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LITERATURE REVIEW ON COMMUNITY RESILIENCE IN REMOTE NORTH AUSTRALIA

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Cover: A workshop on community resilience in remote northern Australia takes place near Ngukurr in the Northern Territory.
Photo by Nathan Maddock, Bushfire and Natural Hazards CRC

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Literature Review on Community Resilience in Remote North Australia

Prepared by Christine Michaels, Matalena Tofa and Glenn James for the

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About NAILSMA Limited

The North Australian Indigenous Land and Sea Management Alliance Limited (NAILSMA) delivers large-scale initiatives across north Australia and is committed to finding practical solutions that support Indigenous people and the management of their lands for future generations. Its culture-based economy approach aims to assist Indigenous people through livelihoods and employment on their country. NAILSMA is an Indigenous led not-for-profit company. It has a strong track record of delivering award-winning programs in challenging and complex settings.

About the NAILSMA Knowledge Series

The NAILSMA Knowledge Series recognises and provides a forum for Indigenous and non-Indigenous people responsible for land and sea management across north Australia. It is an information point for the dissemination of knowledge from both Indigenous and non-Indigenous perspectives on a broad range of issues relevant to land and sea management. The series encompasses a broad range of publication types including discussion and policy papers, research reports, workshop and conference reports, opinion pieces, and Indigenous Knowledge publications.

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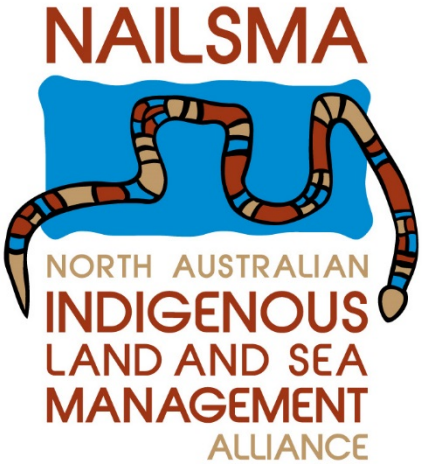

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Background and context

The North Australian Indigenous Land and Sea Management Alliance Ltd (NAILSMA) is working with the Research Institute for the Environment and Livelihoods (RIEL) and the Aboriginal Research Practitioners Network (ARPNet) at Charles Darwin University (CDU), together with community members from Ngukurr and Gunbalanya communities in Arnhem Land, on a research project titled 'Building Community Resilience in Northern Australia'. The project is funded by the Bushfire and Natural Hazards Cooperative Research Centre.

The aim of the project is to use action research to understand, identify and trial opportunities for promoting resilience in remote north Australian Indigenous communities. There are two key component projects:

1. Scoping remote north Australian community resilience; and
2. Developing opportunities for building more resilient remote communities in northern Australia including effective governance models.

The aim of this literature review is to provide background information for the scoping study and governance modelling project, and to identify gaps in the literature which these projects may seek to address.

Introduction

The purpose of this literature review is to provide an overview of current research on community resilience in relation to natural hazards. It examines the concepts of vulnerability and resilience in the north Australian context and, in particular, in remote Indigenous communities. In remote northern Australia there are particular issues that must be considered for preparing for, responding to, and recovering from natural hazards. Desert Knowledge Australia, for instance, highlights 'the difficulties faced by governments in providing basic community services and infrastructure, the lack of any real local authority over decision making or allocation of resources, the severe stress on Indigenous culture and societal structures, and the risk of collapsing fragile ecosystems in the context of outmoded land management regimes' (Desert Knowledge Australia 2009, p.3). In contrast, many highlight the strength and resilience of remote Indigenous communities, despite the hardships produced by colonisation, failed policies and poor governance. This is exemplified by many successful practical projects in land and sea management, such as the West Arnhem Land Fire Abatement Project (Bessen Consulting Services & NAILSMA 2009, Garnett & Sithole 2007). This literature review considers what community resilience means in the context of remote Indigenous communities in northern Australia and how this concept might relate to natural disaster preparedness, mitigation, response and recovery.

The scope of the review includes both Australian and international literature, drawn from a number of disciplines including health, psychology, anthropology, environmental management and emergency management. In systematic order, the following topics will be discussed: definitions of vulnerability and resilience; conceptual frameworks for measuring resilience; Indigenous perspectives on resilience; Indigenous perspective on risk and existing capacity; and factors that enhance community resilience including social capital, local/ traditional knowledge, local governance, and the relationship between emergency management services and Indigenous communities. Whilst the review focuses on community resilience to 'natural hazards,' such as bushfires, cyclones and floods, it also considers the notion of community resilience within the broader context of livelihood security, sustainability and well-being.

Defining vulnerability and resilience

There is an extensive body of international literature, and to a lesser extent Australian literature, which seeks to define and develop conceptual frameworks for understanding and measuring community 'vulnerability' (Cutter et al. 2008, King 2001) and community 'resilience', particularly in relation to natural disasters. There have also been a number of critiques surrounding notions of 'vulnerability' in Indigenous communities, particularly in relation to climate change risk assessments (Bankoff 2001, Howitt et al. 2012, Petheram et al. 2010). Howitt et al. (2012, p.56) argue that the characterisation of Indigenous communities as particularly vulnerable 'assigns Indigenous peoples the role of victims of climate risk…[and] marginalises local knowledge and defines the critical capacity to identify and treat vulnerabilities as residing with the experts and agencies rather than the affected communities themselves.'

More recent literature from various disciplines (including disaster management, sustainability, climate change) focuses instead on 'resilience' (Comfort et al. 2010, Wildavsky 1988). Drawn primarily from ecological research, resilience describes the ability of a system to 'bounce back' or 'return to equilibrium' following a shock, or to transform and establish new equilibria in response to stressors or disturbances (Cutter et al. 2008, Gawith et al. 2016, Leykin et al. 2016). There are diverse definitions of 'resilience,' which reflects both its innate complexity and the diversity of its application (Cutter et al. 2008). Social-ecological resilience, for instance, tends to conceptualise resilience as an adaptive cycle or the ability transform in response to changing conditions or disturbances (e.g., climate change) (Berkes & Ross 2013, Brown & Williams 2015). In contrast, disaster resilience focuses on resilience as the ability to return to a pre-existing status quo or to 'normal function' after a disturbance (e.g., flooding, eruption) (Brown & Williams 2015, Cutter 2016). Policy definitions of social or community resilience often focus on the ability of communities to adapt, prepare, respond to, and recover from natural disasters (ISDR 2005, Teo et al. 2013). For instance, the National Strategy for Disaster Resilience identifies the following indicators of community resilience: 'functioning well while under stress, successful adaptation, self-reliance, and social capacity' (COAG 2009, p.4).

Resilience has become popular in both academic and policy discourses, and forms an important framework through which emergency and hazard management are undertaken (Cox & Hamlen 2015). This is in part because resilience provides a conceptual mechanism for linking social and environmental systems, considering complex and non-linear processes, and for positioning adaptation and change as necessary and important (Darnhofer et al. 2016, Hooli 2015). Notably, 'resilience' also directs attention to communities' strengths and capabilities when facing challenges, and emphasises empowerment and agency, rather than victimhood (Hooli 2015). In the Australian context, resilience

and the accompanying narrative of 'shared responsibility' also work to redistribute responsibility for community safety from solely government agencies to a combination of communities and individuals alongside government agencies (Singh-Peterson et al. 2015).

Critical analyses of resilience in disaster and hazard management highlight the complexity of 'resilience' in social contexts, and how this may problematize government or institutional efforts to develop and foster resilient communities. Theorisation of resilience in hazards management contexts initially focused on resilience as an 'outcome' and thus sought to identify resources or capitals – social, economic, environmental, infrastructural *inter alia* – that communities need to be resilient (Kirmayer et al. 2009, Madsen & O'Mullan 2016). In this work, social capital, or the networks and relationships within communities that can be drawn upon during emergencies, is frequently emphasised as key to community resilience as it fosters such qualities as 'connectedness,' 'engaged governance,' and 'community participation' (Madsen & O'Mullan 2016). More recent theorisations of resilience often emphasise the dynamic, fluid, interactive and relational nature of resilience (Darnhofer et al. 2016, Hooli 2015, Pauwelussen 2016). Rather than identifying the range, quality or quantity of capitals communities need, this research focusses on diverse processes and relationships between people and environments that enable communities to 'bounce back' and adapt (Darnhofer et al. 2016, Kirmayer et al. 2009). Critics have also noted the problematic nature of 'community' as the assumed holder or enactor of 'resilience' (Barrios 2014). Pauwelussen (2016), for instance, argues that the literature often assumes consensus and homogeneity within communities, and Hooli (2015) observes that issues of power and inequality within communities are seldom adequately addressed. Barrios (2014) further argues that communities are not stable and fixed entities, rather communities are identified and take on varying shapes and forms through their relationships with government agencies and NGOs. Finally, Madsen and O'Muller (2016, p. 286) highlight that resilience – whether it is seen as a process or as an effect of resources and capitals – 'is clearly not something that can be imposed on a community from a distant bureaucracy.' This suggests that alongside attention to relationships, processes and community abilities, building community resilience demands long-term and ongoing effort.

Measuring resilience

Resilience is difficult to measure in part because of the diverse range of definitions and interpretations, but also because of 'the multifaceted nature of resilience including the physical, social, institutional, economic and ecological dimensions' (Cutter et al. 2008, p.603). Measuring resilience has been a major research focus, reflecting the importance of resilience in public policy, and the need to provide guidance and direction for government agencies and communities. A wide range of measures have been developed, yet there is no one measurement that fits all circumstances or

contexts (Cutter 2016, Hegney et al. 2008, Maguire & Cartwright 2008, Resilience Alliance 2007). Measures of community resilience frequently include a combination factors, such as:

- Local infrastructure and buildings;
- Emergency/disaster polices and plans, and mitigation activities;
- Emergency management services, health services, and other related services;
- Social factors, such as education levels, healthcare access, economic status;
- Social connectedness; for instance, social capital, community cohesion, civic or non-profit organisations, community leadership; and
- Local knowledge and experiences of emergencies and disasters, and preparedness (Cutter 2016, McAslan 2011)

In essence, measurements seek to consider 'the complex interplay of environmental, social, governance, infrastructure and economic attributes associated with community resilience' (Teo et al. 2013, p.9).

Cutter (2016) identifies two main methodological approaches to measuring resilience. The first is the top-down approach which may use a range of indicators or score cards to evaluate the resilience of communities and direct government (or community) policies and investments. This approach allows ready comparisons between locations, can easily be operationalised at scale, and facilitates monitoring progress over time. Yet because top-down measurements inherently require 'reducing, simplifying, and quantifying complex, dynamic processes and constructs…' (Cox & Hamlen 2015, p. 222), they risk privileging quantifiable and universally applicable variables over the tricky, but crucial, social and cultural aspects of community resilience. In contrast, bottom-up approaches privilege local and contextual understandings of community (and) resilience and typically employ qualitative methods to generate rich or deep analyses of specific locations (Cutter 2016). Whilst this approach may not allow for easy comparisons between sites, it likely facilitates greater community participation and education. Indeed, for Cox and Hamlen (2015), bottom-up approaches reposition measurement as a process of dialogue, community engagement and empowerment. Recent work often draws on both quantitative and qualitative methods seeking to provide measurements of resilience that are both locally meaningful and understandable, and useful for managerial purposes. In Australia, for instance, The Torrens Resilience Institute has developed a tool to measure community resilience (Torrens Resilience Institute 2012). It draws on a model of resilience that identifies community connectedness, risk and vulnerability, planning and procedures and available resources as they key aspects that need to be considered. It also enables communities to assess their own disaster resilience using a scorecard, and is intended to both measure and improve community resilience through

strengthening community understanding of risks and emergency/government services, and encouraging a sense of community and collective responsibility (Torrens Resilience Institute 2012). In sum, measuring resilience remains complex, reflecting both the diversity of interpretations of the term 'resilience,' and the varying approaches and purposes of measurement.

Indigenous perspectives on vulnerability and risk

Maru et al. (2014) discern two key narratives about (remote) Indigenous communities in relation to vulnerability and resilience: (1) Indigenous communities are more vulnerable to environmental hazards and change because of entrenched inequalities, marginalisation and disadvantage; and (2) Indigenous communities are more resilient because of their historical experiences, knowledges and community relationships/networks. Both narratives generate deficient and problematic understandings of both Indigenous communities and environmental hazards and changes, and can be used to justify top-down interventions, as well as reduced governmental responsibility (Maru et al 2014). In this context, it is particularly important to engage with Indigenous perspectives of vulnerability and risk.

An emerging body of literature highlights two key issues in regard to Indigenous perspectives and understandings of vulnerability and risk (Howitt 2012, Miller & Davidson-Hunt 2013, Petheram et al. 2010). Firstly, authors argue for more nuanced understandings of the current status quo in Indigenous communities. This includes an understanding of contemporary governance systems whereby remote Indigenous communities are subject to centralised policy-making (Maru et al 2014), and perhaps more importantly, of historical contexts that mean that 'in many Indigenous settings, everyday life proceeds in a constant state of emergency' (Howitt et al 2012, p. 55) and that contemporary 'local socio-ecosystems are not in equilibrium' (Bardsley & Wiseman 2012, p. 721). This is significant as much theoretical work on vulnerability and resilience problematically treats current norms as the equilibrium to be maintained. Ellemor (2005, p.5), thus, calls for critical reflection on 'how much we really understand about what is "normal"' in remote Indigenous contexts to better understand risks, vulnerabilities and appropriate interventions. In addition, the problematic nature of the current status quo may direct local concern to contemporary issues, rather than future ecological changes or risks. For instance, in a recent case study examining Yolŋu perspectives of climate change and adaptation in northeast Arnhem Land, participants highlighted that despite their concern about ecological changes, they were primarily worried about other issues affecting their community's general welfare. The authors stressed that 'the results suggest that strategies and policies are needed to strengthen adaptive capacity of communities to mitigate over-arching poverty and well-being issues, as well as respond to changes in climate' (Petheram et al. 2010, p.682). Academic formulations of risk,

vulnerability, and resilience, therefore need to be appropriately contextualised, rather than simply applied, to be meaningful in remote Indigenous communities.

Secondly, authors have highlighted differing worldviews and conceptions of 'risks' and 'hazards.' For instance, in the Australian context Howitt et al. (2012, p. 55) note that;

> For many Indigenous people, natural phenomena such as storms and cyclones are seasonal events and are regarded as manifestations of a cosmological order in which such events are anticipated and not reducible to external risks in any simplistic way…

Thus, developing locally-meaningful definitions of, and responses to, vulnerability and risk requires engaging with Indigenous worldviews and ontologies, and being particularly attentive to Indigenous conceptions of nonhuman agency (Miller & Davidson-Hunt 2013).

Indigenous perspectives on resilience

The conceptual frameworks and indicators developed for understanding and measuring resilience largely form part of a 'western' discourse which may not necessarily apply in cross-cultural settings such as remote northern Australia (Pretty 2011). Kirmayer et al. (2009, p.63) further note that:

> Unlike a disaster that disrupts or destroys existing infrastructure, many Aboriginal communities have undergone radical changes, displacements and reconfigurations in response to colonization and have had to improvise ways to cope with continuing marginalization and external control. As a result, rather than focusing on crisis responses to catastrophes, Aboriginal resilience must be considered in terms of the impact of structural violence, and interventions must take a long-term approach to rebuild, repair and revitalize community strengths and institutions.

Indigenous perspectives on community resilience (though this terminology may not necessarily be used), therefore, include a range of programs and issues outside the field of natural hazards. For instance, discussions of resilience can be found in a number of reports about successful practical projects such as the West Arnhem Land Fire Abatement Project and music and sports programs in Indigenous communities (e.g. Vallance and Cooke (2011) and Kennett and Kitchens (2009)).

There is also a growing body of literature relating to Indigenous livelihoods that supports the importance of diversified and local economies in aiding community resilience (Altman & Jordan 2008, Smyth 2012). A number of reports over the last ten years have highlighted the links between environmental health and human health (Berry 2009, Burgess et al. 2009, Campbell et al. 2011, Dekens 2007, Garnett et al. 2009, Price-Robertson & Knight 2012). In particular, the role of land management (and fire management) in building community resilience has been considered (Whitehead et al. 2008).

According to Burgess et al. (2009, p.567) 'greater Indigenous participation in caring for country activities is associated with significantly better health.' Campbell et al. (2011, p.87) identified 'substantial savings in the cost of primary health care of chronic disease.' These estimated savings are in addition to the market and non-market economic benefits of a healthier population and environmental benefits.

The Healthy Country, Healthy People project (Garnett & Sithole 2007) has explored the relationship between landscape health and Aboriginal health in northern Australia. According to the report;

> People taking part in customary and contemporary land and sea management practices, particularly those living in traditional homelands, were much healthier, including lower rates of diabetes and lower risks of cardiovascular disease. The landscape where ICNRM [Indigenous Cultural and Natural Resource Management] is practised was also in better condition according to several measures of landscape health (Garnett & Sithole 2007, p.iv).

A recent report of the Culture is Life campaign entitled *The Elders' Report into Preventing Indigenous Self-harm & Youth Suicide* considers the importance of young people learning how to live on country and having access to traditional knowledge and culture to strengthen and reinforce a positive sense of identity. Themes such as community empowerment, the strengthening of cultural identity, maintenance of Indigenous languages, culturally appropriate employment, bi-cultural education and returning to country were highlighted by the contributors of the above report (Gooda & Dudgeon 2014).

As can be seen from the above examples, these perspectives on Indigenous community resilience do not consider the notion of community resilience to 'natural' hazards per se, but consider community resilience to hazards more broadly and focus on existing strengths and capabilities. This aligns somewhat with research on resilience in relation to natural hazards which highlights the value of existing capabilities of Indigenous communities, such as knowledge of the environment and local hazards, the ability to cope and ability to access help from outside, in addition to the importance of local/traditional knowledge (in terms of understandings of risk, hazards, and coping strategies) (e.g., Leonard et al. 2013, McLachlan 2003, Petheram et al. 2010). Authors have also noted the importance of engaging with local Indigenous understandings of resilience to achieve common goals, develop safer communities, and appropriate emergency management policies and practices (Ellemor 2005, Miller & Davidson-Hunt 2013, Petheram et al. 2014).

Enhancing community resilience

Although community resilience – particularly the social aspects of this concept – cannot be imposed or achieved solely through government policies and interventions, Cutter et al. (2010, p.2) do suggest that aspects of community resilience 'can be fostered through interventions and policies, which in turn help build and enhance a community's ability to respond and recover from disasters.' Work at an international scale highlights the importance of 'ownership, capacity and connection' to enhancing community resilience (World Resources Institute 2008), and the role of local knowledges in responding to natural hazards (International Strategy for Disaster Reduction (UN/ISDR) 2008). The International Union for Conservation of Nature and Natural Resources (Macchi 2008) suggests that improving Indigenous resilience (in relation to climate change) should involve recognition of Indigenous adaptation strategies and knowledges, and collaboration between scientists and Indigenous peoples, alongside policies that secure Indigenous rights, infrastructural improvements, and support for livelihood diversification. Thus, enhancing community resilience involves a combination of practical policy and investment measures with recognition and acknowledgement of Indigenous knowledges, perspectives and relationships with particular places. Recent research further emphasises the importance of social networks and people-place connections, collaborative and social learning alongside recognition of local/traditional knowledges, strong local leadership and engaged governance, and relationships between emergency services and communities (Lopez-Marrero & Tschakert 2011, Ross et al. 2010, White et al. 2014). Notably, each of these themes directs attention and efforts to the local scale, to extant local strengths and capacities, and to collaborative and participatory approaches. The following sections will explore each of these topics in turn with particular attention to research with Indigenous communities in northern Australia.

Social capital

Social capital is widely and frequently identified as an important aspect of community resilience in disaster recovery more broadly (Marín et al. 2015). The concept was developed primarily by sociologists and, like resilience, is variously interpreted. Its use in studies of community resilience and hazard management often draws heavily on Putnam's work, through which social capital is positioned as a collective rather than a personal good (Koniordos 2008). Recent interest in social capital reflects a shift in natural hazards and disaster research from focusing on buildings and physical infrastructure to social infrastructure (Pfefferbaum et al. 2015), and from risk perception to social connections and collective interests (Lo et al. 2015). In essence, it shows 'an acknowledgement on the part of disaster

researchers of the importance of social relations among people in the weathering and mitigation of disasters' (Barrios 2014, p.332).

In resilience research, three main types of social capital are identified: (i) bonding social capital among community members which is based on such qualities as trust and shared values; (ii) bridging social capital that links different groups within communities, and different communities; and (iii) linking social capital through which communities access formal or higher-level organisations (e.g., government agencies or NGOs) (Bihari & Ryan 2012, Marín et al. 2015, Petzold 2015, Pfefferbaum et al. 2015). It is argued that these social relationships and networks enable collective action, knowledge sharing, learning and adaptation, and consequently enable communities to be more resilient (Petzold 2015). Authors caution, though, that strong social capital is not inherently positive and helpful. For instance, high levels of bonding social capital among particular groups in communities may mask the social exclusion of others, and communities may have strong bonding and bridging social capital, but could still be isolated from organisations whose resources and support is needed in a disaster (Lo et al. 2015, Marín et al. 2015, Petzold 2015).

Recent interest in the role of social capital in community resilience both reflects and furthers a shift from top-down management of natural hazards towards collaborative and participatory approaches to disaster management and adaptation (Bihari & Ryan 2012, Lo et al. 2015, Pfefferbaum et al. 2015). It also directs attention to the local scale, with an increasing number of policy measures that seek to enhance and enable social capital through active participation and community-level interaction (Pfefferbaum et al. 2015). In this way, communities are increasingly being repositioned as key resources or agents in responding natural hazards, rather than as passive recipients of government services (Murphy 2007).

The importance and strength of social capital in Indigenous communities has been widely discussed, particularly in relation to issues that stem from colonial dispossession and violence, and contemporary poverty and marginalisation (see, for example, Kirmayer et al. 2009, Tousignant & Sioui 2009). Indeed, the strength of these social ties and bonds of Indigenous communities contributes to narratives of Indigenous resilience to natural hazards (Maru et al. 2014). Yet as Hunter (2004) notes, uncritical application of 'social capital' to Indigenous contexts risks cross-cultural misinterpretation and ahistorical analyses. In particular, colonial and contemporary government policies often work to undermine the very kinship, family and cultural ties that many posit as integral to strong social capital in Indigenous communities (Howitt et al. 2012, Hunter 2004). In Australia, these include previous eras of forced dislocations of people from their lands and families, and contemporary government policies

that compel relocation from homelands to townships and regional centres for financial efficiency and service delivery (Howitt et al. 2012), as well as the pervasive role of the state and market in shaping contemporary Indigenous life (Hunter 2004). In addition, while such factors as shared values and beliefs, kinship and reciprocity may promote strong (bonding) social capital within Indigenous communities, this network may not link (well) with 'mainstream' or formal organisations (Hunter 2004). Such disconnects perhaps evince the continued problematic relationship between government policy initiatives and Indigenous cultural values, yet also likely reflect historical mistrust.

In summary, recent research indicates the importance of social relationships and networks to community resilience, and generates policy attention to ensuring active, local-level participation and interaction. Although many authors have noted 'bonding' social capital that stems from kinship, shared values, and reciprocity as a key strength of Indigenous communities, 'linking' social capital that connects communities with external organisations and resources is arguably more problematic. Further, market or state incursions that reorganise daily life and relationships may impede/disrupt activities and relationships that sustain strong social capital in Indigenous communities. This suggests the potential utility of research and activities that support and enhance social capital in townships or regional centres, alongside the strengthening of links between Indigenous communities and government agencies.

Local/Indigenous knowledges

In Australia and other nations, scientists and government agencies have typically determined strategies for and responses to risks and natural hazards. This emphasis on scientific knowledge and government-led action positions communities as clients or passive recipients of aid, and marginalises local and traditional knowledge of natural hazards (Dekens 2007, Hilhorst et al. 2015, Mercer et al. 2007, Pretty 2011). Recent work highlights the importance and value of local/traditional knowledges; this could include such aspects as local knowledge of preparing for disasters, observing changing environmental conditions, communicating about risks and hazards, communicating during disasters, and adapting in response to hazards (Dekens 2007). This recognition emphasises three key aspects of local and traditional knowledges. Firstly, Indigenous knowledges are widely recognised as long-standing, time-tested strategies that stem from place-based knowledge and cultures, and close relationships between Indigenous societies and their environments (Hilhorst et al. 2015, Pretty 2011). Indeed, many authors have described rich and long-standing strategies for natural hazards in Indigenous communities (Ellemor 2005). Yet celebrating Indigenous knowledges as traditional and ecologically wise risks treating these knowledges as a static body of knowledge (unlike science which

is continually updated), and may invite problematic narratives that variously romanticise Indigenous knowledges without regard for historical contexts, colonial disruptions, or contemporary ambitions, or that position Indigenous knowledges as vulnerable and in need of protection (Haughton et al. 2015, Hilhorst et al. 2015).

Secondly, local and Indigenous knowledges are often recognised as underpinning and strengthening extant community resilience. For instance, in research with remote Indigenous communities in the Gulf of Carpentaria, McLachlan (2003, p.12) notes that

> ...despite having the basic structure of their traditional culture dismantled by a foreign religious influence, the people have managed to maintain important traits of original Lardil culture. The strategy to survive in a cyclone prone area, is one such ability that has been passed down through generations. A vital part of their natural hazard management process, is the people's resilience. The capacity to adapt to the island's natural environment and the climatic conditions has been instilled in the Lardil lifestyle and may be seen as an important factor in their ability to adapt to western culture. The skill used to establish an environmental hazard strategy, and incorporating it into helping their traditional culture survive western influences, indicates Lardil resilience, which is one of many issues requiring further investigation.

Many authors, therefore, suggest that the marginalisation of local knowledges in disaster management both demonstrates the failure of state agencies to recognise local capacities and strengths and increases Indigenous vulnerability (Ellemor 2005, Hilhorst et al. 2015, Rumbach & Foley 2014). Drawing on research in American Samoa, Rumbach and Foley (2014) observe that most funding for tsunami preparation and hazard management goes to formal institutions, but during and after the tsunami in 2009 the disaster response and recovery in villages was effectively led by Indigenous institutions using Indigenous knowledges precisely because these institutions and knowledges are embedded in daily life. They argue that community resilience could be strengthened through recognising and supporting Indigenous strategies, rather than excluding them from disaster management.

Thirdly, authors have emphasised that local worldviews and knowledges influence how communities understand and respond to hazards, and consequently what kinds of interventions and adaptation strategies are culturally appropriate and locally relevant (Roder et al. 2015). Leonard et al. (2013), for instance, explored the issue of climate change adaptation with the Miriwoong people from the east Kimberley region, and found that perceptions and explanations of environmental changes are often driven by knowledge of their traditional lands and local developments, and that Indigenous knowledge 'serves to provide standards that guide individuals' decisions, choices and attitudes' (p. 630). They further note that Indigenous worldviews and values will shape climate change adaptation strategies and the acceptability of, and responses to, any externally-determined adaptation efforts (Leonard et

al. 2013). Drawing on research with an Indigenous community on South Goulburn Island, Petheram et al. (2014) emphasise the importance of involving people in decision-making for climate change adaptation, and suggest that any strategies 'will need to seriously take into account how Indigenous voice can be integrated into decision-making – in ways that acknowledge often unrecognized threats to remote communities, such as external political and economic factors' (p. 349). They also found that participants emphasised respect for both scientific and Indigenous knowledges and the importance of engaging with both knowledge sets.

Taken together, these three narratives about Indigenous/local knowledges put forward a strong case for greater recognition and support for Indigenous knowledges in natural hazards management, and there are increasing efforts to integrate scientific and local knowledges and co-produce knowledge to design culturally and locally appropriate responses that strengthen, rather than undermine, resilience in Indigenous communities.

Local governance and Governments

Governance is often highlighted as a key aspect of community resilience. In discussions of Indigenous community resilience, the presence of local, culturally-embedded institutions and governance structures is often cited as a key aspect of extant Indigenous resilience (Hunter 2004, Maru et al. 2014, Rumbach & Foley 2014). This acknowledgement of the value and importance of Indigenous governance, alongside recognition of social capital and Indigenous knowledges, furthers the recent interest in local capacities and strengths of Indigenous communities.

Notably, in Australia, recent work suggests that for many Indigenous communities vulnerability is an effect of being governed (Maru et al. 2014). Although Indigenous governance systems in Australia are typically grounded in local networks of kinship, formal government can impose policies and strategies from afar, and by so doing, entrench narratives of Indigenous vulnerability and disadvantage (Howitt et al. 2012). For example, a recent case study by Petheram et al. (2010) in Northeast Arnhem Land considered Indigenous perspectives on climate change and adaptation. It found that:

> Participants believed that major constraints to strengthening adaptive capacity had external origins, at regional, state and federal levels. Examples are poor communication and engagement, top-down institutional processes that allow little Indigenous voice, and lack of recognition of Indigenous culture and practices (Petheram et al. 2010, p.681).

This suggests the importance of relationship building between Indigenous governance structures and formal government bodies, and efforts to move beyond top-down, prescriptive approaches to risk

management and adaptation (Howitt et al. 2012). Indeed, Veland et al. (2013) examine the successful evacuation of the remote Indigenous community of Warruwi (Goulbourn Island) in the Northern Territory during cyclone Monica, and argue that recognising and respecting local Indigenous governance needs to be prioritised so that formal government agencies strengthen and support Indigenous institutions. This aligns well with Rumbach and Foley (2014), who use the tsunami in American Samoa to point out that locally and culturally embedded institutions are both active and effective during disasters, and therefore formal institutions should be aligned with Indigenous ones. In essence, this body of research highlights local Indigenous governance as an integral and interlinking aspect of Indigenous community resilience, and the need for formal government agencies to work with, not over, Indigenous governance structures.

The relationship between emergency management services and Indigenous communities

In traditional emergency and disaster management, governments are positioned as having a lead and active role in mitigating and responding to natural hazards. Current emphasis on community resilience calls for a shift towards governments taking a 'facilitative role…in aiding and building resilient communities' (Teo et al. 2013, p.5). Consequently, the importance of relationships between emergency management services and Indigenous communities is widely recognised in both public policy documents and academic literature. For instance, in a review of the National Strategy for Disaster Resilience, the Council of Australian Governments states that for remote Indigenous communities:

> [Disaster management] needs to recognise and address the gaps and cultural differences between systems and structures predicated on an assumed level of community capacity that does not necessarily exist within remote Indigenous communities, outstations or homelands, particularly in relation to:
>
> - critical population mass;
> - basic and serviceable community infrastructure;
> - accessible and basic community services;
> - sustainable market economies;
> - levels of literacy and numeracy; and
> - community governance arrangements.
>
> It also needs to be recognised that improved disaster management outcomes in remote Indigenous communities will only be achieved if the associated systems and structures are informed by the cultural needs and perspectives of those communities. Systems and structures must be flexible, responsive to and accommodate the values, priorities and practices of Indigenous Australians and their communities. The provision of ongoing education and support to members of

> these communities is necessary to ensure successful achievement of this outcome (COAG 2011, p.1).

Such policy directives reveal an awareness of the need for attention to local cultural perspectives for effective disaster management in remote Indigenous settings, and also stress the radical differences (or gaps) with mainstream Australia. Recent research evokes the complexity of bridging these differences to build relationships between emergency services and Indigenous communities and devise appropriate procedures. Authors have noted that contemporary efforts at relationship building between governments and Indigenous communities confront historical legacies from colonisation, entrenched mistrust, and the effects of current interventions and policies (Ellemor 2005, Howitt 2012, Howitt et al. 2012, Veland et al. 2013). Howitt et al. (2012, p.55), therefore, suggest that:

> There is a deeper challenge for service agencies to engage with indigenous worldviews and negotiate what is appropriate and effective in building local capacity to respond and building resilience to support recovery in emergency settings. It is also essential to recognise that in many indigenous settings, everyday life proceeds in a constant state of emergency because of the historical context in which people find themselves.

Arguably, such an approach requires genuine recognition and engagement with local capacities, knowledges, and understandings of risks and resilience, alongside a commitment to long-term and respectful partnerships with Indigenous communities, rather than a reproduction or modification of mainstream service provision (Ellemor 2005, Howitt et al. 2012, Miller & Davidson-Hunt 2013).

Conclusion

This review has explored research on community resilience in relation to natural hazards with a particular focus on remote and Indigenous communities in northern Australia. Community resilience is a complex concept that is variously defined and applied, but typically integrates social, environmental, economic, governance and infrastructural aspects. Recent work on measuring and enhancing community resilience tends to direct attention to the local scale in order to better recognise and utilise local knowledges, governance systems, and capacities. This is aligned with a shift towards participatory and collaborative approaches to defining, measuring and enhancing community resilience.

Recent work in remote Indigenous communities in northern Australia highlights the importance of an in-depth understanding of local, historical contexts, and the ongoing impacts of state interventions. Research also highlights the critical nature of Indigenous knowledges, cultures, and governance to community resilience during natural hazards, and therefore, the importance of ensuring that government/mainstream services recognise, support, and complement Indigenous structures and approaches. This work also points towards a need for culturally and locally appropriate measures and strategies for community resilience and natural hazards management, and for relationships between formal/mainstream services and Indigenous communities that engender mutual understanding of risks and hazards, expectations, and capacities.

References

Altman, J. and K. Jordan (2008). Impact of Climate Change on Indigenous Australians: Submission to the Garnaut Climate Change Review. CAEPR Topical Issue 3/2008. Canberra, CAEPR.

Bankoff, G. (2001). "Rendering the world unsafe: 'Vulnerability' as western discourse." Disasters **25**(1): 19-35.

Bardsley, D. K. and N. D. Wiseman (2012). "Climate change vulnerability and social development for remote indigenous communities of South Australia." Global Environmental Change **22**(3): 713-723.

Barrios, R. E. (2014). "'Here, I'm not at ease': anthropological perspectives on community resilience." Disasters **38**(2): 329-350.

Berkes, F. and H. Ross (2013). "Community Resilience: Toward an Integrated Approach." Society and Natural Resources **26**(1): 5-20.

Berry, H. (2009). "Pearl in the oyster: Climate change as a mental health opportunity." Australasian Psychiatry **17**(6): 453-456.

Bessen Consulting Services and NAILSMA (2009). Performance Story Report Evaluation of Investment in the Dugong and Marine Turtle Project. NAILSMA Knowledge Series. Darwin, NAILSMA.

Bihari, M. and R. Ryan (2012). "Influence of social capital on community preparedness for wildfires." Landscape and Urban Planning **106**(3): 253-261.

Brown, E. D. and B. K. Williams (2015). "Resilience and Resource Management." Environ Manage **56**(6): 1416-1427.

Burgess, C. P., F. H. Johnston, H. L. Berry, J. McDonnell, D. Yibarbuk, C. Gunabarra, A. Mileran and R. S. Bailie (2009). "Healthy country, healthy people: The relationship between Indigenous health status and "caring for country"." Medical Journal of Australia **190**(10): 567-572.

Campbell, D., C. P. Burgess, S. T. Garnett and J. Wakerman (2011). "Potential primary health care savings for chronic disease care associated with Australian Aboriginal involvement in land management." Health Policy **99**(1): 83-89.

COAG (2009). National Strategy for Disaster Resilience: Building our nation's resilience to disasters, COAG.

COAG (2011). Review of Natural Disaster Relief and Mitigation Arrangements: Improving Emergency Management Outcomes for Remote Indigenous Communities in Northern Australia.

Comfort, L. K., A. Boin and C. C. Demchak, Eds. (2010). Designing Resilience: Preparing for Extreme Events. Pittsburgh, University of Pittsburgh Press.

Cox, R. S. and M. Hamlen (2015). "Community Disaster Resilience and the Rural Resilience Index." American Behavioral Scientist **59**(2): 220-237.

Cutter, S., L. (2016). "The landscape of disaster resilience indicators in the USA." Natural Hazards **80**(2): 741-758.

Cutter, S., L. Barnes, M. Berry, C. Burton, E. Evans, E. Tate and J. Webb (2008). "A place-based model for understanding community resilience to natural disasters." Global Environmental Change **18**(4): 598-606.

Cutter, S., L., C. Burton, G. and C. Emrich, T. (2010). "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management **7**(1).

Darnhofer, I., C. Lamine, A. Strauss and M. Navarrete (2016). "The resilience of family farms: Towards a relational approach." Journal of Rural Studies **44**: 111-122.

Dekens, J. (2007). Local knowledge for disaster preparedness: A literature review. Kathmandu, International Centre for Integrated Mountain Development.

Desert Knowledge Australia. (2009). "Revitalising Remote Australia: Remote Focus Prospectus." Retrieved 26.04.16, from http://www.desertknowledge.com.au/getattachment/781f75f9-2dfb-4a1d-bcee-abd6392b9baa/remoteFOCUS-prospectus.aspx.

Ellemor, H. (2005). "Reconsidering emergency management and indigenous communities in Australia." Environmental Hazards **6**(1): 1-7.

Garnett, S. T. and B. Sithole (2007). Sustainable Northern Landscapes and the Nexus with Indigenous Health: Healthy Country, Healthy People. Canberra, Land & Water Australia.

Garnett, S. T., B. Sithole, P. J. Whitehead, C. P. Burgess, F. H. Johnston and T. Lea (2009). "Healthy country, healthy people: Policy implications of links between indigenous human health and environmental condition in tropical Australia." Australian Journal of Public Administration **68**(1): 53-66.

Gawith, D., A. Daigneault and P. Brown (2016). "Does community resilience mitigate loss and damage from climate related disasters? Evidence based on survey data." Journal of Environmental Planning and Management: 1-22.

Gooda, M. and P. Dudgeon (2014). The Elders' report into preventing Indigenous self-harm and youth suicide, People, Culture, Environment.

Haughton, G., G. Bankoff and T. J Coulthard (2015). "In search of 'lost' knowledge and outsourced expertise in flood risk management." Transactions of the Institute of British Geographers **40**(3): 375-386.

Hegney, D., H. Ross, P. Baker, C. Rogers-Clark, C. King, E. Buikstra, A. Watson-Luke, K. McLachlan and L. Stallard (2008). Building Resilience in Rural Communities Toolkit. Toowoomba, Queensland, The University of Queensland, University of Southern Queensland,.

Hilhorst, D., J. Baart, G. van der Haar and F. M. Leeftink (2015). "Is disaster "normal" for indigenous people? Indigenous knowledge and coping practices." Disaster Prevention and Management: An International Journal **24**(4): 506-522.

Hooli, L. J. (2015). "Resilience of the poorest: coping strategies and indigenous knowledge of living with the floods in Northern Namibia." Regional Environmental Change **16**(3): 695-707.

Howitt, R. (2012). "Sustainable Indigenous futures in remote Indigenous areas: Relationships, processes and failed State approaches." GeoJournal **77**(6): 817-828.

Howitt, R., O. Havnen and S. Veland (2012). "Natural and Unnatural Disasters: Responding with Respect for Indigenous Rights and Knowledges." Geographical Research **50**(1): 47-59.

Hunter, B. (2004). <2004_DP261.pdf>.

International Strategy for Disaster Reduction (UN/ISDR) (2008). Indigenous Knowledge for Disaster Risk Reduction: Good Practices and Lessons Learned from Experiences in the Asia-Pacific Region.

ISDR. (2005). "The Hyogo Framework for Action." Retrieved 26.04.16, from http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf.

Kennett, R. and J. Kitchens (2009). Dugong and Marine Turtle Project; Project Final Report to National Heritage Trust Regional Competitive Component. Darwin, North Australia Indigenous Land and Sea Management Alliance.

King, D. (2001). "Uses and limitations of socioeconomic indicators of community vulnerability to natural hazards: Data and disasters in Northern Australia." Natural Hazards **24**(2): 147-156.

Kirmayer, L. J., M. Sehdev, R. Whitley, S. F. Dandeneau and C. Isaac (2009). "Community Resilience: Models, Metaphors and Measures." Journal of Aboriginal Health **5**(1): 62-117.

Koniordos, S. M. (2008). "Social capital contested." International Review of Sociology **18**(2): 317-337.

Leonard, S., M. Parsons, K. Olawsky and F. Kofod (2013). "The role of culture and traditional knowledge in climate change adaptation: Insights from East Kimberley, Australia." Global Environmental Change **23**(3): 623-632.

Leykin, D., M. Lahad, R. Cohen, A. Goldberg and L. Aharonson-Daniel (2016). "The dynamics of community resilience between routine and emergency situations." International Journal of Disaster Risk Reduction **15**: 125-131.

Lo, A. Y., B. Xu, F. K. S. Chan and R. Su (2015). "Social capital and community preparation for urban flooding in China." Applied Geography **64**: 1-11.

Lopez-Marrero, T. and P. Tschakert (2011). "From theory to practice: building more resilient communities in flood-prone areas." Environment and Urbanization **23**(1): 229-249.

Macchi, M. (2008). Indigenous and Traditional Peoples and Climate Change: Issues Paper International Union for the Conservation of Nature.

Madsen, W. and C. O'Mullan (2016). "Perceptions of Community Resilience after Natural Disaster in a Rural Australian Town." Journal of Community Psychology **44**(3): 277-292.

Maguire, B. and S. Cartwright (2008). Assessing a community's capacity to manage change: A resilience approach to social assessment. Canberra, Bureau of Rural Sciences.

Marín, A., Ö. Bodin, S. Gelcich and B. Crona (2015). "Social capital in post-disaster recovery trajectories: Insights from a longitudinal study of tsunami-impacted small-scale fisher organizations in Chile." Global Environmental Change **35**: 450-462.

Maru, Y. T., M. Stafford Smith, A. Sparrow, P. F. Pinho and O. P. Dube (2014). "A linked vulnerability and resilience framework for adaptation pathways in remote disadvantaged communities." Global Environmental Change **28**: 337-350.

McAslan, A. (2011). "Community resilience: Understanding the concept and its application." Retrieved 03.05.16, from https://www.flinders.edu.au/centres-files/TRI/pdfs/understanding%20community%20resilience.pdf.

McLachlan, E. (2003). "Seagulls on the Airstrip: Indigenous Perspectives on Cyclone Vulnerability Awareness and Mitigation Strategies for Remote Communities in the Gulf of Carpentaria." Australian Journal of Emergency Management **18**(1): 4-13.

Mercer, J., D. Domineyhowes, I. Kelman and K. Lloyd (2007). "The potential for combining indigenous and western knowledge in reducing vulnerability to environmental hazards in small island developing states." Environmental Hazards **7**(4): 245-256.

Miller, A. M. and I. Davidson-Hunt (2013). "Agency and Resilience: Teachings of Pikangikum First Nation Elders, Northwestern Ontario." Ecology and Society **18**(3).

Murphy, B. L. (2007). "Locating social capital in resilient community-level emergency management." Natural Hazards **41**(2): 297-315.

Pauwelussen, A. (2016). "Community as network: exploring a relational approach to social resilience in coastal Indonesia." Maritime Studies **15**(1).

Petheram, L., N. Stacey and A. Fleming (2014). "Future sea changes: Indigenous women's preferences for adaptation to climate change on South Goulburn Island, Northern Territory (Australia)." Climate and Development **7**(4): 339-352.

Petheram, L., K. K. Zander, B. M. Campbell, C. High and N. Stacey (2010). "'Strange changes': Indigenous perspectives of climate change and adaptation in NE Arnhem Land (Australia)." Global Environmental Change **20**(4): 681-692.

Petzold, J. (2015). "Limitations and opportunities of social capital for adaptation to climate change: a case study on the Isles of Scilly." The Geographical Journal: n/a-n/a.

Pfefferbaum, B., R. L. Van Horn and R. L. Pfefferbaum (2015). "A Conceptual Framework to Enhance Community Resilience Using Social Capital." Clinical Social Work Journal.

Pretty, J. (2011). "Interdisciplinary progress in approaches to address social-ecological and ecocultural systems." Environmental Conservation **38**(02): 127-139.

Price-Robertson, R. and K. Knight (2012). Natural disasters and community resilience: A framework for support. Melbourne, Australian Institute of Family Studies.

Resilience Alliance. (2007). "Assessing and managing resilience in social-ecological systems: A practitioners workbook." Retrieved 03.05.16, from http://www.sustentabilidad.uai.edu.ar/pdf/cs/practitioner_workbook_1.pdf.

Roder, G., T. Ruljigaljig, C.-W. Lin and P. Tarolli (2015). "Natural hazards knowledge and risk perception of Wujie indigenous community in Taiwan." Natural Hazards **81**(1): 641-662.

Ross, H., M. Cuthill, K. Maclean, D. Jansen and B. Witt (2010). Understanding, Enhancing and Managing for Social Resilience at the Regional Scale: Opportunities in North

Queensland. Cairns, Marine and Tropical Sciences Research Facility, Reef and Rainforest Research Centre Limited.

Rumbach, A. and D. Foley (2014). "Indigenous Institutions and Their Role in Disaster Risk Reduction and Resilience: Evidence from the 2009 Tsunami in American Samoa." Ecology and Society **19**(1).

Singh-Peterson, L., P. Salmon, C. Baldwin and N. Goode (2015). "Deconstructing the concept of shared responsibility for disaster resilience: a Sunshine Coast case study, Australia." Natural Hazards **79**(2): 755-774.

Smyth, D. (2012). Best practice recognition and engagement of Aboriginal Traditional Owners and other Indigenous people in the use and management of Victoria's marine protected areas: A Discussion Paper for the Victorian Environment Assessment Council. Queensland, Smyth and Bahrdt Consultants.

Teo, M., A. Goonetilleke and A. M. Ziyanth (2013). An integrated framework for assessing community resilience in disaster management. Proceedings of the 9th Annual International Conference of the International Institute for Infrastructure Renewal and Reconstruction, Risk-informed Disaster Management: Planning for Response, Recovery and Resilience, Brisbane, Queensland University of Technology,.

Torrens Resilience Institute (2012). Developing a model and tool to measure community disaster resilience. Adelaide, Flinders University,.

Tousignant, M. and N. Sioui (2009). "Resilience and Aboriginal Communities in Crisis: Theory and Interventions." Journal of Aboriginal Health November: 43-61.

Vallance, G. and P. Cooke (2011). Warddeken Land Management Limited: Annual Report 2010-2011, CAEPR.

Veland, S., R. Howitt, D. Dominey-Howes, F. Thomalla and D. Houston (2013). "Procedural vulnerability: Understanding environmental change in a remote indigenous community." Global Environmental Change **23**(1): 314-326.

White, R. K., W. C. Edwards, A. Farrar and M. J. Plodinec (2014). "A Practical Approach to Building Resilience in America's Communities." American Behavioral Scientist **59**(2): 200-219.

Whitehead, P. J., P. Purdon, J. Russell-Smith, P. M. Cooke and S. Sutton (2008). "The management of climate change through prescribed Savanna burning: Emerging contributions of indigenous people in Northern Australia." Public Administration and Development **28**(5): 374-385.

Wildavsky, A. (1988). Searching for Safety. New Jersey, Transaction Press.

World Resources Institute (2008). Roots of Resilience – Growing the Wealth of the Poor. Washington DC, United Nations Development Programme, United Nations Environment Programme.

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