

## Review

# Navigating psychosocial dimensions: understanding the intersections of adaptation strategies and well-being outcomes in the context of climate change

Stacey C Heath



Adaptation strategies are essential for mitigating climate risks and safeguarding human well-being. However, not all adaptation options are equal, either in their effectiveness at reducing risk or in their consequences and outcomes. This paper examines the interplay between adaptation strategies, psychosocial constraints, and well-being. It highlights how the success of adaptation measures is interconnected with their often overlooked social and psychological consequences. By exploring psychological mechanisms and societal implications (e.g. identity and social norms), I aim to contribute to a better understanding of the adaptation–well-being nexus. The concept of well-being is considered within the milieu of climate adaptation, recognising diverse interpretations across contexts. The unequal impacts of adaptation on vulnerable populations are also discussed, highlighting the need for context-specific approaches that prioritise the well-being of heterogeneous communities. The paper provides critical insights into the psychosocial dimensions of climate adaptation, offering recommendations for more transformative adaptation strategies that foster overall well-being.

**Address**

School of Psychology and Counselling, The Open University, Milton Keynes, UK

Corresponding author: Heath, Stacey C ([stacey.heath@open.ac.uk](mailto:stacey.heath@open.ac.uk))

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ranging from extreme weather events to ecosystem disruptions [1]. Rising temperatures, changing precipitation patterns, and intensifying extreme events pose significant risks to human and natural systems [2,3]. In response, adaptation strategies — defined as the adjustment of ecological, social, or economic systems — aim to mitigate risks and enhance resilience [4]. Resilience refers to the capacity of individuals, communities, and systems to absorb, recover from, and adapt to climate impacts while maintaining essential functions [5]. However, resilience is not a uniform concept; it varies across communities, systems, and various economic, social, and psychological dimensions. Moreover, these differences can influence the ways in which groups experience and respond to climate stressors, including adaptation efforts [5,6].

Adaptation strategies, such as constructing seawalls to protect against sea-level rise, developing drought-resistant crops to ensure food security, and implementing early warning systems for natural disasters, are essential for mitigating risk. However, conventional approaches often prioritise economic factors and physical outcomes, with little attention to broader well-being impacts [7]. Recent research highlights that the effectiveness of adaptation strategies hinges not only on environmental outcomes but also on safeguarding well-being [8,9]. Consequently, the centrality of well-being across interventions, global health goals, and policy research is becoming increasingly apparent [10–12].

Despite this broader understanding, examples of adaptation interventions integrating wider well-being considerations into practice remain scarce [7]. This can partly be attributed to the multifaceted nature of well-being which varies significantly across contexts, making it challenging to apply universal standards [13–15]. While much attention has been devoted to the technical aspects of adaptation (such as economic value and efficacy), broader well-being considerations have often been overlooked or inadequately explored. This highlights the need for a more comprehensive understanding of the social dimensions of adaptation and their interconnectedness with well-being outcomes [16,17].

## Introduction

The global phenomenon of climate change has become increasingly pronounced, resulting in myriad challenges

Against this backdrop, this paper explores the interplay between adaptation strategies, psychosocial constraints,

and well-being outcomes. In doing so, I seek to offer theoretical insights to guide inclusive and transformative approaches to climate adaptation. The following sections will examine the multidimensional nature of well-being; the intersections between adaptation strategies and well-being outcomes; and the importance of integrating psychosocial factors into adaptation planning and policy.

### Conceptualizing well-being

Well-being is not a monolithic concept but rather, much like adaptation, unfolds in transient and complex ways, encompassing various conceptualisations and interpretations across the literature [18]. These diverse and intersecting perspectives shape our understanding of what it means to live well and what the good life constitutes across multiple dimensions. Objective well-being refers to observable and verifiable dimensions such as income, health, and education levels [18], providing the foundation for eudaimonic well-being, which emphasises personal growth, self-realisation, and fulfilment [19]. These two dimensions are interdependent; objective well-being creates the conditions for growth, while eudaimonic well-being allows one to realise potential within these conditions. Subjective well-being, on the other hand, involves individuals' perceptions and evaluations of their own happiness and life satisfaction [20,21]. These interdependent dimensions highlight the numerous intersections and divergences within a complex well-being landscape.

Among these diverse interpretations, the concept of relational well-being emerges as particularly relevant in the context of climate adaptation. This perspective fosters a more holistic understanding of human flourishing, focussing on how individuals navigate their social, psychological, economic, and environmental milieu [18,22]. Relational well-being does not assume limitless growth or progress but rather examines how well-being is constructed and experienced within resource-constrained environments [22]. This aligns with transformative adaptation principles, emphasising the importance of identifying and assessing adaptation impacts across multiple aspects of life [23]. For example, adaptation measures that focus primarily on risk reduction can disrupt social identity [24,25] and sense of place [26], thereby negatively impacting well-being. Conversely, adaptation initiatives involving community decision-making processes can enhance social capital, increase knowledge, drive collective action, and foster resilience [27–30]. Therefore, by integrating diverse well-being perspectives, adaptation efforts can better address the varied ways people experience and achieve a good life. Adopting inclusive and holistic approaches that are sensitive to psychosocial and contextual factors will

ensure equitable and effective adaptation measures that contribute to, rather than hinder, resilience and overall well-being.

### Understanding the intersections of adaptation strategies and well-being outcomes

Building on this understanding of well-being, it is essential to explore how adaptation strategies intersect with and influence these outcomes. Infrastructure improvements, for example, mitigate risks and protect communities from severe weather events, reducing ecological and economic losses [29]. Similarly, investments in renewable energy and sustainable agriculture enhance economic systems and improve food security and nutrition [30]. These investments positively affect material and objective well-being. However, adaptation strategies do not occur in isolation; they frequently necessitate large-scale and often-imposed changes that can disrupt psychosocial processes [24]. Psychosocial processes refer to the social and cultural factors often affected by adaptation interventions. These processes, in turn, influence mental health, well-being, and behaviour. The following subsections will explore the psychosocial dimensions in more detail.

### Vulnerable populations and the unequal impacts of adaptation

Adaptation strategies that prioritise risk reduction and fiscal outcomes can lead to unintended social consequences [24,31]. These effects are particularly pronounced for marginalised and vulnerable populations [32,33]. For example, while infrastructure projects may reduce physical and economic losses [34], they can also precipitate psychological distress and social fragmentation [27]. These effects manifest in different ways, such as through expressions of solastalgia — defined as the distress caused by environmental change [35]; reduced feelings of safety, identity, and attachment [24]; and increased vulnerability [32,36,37]. Importantly, these impacts are not uniform, as populations experience different physical, mental, and social challenges, depending on their social, cultural, geographical, and political contexts [38–40]. Acknowledging these impacts can lead to the development of more equitable strategies that promote mental health, strengthen social cohesion, and align with transformative adaptation processes [23,41,42]. An integral part of addressing the psychosocial impacts is considering sociocultural factors, such as community-specific values and norms, which can either complicate or support adaptation efforts [39,43]. Understanding these factors is important because they often underpin some of the broader vulnerabilities and challenges that populations face.

### *The role of sociocultural factors in shaping adaptation responses*

Sociocultural factors, such as social norms and individual values, can constrain adaptation strategies by reinforcing maladaptive behaviours [33]. Maladaptive behaviours are actions that, although often unintentional, reduce resilience. For example, communities valuing traditional practices may resist new adaptive measures critical for long-term resilience [40]. This resistance is often rooted in the desire to maintain social cohesion and cultural identity. It highlights the complex interplay between psychosocial factors and broader social norms. Although these behaviours preserve cultural identity, they can also limit adaptation effectiveness, increasing vulnerabilities in communities already facing significant environmental changes [39,44].

Ziervogel et al. [44] illustrate how sociocultural factors influence adaptation efforts. In their study of water governance in low-income communities in Cape Town, the authors found that resistance to change often stemmed from the historical and cultural context of apartheid. This created deep mistrust between local communities and municipal authorities. Mistrust, combined with entrenched sociocultural values, made it difficult to introduce essential new water management practices during droughts. The study highlights the importance of addressing sociocultural resistance and empowering marginalised voices. The authors conclude that knowledge co-production is necessary to ensure effective and culturally sensitive adaptation strategies.

### *Differentiating slow-onset versus extreme weather events in adaptation*

The psychosocial impacts of adaptation strategies can also vary significantly depending on the nature of the climate event [45]. Slow-onset events, like desertification or sea-level rise, often require long-term structural changes, such as relocation or livelihood diversification. While these strategies may mitigate physical risks, they can also exacerbate psychosocial stressors like solastalgia [35] and identity loss [24]. Conversely, extreme weather events, such as wildfires or hurricanes, necessitate immediate responses, like evacuations or rapid reconstruction. The urgency of these events can rapidly shift social norms and values, towards short-term survival and recovery [46]. Such shifts can lead to acute impacts like anxiety, depression, and post traumatic stress disorder (PTSD) [47].

Despite differences in intensity and immediacy, the long-term psychosocial effects of slow-onset and extreme events often overlap. For example, prolonged displacement and environmental changes from extreme weather

events can cause solastalgia [35,48], echoing the gradual psychological toll of slow-onset events. Moreover, the negative impacts associated with such events are often intensified among indigenous, marginalised, and vulnerable populations [37]. Thus, adaptation strategies must be designed not only to protect physical safety but also to foster long-term resilience and well-being [32]. Poorly designed strategies risk maladaptation through increasing vulnerabilities, underscoring the need to align efforts with each event's specific contexts and impacts [33].

### *Impacts on marginalised groups and vulnerable communities: unique adaptation challenges*

Similar to the impacts of climate change events, the psychosocial impacts of adaptation strategies are not uniformly experienced across populations. Marginalised and vulnerable groups, such as indigenous communities, women, and those in low socioeconomic areas, face unique challenges from both climate change and adaptation measures [37,38]. Indigenous populations, whose identities, cultural practices, and traditional knowledge are intricately connected to the land and environment, often experience distinct challenges due to adaptation measures [35,49]. These challenges include feelings of disempowerment, identity loss, and cultural erosion that can affect both physical well-being and social cohesion.

Building on these unique challenges, different types of loss — such as cultural heritage, mobility, and biodiversity — can also constrain adaptation differently depending on the community's sociocultural context. For example, the loss of cultural heritage and land can be profound for indigenous populations [14]. On the other hand, biodiversity loss may significantly impact the well-being and livelihoods of agricultural communities. Marginalised and nonindigenous groups, including those in low-income areas, may experience psychosocial barriers tied to socioeconomic disparities and lack of political representation [32,45]. These factors compound vulnerabilities and intensify mental health challenges. The emotional and cultural dimensions of loss of place, identity, and landscapes, for example, can affect both individual and broader social structures, resulting in increased anxieties and diminished well-being [24]. Failing to account for these nonmaterial losses can limit the effectiveness of adaptation strategies and risk perpetuating unjust outcomes [27,32,39].

### *Intersecting vulnerabilities: gender, age, and social inequities in adaptation*

In addition to these challenges, it is important to recognise how different vulnerabilities intersect when assessing climate adaptation strategies. Climate-related changes often exacerbate pre-existing vulnerabilities,

such as gender, age, and minority status [38,40,50,51]. Research suggests that adaptation strategies can intensify these inequities, further amplifying vulnerabilities [33,52]. For example, women in marginalised communities face unique challenges due to traditional gender roles, limiting their participation in decision-making processes [38,53]. Similarly, elderly individuals may experience greater isolation and anxiety as they struggle to adapt to rapidly changing environments [51].

These psychosocial effects further impede the resilience of individuals and communities, limiting their capacity to cope with future environmental changes [54]. The unequal distribution of adaptation resources, such as early warning systems or climate-resilient housing, often means that the communities most affected by climate change have the fewest resources to adapt. For example, marginalised and vulnerable communities are often faced with structural barriers like poverty, geographic isolation, and social exclusion, which can limit their ability to benefit from such resources and technological advancements [39,54]. Consequently, it is the most vulnerable populations that bear the brunt of both climate impacts and the unintended consequences of adaptation measures [33,39–41].

To ensure adaptation efforts are both effective and equitable, it is important to address developmental gaps and psychosocial dimensions in combination. That is, psychosocial factors such as social cohesion and identity interact with structural disparities, disrupting social networks. These disparities can limit collective resilience, further entrench vulnerabilities, and shape how communities perceive and engage with adaptation efforts [55].

#### **Towards inclusive and equitable climate adaptation for well-being**

A review of internationally funded climate adaptation projects demonstrates that many such efforts can inadvertently perpetuate or exacerbate vulnerabilities [50,55]. Current adaptation frameworks often reinforce, redistribute, or create new vulnerabilities due to inequities in engagement and the oversight of multiscale processes [28,43]. This underscores a fundamental flaw in conventional frameworks, which frequently overlook the social dimensions and broader consequences of adaptation [7]. These findings call for a paradigm shift towards more transformative research and strategies that incorporate social, cultural, and psychological factors alongside economic and environmental considerations [16,24,32,50,56]. By addressing these social dimensions, adaptation measures can more effectively enhance resilience and well-being across diverse communities.

In line with these assertions, a recent review of the literature [56] emphasises the need for inclusive and

equitable adaptation strategies that prioritise social justice and sustainability. It highlights the interconnected, yet often misunderstood relationships between vulnerability, adaptation, and resilience. Key findings foreground the importance of integrating social, institutional, economic, and environmental factors into adaptation planning and evaluation. The review also highlights the link between climate adaptation and disaster risk reduction, advocating for strategies that address both immediate climate threats and long-term resilience. Such an inclusive and holistic framework will not only mitigate environmental risks but also address the underlying social inequities that exacerbate vulnerability.

Research on transformative adaptation and climate justice emphasises the necessity of incorporating systemic and inclusive approaches to the ways we formulate knowledge [23,41,44,57–59] and develop ecologically safe and socially just responses to climate change [27,60]. Recognising and addressing psychosocial impacts is essential for creating effective and equitable responses that foster genuine resilience and well-being [37,55]. Social and environmental psychology can significantly contribute to the adaptation–well-being nexus by providing insights into the psychosocial drivers of effective adaptation; and the consequences of neglecting these dimensions [24,25,53]. By integrating these perspectives, we can develop comprehensive strategies that support both the immediate and long-term well-being of vulnerable populations.

To achieve this, adaptation strategies must consider how they alter social and environmental landscapes, including cultural, geographical, ideological, social, and political contexts. Given their multifaceted impacts, understanding psychosocial dimensions is important to comprehend their role in shaping human well-being. However, despite growing awareness of some of the broader psychosocial consequences across disciplines and sectors [16], multiple conceptualisations of well-being, institutionalised norms, and inequitable motivations often lead to the neglect of these aspects [7,14,61].

#### **Integrating psychosocial considerations into climate adaptation**

Integrating psychosocial processes, such as identity, social norms, and values, into adaptation planning is essential for equitable and transformative outcomes [62,63]. Research on Maasai pastoralists' land management practices showed community identification and group norms to influence a willingness to protect communal land from degradation [53]. Furthermore, this research highlights the role of gender dynamics, with women's voices and perspectives frequently under-represented, affecting the equity and effectiveness of adaptations (see also [38]). Similarly, in Khuzestan, Iran,

individual values such as fatalism were identified as significant barriers to successful adaptation [63].

Jones and Boyd [64] highlight that social processes heavily influence adaptation actions. They emphasise that adaptation efforts must prioritise local social structures, values, and perceptions to be effective and equitable. Initiatives promoting engagement, participatory decision-making, and capacity-building can foster a sense of ownership and empowerment, ultimately enhancing the overall effectiveness of adaptation measures [61,62,64]. Additionally, research examining community responses to flooding in Somerset, England, and Gippsland East, Australia, foregrounds the importance of social identity in enabling or constraining adaptation [25]. Similarly, a study on planned relocation due to sea-level rise in Ghana's Volta Delta region further illustrates these psychosocial impacts [24]. The research found that relocated communities reported lower well-being, higher anxiety, and lower safety perceptions compared to nonrelocated communities. The relocation also disrupted community-based self-efficacy and identity, exacerbating feelings of detachment and insecurity. These outcomes were attributed to livelihood disruptions, ineffective government interventions, and ongoing risk perceptions. Thus, highlighting the necessity of considering social, economic, and psychological dimensions in adaptation strategies.

The psychosocial dimensions of adaptation are also evident in the case of place loss due to coastal erosion in Ireland [65]. Using in-depth walking interviews and photo-elicitation, the research found that the emotional responses to place loss, consistent with solastalgia, were intensified by undesirable adaptation measures like rock armour installation. The lack of community engagement in decision-making amplified feelings of powerlessness and anxiety, which were further compounded by rapid residential development that altered place identity and community cohesion. The study highlights the importance of considering place attachment and fostering community engagement in adaptation strategies to mitigate emotional distress and promote adaptive resilience.

Additionally, a comprehensive review of climate change strategies on mental health and well-being in low- and middle-income countries (LMICs) underscores the importance of integrating mental health considerations into adaptation planning [56]. Over half of the studies reviewed showed significant improvements in mental health or well-being, while the rest had mixed results influenced by local and sociocultural factors. This underscores the necessity for targeted, context-specific

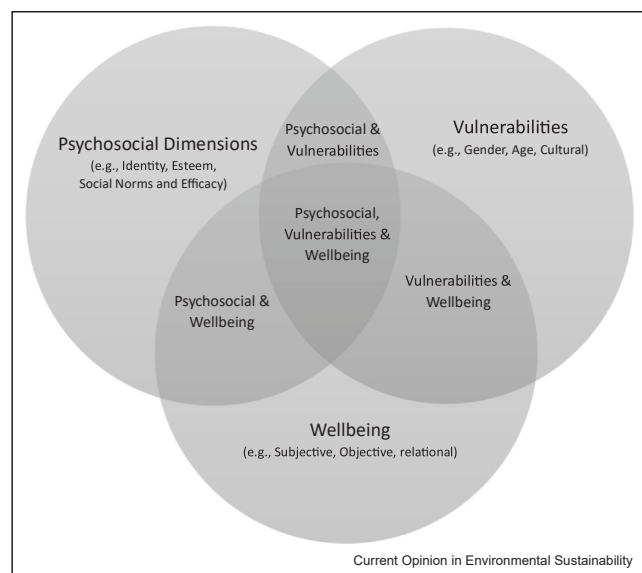
participatory planning to understand the specific impacts of these strategies on mental health and well-being outcomes. The review also highlighted the pronounced vulnerability of LMICs to climate change. It emphasised the need for equitable research and policy to address the complex interplay between socioeconomic, structural, and political factors contributing to human vulnerability. That is, advancements in research and policies should be inclusive of marginalised and vulnerable groups in decision-making processes. This ensures that the benefits of adaptation strategies are distributed fairly across diverse populations.

Building on the need for more equitable research and policy in LMICs, it is also necessary for effective adaptation strategies to consider broader psychosocial dimensions that influence how groups experience, and respond to, adaptation efforts. For example, a systematic review identified vulnerability, justice, and social resilience, as key markers of successful adaptation [8]. Group-based processes such as resource sharing and collective decision-making are crucial determinants of mutually beneficial outcomes. This highlights the importance of adaptation strategies that are sensitive to the differentiated impacts of climate change on various social groups, including women, indigenous communities, and economically disadvantaged populations. Gender-sensitive approaches, for example, can address the unique and intersecting vulnerabilities and strengths of women, preventing adaptation measures from exacerbating gender inequality [66].

Local governance structures also play a critical role in enabling or hindering community adaptation. Institutional rigidity and entrenched social norms can stifle innovative responses, leaving communities vulnerable. Overcoming these barriers requires policy shifts to support flexible, community-driven adaptation initiatives [43]. This relational approach ensures adaptation measures are technically effective, socially sustainable, and equitable. By integrating psychosocial dimensions into climate adaptation planning, we can develop more resilient communities that are better equipped to handle the multifaceted challenges posed by climate change. This consideration aligns with the broader goals of transformative adaptation, which seek to fundamentally reshape social-ecological systems to enhance resilience and well-being in the face of ongoing environmental change [23].

Figure 1 provides a visual framework to understand how psychosocial dimensions, vulnerabilities, and well-being dimensions intersect in the context of climate adaptation strategies.

Figure 1



Intersecting Dimensions of Climate Adaptation. A Venn diagram showing the intersections between psychosocial dimensions (including identity, self-efficacy, and social norms), vulnerabilities (including gender, age, cultural, historical, economic, geographical, health, and indigenous status), and well-being dimensions (including objective, subjective, and relational well-being).

## Conclusion

This paper foregrounds the importance of integrating psychosocial dimensions into adaptation strategies. By considering the multifaceted nature of well-being and its interaction with social and environmental changes, we can create more inclusive and equitable responses to climate change. I have emphasised that adaptation governance and planning must design strategies that are flexible and inclusive, consider identity-building processes, adopt participatory decision-making, and capacity-building initiatives to foster a sense of ownership and empowerment. Additionally, to ensure adaptations are effective and just, strategies must address the unique vulnerabilities of different social groups, including women, indigenous communities, and economically disadvantaged populations. Future research should continue to explore these intersections between adaptation strategies, psychosocial dimensions, and vulnerabilities, to provide deeper insights and offer practical, actionable, and equitable recommendations for policymakers. By highlighting the necessity of incorporating psychosocial considerations into adaptation measures, this paper contributes to a more nuanced understanding of how to promote resilience and enhance well-being in the face of climate-related changes. Focussing on these dimensions is crucial for achieving transformative adaptation strategies that effectively address the complex challenges posed by a changing climate.

## Data Availability

No data were used for the research described in the article.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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- of special interest
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