

# Guide to Post-Disaster Recovery Capitals (ReCap)



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**Further project information:**

Australian ReCap resources are hosted on the Australian Red Cross website: [www.redcross.org.au/recap](http://www.redcross.org.au/recap).

A BNHCRC Hazard Note provides further information about the ReCap project: [www.bnhcrc.com.au/hazardnotes](http://www.bnhcrc.com.au/hazardnotes).

**Further work from the teams leading the ReCap project:**

[www.beyondbushfires.org.au](http://www.beyondbushfires.org.au)

[www.disasters.massey.ac.nz](http://www.disasters.massey.ac.nz)

# About this resource

This resource has been developed through the Recovery Capitals (ReCap) project, which aims to support wellbeing after disasters by providing evidence-based guidance. It emphasises the interacting elements of recovery, using a framework of 'community capitals' – natural, social, financial, cultural, political, built and human.

This high-level resource will form part of a multi-level, multi-format suite of resources. It has been created through an Australia-Aotearoa New Zealand collaboration, and there will be an edition tailored to each country, although both will have broader relevance to other locations. This edition is designed for use in Australia.

## How is it structured?



For each of the seven community capitals, there is a section outlining its role in disaster recovery, including how it can affect wellbeing and influence other community capitals. The community capitals are deeply interrelated, so you will find information relevant to each capital throughout the document. Icons after each statement of 'what we know' illustrate some of the links revealed in the underlying evidence base.

The statements of 'what we know' summarise academic evidence, but they do not represent the entire evidence base. They are accompanied by prompts for those involved in disaster recovery to consider when applying this knowledge to their own work.

## Other resources

Given the complexity and diversity of disaster contexts, we do not attempt to provide specific instructions for recovery workers. However there are existing resources that may assist you to decide what to do in response to the insights and considerations raised in this resource, such as the Australian Institute for Disaster Resilience [Community Recovery Handbook](#).

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# ReCap - Overarching statement

## Indigenous peoples & recovery experiences

The experiences of Indigenous people have largely been overlooked in the field of disaster recovery in Australia and we are currently developing a focused approach to this as part of the ReCap project. We are grateful to Williamson, Weir, Cavanagh and Markham for their valuable insights on this issue<sup>1,2</sup>.

### A note on terminology

Much of the knowledge included in this resource regarding Indigenous peoples relates specifically to Aboriginal peoples, and in these cases the term 'Aboriginal' has been used when describing what we know. However, as this resource is intended to be applicable in all contexts within Australia, the term 'Indigenous' has been used when outlining what to consider, so as to be inclusive of Torres Strait Islander peoples.

## Community capitals framework

The ReCap project uses the concept of 'capitals' to help understand the ways that many factors interact and influence recovery in diverse disaster contexts, and how resources can be drawn upon to support wellbeing. For the purposes of this project, capitals are defined as resources used to generate more or new resources for the purpose of sustaining and securing the wellbeing of all life forms on the planet<sup>3</sup>.

ReCap uses an adapted version of Emery & Flora's<sup>4</sup> Community Capitals Framework which was originally outlined in the context of community development and consists of seven capitals – natural, social, financial, cultural, built, political, and human. Definitions of each of the seven community capitals have been developed based on the literature and consultation with project end-users, and abbreviated versions are provided in this resource.

## Assumptions & perspective

The Community Capitals Framework involves the separation of community factors into seven domains for the sake of categorisation which, in this project, assists in the process of mapping evidence and producing useful outputs. However, of course, these aspects of life do not exist in isolation from each other, and the attempt to separate out aspects of life from each other may be particularly incongruent with Indigenous worldviews. There is nonetheless a recognition that there are deep connections between the aspects of the world that are categorised separately within this framework, and that many phenomena and resources can be conceptualised as constituting multiple forms of capital simultaneously.

## Multi-dimensional/multi-level

The approach to the Community Capitals Framework taken in ReCap draws from Bronfenbrenner's socioecological model in adopting a multi-level and multi-dimensional framing to allow the exploration of the interactions between these levels and dimensions.

This multi-dimensional and multi-level framing is applied to each of the seven forms of capital within the ReCap project. However, these dimensions and levels are specifically mentioned in the definitions of some capitals, where it is particularly relevant to how the capital is conceptualised.



## People, households, communities

In terms of people, each of the capitals can be conceptualised at an individual level, a family/household level, and a community level (with varying senses of the term 'community' e.g. based on place, interest, identity or circumstance). This multilevel approach allows for exploration of the interplay between levels, recognising that community capital is a function of both individual and community level elements, as is also the case for an individual person's capital.

As outlined above, the distinctions are situated within a non-Indigenous perspective with strong self-nonsel self boundaries. The project recognises this framework may not align with collectivist worldviews and relational conceptualisations of a notion of self.

## Local, regional & macro scales

In terms of systems and infrastructure, capitals can also be understood at multiple levels which intersect and interact with each other: local (neighbourhood or town), regional (city or state) and macro (national or global).

It is important to recognise that people impacted by disasters may be living across a wide geographic area, and to consider those that may be left out of place-based approaches to community recovery.

## Temporality: prevention, preparedness, response, recovery

Reflecting the 'chronosystem' dimension in Bronfenbrenner's socioecological model, this project applies a temporal element to the community capitals framework. This acknowledges that capitals fluctuate over time and have a dynamic influence on disaster recovery. Recovery is a lengthy and dynamic process, and the experiences in the short-term aftermath of a disaster will not necessarily reflect the circumstances a decade later.

This temporal dimension also allows for a nuanced approach to the 'phases' of disasters – prevention, preparedness, response and recovery – treating them as interdependent and overlapping rather than discrete and linear. While the focus of ReCap is on recovery, this is not at the exclusion of the other phases: for example,

preparedness activities influence recovery, and recovery processes can affect preparedness for future disasters. In prolonged disasters, such as pandemics and long fire seasons, these lines are blurred even further with prevention, preparedness, response and recovery activities occurring simultaneously.

## Different recovery contexts

The type and scale of a disaster has implications for the ways in which the various forms of community capital manifest, interact and influence each other and recovery outcomes. As such, rather than providing generalised messages that can be universally applied, ReCap draws upon evidence from particular disaster contexts to illustrate possibilities and prompt reflection, and to guide development of recovery strategies adapted to community contexts.

## Access and equity

Across each form of capital, ReCap focuses not only on amount of capital available to people but also on the distribution of capital within and between groups of people. This reflects a commitment to social justice and an understanding that rather than affecting all people equally, disaster impacts and recovery trajectories tend to reflect existing social inequities and often exacerbate them.

## Diversity

The definitions are framed broadly in order to account for the richness of experience and diversity in people and communities. Each type of capital will have different meanings and relationships to other forms of capital for different people, communities and contexts.



# Natural | key considerations



'Natural capital' refers to natural resources and beauty, and the overall health of ecosystems. This includes air, land, soil, water, minerals, energy, weather, geographic location, flora, fauna and biodiversity<sup>5,6</sup>.



## Connection

### What we know

Damage to nature can cause grief for many people<sup>7</sup>. However the regeneration of nature can provide solace, and connection to the natural environment has been associated with better post-disaster mental health and wellbeing<sup>7,8</sup>. For Aboriginal people these experiences can be particularly profound due to the deep connections between land, culture, history, colonisation and identity<sup>1,2</sup>.



### Consider

- ▶ **Involve residents and groups in the co-development of local practices to restore and protect the environment and the land.**
- ▶ **Recovery approaches should be respectful of the history, culture, strengths and circumstances of affected Indigenous communities, including deep connectedness to the land. This involves enabling each community to lead their own recovery; developing respectful, trusting relationships and collaborations; and considering the significance of land, trauma, healing and resilience.**

## Climate change

### What we know

There is growing evidence of the mental health impacts from the threat of climate change (including 'ecoanxiety' and 'solastalgia')<sup>18,19</sup>. The interplay with disaster recovery requires further investigation.



### Consider

- ▶ **How might increasing anxiety about climate change influence people's recovery and mental health?**

# Natural | key considerations



## Risk and barriers

### What we know

Certain features of the natural environment can increase exposure to risk e.g. proximity to bushland or floodplains<sup>9-11</sup>. The natural environment can also pose barriers to recovery e.g. lack of services in remote locations<sup>12</sup>; insurance difficulties in high-risk areas<sup>13</sup>; lack of financial resources for recovery if local industries are highly dependent on the natural environment<sup>14</sup>.



### Consider

- ▶ **What features of the natural environment increase exposure to risk, or pose barriers to recovery? What mitigation strategies are in place, or need to be developed?**

## Remaining and relocating

### What we know

Connection to the natural environment is an important part of people's sense of place, and as such people may be more likely to remain in the community after a disaster event<sup>8,15</sup>.

Decisions about relocation may be further complicated for Aboriginal people whose rights, interest and connection to Country remain specific to the disaster-affected area<sup>2</sup>, and who may experience negative effects of relocating including an inability to maintain proper relations with Country<sup>16,17</sup>.



### Consider

- ▶ **Restore local features that enable people to connect to the natural environment, such as walkways, parks or recreational facilities.**
- ▶ **Provide information about the history of the local area and, where appropriate, Indigenous knowledge and stories about the land.**

## Restoration

### What we know

Restoration of the natural environment can be a source of solace<sup>7</sup>. It can also provide other benefits including financial boost to local economies<sup>14</sup>.



### Consider

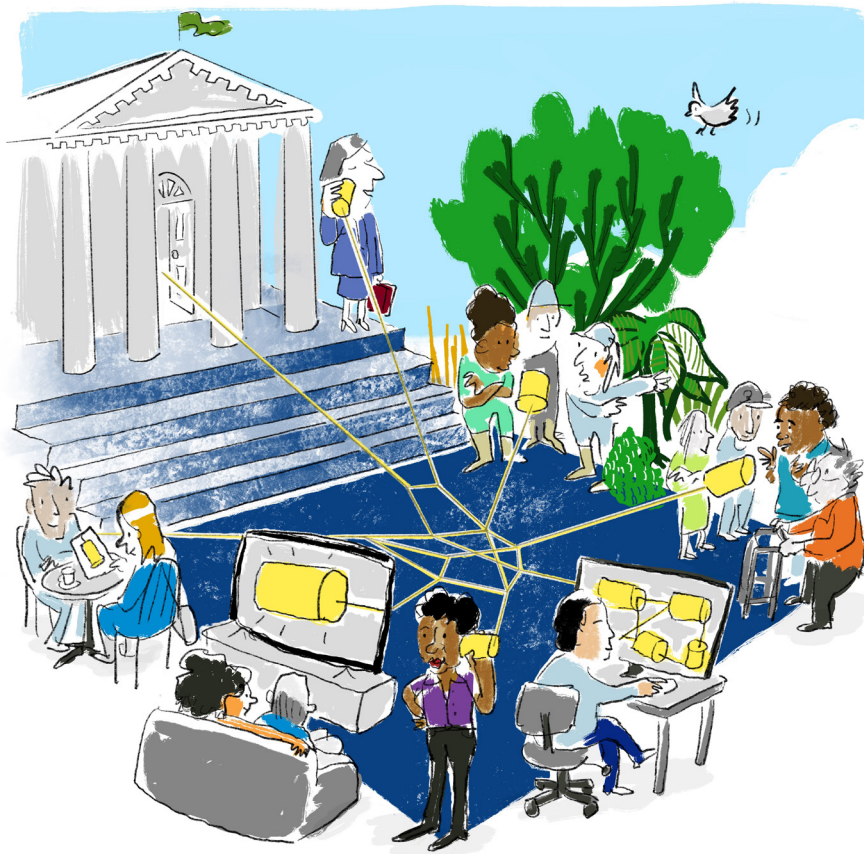
- ▶ **How might the natural environment be protected, restored and drawn upon to foster local activity in industries such as tourism and agriculture?**
- ▶ **Create diverse opportunities for connection with nature. Attention should be paid to appropriate engagement with places of particular significance to Indigenous peoples.**



# Social | key considerations



'Social capital' refers to the connections, reciprocity and trust among people and groups. There are three types of social capital: **bonding** (strong ties between similar people e.g. family and friends), **bridging** (looser ties between a broader range of people, often cutting across race, gender and class) and **linking** (ties connecting people with those in power, such as decision-makers)<sup>20</sup>. Social capital can be thought of as a resource at both an individual and community level.



## Relocation decisions

### What we know

Social networks and connection to a community can influence people's decisions about relocating or living locally after a disaster. Neighbourhoods with high levels of social capital tend to repopulate more quickly after disasters<sup>21,22</sup>. Following Black Saturday, strong sense of community was a reason people chose to stay locally, while for others damaged sense of community arising from disagreements and changes to the local area led to decisions to relocate<sup>15,23</sup>. After Hurricane Katrina, survivors relied on information about the plans of their neighbours, friends and store owners when deciding whether to return to New Orleans or relocate<sup>21,24</sup>.

Decisions about relocation may be further complicated for Aboriginal people with connections to Country in the disaster-affected area<sup>2,16</sup>. In addition to the ramifications for social, cultural and political life, these decisions are influenced by the distinctive nature of the formally recognised rights and interests held by

Aboriginal people – such as native title, which cannot be bought or sold – as compared to non-Indigenous land ownership<sup>2</sup>.



### Consider

- ▶ **What local groups, spaces, resources and activities help people connect with each other socially? How can these be supported? Be sure these opportunities are culturally sensitive and support marginalised groups.**
- ▶ **Facilitate ways for people to connect (e.g. through free local events) even if they are far apart (e.g. community pages on social media).**
- ▶ **Are there people who will have less opportunity to decide whether to stay or relocate than others (e.g. those in public housing or in rental homes)? Identify opportunities to help these people to connect and access support.**



# Social | key considerations



## Community cohesion and participation

### What we know

Recovery is strongly influenced by the degree of connection and participation within affected communities<sup>21,29</sup>. Community cohesion can facilitate cooperation within and between disaster-affected communities, enabling them to respond to the needs of different community members<sup>14,30</sup>. Disasters can trigger shifts in community dynamics<sup>14,15</sup>, with initial increases in community cohesion giving way to disagreements and tensions<sup>31</sup>. Post-disaster interventions can enhance social structures within communities to support resilience and recovery<sup>30</sup>.

Where many people belong to community groups and organisations, benefits to mental health and wellbeing are felt throughout those local communities<sup>32</sup>. People who belong to community organisations and groups generally had better mental health and wellbeing years after a disaster experience, although being involved in many groups may have negative effects<sup>27,32</sup>. Community groups can play an important role in recovery decision-making and collective action<sup>21</sup>.

Having many close social bonds within a group, as is the case within many migrant and Indigenous communities<sup>2,33,34</sup>, is generally a strength likely to foster resilience and recovery<sup>14,35</sup>, unless there is a lack of bridging and linking capital<sup>21,36</sup>.



### Consider

- ▶ **Support the capacity of local groups to continue operating. This may require funds for facilities, equipment and/or activities.**
- ▶ **Initiate opportunities for people throughout various communities to become involved and connected with each other in new ways, to build ties within and outside existing groups.**

## Relationships and support

### What we know

Social ties matter in people's recovery – they are generally helpful, but it is complex. Family, friends and neighbours are important sources of support<sup>23,37-41</sup>, and providing support to loved ones can also support resilience<sup>37,42</sup>. People with more social relationships generally have better mental health in recovery<sup>25</sup>. Belonging to community organisations and groups is associated with better mental health in recovery<sup>27,32</sup>, although participating in many community organisations may lead to people becoming overburdened<sup>32</sup>. Wellbeing may be compromised if friends and family are depressed<sup>25</sup>, have high property loss<sup>25</sup> or leave the area following a disaster<sup>15,25</sup>. Where disasters cause loss of life, the mental health impacts extend beyond the family to friends and community members, with particularly deep impacts where there are multiple deaths within a community<sup>43</sup>.



### Consider

- ▶ **Acknowledge the support people are providing to each other. Provide community information sessions about post-trauma support strategies to help them take care of themselves and others.**
- ▶ **Participation in community organisations and groups should be encouraged, however it's important to share the load. Monitor whether a few people are doing the heavy-lifting as they may become overburdened.**
- ▶ **If appropriate, create spaces for memorials and anniversary events in which people can reflect on community members they have lost.**

# Social | key considerations



## Relocate/remain experiences

### What we know

Relocating or living locally after a disaster is likely to alter recovery experiences, but the implications for long-term wellbeing are complex and variable. Benefits of staying locally include opportunities for shared processing and community connection, although this can be undermined if friends and neighbours choose to leave<sup>15,25,26</sup>. Those who relocate may feel guilt over this and be less socially connected in their new homes, but may benefit from stepping away from the post-disaster disruption<sup>15</sup>. Their mental health may be protected if they have new neighbours who have also relocated from the same area<sup>27</sup>.

Negative effects of evacuations and relocation for Aboriginal people include inability to maintain proper relations with Country, disconnection from Country and family and loss of resources, all of which occurs in the historical context of dispossession and forced relocation under settler colonialism<sup>16,17</sup>. At a community level, repopulation of disaster affected locations is often an indicator of recovery<sup>22</sup>, yet relocation may become necessary if there is high risk of future disasters<sup>28</sup>.



### Consider

- ▶ **Establish a communications register so people who have been impacted by disasters can receive information about services, events, grants and research over time if they wish, even if they do not live in affected areas.**
- ▶ **Provide information to people facing decisions about rebuilding or relocating about the sorts of stressors and benefits they are likely to face in each scenario.**
- ▶ **Recovery support packages (and case support worker approaches) should be tailored to match the stressors that people are likely to face based on whether they are staying locally or relocating. Planning should include consideration regarding how those who have relocated will be able to access support services and information.**
- ▶ **When mass relocation is needed (temporarily or longer-term), enable people from the same area to live near each other.**

## Inequities

### What we know

Social capital is a double-edged sword – it can be a powerful engine of recovery and social progress, but it can hinder recovery and exacerbate inequities<sup>21,36</sup>. For marginalised groups, trusting relationships with peers, services and advocates can be crucial<sup>48</sup>. However, social capital can benefit those within a well-connected group at the expense of those on the outside<sup>21,36</sup>. In-groups often mobilise to protect their own interests, which can inhibit broader recovery, shift burdens onto the less connected and entrench stigma and disadvantage<sup>21,48,50-54</sup>.

There is evidence from the USA that poverty increases more after disasters if there is a growth in organisations that bond people who are alike together and may constrict resources to the 'in-group' (e.g. religious organisations)<sup>36,55</sup>. By contrast, increases in advocacy organisations – which foster bridging and linking social capital amongst a broader range of people and institutions – appear to reduce poverty rates<sup>55</sup>.

There is also evidence suggesting that the sense of community generated by involvement in community organisations is not only linked to relationships within the organisation, but also to the outward focus and influence of the organisation<sup>56</sup>.



### Consider

- ▶ **Advocacy organisations should be activated, supported and funded (along with direct service organisations), as they are able to attract external resources, foster sense of community and promote equity in the distribution of services and resources.**

# Social | key considerations



## Communication

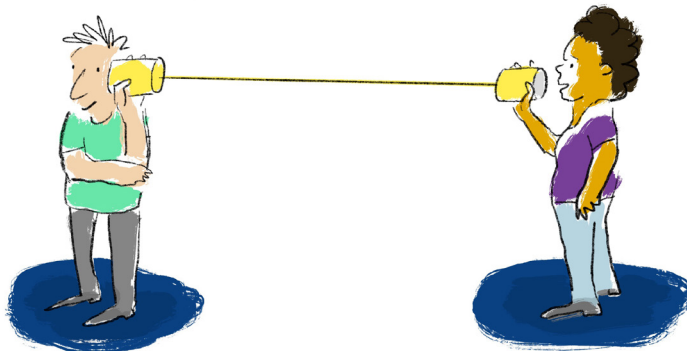
### What we know

Social connections build trust and enable the flow of information, which is critical during recovery as it enables decision-making and access to resources<sup>21,24,27,37,48,49</sup>. This includes connections between family, friends, neighbours, service providers, media and government. Information delivered through strong relationships and effective methods can further strengthen social capital<sup>30,37</sup>, whereas weak social ties can lead to a cycle in which poor communication leads to mistrust and blame, further damaging social connections<sup>49</sup>.



### Consider

- ▶ **The ways that people communicate in post-disaster settings may be very different from the way that they did before. It is important to assess how people want to access and provide information in post disaster settings, noting this may change throughout the recovery.**
- ▶ **Central community websites, newsletters, noticeboards and meetings can be important means of sharing official information about recovery. Sharing that information through community groups, networks and social media can also be a way of reaching more people.**
- ▶ **Ensure that communications are accessible to all, taking into consideration people's diverse needs and circumstances.**



## Physical distancing

### What we know

Given the importance of social connectedness in disaster recovery, further evidence is needed on the impacts of physical distancing measures in response to pandemics, and interventions that can maintain and build social connections in these contexts.

### Consider

- ▶ **How can social capital be built and maintained, particularly for those most at risk of isolation, in the context of a pandemic?**

## External support

### What we know

Communities affected by disasters often receive support from broader society, including resources, guidance, and emotional support<sup>30,37,21</sup>. When this support is responsive to local needs it generally plays a positive role in recovery<sup>44,45</sup>. Communities with greater ability to draw on these external connections tend to fare better<sup>14,21,46,47</sup>.

### Consider

- ▶ **Identify and support the communities that are least likely to be able to draw on connections to government and broader society and advocate for their needs.**



# Financial | key considerations



'Financial capital' refers to the availability of and access to resources including savings, income, assets, investments, credit, insurance, grants, donations, loans, consumption and distribution of goods and services, employment and economic activity<sup>6,57</sup>. Financial capital represents the resources available to people, households and communities, with interactions across these levels.

## Financial strain and assistance

### What we know

Financial strain after disasters may contribute to reduced wellbeing and mental health<sup>58-60</sup> and increased risk of experiencing violence for women<sup>61,62</sup>, and disputes over funding allocation can lead to community conflict<sup>15</sup>. Financial assistance from governments, charities and insurance is often helpful and necessary for people and communities to recover, yet it is not always accessible in a timely and adequate manner<sup>30,45</sup>. Funding opportunities often come with timing and reporting requirements for accountability purposes, yet these are often difficult for community groups to meet, which can impede community-led recovery efforts<sup>45</sup>.

### Consider

- ▶ **Recovery is a long and difficult process with different needs emerging along the way, so funds need to be released at different stages over time. While there is a need for accountability in allocation of funds, it is important that processes for accessing financial assistance are as simple as possible.**
- ▶ **What assistance should be put in place to help people and organisations in accessing funds, and what support can be provided until they come through?**





# Financial | key considerations



## Inequities worsening

### What we know

What people, communities and countries had before a disaster tends to shape what they can access afterwards<sup>14,51,63,68,69</sup>. Income gaps often widen after disasters<sup>63</sup>.



### Consider

- ▶ **What training do staff need to help them identify the ways in which inequities exist in communities and how they can be addressed?**
- ▶ **Critique proposed recovery strategies for issues of equity and unintended consequences for different groups within the community before proceeding (from multiple perspectives e.g. community, recovery experts, social justice).**

## Equitable funding

### What we know

Distribution of funds following disasters can be inequitable<sup>2,63</sup>, and perceived inequities can contribute to a negative social environment<sup>14,15</sup>.



### Consider

- ▶ **Provide clear information to communities about the basis for decisions about recovery funding.**
- ▶ **Recovery funding and economic initiatives should focus on those that are likely to lose income – part time and casual workers – and on heavily impacted businesses and sectors. How can the impact be mitigated? Can people be supported to transfer their skills or retrain for roles in another sector?**
- ▶ **Funds for land management and restoration should include eligibility for Indigenous peoples' social, cultural and political interests in Country, as well as farming and business interests.**

## External ties

### What we know

Significant financial resources for recovery come from outside affected communities, flowing through social and political ties<sup>21</sup>. This means that macro level financial capital influences the amount of money that can flow to people and communities to support recovery.



### Consider

- ▶ **Explore connections that community members may have with external decision-makers and networks that could be helpful in bringing additional financial resources into the community – but be aware that well-connected groups may benefit at the expense of others.**

## Insurance and investments

### What we know

Financial investments prior to disasters, such as insurance, can play a key role in the recovery of households, businesses and communities<sup>64</sup>. However access to these investments is inequitable<sup>65,66</sup>, and non-insurance or underinsurance are major problems that can hinder recovery<sup>67</sup>.



### Consider

- ▶ **What assistance is available for those that are not insured or are underinsured?**

# Cultural | key considerations



'Cultural capital' refers to the way people understand and know the world, and how they act within it. It includes ethnicity, habits, language, stories, traditions, spirituality, heritage, symbols, mannerisms, preferences, attitudes, orientations, identities, norms and values<sup>5,6,14</sup>.

## Attitudes and norms

### What we know

Cultural norms and attitudes towards disasters, loss, support and community shape people's experiences of recovery. People may experience grief over loss of community members<sup>43</sup>, animals<sup>75,76</sup> and the natural environment<sup>2,7</sup> – for example, Aboriginal people may experience the loss of a particular tree as a family loss<sup>2</sup> – and culture influences these experiences, their expression, and how others respond to them<sup>34,41</sup>.



### Consider

- ▶ **It is important to validate the effects of a variety of relationship losses. What strategies should interventions provide to cope with this?**
- ▶ **What attitudes (e.g. taboo topics) exist within affected communities that may affect recovery? Consider the implications of these when providing support.**

## Inclusivity

### What we know

Cultural norms and attitudes towards marginalised groups (e.g. LGBTIQ people<sup>73,74</sup>, sex workers<sup>48</sup>, Indigenous people<sup>2</sup>) can have negative impacts on experiences of disaster and recovery through stigma, discrimination and lack of appropriate support.



### Consider

- ▶ **What diversity training do staff require to help them ensure their work is culturally inclusive and appropriate? How can this be provided? Collaborate with a range of groups and organisations to design recovery approaches that are appropriate for all diverse members of affected communities.**

## Gender

### What we know

Gender norms influence experiences of disaster and recovery in many ways. This includes influencing decisions made during emergencies (e.g. different social expectations of women and men)<sup>70-72</sup>, how people behave afterwards and whether this is accepted (including violence and aggression)<sup>61,62</sup>, and whether people seek support<sup>61</sup>.



### Consider

- ▶ **Embed an understanding of gender into support services in disaster contexts (e.g. through education of recovery workers).**
- ▶ **How available and accessible are appropriate family services (including family violence practitioners)?**

## Cultural cohesion

### What we know

Cultural factors that enable some communities to fare relatively well in recovery include: cultural cohesion, common narratives of shared history, sense of collective identity, shared meaning-making and cultural strategies<sup>33,35</sup>. In particular, the shared histories and close ties that characterise many migrant and Indigenous communities have the potential to support resilience<sup>2,33,34</sup>.

However, external forces during recovery may degrade this cultural capital or inhibits its use in recovery<sup>2,14,34</sup>.



### Consider

- ▶ **What are the core cultural features of the affected communities? Involve community members in reflecting on this to guide recovery priorities.**

# Cultural | key considerations



## Indigenous peoples

### What we know

The knowledge, values and cultural practices of Indigenous peoples around the world can be highly valuable in disaster preparedness, response and recovery<sup>16,34,44</sup>.

However, this value is often not fully recognised or drawn upon in mainstream emergency management<sup>2</sup>, in part because it can conflict with or be undermined by top-down, national or state-wide approaches<sup>34,44</sup>.

In Australia, there is growing interest in cultural burning as a bushfire risk reduction strategy, yet Aboriginal voices have largely been ignored in broader discussions of resilience and recovery, despite the depth of knowledge within Aboriginal communities about strength, resilience and living with Country<sup>2,16</sup>.



### Consider

- ▶ **Establish formal mechanisms and authentic relationships for ongoing contribution of Indigenous peoples in recovery decision-making.**
- ▶ **How can recovery be enhanced by listening to Indigenous people's voices and deep knowledge of resilience, healing and how to live with Country?**

## Connection to nature

### What we know

Cultural and spiritual meanings are often attached to nature, such that changes to the natural environment following disasters have implications for mental health and wellbeing<sup>7,8</sup>. For Aboriginal people these experiences can be particularly profound due to the deep connections between land, culture, history, colonisation and identity<sup>1,2</sup>.



### Consider

- ▶ **Restore local features that enable people to connect to the natural environment (such as walks and parks), and initiate diverse opportunities to enable people to engage with the spiritual and cultural significance of nature in their lives.**
- ▶ **Recovery approaches should be respectful of the history, culture, strengths and circumstances of affected Indigenous communities, including deep connectedness to the land. This involves enabling each community to lead their own recovery; developing respectful, trusting relationships and collaborations; and considering the significance of connection to Country, trauma, healing and resilience.**



# Political | key considerations



'Political capital' refers to the power to influence decision-making in relation to resource access and distribution, and the ability to engage external entities to achieve local goals<sup>5,6,14</sup>. It includes agency, voice, justice, equity, inclusion, legislation, regulation, governance, leadership and policy. It applies within and between groups and exists both formally and informally.

## Indigenous peoples

### What we know

The voices of Aboriginal people have largely been ignored following disasters in Australia, resulting in recovery strategies that do not consider the historical, political and cultural contexts that shape Aboriginal people's experiences – including ongoing colonisation and discrimination. Yet Aboriginal communities are also characterised by resilience, shared identities and close social bonds. There is developing knowledge of the ways in which recovery of Aboriginal people and the broader community may be enhanced by these strengths<sup>2</sup>.



### Consider

- ▶ **How have Indigenous people been impacted by this disaster? Consider residents, distinct communities and legal rights and interest in the land as First Peoples. Consider also the deep connections between land, culture, history, colonisation and identity.**
- ▶ **Engage with local Indigenous organisations and Elders to centre Indigenous people's voices in developing recovery strategies which minimise the risks of exacerbating existing trauma and vulnerability. Strategies should recognise and build on the strength and resilience of Indigenous communities.**

## Community-led recovery

### What we know

Community participation, agency, and knowledge – including that of Indigenous peoples – are highly valuable in disaster resilience and recovery<sup>14,30,34,78</sup>. Recovery outcomes are best when community capacity and local decision-making is complemented and supported (rather than overpowered) by external groups or agencies<sup>44,45,79</sup>.



### Consider

- ▶ **To what extent are recovery strategies being guided by local decision-makers and adapted to local contexts?**
- ▶ **To ensure external pressures do not over-ride local interests, work closely with local government, businesses, services, Indigenous organisations and community groups.**
- ▶ **Support community initiatives and build local capacity wherever possible, rather than bringing in external resources and skills.**
- ▶ **What processes and structures are needed to support community participation in decision-making? Consider factors that may inhibit participation by some groups (e.g. need for childcare, transport, flexible meeting times).**



# Political | key considerations



## Power and voice

### What we know

Power is not distributed equally within and between communities during recovery<sup>14,46,47</sup>. Decisions are often made for and by those with the most voice and agency, which can have negative impacts on marginalised groups<sup>2,48,61,66,77</sup>.



### Consider

- ▶ **Contact those with less voice and agency to gather insights about as many different local experiences as possible. Remember that chats in the street, over the phone or over a cup of tea can be just as helpful as group meetings or emails. Local health and social services can be helpful in connecting with marginalised groups.**

## Influencing knowledge

### What we know

Political agendas, public attention and power dynamics can influence what knowledge is produced and accepted after disasters. This in turn can influence policy reform and changes to practice<sup>2,80,81</sup>. The way research and formal enquiries are set up shapes which voices are heard, and what is found<sup>2,82-84</sup>.



### Consider

- ▶ **Political and social backlash are common in the post-disaster context. Tread carefully with your words and actions and keep focused on your main goal.**



# Political | key considerations



## External support

### What we know

Communities affected by disasters often receive support from broader society, including resources, guidance and emotional support<sup>30,37</sup>. When this support is responsive to local needs it generally plays a positive role in recovery<sup>44,45</sup>. Communities with greater ability to draw on these external connections tend to fare better<sup>14,21,46,47</sup>.



### Consider

- ▶ **Identify and support the communities that are least likely to be able to draw on connections to government and broader society and advocate for their needs.**

## Policies and regulations

### What we know

Policies and regulations, and their implementation, can shape disaster risk and recovery<sup>48,63,85,86</sup>. In turn, disasters can influence the regulatory environment, and while these changes may increase resilience<sup>13,86-88</sup>, they may also create problems in recovery. For example, stricter building codes introduced after Black Saturday raised the cost of rebuilding, resulting in shortfalls in insurance payouts and higher ongoing premiums<sup>65,67</sup> which led to community backlash<sup>89</sup>.



### Consider

- ▶ **Stay up to date with changes in regulations affecting recovery processes. Understand their intent. Deal with evidence, not rumours.**

## Leadership

### What we know

Strong and adaptable leaders can help to access external resources, encourage innovation, support community mental health, and foster cooperation within and between communities<sup>14,32,90</sup>. Leadership training and support before and after disasters may build these attributes, with benefits to the community as well as the wellbeing of those in leadership roles<sup>32,45,91-93</sup>.



### Consider

- ▶ **Provide leadership training and support, both pre-event and post-event.**
- ▶ **Link local leaders to people with previous experience leading community disaster recovery, for mentoring and support.**

# Built | key considerations



'Built capital' refers to the design, building and maintenance of physical infrastructure, including its functional and aesthetic value. This includes critical facilities and services, housing, vehicles, equipment, information technology, communications, water and energy infrastructure<sup>5</sup>.

## Damage and restoration

### What we know

Physical damage caused by disasters can negatively impact wellbeing<sup>25,59,94</sup>, sense of community<sup>15</sup>, financial security<sup>41,59</sup> and business viability<sup>14,41</sup>.



### Consider

- ▶ When restoring buildings and infrastructure, prioritise what is central to community activity, such as roads, bridges, schools, community halls and thriving local businesses.

## Risk and resilience

### What we know

The location, density and design of buildings influence risk from hazards such as floods, fires and earthquakes<sup>9,10</sup>, including risk of injury<sup>95</sup> and reduced business activity<sup>27</sup>. Planning and building regulations can reduce these risks<sup>13</sup>, but this can also create problems in recovery by raising the cost of rebuilding, resulting in shortfalls in insurance payouts and higher ongoing premiums<sup>65,67</sup>.



### Consider

- ▶ What risks might this community face in the future? Consider resilience to future emergencies when making rebuilding decisions.



# Built | key considerations



## Social infrastructure

### What we know

While some infrastructure is crucial to preparedness, response and recovery (including telecommunications and transport)<sup>44,96,97</sup>, there is evidence that some physical disaster mitigation infrastructure (such as sea walls against tsunamis) is less protective than social factors such as social capital<sup>47,98</sup>.



### Consider

- ▶ **Social strategies need to be developed alongside infrastructure strategies to support preparedness, response and recovery.**



# Built | key considerations



## Remaining and relocating

### What we know

Choosing to live locally or relocate elsewhere is likely to alter the recovery experience, but not necessarily long-term personal wellbeing<sup>15</sup>.

After Black Saturday, sense of community was enhanced for some by the shared processing of the disaster experience and rebuilding, and this supported wellbeing. For others, sense of community was lost through damage to property, disruption and disharmony, and they were more likely to leave. They had fewer opportunities to process the disaster, but benefited from being removed from the ongoing disruptions and challenges in the bushfire-affected community<sup>15</sup>.

Decisions about relocation may be further complicated for Aboriginal people whose rights, interest and connection to Country remain specific to the disaster-affected area<sup>2,16</sup>.



### Consider

- ▶ **Provide information to people facing decisions about rebuilding or relocating about the sorts of stressors and benefits they are likely to face in each scenario.**
- ▶ **Recovery support packages (and case support worker approaches) should be tailored to match the stressors that people are likely to face based on whether they are staying locally or relocating.**

## Rebuilding appropriately

### What we know

Rebuilding is an important part of recovery, allowing those affected by disasters to re-establish routines, sense of place and identity<sup>23,30,37</sup>. Rebuilding can also foster community resilience and enable economic activity, which in turn provides resources for further recovery<sup>14</sup>.

However decisions and uncertainties about rebuilding shared spaces can be major stressors after disasters<sup>59</sup>, and disagreements about rebuilding can damage the social environment<sup>15</sup>. A range of strategies can enhance these processes, including allowing time for reflection before making less urgent decisions<sup>79</sup>.

New and temporary accommodation arrangements can influence social connectedness, with poorly designed housing leading to social isolation<sup>22</sup>. By contrast, social connectedness can be fostered by enabling people from the same area to live near each other in new or temporary accommodation<sup>22</sup>.



### Consider

- ▶ **Timing of rebuilding is important – where possible, rebuilding early can have benefits, however be mindful that rushing to rebuild can place strain on communities and lead to different decisions than might be made with more time and consideration.**
- ▶ **What may be causing uncertainty for people around rebuilding? What strategies could reduce this uncertainty? For example, clear community information, and opportunities for people to access expert advice.**
- ▶ **Arriving at consensus can be very difficult when there are different points of view. Careful, inclusive processes are needed to support collective decision-making e.g. have group discussions led by someone with facilitation and public participation expertise.**
- ▶ **When mass relocation is needed, enable people from the same area to live near each other.**

# Human | key considerations



'Human capital' refers to people's skills and capabilities, including the ability to access resources and knowledge<sup>57</sup>. It includes education, physical and mental health, physical ability, knowledge from lived experience and leadership capabilities.



## Supporting others

### What we know

Adults and children use various coping strategies following disasters, and being able to help others can be particularly helpful to recovery<sup>37,42</sup>. People provide practical and emotional support to others in many ways, drawing on a diverse set of capabilities. For example, following Hurricane Sandy, volunteers who had already been experiencing homelessness played a valuable role in supporting the disaster affected community<sup>99</sup>.



### Consider

- ▶ **People benefit when they contribute to recovery efforts, and so does the community. Which contributions can you identify and how can you validate them? How can you support all members of the community to use their diverse skills to contribute?**

## Skills and livelihoods

### What we know

Employment sector and status influence how people are affected by disasters. People are more likely to face reduced income if their employment is part time, low-paying and in particular fields<sup>63</sup>. Those working in agriculture, accommodation and food services are generally hit hardest, while income can even increase in some sectors<sup>63</sup>. Community level impacts also vary based on local economies<sup>100</sup>.

### Consider

- ▶ **Who is most likely to lose work or income? How can this be mitigated? Consider supporting people to transfer their skills or retrain for roles in another sector.**
- ▶ **Recovery funding and economic initiatives should focus on those that are likely to lose income – part time workers and casual workers – and on heavily impacted businesses and sectors.**



# Human | key considerations



## Recovery workforce

### What we know

The recovery workforce must be assembled very quickly following a disaster. The increased demand means that staff and volunteers do not always have the knowledge and skills that they need, which can create problems for them and the people they are supporting<sup>38,61,101,102</sup>. Planning and coordination by organisations and governments is crucial in meeting these workforce demands, and in all aspects of recovery<sup>44,84</sup>.



### Consider

- ▶ **What additional demands and issues will staff encounter in this recovery context? Are they being provided with appropriate training and support?**
- ▶ **What processes and plans does your organisation have in place to prepare for future risks? What is required for activating a rapid response and adapting to changed operating environments?**
- ▶ **Can marginalised groups access recovery support through existing, trusted service providers?**

## People at increased risk

### What we know

Certain demographic factors are linked with vulnerability to disasters, including: age, gender, race, cultural and linguistic background, health, disability, education, household composition and housing status<sup>51,69,104,108</sup>. This is largely because of social and financial disadvantage, and policies, messaging and practices that overlook some people's circumstances, capabilities and needs<sup>2,51,66</sup>.



### Consider

- ▶ **Who is most likely to be most heavily impacted by disaster, and face greater challenges in recovering? What targeted strategies can be used to support these people? Remember that this is not a simple 'vulnerability equation' – people and groups in disaster environments have a complex mix of strengths and support needs.**

## Local capabilities

### What we know

Knowledge and capacity within disaster affected communities influences recovery experiences. Experience of previous disasters or adversity can build this knowledge and recovery capacity, although lessons can also be misapplied if they don't allow for the unique elements of new events<sup>99,103–107</sup>.



### Consider

- ▶ **What knowledge and skills do local residents have that will enable them to prepare, respond and recover from disaster? What gaps in knowledge or inaccurate beliefs might exist, and how could these be addressed? Consider multiple scenarios and all members of the community.**

## Leadership

### What we know

Strong and adaptable leaders can help to access external resources, encourage innovation, support mental health and foster cooperation within and between communities<sup>14,32,90</sup>. Leadership training and support before and after disasters may build these attributes, with benefits to the community as well as the wellbeing of those in leadership roles<sup>32,45,91–93</sup>.



### Consider

- ▶ **Provide leadership training and support, both pre-event and post-event.**
- ▶ **Link local leaders to people with previous experience leading community disaster recovery, for mentoring and support.**

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# References

1. Williamson B, Weir J, Cavanagh V. Strength from perpetual grief: how Aboriginal people experience the bushfire crisis. *The Conversation* [Internet]. 2020; Available from: <https://theconversation.com/strength-from-perpetual-grief-how-aboriginal-people-experience-the-bushfire-crisis-129448>.
2. Williamson B, Markham F, Weir J. Aboriginal peoples and the response to the 2019–2020 bushfires, Working Paper No. 134/2020. Centre for Aboriginal Economic Policy Research, Australian National University, Canberra; 2020.
3. García Cartagena M. Community resilience, capitals, and power relations: stories from the Waimakariri District about the aftermath of the 2010-2011 Canterbury Earthquakes in New Zealand: a thesis presented in partial fulfillment of the requirements for the degree of Doctor o. Massey University; 2019.
4. Emery M, Flora C. Spiraling-up: Mapping community transformation with community capitals framework. *Community Dev.* 2006;37(1):19–35.
5. Emery M, Fey S, Flora C. Using community capitals to develop assets for positive community change. *CD Pract.* 2006;13:1–19.
6. Jacobs C. Measuring success in communities: The community capitals framework. 2011.
7. Block K, Molyneaux R, Gibbs L, Alkemade N, Baker E, MacDougall C, et al. The role of the natural environment in disaster recovery: "We live here because we love the bush." *Health & Place.* 2019 May 1;57:61–9.
8. Boon HJ. Disaster resilience in a flood-impacted rural Australian town. *Nat Hazards.* 2014 Mar;71(1):683–701.
9. Syphard AD, Keeley JE, Massada AB, Brennan TJ, Radeloff VC. Housing arrangement and location determine the likelihood of housing loss due to wildfire. *PLoS One.* 2012 Mar 28;7(3).
10. Crompton RP, McAneney KJ, Chen K, Pielke RA, Haynes K. Influence of location, population, and climate on building damage and fatalities due to Australian bushfire: 1925-2009. *Weather Clim Soc.* 2010 Oct;2(4):300–10.
11. Wenger C. Building walls around flood problems: The place of levees in Australian flood management. Vol. 19, *Australian Journal of Water Resources.* 2015. p. 3–30.
12. Sorensen T, Epps R. An overview of economy and society. Prospect Policies Rural Aust Longman Cheshire, Melb. 1993;7–32.
13. van den Honert RC, McAneney J. The 2011 Brisbane Floods: Causes, Impacts and Implications. *Water.* 2011 Dec 9;3(4):1149–73.
14. Himes-Cornell A, Ormond C, Hoelting K, Ban NC, Zachary Koehn J, Allison EH, et al. Factors Affecting Disaster Preparedness, Response, and Recovery Using the Community Capitals Framework. *Coast Manag.* 2018 Sep 3;46(5):335–58.
15. Gibbs L, Gallagher HC, Block K, Snowdon E, Bryant R, Harms L, et al. Post-bushfire relocation decision-making and personal wellbeing: A case study from Victoria, Australia. In: Adenrele Awotona, editor. *Planning for Community-based Disaster Resilience Worldwide: Learning from Case Studies in Six Continents.* London and New York: Routledge; 2016. p. 333–56.
16. Thomassin A, Neale T, Weir JK. The natural hazard sector's engagement with Indigenous peoples: a critical review of CANZUS countries. *Geogr Res.* 2019;57(2):164–77.
17. Zander KK, Petheram L, Garnett ST. Stay or leave? Potential climate change adaptation strategies among Aboriginal people in coastal communities in northern Australia. *Nat Hazards.* 2013;67(2):591–609.
18. Berry HL, Bowen K, Kjellstrom T. Climate change and mental health: a causal pathways framework. *Int J Public Health.* 2010;55(2):123–32.
19. Hayes K, Blashki G, Wiseman J, Burke S, Reifels L. Climate change and mental health: Risks, impacts and priority actions. *Int J Ment Health Syst.* 2018;12(1):28.
20. Szreter S, Woolcock M. Health by association? Social capital, social theory, and the political economy of public health. *Int J Epidemiol.* 2004;33(4):650–67.
21. Aldrich DP. *Building resilience: Social capital in post-disaster recovery.* Chicago: University of Chicago Press; 2012. 232.
22. Aldrich DP. The power of people: Social capital's role in recovery from the 1995 Kobe earthquake. *Nat Hazards.* 2011 Mar 18;56(3):595–611.
23. Gibbs L, Block K, Harms L, MacDougall C, Snowdon E, Ireton G, et al. Children and young people's wellbeing post-disaster: Safety and stability are critical. *Int J Disaster Risk Reduct.* 2015;14:195–201.
24. Chamlee-Wright E, Rothschild DM. Disastrous uncertainty: how government disaster policy undermines community rebound. *Mercat Policy Ser Mercat Center, Georg Mason Univ.* 2007;(9).
25. Bryant R, Gallagher H, Waters E, Gibbs L, Pattison P, MacDougall C, et al. Mental Health and Social Networks After Disaster. *Am J Psychiatry* [Internet]. 2017 Mar [cited 2019 Jan 18];174(3):277–85. Available from: <http://ajp.psychiatryonline.org/doi/10.1176/appi.ajp.2016.15111403>.
26. Tuohy R, Stephens C, Johnston D. Older adults' disaster preparedness in the context of the September 2010-December 2012 Canterbury earthquake sequence. *Int J Disaster Risk Reduct.* 2014 Sep 1;9:194–203.
27. Iwasaki K, Sawada Y, Aldrich DP. Social capital as a shield against anxiety among displaced residents from Fukushima. *Nat Hazards.* 2017 Oct 23;89(1):405–21.
28. Haney TJ. Paradise Found? The Emergence of Social Capital, Place Attachment, and Civic Engagement after Disaster. Vol. 36, *International Journal of Mass Emergencies and Disasters.* 2018.



29. Townshend I, Awosoga O, Kulig J, Fan H. Social cohesion and resilience across communities that have experienced a disaster. *Nat Hazards*. 2015;76(2):913–38.
30. Van Kessel, G., Gibbs, L., & MacDougall C. Strategies to enhance resilience post-natural disaster: a qualitative study of experiences with Australian floods and fires. *J Public Health (Bangkok)*. 2014;37(2):328–36.
31. Kaniasty K. Predicting social psychological well-being following trauma: The role of postdisaster social support. *Psychol Trauma Theory, Res Pract Policy*. 2012;4(1):22–33.
32. Gallagher C, Block K, Gibbs L, Forbes D, Lusher D, Molyneaux R, et al. The effect of group involvement on post-disaster mental health: A longitudinal multilevel analysis. *Soc Sci Med*. 2019;220:167–75.
33. VanLandingham MJ. *Weathering Katrina: Culture and Recovery among Vietnamese Americans*. Russell Sage Foundation; 2017.
34. Kenney CM, Phibbs SR, Paton D, Reid J, Johnston DM. Community-led disaster risk management: A Māori response to Ōtautahi (Christchurch) earthquakes. *Australas J Disaster Trauma Stud*. 2015;19(Special Issue):9–20.
35. Moreton MRJ. A study of four natural disasters in Australia: how the human response to fire, flood and cyclone contributes to community resilience and recovery. 2016.
36. Aldrich DP, Page-Tan C, Fraser T. A Janus-faced resource: Social capital and resilience trade-offs. In: Trump BD, Florin M-V, Linkov I, editors. *IRGC resource guide on resilience (vol 2): Domains of resilience for complex interconnected systems*. Lausanne, CH: EPFL International Risk Governance Center; 2018.
37. van Kessel G, MacDougall C, Gibbs L. The Process of Rebuilding Human Resilience in the Face of the Experience of a Natural Disaster: A Multisystem Model. *IJEMHHR*. 2015;17(4):678–87.
38. Johal S, Mounsey Z, Tuohy R, Johnston D. Coping with Disaster: General Practitioners' Perspectives on the Impact of the Canterbury Earthquakes. *PLoS Curr*. 2014;(APR):1–9.
39. Camilleri P, Healy C, Macdonald E, Nicholls S, Sykes J, Winkworth G, et al. Recovery from bushfires: The experience of the 2003 Canberra bushfires three years after. *Australas J Paramed*. 2010;8(1):15.
40. Sadri AM, Ukusuri S V, Lee S, Clawson R, Aldrich D, Nelson MS, et al. The role of social capital, personal networks, and emergency responders in post-disaster recovery and resilience: a study of rural communities in Indiana. *Nat hazards*. 2018;90(3):1377–406.
41. Urmson K, Johnston D, Kemp S. Asking for help and receiving support after a disaster. *Australas J Disaster Trauma Stud*. 2016;20(1):3–14.
42. Mooney M, Tarrant R, Paton D, Johal S, Johnston D. Getting through: Children's effective coping and adaptation in the context of the Canterbury, New Zealand, earthquakes of 2010–2012. *Australas J Disaster Trauma Stud*. 2017;21(1):19–30.
43. Harms L, Gallagher H, Gibbs L, Bryant R, Lusher D, Richardson J, et al. Conceptualising post-disaster recovery: Incorporating Grief Experiences. *Br J Soc Work*. 2015;45((suppl 1): i170-i187).
44. Aldrich DP. Challenges to Coordination: Understanding Intergovernmental Friction During Disasters. *Int J Disaster Risk Sci*. 2019 Sep;10(3):306–16.
45. Dibley G, Mitchell L, Ireton G, Gordon R. Government's role in supporting community-led approaches to recovery. 2019.
46. Aldrich DP. It's who you know: Factors driving recovery from Japan's 11 March 2011 disaster. *Public Adm*. 2016 Jun;94(2):399–413.
47. Aldrich DP. *Black wave: how networks and governance shaped Japan's 3/11 disasters*. University of Chicago Press; 2019.
48. Fraser C, Blake D. *Valuing Voices: Sex workers' experiences following the Canterbury earthquakes*. Disaster Research Science Report; 2020/01. Wellington (NZ); 2020.
49. Ahangama N, Prasanna R, Blake D. The influence of relational and cognitive capital on knowledge networks: Disaster drill experiences in Ratnapura, Sri Lanka. *Resil Int Policies, Pract Discourses*. 2019 Jun 18.
50. Aldrich DP, Crook K. Strong civil society as a double-edged sword: Siting trailers in post-Katrina New Orleans. *Polit Res Q*. 2008;61(3):379–89.
51. Thomas DSK, Phillips BD, Lovekamp WE, Fothergill A. *Social vulnerability to disasters*. CRC Press; 2013.
52. Williamson T. Beyond social capital: Social justice in recovery and resilience. *Risk, Hazards Cris Public Policy*. 2013;4(1):28–31.
53. Dominey-Howes D, Gorman-Murray A, McKinnon S. Emergency management response and recovery plans in relation to sexual and gender minorities in New South Wales, Australia. *Int J disaster risk Reduct*. 2016;16:1–11.
54. Yang J, Yang Y, Liu X, Tian J, Zhu X, Miao D. Self-efficacy, social support, and coping strategies of adolescent earthquake survivors in China. *Soc Behav Pers*. 2010;38(9):1219–28.
55. Smiley KT, Howell J, Elliott JR. Disasters, local organizations, and poverty in the USA, 1998 to 2015. *Popul Environ*. 2018;40(2):115–35.
56. Hughey J, Speer PW, Peterson NA. Sense of community in community organizations: Structure and evidence of validity. *J Community Psychol*. 1999;27(1):97–113.
57. Stofferahn CW. Community capitals and disaster recovery: Northwood ND recovers from an EF 4 tornado. *Community Dev*. 2012;43(5):581–98.
58. Forbes D, Alkemade N, Waters E, Gibbs L, Gallagher HC, Pattison P, et al. Anger and major life stressors as predictors of psychological outcomes following the Victorian Black Saturday bushfires. *Aust N Z J Psychiatry*. 2015;DOI: 10.11.

- 
59. Morgan J, Begg A, Beaven S, Schluter P, Jamieson K, Johal S, et al. Monitoring wellbeing during recovery from the 2010–2011 Canterbury earthquakes: The CERA wellbeing survey. *Int J Disaster Risk Reduct.* 2015 Dec 1;14:96–103.
  60. King A, Middleton D, Brown C, Johnston D, Johal S. Insurance: Its role in recovery from the 2010–2011 Canterbury Earthquake sequence. *Earthq Spectra.* 2014 Feb;30(1):475–91.
  61. Parkinson D. Investigating the Increase in Domestic Violence Post Disaster: An Australian Case Study. *J Interpers Violence.* 2019 Jun 1;34(11):2333–62.
  62. Molyneaux R, Gibbs L, Bryant R, Humphreys C, Hegarty K, Kelleff C, et al. Interpersonal violence and mental health outcomes following disaster. *BJPsych Open.* 2020;6(1).
  63. Ulubasoglu M. Natural disasters increase inequality. Recovery funding may make things worse. *The Conversation* [Internet]. 2020 Feb 27; Available from: <https://theconversation.com/natural-disasters-increase-inequality-recovery-funding-may-make-things-worse-131643>.
  64. de Vet E, Eriksen C, Booth K, French S. An unmitigated disaster: shifting from response and recovery to mitigation for an insurable future. *Int J Disaster Risk Sci.* 2019;10(2):179–92.
  65. Banks M, Bowman D. Juggling risks: insurance in households struggling with financial insecurity. *Brotherhood of St Laurence*; 2017.
  66. Blake D, Marlowe J, Johnston D. Get prepared: Discourse for the privileged? *Int J Disaster Risk Reduct.* 2017 Oct 1;25:283–8.
  67. Victorian Bushfires Royal Commission. *The 2009 Victorian Bushfires Royal Commission Final Report Summary* [Internet]. Vol. PP No. 332. Government Printer for the State of Victoria; 2009. Available from: <http://royalcommission.vic.gov.au/Commission-Reports/Final-Report/Summary.html>.
  68. Tierney K. The social roots of risk: Producing disasters, promoting resilience. *Stanford University Press*; 2014.
  69. Morrow BH. Identifying and mapping community vulnerability. *Disasters.* 1999;23(1):1–18.
  70. Whittaker J, Eriksen C, Haynes K. Gendered responses to the 2009 Black Saturday bushfires in Victoria, Australia. *Geogr Res.* 2016;54(2):203–15.
  71. Eriksen C. Gendered Risk Engagement: Challenging the Embedded Vulnerability, Social Norms and Power Relations in Conventional Australian Bushfire Education. *Geogr Res.* 2014;52(1):23–33.
  72. Tyler M, Fairbrother P. Gender, households, and decision-making for wildfire safety. *Disasters.* 2018;42(4):697–718.
  73. Dominey-Howes D, Gorman-Murray A, McKinnon S. Queering disasters: On the need to account for LGBTI experiences in natural disaster contexts. *Gender, Place Cult.* 2014;21(7):905–18.
  74. Larkin B. Pride and prejudice: LGBTIQ community responses to disaster events worldwide. *Aust J Emerg Manag.* 2019;34(4):60.
  75. Thompson K, Every D, Rainbird S, Cornell V, Smith B, Trigg J. No pet or their person left behind: Increasing the disaster resilience of vulnerable groups through animal attachment, activities and networks. *Animals.* 2014;4(2):214–40.
  76. Smith Y, Golomb-Leavitt A. *The Loss of a Pet. Pet Loss, Grief, Ther Interv Pract Navig Human-Animal Bond.* 2019.
  77. Blake D. Social determinants of health for opioid substitution treatment and emergency management in Aotearoa New Zealand. *Aust Community Psychol.* 2018;29(1).
  78. Collins S, Glavovic B, Johal S, Johnston D. Community engagement post-disaster: case studies of the 2006 Matata debris flow and 2010 Darfield earthquake, New Zealand. *NZ J Psychol.* 2011;40:17–525.
  79. O'Neill K. *Communities at the Heart of Recovery: Reflections on the Government-Community Partnership for Recovery After the 2009 Black Saturday Bushfires in Victoria, Australia.* In: *Natural Disaster Management in the Asia-Pacific.* Springer; 2015. p. 119–38.
  80. Eburn M, Dovers S. Learning lessons from disasters: Alternatives to Royal Commissions and other quasi-judicial inquiries. *Aust J Public Adm.* 2015;74(4):495–508.
  81. Boin A, McConnell A, Hart P. *Governing after crisis: The politics of investigation, accountability and learning.* 2008.
  82. Gibbs L, MacDougall C, Block K. Political reflexivity in post-bushfire research. *Qual Res J.* 2014;14(3).
  83. Gibbs L, Block K, MacDougall C, Harms L, Baker E, Richardson J, et al. Ethical use and impact of participatory approaches to research in post-disaster environments: An Australian bushfire case study. *Biomed Res Int.* 2018.
  84. Beaven S, Wilson T, Johnston L, Johnston D, Smith R. Research engagement after disasters: research coordination before, during, and after the 2011–2012 Canterbury earthquake sequence, New Zealand. *Earthq Spectra.* 2016;32(2):713–35.
  85. McClure J, Wills C, Johnston D, Recker C. New Zealanders' judgments of earthquake risk before and after the Canterbury earthquakes: Do they relate to preparedness? *NZ J Psychol.* 2011;40:7–11.
  86. Frazier TG, Walker MH, Kumari A, Thompson CM. Opportunities and constraints to hazard mitigation planning. *Appl Geogr.* 2013;40:52–60.
  87. March A, Henry S. A better future from imagining the worst: Land use planning and training responses to natural disaster. *Aust J Emerg Manag.* 2007;22(3):17.
  88. Mason MS, Haynes K. *Adaptation lessons from cyclone Tracy.* National Climate Change Adaptation Research Facility; 2010.
  89. Kornakova M, March A, Gleeson B. Institutional adjustments and strategic planning action: The case of Victorian Wildfire Planning. *Plan Pract Res.* 2018;33(2):120–36.
  90. Ombler J, Washington S. *Seismic Shifts: The Canterbury earthquakes and public sector innovation.* *Futur State.* 2014;277.
  91. Comfort LK, Boin A, Demchak CC. *Designing resilience: Preparing for extreme events.* University of Pittsburgh Pre; 2010.
  92. Waugh Jr WL, Streib G. *Collaboration and leadership for effective emergency management.* *Public Adm Rev.* 2006;66:131–40.

93. Usdin L. Building resiliency and supporting distributive leadership post-disaster. *Int J Leadersh Public Serv.* 2014.
94. Bryant RA, Gibbs L, Gallagher HC, Pattison P, Lusher D, MacDougall C, et al. Longitudinal Study of Changing Psychological Outcomes Following the Victorian Black Saturday Bushfires. *Aust New Zeal J Psychiatry.* 2017;DOI: 10.11.
95. Johnston D, Standring S, Ronan K, Lindell M, Wilson T, Cousins J, et al. The 2010/2011 Canterbury earthquakes: Context and cause of injury. *Nat Hazards.* 2014 Sep 27;73(2):627–37.
96. Boon H. Investigation rural community communication for flood and bushfire preparedness. *Aust J Emerg Manag.* 2014;29(4):17.
97. Thomas J, Barraket J, Wilson C, Cook K, Louie Y, Holcombe-James I, et al. Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018.
98. Aldrich DP, Sawada Y. The physical and social determinants of mortality in the 3.11 tsunami. *Soc Sci Med.* 2015 Jan 1;124:66–75.
99. Settembrino MR. Hurricane Sandy's impact on the predisaster homeless and homeless shelter services in New Jersey. *J Emerg Manag (Weston, Mass).* 2016;14(1):7–16.
100. Ulubasoglu MA, Rahman MH, Önder YK, Chen Y, Rajabifard A. Floods, Bushfires and Sectoral Economic Output in Australia, 1978–2014. *Econ Rec.* 2019 Mar 15;95(308):58–80.
101. Blake D, Niland P, Johnston D. Health emergency management in Aotearoa New Zealand: Making sense of professional development. *J Emerg Manag.* 2019;17(5):359–69.
102. Johal S, Mounsey Z, Brannelly P, Johnston D. Nurse perspectives on the practical, emotional, and professional impacts of living and working in post-earthquake Canterbury, New Zealand. *Prehosp Disaster Med.* 2016;31(1):10–6.
103. Nakasu T, Ono Y, Pothisiri W. Why did Rikuzentakata have a high death toll in the 2011 Great East Japan Earthquake and Tsunami disaster? Finding the devastating disaster's root causes. *Int J disaster risk Reduct.* 2018;27:21–36.
104. Hansen A, Bi P, Saniotis A. Extreme heat and climate change: adaptation in culturally and linguistically diverse (CALD) communities. 2013.
105. Drabek TE. *The human side of disaster.* CRC Press; 2016.
106. McClure J, Henrich L, Johnston D, Doyle EEH. Are two earthquakes better than one? How earthquakes in two different regions affect risk judgments and preparation in three locations. *Int J Disaster Risk Reduct.* 2016 Jun 1;16:192–9.
107. Marshall MI, Niehm LS, Sydnor SB, Schrank HL. Predicting small business demise after a natural disaster: an analysis of pre-existing conditions. *Nat Hazards.* 2015;79(1):331–54.
108. Becker J., Coomer M., Blake D, Garden E, Rampton A, Newman-Hall G, et al. Impact of the 2016 Kaikōura Earthquake on Wellington CBD Apartment Residents: Results of a Survey. *Low Hutt GNS Sci.* 2018.





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