earthquake in Iran and the Kashmir earthquake in Pakistan, one of the key principles in the reconstruction policy was to preserve the towns' cultural and architectural heritage (Halvorson and Hamilton, 2010; Omidvar, Zafari and Derakhshan, 2010). The importance of restoring social and cultural activities of the local people and providing sufficient psychological support has been documented in reports about the recovery efforts in San Francisco after the Loma Prieta earthquake, the Marmara earthquake in Turkey and the Victorian bushfires in Australia (Al-Nammari and Lindell, 2009; Tas, Tas and Cosgun, 2010; VBRRA, 2010).

Economic recovery

People's livelihoods and the economy are disrupted after a disaster and need to be restored (Bakir, 2004; S.E. Chang, 2010; Khasalamwa, 2009; Monday, 2002). The Red Cross has identified understanding communities and using grass-root schemes to regenerate the economy as successful approaches (IFRC, 2010). Other experts also

praise such approaches, stressing that involving the community can serve to minimise grievances that may arise when government aid and other forms of assistance do not adequately match community needs.³ Positive examples of such involvement include cash-for-work programmes and owner-driven/self-help housing developments through which community members undergo training and become engaged in reconstruction activities of their own towns with assistance and advice from the government, as was the case in Turkey after the 1999 earthquake and in Sri Lanka following the 2004 Indian Ocean tsunami (Baradan, 2006; Joshi and Sohail Khan, 2010). People who are involved in the recovery of their own neighbourhood are able to support each other and establish a sense of normalcy that boosts recovery.⁴

Implementation

The achievement of BBB requires effective and efficient implementation in addition to established risk reduction and community recovery strategies. Implementation of reconstruction and recovery activities involves stakeholders, legislations and regulations, community consultation and monitoring and evaluation.

Stakeholders

The recognition of important stakeholders—such as the local community, policy-makers, the government, engineers, architects, planners, builders, and donors—and their roles and responsibilities is important for smooth implementation of reconstruction and recovery activities (DN and PA, 2008; GoSL and UN, 2005). Coordination of stakeholders as well as reconstruction and recovery activities is essential to managing the post-disaster reconstruction and recovery environment (Clinton, 2006; JLWA, 2005; Khasalamwa, 2009). Many disaster-affected countries have created separate institutions to coordinate recovery activities, as was the case with the Victorian Bushfire Reconstruction and Recovery Authority (VBRRA) in Australia (2009 VBRC, 2010); the Bureau of Rehabilitation and Reconstruction in Indonesia (Meigh, 2009); and the Task Force for Rebuilding the Nation in Sri Lanka (JLWA, 2005).

Legislation and regulation

Clinton's Propositions highlight the need to have legislation and regulations in place to ensure that risk reduction and community recovery measures can be undertaken (Clinton, 2006). This point is also stressed in the UN Hyogo Framework, as well as in the recommendations provided in the *South Asia Disaster Report 2008* and the report of the National Post-tsunami Lessons Learned and Best Practices Workshop, both of which document experiences from the Indian Ocean tsunami (UN, 2005; DN and PA, 2008; GoSL and UN, 2005).

Community consultation

If practitioners are to deliver post-disaster solutions efficiently and effectively, they must consult with community members to understand local needs, wants, and culture,

as well as the social, ethnic and political issues (2009 VBRC, 2010; Clinton, 2006). Involvement in important decision-making empowers people and encourages them to support the recovery process (Batteate, 2005; Davidson et al., 2007). Community recovery committees and village rehabilitation committees established in Australia and Sri Lanka, respectively, enabled the interaction between residents and other stakeholders (DRMU, 2006; VBRRA, 2009b).

Monitoring and evaluation

Many observers call for the monitoring and evaluation of recovery efforts and for the integration of lessons learned into future recovery plans so that communities may become resilient and skilled in responding to future disaster events (2009 VBRC, 2010; Baradan, 2006; Clinton, 2006; Haigh et al., 2009).

Summary of BBB principles

Table 2 summarises the BBB principles discussed above and serves as the foundation for the following discussion of the Victorian bushfire recovery.

Research methodology

The application of BBB concepts in the Victorian bushfire reconstruction and recovery effort was tested using a case study approach. Two research trips were undertaken

Table 2. Summary of BBB principles

	BBB principle	Aim
Risk reduction	Principle 1: improvement of structural designs	Enhance physical resilience to natural hazards through structural design improvements.
	Principle 2: land-use planning	Employ hazard-based land-use planning for developments.
Community recovery	Principle 3: social recovery	Provide social, cultural and psychological support to aid community recovery.
	Principle 4: economic recovery	Improve the economic climate through livelihood support.
Implementation	Principle 5: stakeholders	Coordinate multi-disciplinary stakeholders and their functions with clear role allocation for efficient and effective implementation.
	Principle 6: legislation and regulation	Use legislation and regulations to control and facilitate recovery operations.
	Principle 7: community consultation	Consult and consider community views to provide appropriate solutions.
	Principle 8: monitoring and evaluation	Establish systems to monitor and evaluate reconstruction and recovery operations for sustainability and improvement of future disaster management practices.

Source: authors.

Table 3. Profiles of the interviewees

Date of research trip	Interviewee code	Number of interviewees	Description
July 2010	P1–P9	9	Managers, Victorian Bushfire Reconstruction and Recovery Authority (VBRRA)
	P10 and P11	2	Managers, Building Commission
	P12	1	Manager, temporary village
	P13	1	Manager, local council
	P14 and P15	2	Volume builders
	P16 and P17	2	Managers, Department of Human Services (DHS)
	P18	1	Steel product manufacturer
July 2011	P19	1	Rebuilding advisor, Fire Recovery Unit (FRU)
	P20	1	Manager, Building Commission
	P21	1	Manager, Office of Housing, DHS
	P22	1	Department of Planning and Community Development
	P23	1	Economic Recovery, FRU
	P24	1	Manager, FRU
	P25	1	Chair, Marysville Community Recovery Committee
	P26	1	Chair, Marysville Chamber of Commerce

Source: authors.

to Melbourne and the surrounding bushfire-affected areas (in particular Marysville, Kinglake, and Alexandra in Murrindindi Shire) in July 2010 and July 2011.

Various stakeholders involved in the Victorian bushfires post-disaster reconstruction and recovery activities were identified and interviewed to gain a comprehensive understanding of the recovery process (see Table 3). Hour-long, semi-structured open-ended interviews were conducted with the participants.

Interviews were conducted with individuals who were involved in the construction aspect of recovery, including town planners and rebuilding advisors for housing projects as well as community reconstruction projects; Building Commission representatives with technical knowledge in structural design; and a local councilman. The community and social impacts of the recovery and corresponding recovery initiatives were obtained from Department of Human Services officials, who described the government approach to community recovery. Residents from the affected towns provided information based on their own experiences.

Reports and publications from the VBRRA and Building Commission and observations made during the visits to the bushfire-affected areas were used to validate the findings.

An inductive approach using grounded theory and constant comparative method was employed to analyse the data using the computer programme NVivo 9 (Dick, 2005; Maxwell, 2005). The interview data was transcribed and then coded under the eight BBB principles identified above.

Study limitations arise due to the limited number of interviewees and the narrow range of their expertise. For instance, it was not possible to interview specialists in the psychological recovery of post-disaster communities for this study. While data collection was undertaken during only two periods, such that the study results may not be able to capture some of the rapid changes that took place in the study area, recovery documents were consulted in an effort to minimise major oversights.

Victorian bushfire reconstruction and recovery

The areas affected by the bushfires in the northeast of Victoria mostly consisted of mountainous high country, forests and pastoral lands (Cioccio and Michael, 2007). The key industries in the bushfire-affected areas are: agriculture, primarily cattle, sheep, wool and horticultural products; forestry, with a focus on native timber; tourism, including large national parks and reserves; and other sectors such as retail, trade and construction (Murrindindi Shire Council, n.d.). The bushfires had a large impact on these areas, destroying 430,000 hectares of forests, crops and pasture; more than 2,000 properties; more than 55 businesses; more than 3,550 agricultural facilities; 70 national parks and reserves; and 950 local parks and 467 cultural sites (VBRRA, 2009a).

Following the Victorian bushfires, the Australian government took responsibility for the recovery and reconstruction operations. It created the Victorian Bushfire Reconstruction and Recovery Authority on 10 February 2009, three days after Black Saturday. VBRRA was established as a coordinating body, designed to work with the community, businesses, charities, local councils and governmental departments to oversee Victoria's reconstruction and recovery process (VBRRA, 2009a). The Victorian Bushfires Royal Commission was set up on 9 February to investigate the cause of the fires, existing bushfire preparation and planning initiatives, and the response taken to the Black Saturday fires; it was also charged with producing a list of lessons learned and recommendations for the future (2009 VBRC, 2010).

Findings

Risk reduction

Principle 1: improvement of structural designs

Principle 1 refers to enhancing the resilience of the built environment to natural hazards through structural design improvements. One of the first risk reduction measures taken in Victoria was to publish a revised edition of the Australian Building Code, AS3959, on 11 March 2009 (Building Commission and CFA, 2010). Interviewee P10

from the Building Commission confirmed that ‘it contained more stringent design and construction specifications for better bushfire protection according to the determined bushfire attack level’. The BAL ratings are assigned based on factors such as building construction type, proximity to other buildings, the slope of the land, vegetation type and shielding; the ratings range from BAL-LOW (low risk) to BAL-FZ (extreme risk) with intermediate ratings of BAL-12.5, BAL-19, BAL-29 and BAL-40 (Building Commission and CFA, 2010).

The structural improvements required correspond to the level of risk in the land. Interviewee P14 said that, from a builder’s perspective, implementing the building code revisions ‘wasn’t difficult: there were just a few extra guidelines and requirements to comply with. We had to learn what the new regulations were, but it wasn’t a huge jump.’ Interviewees P14 and P15 said that the changes didn’t cause any significant time delays or technical or financial difficulties for construction in areas with lower BAL levels and that the community understood the need for the extra design requirements and were happy with construction in zones up to BAL-29, which denotes radiant heat exposure of 19–29 kW/m².

Interviewees P3, P10 and P14 from the first research trip as well as interviewee P19 from the second trip all agreed that construction in the high-risk BAL-FZ zone was a complicated and time-consuming task. As noted by interviewee P19:

A house in BAL-FZ zone would now cost \$70,000–\$90,000 over and above what it would cost to build a normal house. The extra money is for special flameproof materials in the roof, windows and shutters to meet the BAL-FZ requirements in the building code. These materials significantly increase the cost of construction, and they were also difficult to source.

Interviewee P22 recalled that some people had attempted to avoid the increased cost of their home by relying on purchasing external bushfire shelters:

Some people are saying, ‘We’ll build it down, and build it cheap, but we’ll have a shelter.’ Some people were selling bushfire shelters which weren’t certified. The clear message from the government is that it’s not a trade-off and [the government] doesn’t encourage people to build shelters.

While he conceded that stricter design guidelines helped to make the community safer, interviewee P19 said that people felt resistant to change:

If they didn’t implement stricter rules for houses to make them safer and in another five years if a bushfire comes along and kills a large number of people, the first thing they’ll say is why didn’t you make the houses safer after the last one. But when you bring in new regulations to make houses safer, people complain that they are too expensive.

Principle 2: land-use planning

The principle of land-use planning entails using a hazard-based approach in land-use plans to minimise risks. As interviewee P20 explained:

When the fires occurred they realised that a lot of the areas that were destroyed weren't declared bushfire-prone. The new bushfire standard AS3959 [2009 version] specified the whole of Victoria as bushfire-prone. That was intended to be an interim measure until proper assessments and mapping could be done in terms of bushfire risk.

New regulations were brought in by September 2011, based on the mapping work undertaken by the Department of Sustainability and Environment, the Department of Planning and Community Development and the Country Fire Authority (DPCD, 2011). In fact, the new mapping built heavily on the Country Fire Authority's wild-fire management overlay (WMO), a type of map that shows areas with exposure to wildfires (2009 VBRC, 2010). As described by the Building Commission interviewee, the new model categorises all areas into high, medium and low risk:

Low bushfire risk will mean you don't have to do anything in terms of bushfire construction. Medium bushfire risk will mean that you will need to comply with the Australian Standard [AS3959] and just a building permit would be required. In the high bushfire risk areas that will equate to what's been in place under the WMO, where you'll need a planning permit as well as a building permit and the bushfire construction requirements will be integrated into one system which will be called the bushfire management overlay.

Asked about the possible relocation of the community to safer locations, interviewee P20 said that 'the government immediately told the people that they were entitled to rebuild on their same lands, so they didn't have to necessarily find alternative locations unless it was their own wish to do so'.

One of the recommendations in the Victorian Bushfires Royal Commission final report regarding high-risk properties is that 'the State develop and implement a retreat and resettlement strategy for existing developments in areas of unacceptably high bushfire risk, including a scheme for non-compulsory acquisition by the State of land in these areas' (2009 VBRC, 2010). Interviewee P19 said that so far the buy-back scheme proposed by the Royal Commission had not been implemented and raised a potential issue about the safety of surrounding properties:

There's a worry in the buy-back scheme. If one property is bought back while the others around are still owned by people and have homes on them, who will maintain the empty lot? It will make the bushfire risk for the remaining homes greater.

The manager of the Department of Human Services' Office of Housing, formerly from VBRRA, proposed a land-swap instead of a buy-back scheme as an incentive for entire subdivisions to relocate away from high-risk areas:

With the land-swap, if you opened up new subdivisions in safe areas and said that you can have any section in there that you like, in exchange for the land that you have, you get a new block of land when you hand in your old block of land.

Community recovery

Principle 3: social recovery

The social recovery principle refers to improving the psychosocial aspects of the affected population. Psychosocial recovery initiatives for Victoria were set up based on the Department of Human Services' psychosocial model for post-emergency community support (DHS, 2005). The two-pronged model focuses on two areas of support. Individualised support is offered through the provision of information as well as assistance and access to generic and specialist services; community support is designed to enhance the ability of existing community agencies to identify and respond to community needs and promote social cohesion. Interviewees from VBRRA and the Building Commission explained that DHS established information centres called 'community hubs' in each affected town and assigned case managers to each affected family, mainly to direct families to appropriate sources of information. As interviewee P12 observed: 'One of the most important things that happened after the fires was that everyone has been or should have been allocated a case manager.'

All the interviewees shared the opinion that the one-year anniversary memorial service held to commemorate Black Saturday was a turning point for the affected community, marking a shift from grieving to progressing with recovery. Interviewee P12 said that dedicated social events helped to bring people together and to reduce their levels of stress and anxiety; she also pointed out that the establishment of temporary villages as transitional accommodation in Marysville, Kinglake and Flowerdale helped communities to regain some stability after the disaster. Seventeen months after the fires, the manager of Marysville's temporary village commented that it had 'enabled a lot of people to keep their kids at the school and [kindergarten] that they love and keep a normal routine. It has also enabled them to maintain their employment.'

On a similar note, the chair of the Marysville Community Recovery Committee cited awareness raising and the maintenance of a sense of community as important factors in developing resilience:

They've run education programmes so people understand why things happened and what to do next time, which has been a good thing. We're also doing other things like first aid courses, combined with a community BBQ and getting the community together and talking. When everyone's connecting they feel a lot more together, and therefore a lot more secure as a community.

Interviewee P9 specified that:

the reconstruction of affected towns has provided an excellent opportunity to review town planning decisions using community input.

Principle 4: economic recovery

This principle looks at improving the economic climate of the impacted community as part of the overall recovery process. Interviewee P12 asserted that the economic

recovery after the Victorian bushfires ‘appears to be quite slow in the townships affected, after having lost 95% of their businesses’, adding that:

Marysville was in a fairly unique situation, where 51% of the town was owned by holiday homeowners. But less than 10% of the rebuild will be holiday homes. The reconstruction of bed & breakfasts is also a significantly slow process, also less than 10%.

Interviewee P12 also mentioned the fear among the locals about the economic future of their town:

There have been a lot of things that have happened as we went along which resulted in the town still not having any large guesthouses or conference centres come back, which would be the ones drawing in the tourists and revenue. It creates a lot of anxiety in the community.

VBRRA has set up funds and programmes to help businesses re-establish themselves and stimulate new investment, such as the Victorian Bushfire Business Investment Fund and the Small Business Support Programme for Marysville and Kinglake (VBRRA, 2011). Marysville resident interviewee P26 referred to the opening of the supermarket in Marysville as a good start in terms of the recovery of the town and its economy. Yet the chair of the Marysville Chamber of Commerce observed that despite the funding given by the government, people were hesitant to invest in businesses: ‘People were aware they had to make the business work long after the grant or loan was given.’

During the first research trip, a VBRRA official remarked:

The VBRRA economics team would have had the roughest trot of all, because economic recovery is crucial for rebuilding but it’s the hardest thing for governments to undertake. Since a town like Marysville never had a very vibrant economy to begin with, the incentive for new players to come in would be very low.

In an interview conducted in July 2011, an official of the Economic Recovery division of the Fire Recovery Unit (FRU) laid out the government’s newly established strategies to attract businesses to the affected areas:

They’ve made an announcement just last week in terms of providing a more flexible loan package. You’ll be able to get a concessionary loan with 50% subsidy on your interest rate for five years so that’s looking to attract the other types of businesses that will support a conference centre that will come in, like retail spaces, further gift shops, further B&B accommodation [. . .]. We’re looking at doing some training packages to fix the skills shortage. Some of the smaller businesses are trying to get younger people in with subsidised trainees where the businesses will receive 80% of the cost for a trainee.

VBRRA and Building Commission officials noted that a ‘deadlock’ was occurring in the affected towns. As interviewee P10 put it:

There is a vicious cycle affecting reconstruction and re-establishment of towns. Retailers don't want to start businesses there without customers, and people are not keen to move there without retailers. This ultimately holds up the overall recovery of these towns.

Interviewee P26 noted that, from the point of view of a business owner and local, 'no one is unlocking the deadlock, there are no answers. If I'm a business owner I wouldn't go and invest \$50,000–\$200,000 for a business to restart if I've got no one living here.'

Implementation

Principle 5: stakeholders

Principle 5 concerns clear role allocation and coordination of stakeholders for efficient and effective implementation of recovery activities. The stakeholders involved in the Victorian bushfire reconstruction effort included the community; local councils; governmental authorities such as VBRRA, the Building Commission and DHS; builders; engineers; architects; and planners. According to interviewee P14, 'working together with all these various stakeholders was managed as well as was possible in a very chaotic environment'. Interviewees P8 and P12 confirmed that 'there was a great deal of community consultation carried out with regular workshops, such as the Phoenix Workshop, held together with all stakeholders to make important decisions about the town's reconstruction and recovery'. The chair of the Marysville Community Recovery Committee said he was pleased with the outcome of the stakeholder workshops held in his town: 'The main street [in Marysville] was finalised after two workshops. Each workshop had 90–100 attendees and very good facilitators so it worked really well.'

Interviewee P19 stated that the Rebuilding Advisory Service set up by VBRRA to advise the community on all aspects of rebuilding their homes was a valuable service and recommended adoption of a similar service in post-disaster environments:

The [Rebuilding] Advisory Service was one of the really good things that we did. It has been really helpful to people. Building a house in the first place is a very complex process. There are a great proportion of people who have never intended to build a house in their lifetime. So it's a daunting process for those who have lost homes to rebuild it. On top of that they're dealing with trauma, so to be able to call up someone and ask questions about the process and clarify things is really beneficial to them.

In 2011, the VBRRA officials and Marysville resident P25 commented that the shortage of builders and tradesmen available to work in the bushfire areas slowed down the rebuilding work in the affected towns, noting that the strong building industry was based in Melbourne and other metropolitan cities in Victoria. Interviewee P20 from the Building Commission considered the need to bring in skilled labour from outside and related implications:

The thing you need to keep in mind in relation to bringing people in from outside is what are your registration and license requirements. The less regulations you have in the area of bringing licensed practitioners in, the more you'll need in terms of quality control.

Interviewee P14 said that, from a builder's perspective, 'following legislation issues, the next biggest issue would have been dealing with all the stakeholders involved, and communication between builder and suppliers, local authorities and the community'. Although VBRRA was appointed as a coordinating body, interviewee P8 viewed the activities carried out as 'ad-hoc with no proper systems and processes in place to define roles and responsibilities of different parties'. Similarly, interviewee P10 cited a lack of coordination between parties and argued that that 'there needs to be a much better integrated whole-of-government group to make sure that everyone knows where the proper information is coming from'. Interviewee P10 mentioned that tasks were being duplicated and thus taking more time than required:

An example is, the information about the houses burnt and their locations were requested of councils from Building Commission and Town Planning, only to find later that the Municipal Association of Victoria as well as DHS were all doing the same task.

VBRRA's recovery operations in the affected towns excluded local councils due to their lack of capacity. One FRU official recounted that, 'on reflection, you can see the fact that people accessed VBRRA directly and bypassed their local council wasn't ideal'. Interviewee P25, the chair of the Marysville Community Recovery Committee, asserted that the local Murrindindi Council:

was not as involved as they would've liked to have been. I think it would've strengthened the relationship between the Shire and the community a lot more to deal with us. The problem with Murrindindi Council is that they are very under-resourced and under a lot of pressure. It was either: take over from the councils and take over administration to run it all, or get the council the resources to get the job done.

A VBRRA manager concluded that more transparency was needed between the government and the community:

At the early stages it was too much community engagement where communities were given the total say and they took a very long time to decide, and at the later stages the government had too much influence as they were ultimately responsible for selecting the projects that would be implemented based on funding. These issues resulted in misunderstandings and frustrations among the community about the government.

Principle 6: legislation and regulation

This principle refers to the use of legislation and regulation for control and facilitation of recovery operations. Chief among the regulative measures taken to provide better protection from bushfire risk in the future are the adoption of the revised AS3959

building code; designing and land zoning based on bushfire attack levels; and the implementation of the wildfire management overlay and corresponding permit procedures for risk reduction under Principles 1 and 2 (VBRRA, 2009a; Building Commission and CFA, 2010). VBRRA released the 'Rebuilding Together Plan' to guide social and economic recovery projects for community recovery under Principles 3 and 4 in affected communities in conjunction with the community recovery committees (VBRRA, 2009b).

Based on explanations offered by VBRRA, FRU and Building Commission officials, the following legislative processes were put in place to facilitate reconstruction and corresponding tasks:

- People could build temporary accommodation without a planning permit. This option led some to disregard building permits as well, which resulted in sub-standard homes.
- Destroyed dwellings or agricultural buildings could be replaced with a simplified 'planning consent' instead of a planning permit, which worked well.
- A clause was added for removing vegetation under 'interim measures for bushfire protection'. People misunderstood the clause and started clearing their lands beyond the allowed limit, which was problematic for councils.
- A priority fast-track system with the Building Commission was established to resolve issues between owners and builders and to speed up the review processes and provide quick solutions for owners.

Interviewee P15 mentioned that regardless of modifications to the process, 'there was a hold-up with the building permits and construction couldn't begin until these were issued, which delayed construction due to the overwhelming volume of applications'.

Principle 7: community consultation

The principle of community consultation envisages consideration of community views as part of the effort to provide appropriate solutions. Speaking based on her own experience as a bushfire survivor, interviewee P12 said that community consultation and support for victims was given high priority, as intended in VBRRA's Recovery and Reconstruction Framework (VBRRA, 2009a). Interviewee P7 explained that the community recovery committees that were established served as each community's voice, notably by assembling lists of community projects that needed to be undertaken. Marysville resident interviewee P12 said that 'there were regular meetings and spin-off meetings for more specialised communities or areas', but that there were difficulties related to the selection of people for these meetings:

The biggest problem with the workshop was that it was 'invitation only', so people needed to be 'in the know' to get invited. You want people that are there with commitment, drive and passion. I don't think they got the mix right this time by any means, there were some fairly significant people who didn't get invitations that created a division within the community.

The chair of the Marysville Community Recovery Committee, interviewee P25, said that the committees consisted of community leaders and were a ‘good networking tool to get feedback from all the different committees around town’. He added that they:

worked through the community recovery plans, where people have been putting up projects, ideas, etc., and us sorting through to prioritise the projects based on what sort of money we’re going to have to spend on what the town needed.

Interviewees from VBRRA and the Building Commission, as well as interviewee P14, noticed that people were still not ready to make their own decisions about their future. Based on his interactions with clients, interviewee P14 added that ‘people’s ability to make decisions, remember what was discussed, etc., was extremely poor. This not only made it more difficult to work with them, but also greatly delayed the entire reconstruction process.’ Marysville resident P26 said it was important to keep in mind that ‘each individual is different and their decisions are all individual and different and all those individual decisions made have led us to where we are now in terms of recovery’.

Principle 8: monitoring and evaluation

This final principle relates to devising systems to monitor and evaluate reconstruction and recovery operations for sustainability and to extract lessons for the future. VBRRA interviewees spoke of an absence of systems and processes to help reconstruction and of a lack of standard procedures to be followed to implement BBB concepts. Interviewee P1 specified:

Policy ‘on the run’ creates a lot of problems and extra expenses and resources. It is important to learn lessons and have a pre-planned framework or policy ready and have the organisational structure in place. The other thing is the database, it’s very important to have a database organised.

Interviewee P8 expressed regret that an opportunity to monitor and evaluate reconstruction and recovery operations was missed after the 2003 Canberra fires:

We have to learn from past experiences and put those findings into place as a recovery framework for future disasters, which obviously didn’t happen in this case and resulted in repeating similar mistakes from the past unnecessarily.

The Building Commission representatives stated that they conducted a ‘strengths, weaknesses, opportunities & threats’ analysis of preliminary work undertaken in the response stage immediately after the event to learn and improve their processes. In 2010 interviewee P3 noted:

There are currently no systems in place for long-term monitoring and maintenance of reconstruction and recovery and this may re-introduce the vulnerability of being similarly

devastated by a future bushfire. For example, if the BAL ratings that buildings were designed to withstand aren't maintained by specified measures, such as controlling vegetation growth, the level of risk posed will undoubtedly increase yet again.

According to interviewee P19, local councils had imposed maintenance of properties as part of risk management by the year 2011: 'The councils have been issuing notices to people to maintain their properties but it hasn't gone down so well with a lot of people.' The FRU rebuilding advisor commented on the importance of putting in place a training scheme to produce qualified tradesmen for future rebuilding work: 'It's a ten-year plan. You need to get people into the trades soon and train them up.'

Interviewee P1 noted that 'most of the implications of decisions made will only be evident in the long run; therefore, I believe continued monitoring of recovery progress and identification of issues is crucial'. Interviewee P3 added: 'Once reconstruction is completed, the maintenance of these re-built communities is essential by the local council and its people to produce future disaster resilience.'

Discussion: BBB potential in the Victorian bushfire reconstruction effort

Principles 1 and 2: improvement of structural designs and land-use planning.

The revision of the Australian Building Code AS3959 aims to reduce risk by providing better protection against ember attack and burning from bushfires based on the use of BAL levels and stricter implementation of the wildfire management overlay to ensure appropriate design and construction. Other effective BBB initiatives include ensuring risk reduction as part of the reconstruction process and the integration of land-use planning and building controls, as described by interviewee P20. Revisions to the building code were generally praised, including by interviewee P14, who stated that the building code improvements were not difficult to implement in low- to medium-risk zones and that they were accepted by the community and builders.

Construction in BAL-FZ zones was problematic as it required specialised materials, which were difficult to source and thus caused delays and increased cost. A solution for avoiding costly and time-consuming design and construction requirements is for local and national governments to prevent developments in high-risk areas altogether and to educate the public about the risks and consequences. Well-settled residents in high-risk areas may be offered incentives, such as the land-swap initiative suggested by interviewee P21, to relocate to safer areas if upgrading their dwellings to the required standards is unaffordable. Vacating high-risk lands must be done in a manner that doesn't compromise the safety of surrounding properties. The government should take on the responsibility of maintaining vacated sites by introducing new non-residential applications for them. Insurance can also be used as a mechanism to discourage people from living in high-risk areas; specifically, premiums can be raised and payouts limited. These steps are recommended by Iglesias, Arambepola

and Rattakul (2009) as well as by the non-governmental organisation Practical Action and the Reconstruction and Development Agency in Sri Lanka, based on the lessons learned from the Indian Ocean tsunami (DN and PA, 2008; RADA, 2006).

Principle 3: social recovery. In recognition of the need to assist social recovery through the provision of psychosocial support, the DHS set up the case manager service, which the interviewed Marysville resident called a ‘great help’. However, the inability of traumatised residents to make prompt decisions and communicate their needs to other stakeholders delayed the recovery process. An arrangement such as the case manager service to support affected families through the reconstruction and recovery process is useful in all post-disaster environments. Lessons learned from the Victorian bushfires show that case managers who are familiar with the local communities and have adequate training should be employed and remain available until the people settle down in permanent homes.

Studies on post-disaster community psychology show that affected communities display unity immediately following a disaster, with little regard for the hierarchies, boundaries and differences that were present prior to the disaster; over time, however, ‘tensions begin to develop because people increasingly feel the need for recognition of their unique problems’ and ‘issues affect people differently and divide the group’s unity’ (Gordon, 2009). Therefore, Gordon (2009) recommends that assistance measures take into account the emerging social infrastructure and ensure that support and attention be provided to suit the specific needs of different social groups.

The social events held in Victoria after the bushfires, such as the first-year anniversary memorial service and the temporary villages, helped the locals to come together and re-establish their bonds with their former neighbours and friends. Bringing the community back together and getting them involved in collective activities assist people in recovering and rebuilding their lives (Chamlee-Wright and Storr, 2009). Organising social, cultural and religious gatherings to bring affected communities together should be included as an important component of local government community recovery initiatives.

The rebuilding effort after the Victorian bushfires was taken as an opportunity to address planning issues, such as the redesign of the layout of affected towns to improve functionality for residents and tourists. VBRRA worked with the local communities to develop such plans for the future and joint meetings and workshops were held with the local population; moreover, stakeholders responsible for implementation provided a good platform for discussion. Being involved in the decision-making process of their own neighbourhoods is empowering and satisfying for community members (Chamlee-Wright and Storr, 2009). The integrated community-focused approach taken by VBRRA for restoration of the affected towns realised a key BBB concept and should be a central component of future reconstruction and recovery plans.

Principle 4: economic recovery. Interviewees P₃, P₁₀ and P₁₂ deemed the economic recovery of the affected towns unsatisfactory, despite the government support provided. They argued that the government should have provided more initiatives

for businesses to re-establish themselves, such as exemptions from planning permits to rebuild faster. The interviewees claimed that the inadequacy of the economic recovery activities in the bushfire-affected Victorian towns had a negative impact on the overall recovery of the affected communities, dissuading people from returning to settle down.

The overall recovery of a town is influenced by its economic recovery, which helps its people to settle into their daily routines (Clinton, 2006; Mitchell, 1990). Although an attempt was made to improve business recovery initiatives, there is still room for improvement. The government can implement further incentive schemes to encourage pre-existing and potential new businesses to operate in the affected towns. Shop spaces could be provided for subsidised rent. Large projects such as malls or sports stadiums could be introduced to attract small businesses. Advertising campaigns could also be utilised to attract residents and tourists back into the towns.

Principle 5: stakeholders. VBRRA sought to involve all stakeholders in decision-making by holding regular collective workshops and attempting to coordinate and manage all parties. As pointed out by interviewees P10 and P14, however, the coordination of stakeholders proved difficult to achieve and VBRRA's governance resulted in a chaotic, ad-hoc, inefficient environment. To ensure BBB takes place as intended, coordination and clear role allocation by a coordinating body or national government is necessary, along with stakeholder transparency. Local councils are responsible for communities in the long term and thus need to be included in recovery activities from the beginning.

Principle 6: legislation and regulation. Just as reconstruction was beginning, good BBB initiatives were implemented in compliance with Principle 6, including through the publication of revised editions of the Australian Building Code and WMO to enforce structural and land-use requirements for risk reduction. Processes put in place to facilitate reconstruction, such as exemptions from planning permits and the fast-tracking of building permits, allowed people to start rebuilding sooner.

Yet the fast-tracking process calls for extra caution to ensure safety is not compromised through disregard of the suitability of property location and design requirements. As noted above, granting permission to build temporary accommodation without building permits poses a high level of risk to people in these settlements in case of future bushfires, since the dwellings are not built according to required safety standards. Interviewees P14 and P15 observed that despite the permit facilitations made, the local councils' lack of capacity to issue permits in line with demand caused delays in reconstruction activities.

While legislation and regulation are key to incorporating risk reduction measures and facilitating permit procedures in post-disaster environments, they should not delay the reconstruction process. Local councils that are responsible for checking compliance with legislation and regulations require additional support during times of crises. Recruiting help from other councils and national government agencies to assist local councils when their workload is high is a possible solution.

Principle 7: community consultation. A high degree of community consultation took place with community recovery committees. According to interviewee P12, these committees were set up to help empower community members by giving them a primary role in decision-making and engaging them in the recovery of their towns. While community involvement is a key BBB concept, it is important to bear in mind that people may be traumatised and may thus have a low capacity for decision-making, as was observed in Victoria. Local and national government agencies, designers, builders and other stakeholders should therefore be sensitive in their interaction with affected people and seek the assistance of trained mediators if necessary.

The process of establishing community recovery committees should be informed by knowledge of the community's dynamics, culture and needs. Committee members can glean such information by involving the local councils as well as local clubs and associations. As noted above, the Marysville resident said that VBRRA encountered difficulties in identifying people as community representatives, which caused conflicts in the decision-making process. Although the community's input is essential, community recovery committees should avoid relying too heavily on residents of affected towns, especially if they have been traumatised by the disaster; indeed, excessive reliance may prolong recovery operations and place undue pressure on people to make decisions. The information obtained from community consultations needs to be evaluated, after which local and national governments should make final decisions based on available resources and the best interest of the community.

Principle 8: monitoring and evaluation. VBRRA interviewees said that the lack of established processes to guide recovery activities was a setback. Interviewee P8 observed that the failure to learn from the 2003 Canberra bushfires and make recovery plans that would have benefited the Victorian bushfires recovery effort was a missed opportunity. VBRRA should document and analyse the shortcomings and successes of the Victorian bushfires reconstruction and recovery effort to prepare improved recovery plans and frameworks for the future. Baradan (2006) states that 'the most important period in the post-disaster reconstruction is the pre-disaster period', during which 'analyses and preparations of an organisational framework are fundamental'. Recovery plans should thus be prepared in advance and should cover roles and responsibilities of stakeholders; systems to educate the community about risk reduction and train stakeholders to operate in post-disaster environments; and a best-practice methodology on implementation of the reconstruction and recovery efforts.

Conclusions

Build back better is a key concept in post-disaster reconstruction and recovery environments. Its aim is to ensure that communities are restored to a functional level as soon as possible after an event while taking the opportunity to reduce risks and improve resilience to cope with future disasters. As discussed in this study, the BBB concept may be broken down into the following categories: risk reduction through

improvement of structural designs and land-use planning; community recovery through social and economic recovery; and implementation of risk reduction and community recovery through work with stakeholders, legislation and regulation, community consultation and monitoring and evaluation.

The reconstruction effort following the Black Saturday Victorian bushfires commenced following the establishment of the Victorian Bushfire Reconstruction and Recovery Authority, which managed the recovery operations. The experiences from the Victorian bushfire reconstruction and recovery effort provide valuable lessons for a BBB-based recovery.

Risk reduction in reconstruction is a central BBB concept. In Victoria, risks were successfully reduced through structural design improvements based on revised building standards and the application of risk-based land-use planning regulations. Governments must be mindful to ensure that the building controls implemented are not excessively time-consuming and costly. Avoiding high-risk lands is also recommended.

It is important to facilitate permanent reconstruction of the built environment through fast-tracked permit procedures, which helps the rebuilding of affected towns. In addition, consideration of town planning issues during reconstruction can improve a town's layout and its regeneration. The bushfire recovery efforts benefited from community consultation and psychosocial support provided by case managers who were assigned to each family; the creation of community recovery committees; and regular social events designed to enhance community cohesion.

Insufficient support provided for economic recovery in Victoria had a negative impact on overall recovery, revealing a need to strengthen government initiatives for economic recovery. It is essential to provide incentives and loan schemes for the re-establishment of businesses and advertising campaigns to attract businesses, residents and tourists.

Shortcomings from the bushfires experience show that it is imperative for local authorities to play a key role in governing and managing the process; they should also coordinate efforts with stakeholders and make decisions on behalf of the town given their awareness of local needs and concerns. Reconstruction and recovery activities have to benefit the affected community; the local people must therefore be kept abreast of and be involved in the recovery process through ongoing community consultations.

Monitoring the recovery process over time, learning from mistakes and translating lessons learned into post-disaster BBB frameworks in the following pre-disaster phase will ensure BBB initiatives are implemented smoothly in future recovery efforts to create resilient communities.

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Endnotes

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- ² See Clinton (2006); FEMA (2000); Kennedy et al. (2009); Omidvar, Zafari and Derakhshan (2010); and UNDR0 (1982).
- ³ See Batteate (2005); Khasalamwa (2009); Lyons (2009); Winchester (2000); and Ozcevik et al. (2009).
- ⁴ See Chamlee-Wright and Storr (2009); K. Chang (2010); Kennedy et al. (2008); Lloyd-Jones (2006); and Lyons (2009).

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