Review

Enhancing Emotional Resilience in the Face of Climate Change Adversity: A Systematic Literature Review

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Abstract: Australians have experienced repetitive exposure to climate change adversity (either in-person or through televised exposure from media and internet sources). As these events become more prevalent and severe, developing, and implementing strategies to enhance emotional resilience at individual, community, and government levels is beneficial. This literature review examines one way of addressing this issue: enhancement of societal emotional resilience capabilities that can minimize negative impacts of climate change adversity upon emotional wellbeing. The study also offers an initial exploration of climate change adversity and emotional resilience. A systematic literature review identified key research themes. Subsequent findings identified policy and framework recommendations aimed at supporting emotional resilience in communities. Such strategies should focus on community preparedness through needs-based assessments and community engagement, fostering knowledge-building pathways and ongoing collaboration among system levels to address a diversity of community needs. These systematic approaches would ensure the accessibility and appropriateness of relevant supports by establishing frameworks that are regularly monitored, evaluated, and promoted.

Keywords: climate change; human health; emotional resilience; systematic literature review; adaptation

1. Introduction

A systems theory approach can support communities to prepare for and adapt to climate change-related adversity. Developing tools to build baseline adaptive emotional resilience abilities can achieve these aims. While we acknowledge the potential of other responses to this problem, this paper explores ways to enhance baseline emotional resilience through a systematic approach. It also highlights the importance of strategies and interventions at individual, community, and government levels.

Environmental adversity describes extensive material and psychosocial threats affecting health and wellbeing [1,2]. This paper explicitly examines climate change-related adversity. It employs the terminology "climate change adversity" to describe the negative impacts of intensifying climate variability. These impacts can include increasing prevalence and severity of weather-related disasters, such as fires, floods, heatwaves, more intense cyclones and droughts. The escalating prominence and severity of climate change adversity increase the likelihood that everyone will be affected in their lifetime. Clearly, impacts are likely to be more severe for future generations [3–6].

This study defines *emotional wellbeing* as a person's ability to maintain an outlook of hope and purpose and to undertake their usual daily functions and activities, despite experiencing a stressor [6–10]. *Emotional resilience* refers to a person's ability to recover and/or adapt to a stressor [9,11,12]. Human responses to a stressor are subjective and can affect us minimally or we may experience general emotions of distress, grief and loss, hopelessness, anxiety, and depression. A human can also experience severe mental illness and suicidal idealization [6,7,13–15]. Most people have a baseline emotional resilience and can sustain a

level of wellbeing over time, despite encountering stressors [4,16]. At some point, however, a stressor, or an accumulation of stressors may exceed our baseline emotional resilience abilities. Then, we may experience adverse outcomes for our wellbeing [4,16,17]. Humans also experience what is known as "adaptive emotional resilience", a quality which relates to our ability to adapt to a situation [16,17]. Humans differ in their responses to similar experiences [12,16,17].

This paper focuses on how individuals and communities can support current adaptation activities to changing climatic conditions and associated extreme events by enhancing their emotional resilience. A systematic review of 114 studies explored the relevant literature. It provides recommendations for policy and framework approaches to implementation in an Australian context. Climate change science and potential human mitigation activities are outside the scope of this paper [3].

2. Background

Australia ratified the Paris Agreement in 2016 as part of a global effort to reduce emissions, build resilience and decrease vulnerability to the adverse effects of climate change. Within this agreement, it also formally agreed to observe the right to health (including their physical and mental health) for its citizens regarding climate change and the country's response to this issue [18]. Despite this observance, Australia currently has no national-level programs that focus distinctively on this issue. There is a clear need for leadership by Australia's federal government with the engagement of cross-system stakeholders and community members [19]. Although this issue is of great national significance, to date, only limited action has occurred at a federal level. This research alerts us that governments must share responsibility for implementation across multi-system levels, sectors, and jurisdictions. Without this urgent action, we will experience a continued exacerbation of impacts on vulnerable populations. Socio-economic, cultural, and geographical factors also bear on this issue [19].

In Australia, public healthcare is a state responsibility, with state and territory governments contributing primary funds for mental health care, followed by the federal government and the private health sector [20]. States and territories possess different outlooks and priorities regarding issues of health and climate change. For example, in 2020 in Western Australia, the Climate Health WA Inquiry identified significant relationships between health and climate change at the localized state level. Several recommendations resulted. However, they failed to relate specifically to mental health outcomes [21]. Western Australia has since increased funding for Mental Health in subsequent budgets however at the time of publishing we have not seen a national plan of action about the impacts of climate change adversity upon mental health. In 2018–2019, Australia's mental health system cost $10.6 billion [20]. It is widely accepted that this system is overstressed and unable to meet the needs of Australians. COVID-19 has increased these stressors. [22,23]. We now see an urgent need for policies and frameworks to tackle climate change issues.

Australians have experienced repetitive exposure to climate change-induced events (as in-person experiences or through exposure across media and internet sources). Nevertheless, only a limited body of research addresses climate change adversity and its effects on emotional wellbeing. Little research addresses the potential for enhancement of emotional resilience levels at multi-systemic levels [4–6] This emerging issue is significant and complex because, as humans, we are embedded in and have intricate connections with our natural environment. Those connections and interrelationships influence our emotional, mental, spiritual, cultural, and physical wellbeing [4,6] Inevitably, we are susceptible to adverse emotional outcomes when climate change adversity disrupts those connections [6].

This paper explores factors that influence baseline emotional resilience. It then offers insights from critical theorists and case studies to suggest how Australians could implement policies and frameworks to support emotional resilience in the face of climate change adversity. Finally, it offers specific recommendations of how to enhance emotional resilience.

3. Methods

This systematic literature review was undertaken in 2020 and 2021. The exploratory initial stages used informal stakeholder and community members' discussions to gain insights from individuals with first-hand industry and/or personal experience. Those discussions allowed the researchers to inform, test, and refine the initial research questions and verify the relevance of the research topic to these primary sectors.

Participants in these discussions identified an increasing prevalence of climate change-induced events that negatively affect individuals and their environment. They emphasised the need for preparedness actions to improve and maintain baseline emotional resilience and adaptive emotional resilience abilities. The discussions highlighted the following essential considerations: (1) a clear and concise definition and measurement capabilities for emotional resilience; (2) exploration of correlations and impacts of emotional resilience across micro-, meso-, exo- and macro-systems; and (3) examination of events (other than climate-induced ones) where research may exist about enhancing emotional wellbeing, and resilience. Participants also identified challenges for the research study.

A systematic literature review of relevant literature involved several research phrases. Initially, we explored three separate databases to identify relevant literature: ProQuest, Scopus, and Web of Science. During the planning stages, a search scope study identified appropriate key alternate terms, culminating in a search strategy concept grid (see Table 1).

Table 1. Search strategy grid.

Key Words Identified in Title:	Enhancing	Emotional Resilience	Climate Change	Adversity
Alternative words identified:	Improving	Resilience	Environmental Degradation	Trauma
	Developing	Resistance		Solastalgia
	Cultivating	Flexibility		Difficulty
	Supporting			Distress

In addition, we explored these themes to determine a suitable search string across each database. The most appropriate search string was the following: "Enhancing" AND "emotional resilience" AND ["Climate" and "Climate Change"] AND "coping with adversity" OR "emotional trauma recovery".

We used a simplified method to preview, question, read, and summarise (PQRS) to process the literature studies within the search string [24]

Limiters to this search included peer-reviewed studies, English language, and full-article access. We aimed to examine a wide body of literature and include between 60 and 100 relevant studies within the review.

Initial search results across these three databases revealed a total of 924 studies. Within this total, we found 184 results on ProQuest, 188 on Scopus, and 552 on Web of Science. We included a total of 114 full-text articles and reports in the final study. In all, 93 studies resulted from the search string and 21 emerged via exploratory research in the initial research stages.

The PRISMA flow diagram in Figure 1 below outlines this process (conducted in January 2021). We reviewed these studies based on a thematic analysis to identify key themes, theories, policies, and relevant case studies. Quantitative analysis of the material was deemed inappropriate and outside the scope of this research.
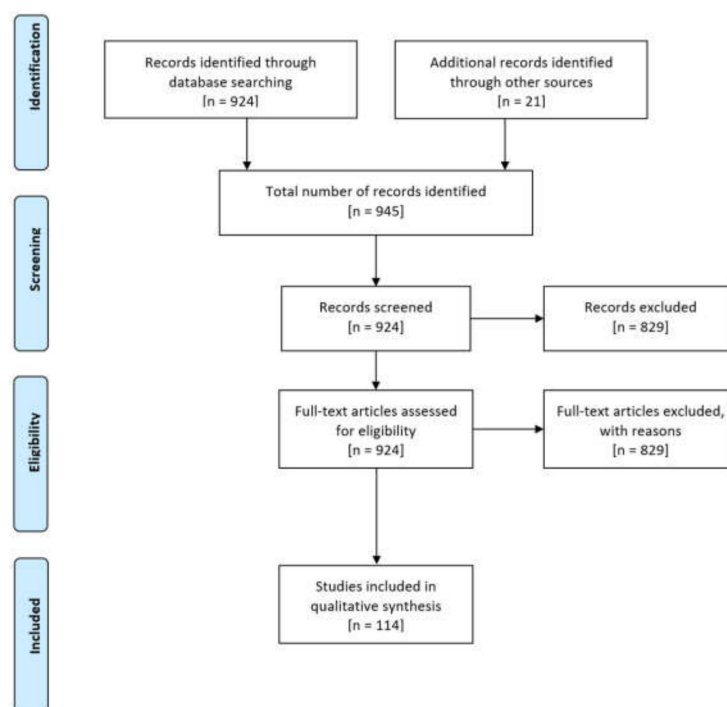
Figure 1. PRISMA flow diagram.

4. Results

This section discusses the qualitative synthesis results of the literature review (n = 114). Many studies focused on individual, community, and governance-level issues. Sections 4.2, 4.3, 4.3.1, 4.3.2, 4.4 and 4.4.1–4.4.4 discuss the three main concepts identified in the literature, including potential interventions and an examination of resilience at individual and community levels. We conclude by examining policy considerations that arose from the review and provide recommendations for enhancing resilience to climate change.

4.1. Concepts

4.1.1. Bronfenbrenner's Biological Theory of Development and Resilience

The first primary concept identified is Bronfenbrenner's biological theory of development and resilience. This theory offers a systems theory analysis framework to permit study and measurement of emotional resilience at individual and community levels. It examines interconnectedness among these systems through micro, meso, exo, and macro perspectives [25]. Figure 2 shows these relationships. The micro level relates to the individual, while the meso level expands to locate the individual within their family, neighborhood, and workplace networks [25] The exo level considers the micro and macro levels within broader systems, including health systems, community-based services, religious organizations, and public media [25]. The macro level, the broadest, includes interactions among all other levels (with broad society, culture, politics, welfare, and economic sectors) [25].

Our research revealed the value of a systems theory approach for exploring individuals' adverse experiences and reactions [26]. It explores how system levels affect an individual and vice versa over a lifetime. This approach can inform appropriate interventions and policies across systems to suggest the level(s) at which these policies and interventions might be most beneficially directed [25,26]. A fundamental consideration is the intricate relationships and interconnections between the individual and their environments over their lifetimes. For example, one study explored the psychosocial consequences of Hurricane Katrina, using a lifespan human development model and models of risk and resilience to explore broad social implications of adversity upon individuals [27].
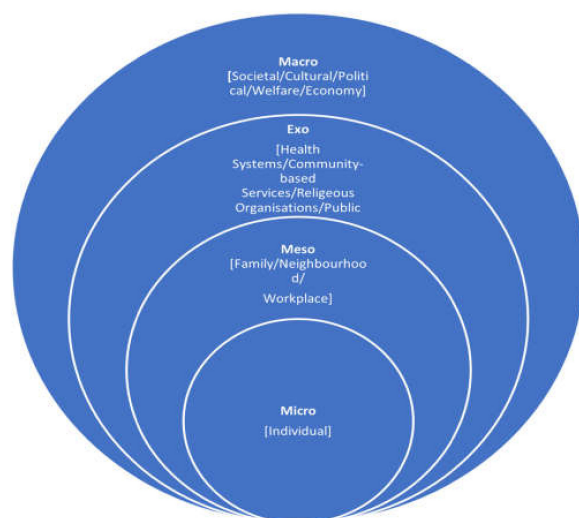
Figure 2. Bronfenbrenner's Biological Theory of Development and Resilience, author created, adapted from [25].

4.1.2. Emotional Resilience Concept

The second primary concept identified is the emotional resilience concept. It addresses the constituents of emotional resilience and how we can measure and maintain it [25,28]. Broadly, emotional resilience refers to the ability to adapt to an associated stressor, such as the experience of climate change adversity, and to continue living at a functional level [25,28]. The subjectivity related to understandings of emotional resilience adds to its complexity. However, a broad definition of emotional resilience allows for subjective interpretations.

One author contends that emotional resilience provides a valuable framework for considering adaptation processes to disasters and informing appropriate policy responses to climate change impacts [25]. Emotional resilience measurement can account for individuals' and entities' abilities to recover from a disruption. It can also identify the capacities individuals and entities need to continue forward, sustain health and positive, meaningful engagement, despite experiencing adversity [25]. We can assess such matters using systems theory principles that allow for analysis of the emotional resilience of social systems from the micro-individual level to the macro-social-environmental level (see Figure 2).

Another author identifies preferred environments for applying emotional resilience in health, education, and social policy contexts [28]. These environments support appropriate approaches to integrating emotional resilience enhancement programs and interventions. This research suggests that exploring correlations among health, emotional resilience, and dysfunctional adversity impacts may contribute to a greater understanding of emotional resilience enhancement strategies observed across the lifespan.

4.1.3. The Need to Understand the Development of Emotional Resilience

The final main concept is the need to understand how emotional resilience develops. We can easily understand normal and healthy reactions to stressors and adversity [29]. However, when a stressor contributes to an intense, chronic, and overwhelming response, it can trigger burnout and physical and emotional illness [16,30–33]. Understanding how emotional resilience develops can potentially help us determine ways to enhance it. Then, we can develop appropriate models and approaches to achieve this goal. Using a well-being model helps us understand emotional resilience and the interactions among well-being and emotional resilience abilities [16]. Genetic and environmental foundations are clearly contributing factors [31,34], as are personality [25,28,31,35]. Significant systemic factors that allow for opportunity and access to support can improve the likelihood that those who experience distress or adversity will maintain a productive level of emotional resilience [1,30,31,36].

A multi-dimensional model can assist in conceptualizing climate change adversity impacts and their interactions to support appropriate implementation and support interventions [28]. One author refers to Cummins' theory that individuals can sustain a limited amount of subjective wellbeing when faced with specific stressors [16]. However, the intensity and duration of persistent stressors that contribute to the breakdown of wellbeing can limit this wellbeing [16]. We need to understand the role of adaptive emotional resilience in understanding, expressing, and regulating emotional wellbeing [37]. Thus, improvements are being made in how to mitigate adverse health outcomes (including improved emotional wellbeing) [38].

One case study explores impacts on emotional wellbeing and emotional resilience from traumatic experiences such as war, disease, famine, and regional displacement affecting groups, such as refugees [39] These examples identify the need for interventions to support individuals at risk of adversity (associated with climate change impacts and induced events) with tools to combat emotional distress through enhanced emotional resilience). Researchers identify correlations among wellbeing, satisfaction of basic life needs, and the ability to access social supports at the individual, community, and broader system levels [16]. The study also identified benefits for those seeking direct social support (if we can prioritize support for communities with pre-existing environmental and socio-economic stressors, like drought influencing crop productivity, and income generation) [16]. Such stressors limit individuals' abilities to develop a resilience reserve if they encounter additional stressors from those typically encountered within daily life [16].

4.2. System Levels of Resilience: Individual and Community

Emotional resilience at the individual level can fluctuate over someone's lifetime [25,28,31]. Further, genetic and environmental influences and learned responses affect the ability to adapt and survive [25,35,40,41]. Factors that incorporate emotional resilience include the following: "the will to live, perception of a situation as challenging, sense of commitment and control, sense of meaning, self-efficacy and learned resourcefulness" [25]. Identifying intrapersonal and environmental factors helps us understand what influences and enhances emotional resilience at the individual level [28,31,40,42]. Intrapersonal factors include cognitive features, such as intelligence, optimism, creativity, humor, and self-belief, and abilities such as coping strategies, interpersonal skills, memory, and educational abilities [25,31]. Environmental factors relate to accessible social support, which allows an individual opportunity and safety to develop these intrapersonal factors [25,43]. Protective factors for resilience enhancement include a supportive environment of family and community, which can mitigate the harmful effects of adverse life events [25,28,31,42,44,45].

When considering measures to influence pre- and post-adversity interventions, we must identify specific protective factors [44]. Hurricane Katrina in 2005 serves as an example of a correlation between the experiences of survivors who experienced disasters and the environmental factors that supported their emotional resilience [25]. The authors of one study identify these correlating factors as "stable housing, family and friend connectedness, economic stability, education systems and safe neighborhoods".

Those most vulnerable to climate change adversity are likely to have pre-existing systematic vulnerabilities: children and those generations yet to be born [46–49]. Children are vulnerable to the impacts of climate change adversity on their emotional wellbeing, particularly if they have difficulty understanding the implications of their experience for themselves, their households, and their wider social networks [50]. As climate change adversity becomes more prevalent, children will likely be at increased risk of multiple adversity experiences over their lifetimes [51,52]. If children cannot attain adequate resilience abilities, we may see risks of poor health outcomes for this group [51,52].

Research on disaster, adversity, and resilience correlations often fails to prioritize the needs of children [46,50,53,54]. However, children are often vulnerable to psychological impacts that compromise their sense of safety, security, ongoing development, and social relations [48,54]. This vulnerability highlights the significance of preventative interventions

for children. The benefits of such approaches include opportunities for better expressing their experiences, participating in decision-making, and influencing issues that affect them [48,54].

This study identifies the need for age-specific and sectoral engagement across system levels within the domains of education, social work, and health. It highlights the importance and benefits of policy implementation to strengthen family dynamics, improve access to mental health services, raise socio-economic levels, and enhance understanding of resilience as a process [52,53,55]. Addressing system change now will support future generations in adapting to climate change and supporting their emotional resilience.

Many studies considered "community" primarily in terms of geographical location. However, there is much more to "community" than location. Relevant dimensions include age, culture, ethnicity, religion, and so forth. At a broader level, community resilience relates to a community's ability to anticipate, prepare for, respond, and recover from and adapt to a disturbance with minimal impacts on public safety, public health, the economy, and national security [25,56]. Approaches to building or enhancing community resilience involve mitigation and adaptation strategies to protect livelihoods, reduce disaster-related health issues, improve disaster management, and support organizational capacity and capability [25,57]. We can promote and enhance the resilience levels of communities through building adaptive capacities, whereby individuals may form organizations that mobilize in response to a disaster [25,58,59]. Communities with strong relationship networks (within their own and surrounding populations) demonstrate higher levels of resilience than others. They are more likely than others to report reduced distress surrounding past, present, and future environmental disasters [58,59].

Events like Hurricane Katrina provide valuable lessons for resilient communities. Taken together, resilient communities have the following qualities: cohesive emergency institutions and communication systems, formalized disaster plans, emergency and volunteer reserves, material and financial resources, public education and information about risks and potential disasters, and long-term planning for recovery and vulnerability reduction [25]. Resilient communities also demonstrate accountability measures and responsibility awareness at all levels of government [25].

We can also assess community resilience through sociological proxy indicators [25] include economic growth, livelihood stability, fair distribution of income and assets across populations, employment rates, crime rates, population mobility, and migration rates [25]. In addition, we must consider the long-term impacts of climate change on community resilience. For example, subsequent disasters significantly reduce opportunities for community emotional resilience building and recovery capacity because of the depletion of emotional, social, physical, and financial resources. We cannot overemphasize the urgency of resilience building as climate change impacts become more common.

We need flexible and adaptable interventions to suit communities' diverse cultural and spiritual needs, and, in particular, the unique needs of many marginalized communities [60]. Interventions should maximize community strengths and resources and engage stakeholders and other affected community members, including children, young people, parents, older community members, people from diverse backgrounds, and community leaders [60]. Rather implementing traditional Westernized intervention responses, we need interdisciplinary responses with initiatives aimed at different systemic levels, that ensure individuals, services, community and governance systems are aware of diversity, and the need for adaptive interventions to suit these groups [60–63]. Interventions must be appropriate and applicable to culturally and linguistically diverse populations [29,60,61,64]. We should ensure that there are no structural or financial barriers to service access that impede this [29].

One author highlights the validity of the concept of "diverse populations" to include ethnicity, language, sexuality, and religion [62]. Through this lens, we can see "the individual within the context of an environment influenced by racism, sexism, colonization, homophobia, poverty" and stigma surrounding emotional health and wellbeing. Inter-

ventions for recovery must occur at multiple levels and ensure that individuals, services, community, and governance systems acknowledge and reflect issues of diversity. Adaptive interventions must be appropriate to the needs of those groups [62,63]. This approach also applies to programs and interventions for preparedness resilience building. The context of policy considerations must reflect the diversity of communities, their disaster experiences, and potential impacts.

4.3. Emotional Resilience-Enhancing Interventions

Systems theory can assist in explaining, in holistic terms, the complex causes, types of distress, and interventions that must be considered across micro, meso, exo and macro systems. For example, on an individual (micro) level, values, beliefs, and identities influence an individual's experience and interpretation of an event [25,40]. An individual's ability to understand, access, and navigate social support systems improves their ability to build, enhance, and maintain emotional resilience. These factors also support their ability to participate in their broader community and contribute to resilience endeavors at the community level.

The farming and agricultural sectors offer a valuable example because of the often physically and emotionally isolating nature of rural life and work. A wide range of forces limit access to support systems and increase reliance on natural resources in rural communities. Relevant factors include economic vulnerability, inter-generational responsibility, and tradition [16,40,65]. One study highlighting impacts of interventions across these four system levels showed how grape growers adapted to a drought that affected crop productivity. They experienced micro, meso, exo and macro-induced stressors that significantly limited their abilities to engage in climate-adaptation strategies (such as comforting daily activities or seeking assistance from community members) [40]. In addition, these stressors lowered their abilities to achieve adaptive emotional resilience regarding existing and future climate change impacts. Policy interventions at all levels should seek to reduce the negative impacts of such experiences.

4.3.1. Individual-Level Interventions

The literature discussed some intervention options related to connections to self, place, and the natural environment. Psychosocial, trauma-informed, and peace-building processes offer valuable insights for integrating emotional, psychosomatic, and self-identity elements [66,67]. The significant correlation between the health of our natural environment and emotional resilience [68] highlights the importance of restoring the natural world and rebuilding ecological systems to support individual human emotional resilience (as well as being a value in its own right). Part of this restorative process can support benefits to emotional wellbeing, using the power of place as a resilience tool in preparing for adversity [69,70].

Yoga, meditation, and mindfulness programs provide opportunities to enhance resilience [71–73]. Yoga education, breathing techniques, movement, and meditation practices can mitigate impacts of stress and trauma and reduce the likelihood of a person developing unhealthy coping mechanisms, such as violence, use of illicit drugs, and alcohol [74–76]. Such programs promote exploration of the self, body, and emotions that correlate with improved emotional intelligence, self-regulation and resilience [73]. They also interact with systemic levels, from the individual and community to macro-system changes that support emotional resilience [71,72].

One example of a project in Colombia positively supported individuals (through yoga education and psychosocial healing), who experienced emotional distress associated with war [72]. This study identifies the need for correlation between personal healing and macro-level peace and the importance of the individual component in creating a harmony of body, mind, and spirit to enhance resilience in the face of adversity. One study that explored the impacts of meditation strategies on adults who experienced childhood trauma found that meditation improved experiences of depression. It highlighted the benefits of enhanced

emotional resilience to overall emotional regulation and quality of life [77]. Further studies examine mindfulness activities that benefited military veterans who experienced adversity through war [75,78]. Applying such tools would help individuals prepare their minds before adversity via development of enhanced resilience abilities.

Negative connotations are associated with suppressing emotions and ongoing emotional distress [79]. In this regard, the creative arts demonstrate potential to enhance emotional intelligence, emotional regulation, and to foster resilience [79,80]. We can use music, drama, dance, storytelling, and photography to explore trauma experiences and make meaning through creativity [81–89]. Constructing or reconstructing a life story and one's purpose can also help build resilience to adversity. This process of narration or story-telling allows participants to explore and make meaning of the effects of a distressing experience on themselves and the systems they interact with (which can influence privilege, empowerment, and social justice) [84]. We can use imagination in reflective processes focussing on how we see ourselves in the world to combat the influence of trauma on the ability to imagine (which is significant for possessing and maintaining hopeful images of the future) [90].

In communities in post-apartheid South Africa, programs incorporating music, drama, and storytelling successfully enhanced resilience [87,88]. They engaged testimonies and challenged experiences of social and ethical issues associated with racism and poverty [87,88]. One program incorporated drama to provide therapy and build resilience in veterans experiencing emotional distress, using imagination and creative thought to narrate and process trauma experience [82]. In one study with earthquake survivors, resilience factors included social contacts and the ability to see their environment recover. However, an inhibiting factor was the need to relocate [91].

Awareness of a sense of self and the need to continue being shaped, evaluated, and reconstructed (at all levels) are factors revealed by the research [84]. Creative arts [e.g., dance, poetry, and photography] and movement-based sporting programs can promote emotional resilience in young people [46]. Ideally, we can initiate and implement these strategies via bottom-up, grassroots approaches involving local community members [46]. Physical activity offers benefits for emotional resilience abilities and emotional wellbeing. Specific benefits include physical, social, cultural, and psychological benefits, providing opportunities for building identity, belonging, and purpose through self-expression and creativity [46]. Successful approaches for youth involve a peer support network, where young people can engage together and build social connections at the peer level, rather than relying on adult-designed interventions [46]. Governmental and non-governmental programs that use competitive sports to improve emotional wellbeing also have value, as do community-led sporting initiatives and informal sporting opportunities for young people, such as skateboarding, bike riding, and surfing [46].

4.3.2. Community-Level Interventions

Community-level interventions address attitudes about a sense of community and social cohesion related to building shared sentiments of attachment and belonging. These approaches can foster and enhance shared resilience at a community level [92,93]. We can use this understanding (of the correlations between traumatic events and impacts on emotional wellbeing) to identify factors that influence resilience [94]. A study exploring the impacts of adverse events at the community level showed that community displacement and disconnection can affect sustained levels of resilience [92]. However, a sense of community can promote leadership, participation, and empowerment to maintain resilience [92]. This approach can support survival and rebuilding, especially when multiple events occur [95,96]. Social cohesion and local networks act as preparedness, resilience, and recovery tools whereby local people can share experiences, unite, and meet basic physical and emotional needs [97,98]. Examples from Hurricane Katrina support these findings and inform future post-disaster relief policies to incorporate community support and leadership [98]. Within social cohesion models, we need opportunities for community

members to examine their experiences, identify their place within the world and their purpose in the broader macro system [99].

Studies of veterans and survivors of disasters show enhanced levels of resilience (through post-traumatic growth), despite experiences of significant and recurring adversity [34]. These participants demonstrated resilience-enhancing qualities, such as a sense of community, belonging, and purpose within their communities [34]. Researchers found correlations among personal and place-related attributes of community resilience among individuals exposed to recurring adversity [100]. Examining the experiences of survivors of events that are often wide-ranging, out of their control, and can lead to post-traumatic stress disorders provides insights into how extreme events influenced by climate change may affect survivors. One example is the long-running Israeli-Palestinian conflict. Studies highlighted the effects of prolonged psychological trauma upon community wellbeing and resilience, where Gaza strip communities have experienced significant and recurring warfare [100]. While these Israeli communities had a higher prevalence of adversity, they also displayed high levels of community-level resilience, social engagement, and connectedness compared to residents in other Israeli communities [100].

The negative social impacts of the COVID-19 virus and strict government isolation, mitigation, and adaptation policies highlight the importance of social connections and cohesion for emotional wellbeing and resilience [101]. Examples of COVID-19 era social connection were revealed in Italy, where household members of communities displayed posters reading "everything will be okay", and sang together from their balconies to promote togetherness and enhance individual and collective emotional resilience [101]. An author who lost a home to wildfire identified one critical factor related to recovery: the sense of place they felt with their new home after they incorporated elements of their attachment to their previous home [102]. This case illustrated the significant contributions to resilience building of a sense of place, place attachment, personalization, and control of a new home environment. These examples reveal universal themes of connection, relationship, belonging, and accessibility that can function as support systems, despite people's significant and diverse experiences of adversity. Such social design elements certainly have potential for building resilience in contexts related to climate change-induced extreme events.

Government programs can play a significant role in enabling equitable access to mental health services, which aim to contribute to emotional wellbeing [92]. However, although most services focus on care following an event or a disaster, there is a vital role for *precautionary* mental health and support services for individuals who may have experienced emotional distress. The research sounded a call for accessible interventions and resources for individuals despite cost or geographical location [60]. Easy access to appropriate mental health services means that individuals already experiencing emotional distress before a disaster could use these services to develop tools to enhance their emotional resilience [92,103]. Policymakers should promote interventions that build social cohesiveness and social connections. Additionally, policymakers, researchers and practitioners should promote dialogue with a diversity of communities to hear their experiences and explore with those community members the ways to best support them on their terms [46]. The desired outcome would be a collaborative view of ways to promote positive emotional wellbeing and ways of preparing communities for potential adversity [101].

Finally, educational programs can promote enhanced resilience in children and reduce trauma-related responses to disasters [34,87,104–107]. Educational environments offer unique opportunities for engaging children and young people within their own experiences and can provide an introductory awareness of the experiences of others within an emotionally supportive context [87,106]. Within school-based programs, creative processes can support children to explore, build their emotional intelligence, and connect with others within their school community [87,104,106]. These approaches could include addressing individual, socio-cultural, and protective factors that promote or prevent positive and negative health outcomes [34]. Relevant approaches may reflect wellbeing and resilience factors,

such as access to health and social services, schools, peers, and family [104]. Benefits of these processes include support for other resilience-building initiatives, such as promoting community bonds, sense of place, and self-identity [104].

Development and implementation of online programs should consider community partnership needs and priorities, as well as opportunities for enhancing resilience. They should also address systemic issues, such as social risk factors of financial and/or housing instability [108]. One example describes engagement with Australian Indigenous communities to develop video games and media platforms that reflect and enhance the contemporary Indigenous experience and support skill development. These approaches aim to help manage deleterious impacts associated with depression, anxiety, and cultural trauma [109].

Teachers, paraprofessionals and educational administrators may implement cost-effective school-based interventions to enhance resilience and help children navigate daily stressors [47,49]. School-based interventions (including mindfulness programs) can provide cost-effective opportunities and benefits to enhance the resilience of children and youth. Participants can include trained teachers or educators or more broadly extent to parents and caregivers [49,105]. Most beneficial are school-based engagement programs that involve children and youth within disaster management and action plans pre- and post-adversity, within an appropriate cultural context [50]. These approaches can engage a variety of players, including siblings, other family members, the school, and the wider community [50]. One study of teachers participating in evidence-driven workshops to build emotional resilience found they showed improved levels of resilience and emotional intelligence. They also showed the ability to transfer their new knowledge and perspectives to their students [110]. However, we should not require teachers to do the work of qualified mental health professionals. They do have a significant role to play, however. If they are appropriately trained, they can help to establish education delivery pathways by offering opportunities such as school-based emotional resilience-enhancing workshops. Online programs may also be an option for some schools or students.

Not surprisingly, efforts to enhance emotional resilience in educational contexts appear to focus more on program intervention within specific contexts than on comprehensive policy initiatives. These local-scale initiatives can inform wide-scale policy interventions, however [53]. We need to understand how interventions interact and influence different systems by identifying the benefits of additional interventions with a mix of protective elements, rather than concentrating on one specific intervention [53]. Importantly, other studies identified a close correlation between children's emotional wellbeing and the family environment [111].

4.4. Policy Considerations

Policies provide guidance on government intentions related to goals and offer roadmaps or strategies for achieving them. "Hard", compulsory, and statutorily binding policies carry the potential of encouraging non-adherence [65]. By contrast, "soft" policies are voluntary. An encouraging finding was that multi-level systems of governance that offer alternative processes to "hard" policies encourage adherence to them [65]. In this model, policymakers are responsible for forming partnerships across system levels to bring about behavior modification and change. The literature in this realm identified several policy considerations outlined below. They concern policy and community preparedness, vulnerability, and adaptation assessments, a collaboration of system entities, and community engagement, communication, education, and outreach.

4.4.1. Policy Realm 1: Community Preparedness

Community preparedness is the ability of communities to engage in emergency preparedness planning [92]. It provides a key to understanding the correlations among climate change adversity, emotional wellbeing, and emotional resilience. We can use this concept to promote enhanced resilience levels at individual and community levels [92,112]. Ideally,

it would incorporate emotional support strategies that enhance emotional wellbeing and recovery during and following events of significant adversity [92]. Accessibility to support services significantly enhances community preparedness. Not surprisingly, common barriers (such as access to finance, geographical location, linguistic limitations, cultural insensitivities, and stigma) affect accessibility of essential support services, such as mental health services. These barriers can inhibit preparedness initiatives [29,62,92,112]. A negative result may be to cause further disadvantage to vulnerable individuals and groups. Effective policies must consider all factors that influence community preparedness and accessibility to support services, including barriers to accessing support, as well as the impacts of existing vulnerabilities on individuals and groups.

4.4.2. Policy Realm 2: Vulnerability and Adaptation Assessments

As previously discussed, there is a high probability that climate change adversity will affect most of the Earth's population. Speaking demographically and not geographically, impacts will be more severe for future generations [3]. Common vulnerability categories include children, young people, older people, unhoused people, or those experiencing acute or chronic physical or mental health conditions [113]. A "blanket" approach to climate adversity risk mitigation policies and interventions often focuses on these "stereotypical" vulnerability categories, potentially excluding other vulnerabilities [113]. Assessing vulnerabilities and strengths within communities allows for targeting specific and appropriate mitigation and adaptation interventions for specific people and places [60,65,92]. A systems theory approach could also be effective to guide these interventions for vulnerable individuals and groups [113].

To comprehend the risks, strengths, and existing resources within systems, we require appropriate and targeted assessment frameworks and strategies [92,113]. Risk assessments that measure climate change impacts on the natural environment and nearby human settlements can detect vulnerabilities and inform interventions and education processes within a systems theory context [92]. Such approaches offer the benefit of effective coordination in disaster governance mechanisms that oversee all disaster mitigation and management systems. These approaches can build resilience and implement support strategies from the micro to the broader macro system levels [65]. Essential components of successful programs and projects may include community engagement via person-centered approaches to question exploration [114]. Including storytelling or exploring personal examples of people in affected communities can also have the benefit of humanizing and informing policy and intervention strategies [114].

4.4.3. Policy Realm 3: Collaboration among System Entities

Systems theory identifies the significance of connections among system levels and entities [25,26]. In the context of this study, we need adaptable policies that reflect the diverse needs of everyone in communities [61]. This research revealed that some policies identified, developed, and implemented by individuals who relate to standard Western societal and cultural norms may fail to reflect accurately Australia's culturally diverse society [62,115]. Stakeholder and community engagement are essential to inform policy identification, development, implementation, maintenance, and monitoring so that outcomes reflect the needs of current and future populations [92].

We need collaboration among systematic-level entities to identify and address the emotional impacts associated with climate change adversity [92]. Cross-system collaboration in policy initiatives can enhance appropriate support systems and interventions to minimize negative impacts on emotional wellbeing and enhance emotional resilience [92]. The literature emphasizes the need for broad-based community engagement with the following groups: children, young people, adults of all ages, apolitical and non-aligned community leaders, policymakers, public health authorities, mental health workers, emergency professionals, environmental agencies, and meteorological services [60,92].

4.4.4. Policy Realm 4: Community Engagement, Education, Communication, and Outreach

Community engagement, education, communication, and outreach are essential components for enhancing resilience [66,92,93,113]. Minimizing systematic vulnerabilities offers many benefits, particularly for those experiencing environmental disaster risks [113]. Collaboration among system levels assists policymakers, emergency responders, and researchers to ascertain vulnerability risks and enhance resilience through targeted interventions [113]. Construction of knowledge-building pathways requires early establishment and ongoing maintenance of communication channels [92,93]. These pathways can serve to enhance resilience through emotional preparedness and support-building avenues [92,93]. Interventions that foster community awareness and community engagement processes can help build mental health literacy and strengthen individual and community coping mechanisms, leading to enhanced resilience outcomes [93]. In every situation, interventions must display cultural empathy and be culturally relevant to the targeted populations [92]. These approaches increase the likelihood of participation by members of diverse communities that may be especially vulnerable to climate and disaster adversity [92]. Various avenues for communication channels offer promise, including the use of social media and community or cultural events that provide multiple opportunities to engage and share knowledge and/or key messages (to and from community members) [113].

5. Discussion

To support adaptable emotional resilience measures to address climate change, individuals and communities require emotional wellbeing to overcome the negative effects of stress. They need support to take risks, engage in support systems, and build and enhance individual and community emotional resilience [40]. Early interventions at a senior government level that filter down to a community level can offer support to identify low baseline contributing factors, such as existing stressors [40]. Individual emotional resilience is a subjective and oscillating process influenced by baseline and adaptable emotional resilience abilities over a lifetime. Enhancing individual emotional resilience correlates with personal growth. Improving intrapersonal factors (such as emotional intelligence and coping mechanisms) can enhance effectiveness. Environmental factors that include supportive relationships and accessible resources can allow people to meet basic emotional and physical needs.

Appropriate approaches to supporting individuals and communities will include a balance of a top-down and bottom-up approaches to identify and address low baseline emotional resilience and existing stressors. Highly beneficial are grassroots programs, where individuals can collaborate within a variety of stages: project planning, implementation, maintenance, and monitoring. In this way, individuals can experience ownership and a sense of belonging in programs that support connection and relationship building. The design of these programs is critical. They must be congruent with the needs of target groups and flexible enough to address the needs of a diversity of individuals. Community emotional resilience includes a community's ability to plan, take action, and recoup post-disaster, with minimal impacts on community members' safety, health, security, and economy. Communities can foster enhanced emotional resilience via grassroots approaches through interventions that focus on community engagement, capacity building and strengthening, and education and promote emotional literacy. These avenues can enhance emotional resilience through risk mitigation associated with vulnerability, emotional preparedness for climate change adversity, and building support networks.

Governments play an essential role in macro-level interventions that are applicable and adaptable at individual and community levels to foster enhanced emotional resilience via policy and framework approaches. Governments will inevitably focus on funding and overseeing accessibility of interventions and programs designed to enhance resilience. Nevertheless, despite barriers, such as geographical distance or financial constraints, we still need government interventions. However, they must be appropriate and adaptable at the individual and community levels.

Collaboration must characterize all government-level interventions. Governments should include other system levels in all phases of identifying, developing, implementing, maintaining, and monitoring resilience opportunities. Processes must include community representatives from all systems. Frameworks for government-level interventions should prioritize a mix of top-down and bottom-up approaches. While grassroots initiatives demonstrate success in enhancing resilience, some top-down frameworks, models, and funding initiatives can also support grassroots movements through collaborative processes. Thus, everyone will benefit from multi-disciplinary collaborations that inform holistic and adaptable interventions. These approaches should include professionals, cross-system community members, and other affected and interested people. They must be adaptable for diverse populations, be able to identify systematic vulnerabilities, and inform direct interventions and risk-mitigation strategies. Assessments should be holistic in nature and incorporate multi-system community members and other interested people through collaborative processes that can inform appropriate interventions.

5.1. Policy Recommendations

The review revealed significant correlations between climate change and emotional wellbeing. Thus, we can assume that enhancing emotional resilience at multi-system levels can also support endurance efforts associated with climate change impacts. Four primary policy considerations illustrate the research's emerging themes: (1) policy and community preparedness; (2) vulnerability and adaptation assessments; (3) collaboration among system entities; and (4) community engagement, communication, education, and outreach (Table 2). Effective policies aimed at enhancing resilience in the face of climate change adversity should incorporate elements of these four themes. The focus should be on these three elements: (1) policy considerations; (2) policy consideration components; and (3) an action plan incorporating actions (including establishing, evaluating, promoting, and monitoring components). Table 3 summarizes these elements. They are discussed below.

Table 2. Policy Considerations and Components: Summary of Themes Discussed in Section 4.

Policy Considerations and Components	Summary of Themes			
Community Preparedness	Aim for communities to possess emergency preparedness planning capabilities for climate change adversity and emotional wellbeing impacts.	Need for national emotional support strategies accessible at the community level.	May take the form of community support services.	Factor for consideration: accessibility measures to support services.
Vulnerability and Adaptation Assessments	Aim to determine community vulnerabilities, strengths, and existing resources.	Develop assessment frameworks and strategies that consider contexts of vulnerability and risk.	May inform interventions and education processes at different systemic levels.	Factors for consideration: relate to context of vulnerability risk, using person-centred approaches to question, explore, and use storytelling about affected communities to humanize and inform policy and intervention strategies.
Community engagement, communication, education, and outreach	Aim to establish early and ongoing communication channels to support knowledge-building pathways.	May include community awareness and engagement programs. Can support minimising systematic vulnerabilities and building resilience.	Use community awareness and engagement programs, campaigns, media, and community/cultural events for multiple opportunities to engage and share knowledge.	Factors for consideration: cultural relevance and empathy.
Collaboration of System Entities	Aim to achieve connections among and within system levels	Need for adaptable policies to reflect diverse needs of entities in different communities	May include stakeholder and community engagement within policy identification, development, implementation, maintenance, and monitoring phases to ensure policies are appropriate and reflect the current population's needs.	Factors for consideration: engaging populations with existing vulnerabilities.

Table 3. Framework Considerations of Policy Considerations: Components Summary.

Policy Consideration Components	Establish	Evaluate	Promote	Monitor
Community Preparedness	Community engagement committee to build relationships.	Social, economic, and environmental costs of climate change adversity upon mental health.	Resilience-enhancing initiatives at individual, community, and government levels.	Mental health impacts
	Vulnerability and adaptation assessment systems.	Vulnerabilities, existing strengths, and existing resources.		Initiatives, programs, funding, etc.
	Community engagement, communication, education, and outreach systems.	Accessibility of support services.		Collaboration of system entities.
Vulnerability and Adaptation Assessments	National environmental health surveillance system that includes climate change-related indicators. Committee to build community relationships Training program for professionals to recognise, prepare for, and respond to mental health impacts of climate change.	Social, economic, and environmental costs of climate change adversity upon mental health. Current and future cost predictions. Vulnerabilities, existing strengths, and existing resources. Accessibility of support services.	Resilience-enhancing initiatives at individual, community, and government levels. Leadership through Climate Change Forum consisting of governance representatives, cross-system stakeholders, and community members.	Mental health impacts. Reporting of evaluations, policy, and interventions. Collaboration of system entities.
Community engagement, communication, education, and outreach	Committee to build stakeholder and other community relationships. Community engagement, communication, education, and outreach systems	Social, economic, and environmental costs of climate change adversity upon mental health. Vulnerabilities, existing strengths, and existing resources. Collaboration of system entities.	Resilience-enhancing initiatives from individual, community, and government levels.	Mental health impacts. Initiatives, programs, funding, etc. Collaboration of system entities.
Collaboration of System Entities	National environmental health surveillance system that includes climate change-related indicators. Committee to build stakeholder and other community relationships. Training program for professionals to recognise, prepare for, and respond to mental health impacts of climate change.	Social, economic, and environmental costs of climate change adversity upon mental health. Current and future cost predictions. Collaboration of system entities.	Resilience-enhancing initiatives from individual, community, and government levels. Leadership through establishing a Climate Change Forum consisting of governance representatives, cross-system stakeholders, and community members.	Mental health impacts. Reporting of evaluations, policy, and interventions Collaboration of system entities.

5.1.1. Communiy Preparedness

This study identified significant accessibility barriers to support services, often exacerbated by pre-existing vulnerabilities in communities. Its outcomes challenge the stereotypical vulnerability spectrum. It reveals that climate change adversity is not limited to those represented in this spectrum. An individual's context and environment are clearly relevant factors. Community preparedness aims for communities to possess emergency preparedness planning capabilities concerning climate change adversity and emotional wellbeing impacts. In a time of increasing climate change adversity, we should assess how national strategies for emotional resilience are used at the community level, inclusive of how these are implemented with existing and future community support services. This should consider critical factors, including accessibility measures and the assessment of vulnerability risks to inform adaptation and mitigation policies that are aimed at enhancing community preparedness planning capabilities.

The following four *community preparedness recommendations* emerge from the proposed framework:

1. Community preparedness recommendation 1: community relationship committee Establish principles and advisory material for a community relationship committee to undertake the following: (1) build cross-system partnerships; (2) identify appropriate tools to undertake vulnerability and adaptation assessments; (3) identify vulnerability risks and inform policy about perceived vulnerabilities, and (4) create appropriate

communication, engagement, communication, education, and outreach systems for the target stakeholders, community members. and other affected populations.

2. Community preparedness recommendation 2: evaluation criteria Develop evaluation criteria, including ways of assessing social, economic, and environmental costs at individual, community, and government levels, to evaluate vulnerabilities, existing strengths and resources within these levels, and assess the accessibility of support services. Different methods may be applied to evaluate these costs, including a cost–benefit analysis of qualitative and quantitative data.

3. Community preparedness recommendation 3: promotion principles Develop promotion principles that incorporate resilience-enhancing initiatives at the individual, community, and government levels. Examples could include the following at an individual level: recommendations for developing and implementing programs that encourage connection and access to support services:

    *   Programs that incorporate activities, sports, sports, and art to foster connection.
    *   Activities that support reflection, such as yoga, meditation, and mindfulness, to enhance resilience at the individual level through improved self-awareness.
    *   Grassroots programs that promote relationships and connections between people and places.
    *   Reducing barriers to support services can improve accessibility.

4. Community preparedness recommendation 4: monitoring principle Develop monitoring principles that include mental health impacts, and initiatives, programs and funding, and collaboration of system entities. Monitoring principles are essential to ensure that intervention and adaption strategies are appropriate and adaptable to meeting diverse needs across different communities. They are also beneficial in determining the wider impacts of these strategies on the broad sytem levels.

5.1.2. Vulnerability and Adaptation Assessments

Vulnerability and adaptation assessments can be beneficial tools in determining vulnerabilities, strengths, and existing resources. We need to develop assessment frameworks and strategies that reflect contexts of vulnerability and risk to identify risks concerning climate change (which may be broader than the stereotypical "vulnerability" spectrum). Such assessments can inform interventions and education processes at different systematic levels. Factors for consideration include: the context of vulnerability risk; using person-centered approaches; and using storytelling approaches to humanize and inform policy and intervention strategies.

The emerging framework provides the following five recommendations:

1. Vulnerability and adaptation assessment recommendation 1: national system-wide principles Firstly, developing principles for a national environmental health surveillance system that includes climate change-related indicators for mental health. Secondly, establish a community engagement committee to build cross-system partnerships. Finally, develop a training program for professionals (health, teachers, and relevant others) to recognize, prepare for, and respond to the mental health impacts of climate change.

2. Vulnerability and adaptation assessment recommendation 2: evaluation principles Develop evaluation principles that include appraising social, economic, and environmental costs associated with the focus issue from the individual, community, and government levels, evaluating vulnerabilities, existing strengths, and resources within these levels, and assessing the accessibility of support services.

3. Vulnerability and adaptation assessment recommendation 3: community preparedness We discuss evaluation tools in Section 5.1.1, Community Preparedness.

4. Vulnerability and adaptation assessment recommendation 4: promotion principles Develop promotion principles that incorporate resilience-enhancing initiatives at individual, community, and government levels and leadership avenues through a Climate Change Forum. This forum is based on the concept of interagency collaboration.

Climate Change Forum participants should be cross-system stakeholders (inclusive of government representatives, community organizations, businesses), community members and other interested people, who can work collaboratively to support collaboration between system levels and inform ongoing decision-making processes. Great care should be taken to ensure representativeness in the Forum participants. Children and youth must be represented. We explain considerations of resilience-enhancing initiatives in Section 5.1.1, Community Preparedness.

5. Vulnerability and adaptation assessment recommendation 5: monitoring principles Develop monitoring principles that include mental health impacts, reporting of evaluations, policy and interventions, and collaborations of system entities. The benefits of such monitoring principles are previously discussed in community preparedness recommendation 4: monitoring principles.

5.1.3. Community Engagement, Communication, Education, and Outreach

Community engagement, communication, education, and outreach processes aim to open up early and sustained communication and engagement channels to support community capacity building, community education (including citizen science), and strengthen knowledge-building pathways. As with many societal issues, approaches to climate change and enhancing emotional resilience in individuals and communities should also consider how community engagement, communication, education, and outreach activities can best support long-term outcomes. A training component will be required for all participants.

This component may take the form of community awareness, education, capacity-building and capacity-strengthening, and community engagement programs. It can support an overarching aim for policy development to minimize systematic vulnerabilities and build resilience. Communication channels could include awareness and engagement programs, community education, capacity-building, and capacity-strengthening programs, use of media, and community or cultural events that offer multiple opportunities to engage and share knowledge with (and from) community members of all ages and cultural backgrounds.

One factor to consider within this component is the importance of including culturally relevant and empathic messaging and communication. These initiatives may involve overcoming appropriate linguistic and cultural awareness barriers via training and support for practitioners, government representatives, community members and others. These approaches must also acknowledge that climate change may affect many vulnerable sectors of society, including culturally and linguistically diverse populations, who may not engage readily with mainstream media sources or community forums.

Building on the examples discussed above, the proposed emerging framework provides the following four recommendations:

1. Community engagement, communication, education, and outreach recommendation 1: community engagement committee Establish principles for establishing a community engagement committee to build cross-system partnerships and appropriate community engagement, education, communication, and outreach systems that reflect those described earlier in this section. Emphasize engagement of children, young people, adults, apolitical and nonaligned community leaders, people from diverse cultural, ethnic and linguistic backgrounds, policymakers, public health authorities, physical and mental health professionals, emergency professionals, environmental agencies, and meteorological services.

2. Community engagement, communication, education, and outreach recommendation 2: evaluation principles Establish evaluation principles. Evaluation principles may include appraising social, economic, and environmental costs associated with the focus issue at individual, community, and government levels. Additional evaluation principles could include evaluating the vulnerabilities, strengths, and resources within these levels and collaboration of system entities. We discuss evaluation tools in Section 5.1.1, Community Preparedness.

3. Community engagement, communication, education, and outreach recommendation 3: promotion principles Develop promotion principles that incorporate resilience-enhancing initiatives at in-dividual, community, and government levels. We discuss resilience-enhancing initiatives in Section 5.1.1 Community Preparedness.

4. Community engagement, communication, education, and outreach recommendation 4: monitoring principles Develop monitoring principles. Monitoring principles include mental health impacts, all initiatives, programs, and funding, and collaboration of system entities. The benefits of such monitoring principles are previously discussed in community preparedness recommendation 4: monitoring principles and referred to in vulnerability and adaptation assessment recommendation 5: monitoring principles.

5.1.4. Collaboration of System Entities

Collaboration of system entities aims to connect system levels and entities with diverse needs residing in different communities. This approach includes community engagement within policy phases to ensure that policies are appropriate and reflect the needs of the current and expected populations. This component focuses on engaging populations with existing vulnerabilities.

The proposed emerging framework suggests the following four recommendations:

1. Collaboration of system entities recommendation 1: a national environmental health surveillance system Establish a national environmental health surveillance system that would involve climate change-related mental health indicators, a community engagement committee to build cross-system relationships and partnerships, and a training program for professionals to recognize, prepare for, and respond to the mental health impacts of climate change.

2. Collaboration of system entities recommendation 2: evaluation principles Develop evaluation principles. Evaluation principles could include appraising social, economic, and environmental costs associated with the focus issue at the individual, community, and government levels. Additional evaluation principles include appraisal of current and future cost predictions and collaboration of system entities. We discuss evaluation tools in Section 5.1.1, Community Preparedness.

3. Collaboration of system entities recommendation 3: promotion principles Develop promotion principles to incorporate resilience-enhancing initiatives at individual, community, and government levels. We discuss considerations of resilience-enhancing initiatives in Section 5.1.1, Community Preparedness.

4. Collaboration of system entities recommendation 4: monitoring principles Develop monitoring principles that include mental health impacts, all initiatives, programs and funding, and collaboration of system entities. The benefits of such monitoring principles are previously discussed in community preparedness recommendation 4: monitoring principles and referred to in vulnerability and adaptation assessment recommendation 5: monitoring principles and Community engagement, communication, education, and outreach recommendation 4: monitoring principles.

6. Conclusions

The whole question of impacts associated with climate change adversity on emotional wellbeing is an emerging concept of vast importance. This systematic literature review reviewed 114 studies that offered insights into ways of enhancing baseline emotional resilience. The research highlighted the importance of strategies and interventions at individual, community, and government levels and suggested a variety of ways that Australians could enhance emotional resilience at those levels.

Knowledge is still emerging about the characteristics of resilience abilities and what influences resilience over a lifetime. This preliminary study revealed difficulties in conceptualizing and identifying the vulnerabilities that would benefit from enhanced resilience. Because of their inherent complexity, ecological models offer promise for conceptualizing the multi-dimensional nature of resilience as it interacts across system levels. They

should be explored further. We also need further investigations to ensure that intervention models can be adapted and made congruent with the needs of a diversity of individuals and communities.

A deeper understanding of resilience will undoubtedly benefit future interventions. This subject is outside the scope of this literature review.

One area requires urgent attention, however. It is critical that policymakers and others understand the highly complex nature of vulnerability–well beyond any stereotypical spectrum of vulnerabilities. Future research and implementation must identify and seek to understand vulnerabilities across systems, looking beyond stereotypical vulnerabilities to consider that everyone is potentially vulnerable to climate change adversity during their lifetime.

The findings present multiple examples of two types of interventions: (1) how individuals and communities can foster enhanced emotional resilience using grassroots approaches; and (2) how governments can foster enhanced emotional resilience using policy and framework approaches sometimes described as "top-down". These approaches are seen as complementary.

Limitations within this study are primarily related to the search strings used and the results extracted from the resulting literature. This topic is of such huge significance that it requires further in-depth investigation. Further studies should explore the potential for designing, implementing, and monitoring interventions across system levels to adapt national intervention frameworks for application at the local level.

Despite its limitations, this study opens a discursive space for further, targeted research and expert, professional, community, and advocacy conversations. It identifies a wide range of critical issues associated with the emotional impacts of climate change adversity. It offers guidance for further research and policy development on this topic. The authors believe that enhancing emotional resilience is one avenue that offers real potential for benefit to Australians. One valuable direction could be to replicate some interventions described in this report to assess their suitability in other (particularly Australian) contexts. Future researchers may wish to apply quantitative analysis methods to supplement the qualitative findings identified by the literature review.

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