

Rural People: Resilient Futures – Social vulnerability to climate change in rural contexts

A review of grey and academic literature for the Victorian Adaptation Sustainability (VAS) Partnership project 'Rural People: Resilient Futures'

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1 Introduction

This document summarises current knowledge on social vulnerability in the context of local resilience in rural areas, based on a review of peer-reviewed and non-peer-reviewed academic and policy literature. The purpose of the review is to inform the implementation of the Rural People: Resilient Futures (RP:RF) project, funded by the Victorian Adaptation and Sustainability Partnership (VASP) and implemented through collaboration between the Southern Grampians Shire Council, the Southern Grampians and Glenelg Primary Care Partnership, and RMIT University's Centre for Urban Research.

The approach taken for this review is to develop a list of key concepts relevant for the RP:RF project and then interrogate and summarise existing literature on each of these concepts in light of the project aims and objectives. The key concepts that guided the review were:

- Vulnerability (including social vulnerability, vulnerability to climate change)
- Resilience (including rural resilience)
- Climate change adaptation.

Combined academic database searches and Google searches (using key words) were used to generate a list of publications for the review.

2 What is vulnerability?

Over the past decades, the concept of vulnerability has made its way into the standard vocabulary of many disciplines and professions. The Oxford-English Dictionary defines vulnerability in association to the state of being vulnerable, from late 17th Century origins relating to 'wounding' or being susceptible of receiving wounds of physical injury (Anon 2014b). Merriam-Webster Dictionary's definition defines the core adjective as being "easily hurt or harmed physically, mentally or emotionally", with most associations to a human state of vulnerability (Anon 2014a).

2.1 Vulnerability in the context of socio-ecological systems

Historically discussed throughout a number of disciplines from economics and anthropology to psychology and engineering, the term has a generalised usage in many contexts, making it difficult to define. In the study of human-environmental relationships, the term vulnerability holds common, though contested meaning (Adger, 2006). Applied to this context, the concept became popular in the 1980s in human ecology and geography, drawing from theories of social change and decision-making in relation to socio-ecological systems (Chambers 1989; Bohle 2007; Turner, R E Kasperson, Matson, et al. 2003a).

Since the 1990s, scholars from various disciplines have argued that any distinction between social and ecological systems is arbitrary, given their intrinsic connectedness and dynamic nature (Kasperson et al. 1988; Turner, Matson, et al. 2003). The focus on social-ecological systems in many definitions of vulnerability reflects the idea that "human actions and social structures are integral to nature" (Adger, 2006, p. 268), highlighting that human social systems are inextricably linked with ecological systems and the services that they provide for human livelihoods and wellbeing. This vital link is one of the main reasons why human and social systems are inevitably exposed to environmental hazards (such as bushfires, floods, extreme weather etc.), which can cause damage to individuals, communities and human settlements.

Most applied definitions of vulnerability recognise social interdependence and its multi-causal aspects (Centre for Excellence in Child and Family Welfare Inc 2011), which infers that social systems are made up of multiple components that are mutually reliant on the function of another, and

therefore vulnerability cannot be caused by simply one stressor. It is this interconnectedness and dynamic nature of vulnerability that makes the meaning of the term somewhat fluid depending on the context of the system to which it is being discussed, particularly considering temporal, spatial and geographical influences (Susan L Cutter et al. 2003).

2.2 Defining socio-ecological vulnerability

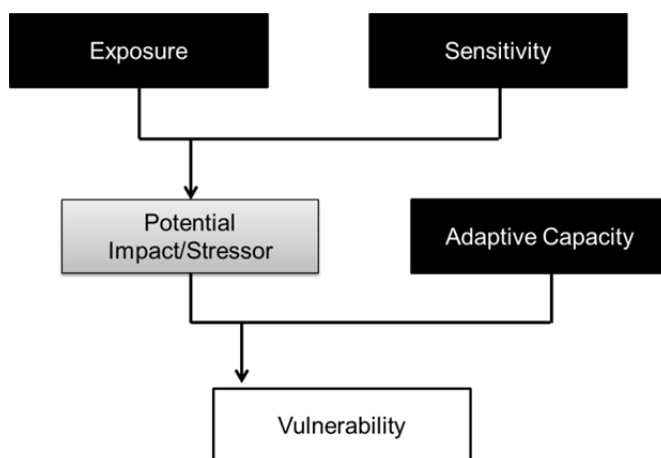
While there is still a lot of debate about the meaning and – more so – use of the term, a common characterisation of vulnerability has emerged as being **“constituted by components that include exposure and sensitivity to perturbations or external stresses, and the capacity to adapt”** (Adger, 2006, p. 270).

Here, vulnerability is understood as a dynamic state of a socio-ecological system, such as a particular plant community, a human settlement or a social community. The system experiences vulnerability due to the interplay of exposure, sensitivity and adaptive capacity:

- *Exposure* refers to a system being subject to experiencing external perturbations and stresses, such as a natural hazard or social unrest.
- *Sensitivity* refers to the system’s likelihood of being affected by these perturbations and stresses and the degree of these effects.
- *Adaptive capacity* refers to the system’s ability to respond to the changes and adjust its functioning to reduce sensitivity and/or exposure to stressors in the future.

This relationship is illustrated at Figure 1 below.

Figure 1: A framework for understanding vulnerability



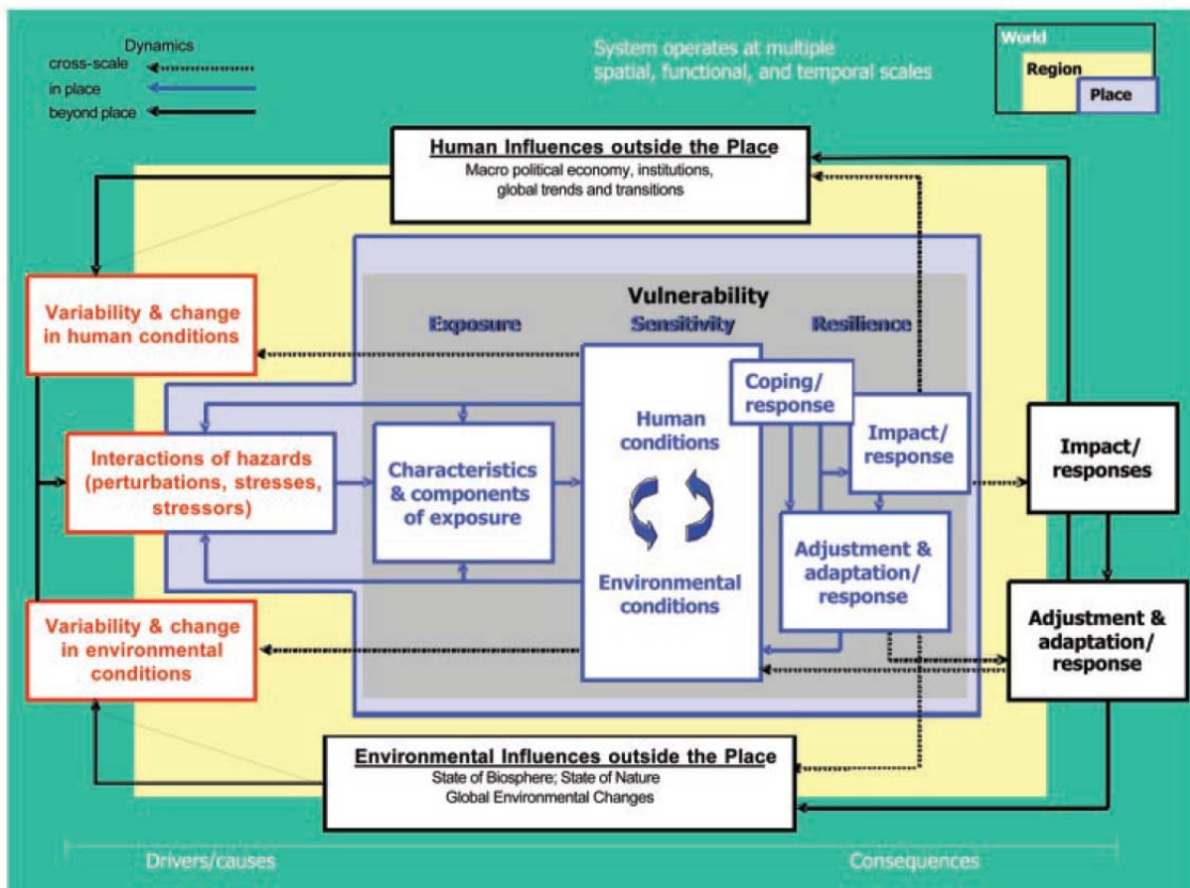
(Source: after Allen Consulting Group, 2005; IPCC, 2007; Barry Smit, Burton, Klein, Richard, & Wandel, 2000; Barry Smit & Wandel, 2006; Smith, Lynam, & Preston, 2010)

Turner et al.’s (2003b) provided a more nuanced framework for vulnerability analysis in the context of socio-ecological systems. This framework is particularly relevant in the context of climate change as it outlines the interplay of vulnerability and coupled human-environment systems (see Figure 2 below). Here, vulnerability rests largely within the condition and dynamics of the system’s exposure to hazards. This perspective is important in the

Key message:
 Vulnerability occurs at multiple spatial and temporal scales and is not a static state, which makes it complex to manage.

context of this research as it emphasises the nested, multi-scalar aspect at which interconnected human-environmental systems operate. The framework also highlights variability and change from human and environmental influences, and how they interact to become a hazard or stressor, which may have an influence on the different scales of the system in question. Following this framework, climate change can be considered an interaction of environmental and human influences, which results in non-linear impacts on human and environmental systems at various scales. Turner et al. also highlight the role of resilience, understood as the system’s ability to cope, respond and adapt to hazards.

Figure 2: Vulnerability framework with components of vulnerability identified and linked to factors within and beyond the system in question and operating at various scales



(Source: Turner, Kasperson, et al., 2003b: 8076)

The above two frameworks are among the most commonly used characterisations of the concept of vulnerability in the context of climate change research. They highlight that a simple definition of vulnerability that satisfies all possible applications is difficult to achieve. For this reasons, we have listed a number of alternative definitions in Table 1 below. The Table compares definitions of vulnerability by distinguishing between the ‘stressor’ and ‘system(s) of reference’ to which the definition is applied. All of these definitions have emerged from socio-ecological and climate change research.

Table 1: Definitions of vulnerability and their relevance

Definition & reference	System(s) in reference	Stressor	Relevance
“Vulnerability is a state of	Social &	Environmental	Implication of ‘state’ may

susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt” (Adger, 2006, p.265)	environmental systems	change	not consider full complexity of characteristics that influence a system’s vulnerability.
“Vulnerability is the degree to which a system, subsystem, or system component is likely to experience hardship due to exposure to a hazard, either a perturbation or stress/stressor” (Turner, Roger E Kasperson, Matson, et al. 2003)	Coupled human – environmental systems	Hazard	Considers scale (temporal and spatial) of a system well.
“The propensity of predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope or adapt” (Intergovernmental Panel on Climate Change (IPCC) 2014)	Generic	‘Harm’ - generic	Vague in its description of ‘adverse affects’ and elements that impact the vulnerability of the system in question.
“The degree to which a system is affected by or responsive to climatic stimuli” (Smit et al. 1999)	Generic	Climatic stressor	Hinged on the premise that vulnerability is essentially a state variable determined by the internal properties of a system
“The characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impacts of a natural hazard. Vulnerability involves a combination of factors that determine the degree to which someone’s life and livelihood are put at risk” (Wisner et al. 2003, p.11)	Coupled social-ecological systems	Natural disaster	High – vulnerability determined by multiple and interacting characteristics of a person (or group). Illustrates complexity well.

Source: Compiled by the authors using the sources given in the table.

3 Conceptualising and understanding social vulnerability

As with the term vulnerability, the concept of social vulnerability has been characterised in different ways. Boon (2013) note different attributes of the concept including gender (Morrow, 1997; Neumayer & Plumper, 2007; Zahran et al., 2008), race and ethnicity (Fothergill 2004; Peacock & Girard 1997) and measures of economic status such as income and poverty (Fothergill & Peek 2004; Vaughn 1995).

It is widely agreed that social vulnerability is not a static attribute of a system but is characterised by a host of complex social and economic factors, often associated with entitlements and access of individuals or groups to resources relative to the context in which these individuals, or groups sit (Adger & Kelly, 2001; Cutter et al., 2003).

In more colloquial terms, it can be argued that individuals or groups are socially vulnerable when they are exposed to stress (general) and they are likely to be unable to cope with that stress. The level of influence and the way that stress manifests itself on individuals or groups is often determined by different characteristics of the individual or group under stress. Cutter et al., (2003) take note of an emerging consensus within the social science community about some of the major influences or characteristics of social vulnerability. These include:

- lack of access to resources (including information, knowledge and technology);
- limited access to political power and representation;
- social capital, including social networks and connections;
- beliefs and customs;
- building stock and age;
- frail and physically limited individuals;
- and type and density of infrastructure and lifelines

(Cutter et al., 2003, p. 245 and Tierney, 2001; Wisner et al., 2003).

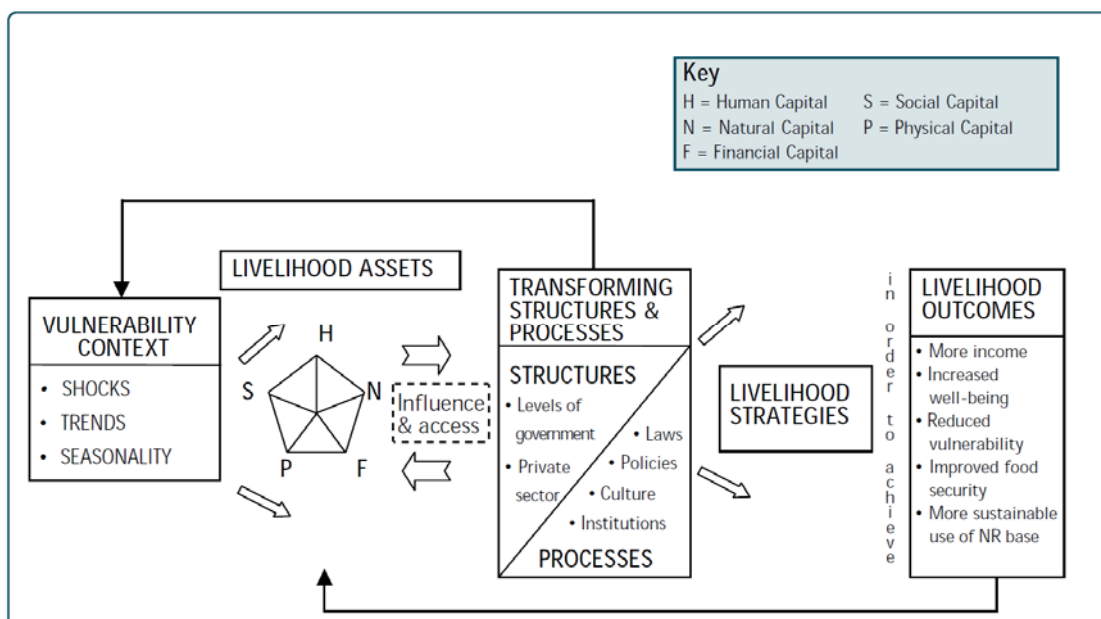
A similar, well established conceptualisation of social vulnerability considers vulnerability in the context of 'five capitals' that are vital for establishing and maintaining a livelihood (Ellis, 1999; Nelson et al., 2010). These capitals (illustrated in Figure 3) are:

- Human capital (labours and influences on the productivity of labour including education, skills and health),
- Social capital (claims on others by virtue of social relationship),
- Natural capital (land, water and biological resources),
- Physical capital (produced by economic activity including infrastructure, equipment and technology) and
- Financial capital (savings and credit),

(Ellis 1999; Nelson, Kocic, Crimp, Meinke, et al. 2010; Department for International Development 1999).

Each of the capitals can be considered 'livelihood assets' that are influenced by the social vulnerability 'context' of an individual or group.

Figure 3: Department for International Development's (1999) Sustainable Livelihood Guidance framework illustrating the five capitals of social vulnerability



This conceptualisation also considers institutional and market structures and processes at various scales that can influence each 'capital'. These transforming structures and processes can be formal (levels of government, laws, policies) or informal (community values, connections within the community) and hold influence at various scales of the system in question (Kelly & Adger 2000; Department for International Development 1999).

Although various definitions of social vulnerability have attempted to break down the complexity of the concept by discussing attributes and characteristics that may influence an individual's or group's exposure to stresses, in reality these characterisations are often rather confusing from a practitioner's point of view. The multitude of definitions and 'angles' taken on vulnerability highlight the fact that multiple – and interacting – factors influence the social vulnerability of an individual or group. Who is considered socially vulnerable, and why, is to a large extent context specific and related to the social, institutional and economic support structures and processes people have access to, both formal and informal.

In summary, social vulnerability can therefore be understood as a dynamic state experienced by an individual or group, who through various and interacting socio-economic characteristics, is susceptible to stresses that may leave them negatively affected when compared to someone in the same setting who does not experience these same socio-economic characteristics.

The following sections attempt to outline a more applied understanding of social vulnerability in a policy setting, where understanding of the term has real implications on the management of individuals and community wellbeing, rather than pondering its conceptualisation and origins.

3.1 The connection between social vulnerability and disadvantage

Socio-economic disadvantage is widely discussed and used in policy development and implementation at various scales (community, local government area, state, and national policy). In some regards, it can be considered a proxy for social vulnerability. The Victorian Council of Social Service (VCOSS) states that people who face disadvantage – those already experiencing hardship in some form – are more vulnerable to external stresses than groups who are not (VCOSS, 2014).

Socio-economic disadvantage has been attributed to groups or individuals in poverty, migrants, refugees, children, older people, people with disabilities, people who are homeless or in transient accommodation, and people living in poor quality housing. People who fall into these categories are considered 'socially vulnerable' to stresses or hazard. VCOSS stresses that such social vulnerability is related to many factors (resources, social support, mobility etc. as discussed earlier), and results of inhibitions in their ability to plan for, respond to, and recover from, stress or multiple stressors (VCOSS, 2014).

3.2 Measuring social vulnerability and disadvantage

Measuring social vulnerability and disadvantage is useful for understanding causes, tracking trends, and focusing funding support to manage the wellbeing of individuals and communities. Various methodologies exist to attempt this (Australian Bureau of Statistics, 2013; King & MacGregor, 2000; Nelson et al., 2010; Sherrieb et al., 2010), and investigating the basis of the associated indicators is an important step to understand how social vulnerability is being defined and applied.

For example, the Australian Bureau of Statistics Social-Economic Index for Areas (SEIFA) ranks areas in Australia for relative socio-economic disadvantage and advantage. These concepts are defined as

“people’s access to material and social resources and their ability to participate in society; relative to what is commonly experienced or accepted by the wider community” (Australian Bureau of Statistics 2013). As such, SEIFA scores for local government areas rank from lowest to highest according to their SEIFA score (comprised of four sub-indexes: relative socio-economic disadvantage, relative socio-economic advantage and disadvantage, economic resources and an index of education and occupation) in proportion to the population. This representative score is used comprehensively in Australia as means to focus support in areas of ‘need’ and track demographic changes over time.

Another description has been used by the Victorian Department of Department of Transport, Planning and Local Infrastructure (DTPLI; formerly the Department of Planning and Community Development), stating that disadvantage occurs when “an individual, family or community is deprived of resources or opportunities (enjoyed by other Victorians), that underpin social and economic wellbeing” (Victorian Government DPCD, 2011; p.16). Resources are herein defined as material (income, housing, services, transport), skills/knowledge resources (education, health) or “social capital” resources (social participation, inclusion, strong governance). The Victorian DTPLI discusses disadvantage as a scale on which individuals or groups sit when they experience a combination of “material deprivation, economic precariousness, labour market disadvantage, poor health, inadequate housing and exclusion from social, educational and civic life”. Severely disadvantaged groups are described as the 10% of the population who suffer multiple social and economic problems that impact significantly on their wellbeing (Australian Government, 2010; Victorian Government DPCD, 2011; p.16). Vulnerability is considered as a relative measure and applied to people who are likely, or at risk of shifting into the previously 10% of the population who are severely disadvantaged.

This comparison of terminology demonstrates how the meaning social vulnerability and disadvantage varies in different policy contexts. A more in-depth discussion of this point is outlined later in this report.

3.3 Resilience and vulnerability – not quite two sides of the same coin

In the past three decades, the concept of resilience has become popular in socio-ecological research and, more recently, in community development. Resilience is *en vogue* as a concept that, some argue, sits diametrically opposed to vulnerability: resilience suggests positivity, proactive behaviour and taking control of a potentially dangerous situation, while vulnerability is often interpreted a more passive way of looking at such situations, focusing on problems rather than on solutions. Although not the focus of this review, we will briefly touch upon key interpretations of resilience and their relationship with conceptualisations of vulnerability in the following.

The origins of the term are the Latin root *resi-lire*, which mean to spring back (Davoudi et al. 2012). In the 1960s, very much driven by a much-cited scientific article by Canadian ecologist C.S. Holling, resilience became used in the field of ecology, from where it has been applied to describe the characteristics of socio-ecological systems. Due to its malleability, the term resilience has been used in many different, inconsistent ways, and, in recent, years, has become a policy buzzword across different sectors and across the political spectrum (Davoudi et al. 2012).

Resilience is often understood to be about maintaining or re-establishing an equilibrium of sorts. A fundamental element of many of the existing interpretations of resilience, in both academic and policy making, is the ability of a system, individual or organisation to ‘bounce back’ after experiencing a negative shock. The Intergovernmental Panel on Climate Change (IPCC) for example, defines resilience as follows:

“The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning and transformation” (IPCC, 2014).

In a similar vein, ‘disaster resilience’ usually refers to a city or community being able to re-activate all its functions and resume pre-existing levels of activity after a breakdown of services and infrastructure due to a natural or man-made disaster (Walker et al. 2004). Similarly, psychologists use the term resilience to describe individual’s ability to maintain or return to normal levels of psychological and physical health, following their experience of a disruptive event (e.g. an accident or bereavement). Climate change resilience, then, is an increasingly common concept used to describe the ability of a geographic area, community or ecosystem to withstand the impacts of a changing climate without losing its key functions or without suffering adverse long-term consequences.

Some scholars argue that resilience and vulnerability are intrinsically linked – and sometimes juxtaposed. For example, a high level of resilience implies greater opportunity for absorbing external shocks and adaptation to both social and environmental change, with low resilience implying that vulnerability to externally imposed change is greater, or that adaptive capacity is limited (Adger & Kelly, 2001). Rather than focusing on these differences, however, the resilience and vulnerability perspectives can provide opportunities for shedding light on complex social challenges associated with climate change, mainly because of their respective different framing and application (Miller et al. 2010):

- Resilience research and practice tends to favour a systems perspective focusing on understanding dynamic systems and their constituent parts in their complexity.
- Vulnerability research and practice tends to focus more on individual actors and their ability or inability to prepare for and respond to external stressors and changes.

This suggests that, although resilience and (social) vulnerability provide different framings for improving our understanding of the impacts of climate change on society, their strengths is perhaps their complementarity. Integrating a systemic resilience perspective with a more actor-based view of social vulnerability promises to offer new insights into how people are affected by the direct and indirect impacts of climate change (Miller et al. 2010).

4 Social vulnerability in the context of climate change

For over a decade now, part of the debate about social vulnerability has centred on the social effects of climate change, both with regard to the effects of climate change mitigation policies and regulations (Obrist et al. 2010; Bulkeley et al. 2013) and the biophysical impacts of climate change on different socio-economic groups (Susan L. Cutter et al. 2003; Adger & Kelly 1999; Adger & Kelly 2001b). In the face of climate change, existing levels of vulnerability among social groups will be influenced by climatic trends and events, such as heatwaves, droughts, flooding and water scarcity. Some of these impacts will immediately affect human health, while others may alter social vulnerability through secondary effects (e.g. economic changes due to climate change impacts, such as rising electricity prices or insurance premiums). An additional layer of impacts are those affecting service providers who support people considered socially vulnerable (Walker et al. 2011; Oven et al. 2012).

4.1 Climate change impacts on human health and well-being

There is an undeniable link between climate change and the negative implications on human health and well-being. The latest Intergovernmental Panel on Climate Change (IPCC) AR5 Working Group II report: *Impacts, Adaptation and Vulnerability* stated with very high confidence that “projected climate change will impact human health mainly by exacerbating health problems that already exist” (IPCC, 2014, p. 21) and throughout the 21st century climate change is expected to lead to increases in ill-health in many regions.

A recent review highlighted that the impacts of climate change for the community welfare sector will be the consequence of the interaction between human systems, including health and social support systems, the changing global climate, and other natural systems (Fünfgeld et al. 2013). This is because health and well-being is strongly dependent on socio-economic drivers, such as income, housing, employment, education, gender and lifestyle.

Within the Australian context, the direct physical impacts of climate change can be summarised as:

- Injury and death from extreme weather events such as floods, bushfires, and storms;
- Physical impacts of increased temperatures and heat waves, such as heat exhaustion and heat stress;
- Spread of vector-borne diseases;
- Impacts on air quality and cardio-respiratory illness;
- Changes in food and water quality and availability due to changing rainfall patterns

(McMichael & Blashki 2007; Frumkin & McMichael 2008; Weaver et al. 2010; Blashki et al. 2011)

The direct physical impacts of climate change can be considered to amplify existing social vulnerability across all five capitals (as previously discussed), but particularly relating to natural and physical capitals in the case of extreme weather events affecting resources and human settlement. This in turn will increase existing hardship and affect the wellbeing of individuals and groups. The direct physical health impacts above can lead to, or occur concurrently with, indirect impacts on physical health, such as:

- Dietary changes due to increases in fresh food prices, resulting in reduced nutrition
- Exacerbation of asthma and allergic conditions from regional increases in pollens and spores,
- Displacement due to sea-level rise and drying trends, and the physical health risks linked to being an environmental refugee
- Increased pressure on health systems, community services and emergency responses, leading to lack of available support

(Blashki et al., 2011; Hughes & McMichael, 2011; Weaver et al., 2010)

Direct and indirect impacts of climate change also present interactions with existing public health issues, which can be referred to as the ‘secondary impacts’ of climate change on human health and community wellbeing. This level of impact includes:

- Exacerbation of population pressures and migration, leading to increased competition for scarce resources;
- Increasing existing structural vulnerabilities resulting from rapid, unplanned urbanisation;
- Psychosocial and mental health outcomes associated with loss, disruption, displacement and anxiety surrounding increased climate related events

(Bowen & Friel, 2012; Dodman & Satterthwaite, 2008; Fritze et al., 2008; Frumkin & McMichael, 2008; HREOC, 2008; Sanchez-Rodriguez, 2009)

4.2 Climate change as an amplifier of existing social vulnerability

In light of various definitions of social vulnerability discussed earlier, the direct impacts of climate change can be considered to not only exacerbate existing physical health conditions, but pose an additional social stress to individuals or groups. Climate change impacts, mainly extreme events (e.g. heatwave, bushfire and storms), can affect all of the listed characteristics of social vulnerability and reduce the ability of these individuals or groups to cope with any stressors. Climate change and its impacts can influence the relative levels of each of the five capitals for individuals or groups, and can therefore directly affect the wellbeing of those already considered socially vulnerable. Recent research indicates that it is not simply individuals deemed already vulnerable who will become increasingly vulnerable under climate-related weather and extreme events (Boon 2013; Costello et al. 2009; World Health Organisation (WHO) 2003), but also organisations supporting these people. As outlined in Fünfgeld et al. (2013) and by others (Australian Government, 2007; Mallon et al., 2013; QCOSS, 2011; VCOSS, 2007), this additional layer of complexity associated with the impacts of climate change on vulnerable populations will also impact the very services that vulnerable people rely on for their livelihood and survival.

Key messages:

Climate impacts have the potential to alter the make-up of social groups, amplifying existing issues that contribute to social vulnerability.

Climate change increases the complexity of social vulnerability and its management.

Mallon et al. (2013) investigated the community service sector's ability to cope with climate extremes in Australia. Key findings indicated that community service organisations are not well prepared to respond to climate change or extreme weather events, with many small and medium sized organisations at risk of temporary and even permanent breakdowns in their provision of critical social services. Survey results across the sector found that one week after an extreme weather event "50% of organisations that sustain serious damage to their premises would still be out of operation, and 25% might never provide services again" (Mallon et al. 2013, p.4).

In light of these observations about the direct and indirect impacts of climate change on human well-being, it is not surprising that some scholars have described climate change as 'the biggest global health threat of the 21st century' (Costello et al. 2009). Climate change, they argue, has the potential to alter the make-up of social groups and to amplify the existing issues that make individuals or groups socially vulnerable. It is therefore important to acknowledge that climate change is not only a physical phenomenon; it is deeply social, with regard to its individual and societal impacts, its public perception, and the range of possible human responses (Adger, 2003; Hulme, 2009; Pelling et al., 2007; Reser & Swim, 2011; Wolf, 2011).

4.3 Aspects of social vulnerability in the context of disasters

The Victorian Council of Social Service highlights (VCOSS Victorian Council of Social Service 2014) different categories of social vulnerability in the context of emergencies and disasters (climate related or otherwise), leading to further disadvantage:

- **Poverty:** the poorer people are, the bigger impact on them in a disaster or emergency, and the harder they will find it to recover;
- **Elderly/Older people:** factors associated with advancing age, such as impaired physical mobility, diminished sensory awareness, pre-existing health conditions as well as social and economic constraints;
- **Migrant and refugee populations** (Culturally and Linguistically Diverse-CALD): due to limited English proficiency, cultural differences, lower literacy levels, poor communications channels, and factors associated with prior traumatic experiences;

- **People with a disability:** range of physical, intellectual, hearing and vision disabilities that can hamper people’s ability to prepare for, and respond to and recover from an emergency event;
- **Children and young people:** factors include developmental levels (e.g. age), pre-existing mental health issues, the community’s ability to offer support, presence or absence of parents during event, reaction of adults during event. In addition to, those who are in out-of-home care, those who have child protection considerations, those whose parents are refugees or migrants;
- **People with poor quality housing and homeless:** including caravan parks, rooming hotels or hostels, temporary housing, sub-standard private rental housing, insecure, hazardous and overcrowded housing, couch-surfing or sleeping on the streets all contribute to putting people at greater risk;
- **People with mental health issues:** people with serious, long-term mental health illnesses such as schizophrenia, dementia and bipolar disorder are often psychologically vulnerable to emergencies, and people with a history of mental illness are more likely to develop stress related symptoms or relapse post a disaster;
- **People with multiple and complex needs:** referring to an array of problems that frequently span social, economic and health issues including multiple disadvantage, multiple adversities, multiple disabilities, multiple impairments, dual diagnosis, high support needs or complex health needs.
- **Other vulnerable groups:** alcohol or drug dependency, single parent households with low income, women and children suffering domestic violence, Aboriginal and Torres Strait Islander people in remote areas.

The above typologies of vulnerability are often compounded, with individuals or groups of multiple or complex needs typically being situated within a “broader context of social, economic, and structural disadvantage, where poverty is interlinked with:

- Poor health and housing;
- Poor education and employment opportunities and skills;
- Lack of social capital and family and community supports;
- Crime and violence;
- Mental health difficulties;
- Substance abuse;
- Early childhood trauma and poor parenting experiences” (VCOSS Victorian Council of Social Service 2014: 21)

In the context of disasters and emergencies, service (dis-)continuity is critical and has the capacity to further impact individuals suffering with one or more of the above types of social vulnerability. With continued service and support from community service organisations, carers and family members, the impact of disasters or climate-related emergencies can be reduced on such community members. Without this vital support, each type of social vulnerability is worsened in the face of rapid, unplanned changes in the physical and social environment, such as a climate related emergency or disaster.

VCOSS recommends that to “best protect and support socially vulnerable people, we have to first know who they are in local communities and have plans in place to help them” when climate related events and disasters strike. The report notes a significant gap in our understanding, and consequently our support system, stating, “to date, this level of understanding is limited as best in Victoria, and across Australia” (VCOSS Victorian Council of Social Service 2014: 36).

Despite acknowledging that vulnerable populations will become more disadvantaged in the face of weather-related disasters, there are very few explicit links between climate change and the increasing propensity of weather-related disasters. The most explicit link a recent VCOSS report is that peri-urban Melbourne is highly susceptible to bushfire hazard will be increased by climate change (VCOSS Victorian Council of Social Service 2014).

5 Climate change and social vulnerability in Victoria's south west

Rural areas bring with them their own array of social, economic and environmental factors that can amplify and interact with existing characteristics of social vulnerability, such as the influences of heightened social (and physical) isolation, lack of access to a variety of goods and services, as well as lack of cheap transportation options, including public transport (Anderson 2009; Morrissey & Reser 2007). Conversely, rural areas are built on the backs of communities who have survived historically through extensive hardship associated with fluxes in the economy, industrial development and significant demographic changes. This inherent resilience associated with maintaining a livelihood in remote rural areas has enabled historic survival of many smaller towns and hamlets in rural Victoria. However, climate change impacts are beginning to amplify existing social and economic vulnerabilities in some rural areas, challenging the sustainability of rural livelihoods and the resilience of communities (Nelson, Kopic, Crimp, Meinke, et al. 2010; Nelson, Kopic, Crimp, Martin, et al. 2010).

Rural and regional Victoria is experiencing significant change due to many factors separate to climate change. These include economic restructuring across the state, causing a change in function and economic focus in many regional towns, from, for example, agriculture industry to tourism (Victorian Government DPCD, 2011). As a result of this, many regional Victorian towns are experiencing changing population compositions, with some localities seeing declining and ageing populations due to younger groups relocating to larger centres in search of work and training, and other localities experiencing growth with influxes from Melbourne including "affluent retirees, and non-affluent retirees, welfare recipients and small numbers of new Australian migrants" (Victorian Government DPCD, 2011; p.4).

The Barwon South West region is experiencing such an economic and demographic transition. Due to livelihood changes from small family-run agricultural businesses to large agricultural corporations, there has been a decrease in economic opportunities for some segments of the population, in particular unskilled workers. This trend is likely to further increase. Similarly, towns within this region that were built on manufacturing are now becoming "reliant on tourism and service provision", with 12,000 jobs lost from 2007/2008 to 2008/2009 in regional Victoria (SGS Economics and Planning 2010). Demographic change is occurring in the form of structural ageing, as the traditional family farmer population ages and youth migrate to the city in search of better employment prospects. Declining population is the consequence of this trend, resulting in the need for local services and businesses to restructure to a changing set of clients and service recipients. Service access, transport access and support for disadvantaged people are significant challenges in the region. In some areas, rising house prices as a result from the transition to a tourism-based economy presents housing stress for those already disadvantaged. A process of gradual yet comprehensive economic and social restructure results from these cumulative impacts, with direct ramifications on employment options for communities within the region (Victorian Government DPCD, 2011).

In regards to SEIFA scoring, over a third of the Barwon South West region score under the Victorian regional average. The Shires of Glenelg and Southern Grampians have the highest percentages (55%

and 50% respectively) of the population living under the regional Victorian average SEIFA score (Victorian Government DPCD, 2011). **Error! Reference source not found.** outlines localities within the Barwon South West region that score under the average Victorian SEIFA score and are considered relatively disadvantaged. Figures included in the table indicate the percentage of the total population in each locality. Red shading indicates figures that are worse than the Victorian regional average, and therefore, factors that constitute particularly prevalent drivers for disadvantage and social vulnerability in rural communities in the region.

Table 2: Localities within Glenelg Shire (GS) and Southern Grampians Shire Council (SGSC) that are considered relatively disadvantaged in relation to Victorian regional SEIFA average scores (% of total population figures)

Disadvantage/ vulnerability factor	Victoria	Portland (GS)	Heywood (GS)	Casterton (GS)	Merino (GS)	Dartmoor (GS)	Hamilton (SGSC)	Glenthompson (SGSC)	Penshurst (SGSC)	Coleraine (SGSC)	Balmoral (SGSC)
Individual income under \$400/week	45.5	40.9	44.2	52.2	54.4	44.8	39.7	57.4	54.6	54.6	36.8
Public housing dwellings	4.2	6.5	4.9	0.6	0.0	5.3	5.0	0.0	1.6	4.1	5.1
Aged over 65	13.6	16.0	21.5	29.3	20.1	14.0	20.4	32.9	26.3	31.1	19.2
Over 75 living alone	2.2	2.9	4.6	5.1	3.1	3.8	4.8	8.3	7.2	7.7	2.3
Disability	4.5	5.3	8.5	8.4	2.5	4.6	5.7	7.2	11.2	10.4	7.4
Single parent families	15.4	18.1	15.6	17.2	24.1	13.1	15	24.3	13.2	16.3	16.3
Aboriginal and Torres Strait Islanders	0.7	2.0	8.9	1.1	0.0	2.8	0.8	0.0	0.9	0.3	2.1
Low English Proficiency	4.0	1.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Households with no internet	39.0	49.0	62.5	64.5	42.7	53.8	51.9	66.7	62.3	64.5	56.4

Source: Victorian DPCD 2011.

In 2011, the Victorian Department of Planning and Community Development noted that the complex and multidimensional nature of disadvantage in this region is difficult to manage (Victorian Government DPCD 2011). Further intensifying this complexity are the impacts of climate related events, with acknowledgement that in rural and regional areas of Victoria a greater proportion of natural disasters and emergencies are experienced, raising concern for health service preparedness under climate change and extreme weather, particularly in smaller rural communities (Purcell & McGirr 2014).

In summary, the Glenelg and Southern Grampians Shires, located in the Barwon South-West region of Victoria, are considered relatively disadvantaged in relation to the Victorian SEIFA regional average, with higher proportions of low income households, high disability rates, an ageing and socially isolated population. These characteristics describe current social vulnerability. All of these factors are likely to be exacerbated by climate change impacts, in particular by extreme weather events of high prevalence in these areas, as well as by drought and water scarcity.

6 Current policy context for addressing social vulnerability to climate change

In the following section, we briefly discuss the current policy context with regard to how the various tiers of Australian Government manage the complex issues associated with social vulnerability of individuals and communities in the face of climate change. The extent to which climate change will affect existing social vulnerability will be mediated by the policy mechanisms put in place to manage the changes occurring (Mallon et al, 2013). This review of current policy is not aiming to be comprehensive; instead it hopes to provide a brief overview of how some of the different interpretations of social vulnerability to climate change introduced and discussed above come to bear in the current policy setting in Australia.

6.1 Australian Government policy

The Australian Department of Human Services (DHS) “work with government and community partners to offer a range of services to people who, for various reasons, need additional support” (Australian Government 2013a: 138). Financial payments and the delivery of services are the two key mechanisms to deliver this support, including through agencies such as: Medicare, Centrelink, Child Support and CRS Australia. The DHS defines vulnerable people as: “people who are vulnerable to poor outcomes because of multiple or complex needs, or who lack access to resources (financial, physical, personal or social) to participate socially and economically” (Australian Government 2012b).

The Australian Government notes that there is evidence that some people may experience greater difficulties accessing and/or using the resources and services they need:

“These include: Indigenous Australians; single parent or blended families; and young parent families. It also includes people living in areas of disadvantage; experiencing housing instability or high mobility; experiencing financial hardship; in families who have member(s) with disability; in families where violence or significant trauma is an issue; and those involved with the child protection and/or family law or justice system. Other groups include: grandparent or extended family carers; people with mental health or substance abuse issues; and those from many culturally and linguistically diverse backgrounds”

(Australian Government, 2012; p.15).

These descriptions are associated with funding criteria to support community service organisations and individuals to address the needs of those considered most vulnerable in society.

In absence of a Federal climate change adaptation policy, the Australian Government’s recent stance on managing the impacts associated with climate change on vulnerable populations is encapsulated by the Productivity Commission’s report into *Barriers to Effective Climate Change Adaptation* (Australian Government 2012a), stating;

“Households, businesses and other organisations will be able to manage many of the risks of climate change. However, in some cases the characteristics of markets, regulatory settings, governance and institutional arrangements and how people make decisions could act as ‘barriers’ that prevent people from effectively managing risks.” (Australian Government 2012a: 39).

This statement outlines an expectation that individuals or groups faced with climate change risks by in large will be responsible for managing that risk, except in cases where obvious barriers to effective management of these risks can be identified. This report received significant concern from

community service sector representatives, noting that disadvantaged and vulnerable populations will be disproportionately affected by the impacts of climate change and therefore, require adequate support through policy mechanisms (e.g. Brotherhood of St Laurence 2012). Given limited policy responses from community welfare or environment departments at the Federal level, the impacts of climate change on socially vulnerable populations remain largely unaddressed in terms of Australian Government policy.

The National Disability Insurance Scheme

Recent changes to disability funding will have an impact on how vulnerable people are financially supported and their access to services through community service organisations. The National Disability Insurance Scheme (NDIS) is the result of a recommendation from the Productivity Commission's report in 2011 to review the provision of funding for disability services (Australian Government 2013b). The NDIS aims to provide a funding pool based on actuarial assessment of need, rather than historical budget allocations and will have an impact on the way CSOs are funded, depending on their specific service delivery. The NDIS legislation (Australian Government 2013b) was introduced to parliament in draft for feedback on 29th of November 2012, and the Bill suggested a framework for a national scheme that includes eligibility criteria, age requirements and what constitutes reasonable and necessary support for people with a disability for wherever they live (Australian Government 2011). It is not yet clear how the NDIS will change funding criteria for organisations that support socially vulnerable individuals, nor for individuals themselves. Given that the funding available will now be based on individual assessments of need, it can be inferred that the definition of social vulnerability, or what classifies someone as vulnerable, will have a large bearing in terms of how support funds will be allocated.

6.2 State Government policy

In Victoria and other states in Australia, state government is a major funder of social and community services. It is therefore important to consider the Victorian Government's framing of social vulnerability and how social vulnerability is expected to change under climate change. Community service organisations are groups that provide a service established to meet the needs of community members requiring care, support, protection or accommodation. This includes out-of-home care services, disability services, community-based child and family services, housing and other types of support for disadvantaged people. In Victoria, CSOs register with the Department of Human Services (DHS) if they meet the Department's service standards, with DHS funding over 600 CSOs (Victorian Government 2013).

Victorian Government Definition of Vulnerable Persons

The Victorian Government Department of Human Services (DHS) and the Department of Health (DoH) response to Recommendation 3 of the Victorian Bushfires Royal commission Final Report (Victorian Government 2010) saw the development of the Vulnerable People in Emergencies Policy in November 2012 (Victorian Government 2012a), which endeavours to improve the safety of vulnerable people in emergencies through supporting emergency planning with and for vulnerable people. The Policy utilises existing relationships with government funded agencies to support vulnerable people within the 64 municipal council areas wholly or partly covered by the County Fire Authority districts, to provide personal care, support and/or case management services in-home or community based (Victorian Government 2012a).

The purpose of the Policy is to "improve the safety of vulnerable people in emergencies by supporting:

- Emergency planning with and for vulnerable people,
- Developing local lists of vulnerable people (Vulnerable Persons Registers, VPRs) who may need consideration in an emergency, and
- Making these lists available to those with responsibility for helping vulnerable residents evacuate (Victorian Government, 2012, p.3).

Of interest is the definition of a 'Vulnerable Person' in this context, and the criteria applied for people to be listed on the register. For the purposes of the Policy, a vulnerable person is defined as **“someone living in the community who is frail, and/or physically or cognitively impaired; and unable to comprehend warnings and directions and/or respond in an emergency situation”** (Victorian Government, 2012: 3). A vulnerable person may be identified for inclusion on a VPR if they additionally “cannot identify personal or community support networks to help them in an emergency” (Victorian Government, 2012, p.3). Screening support is offered to identify vulnerable persons (according to the provided definition) within the community and criteria for funded agencies to list an identified vulnerable person. Funded agencies must obtain informed consent, enter and maintain individual information on vulnerable persons registers.

6.3 Local Government

The Victorian Department of Planning and Community Development (DPCD) outlined the structure of local government in Australia, where council staff, under the guidance of the CEO and elected council, provide services to the community which are made up of residents and rate payers within the local government area (Victorian Government n.d.). There is no mention of specific management of vulnerable people within the Local Government Act (1989), nor a definition of vulnerable people; however Section 3E of the Act outlines that the functions of a Council include, “planning for and providing services and facilities for the local community” (Australian Government 2014, p.22) and best practice states that council must achieve the “balance of affordability and accessibility of services to the community” (Australian Government 2014, p.303). This implies that all members of the community are entitled to equal access to services.

As per Victorian Government mandate, 64 municipalities wholly or partly covered by the County Fire Districts in Victoria must develop Vulnerable People Registers (see above). VPRs are administered by local governments through the Victorian Department of Human Services *Vulnerable People in Emergencies Policy* (Victorian Government 2012b), with local data input by government funded agencies related to the municipality or community service organisations (CSOs). The screening for identification of vulnerable persons is undertaken through State government criteria (Victorian Government 2012b). The registers became operational in April 2013, and enable Victoria Police to directly access this information in the case of an emergency or climate related event. There is a consent provision process in place for VPR registration, with a template consent form circulated to all those identified (VCOSS, 2013).

7 Conclusions

Social vulnerability has been widely debated and contested as a concept, in academic and non-academic circles. It has entered the policy realm largely as a classifier for people experiencing social and economic disadvantage and their inherent lower capacity to cope with external stresses. In recent years, social vulnerability has received additional attention in the context of climate change related events and trends, including climate-related disasters. Two basic assumptions are common to most interpretations of social vulnerability in the context of climate change: that climatic changes will affect those most who are already vulnerable and disadvantaged; and that the impacts of climate change can exacerbate existing specific vulnerabilities in individuals and groups.

Despite the usefulness of the social vulnerability concept, it is important to acknowledge that, by definition, the vulnerability of people is to a significant degree dependent on contextual factors, such as their geographic location (e.g. leading to social isolation), social and institutional factors (e.g. family support networks and community-based assistance), as well as economic opportunities. The context dependency of social vulnerability as a frame of reference for disability and climate change adaptation policy, for example, requires policy makers and practitioners to critically examine commonly used notions of vulnerability and develop locally appropriate interpretations of social vulnerability based on local knowledge rather than scientific definitions.

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