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Concept Paper

# Climate Change's Impact on Mental Health: Preparedness and Policy Interventions to Support Affected Individuals and Communities

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**Abstract:** The complex and interconnected challenges of climate change, water stress, disasters, and health crises have far-reaching implications for sustainable development and global sustainability agendas, such as the Sustainable Development Goals (SDGs). However, one critical issue that has been overlooked is the nexus between climate change impacts and mental health (CCMH). Recognizing and addressing the negative emotions associated with this global phenomenon is essential to fostering a holistic approach to climate action planning and building long-term resilience. In this assessment, we present a set of narratives to argue that CCMH research requires a collaborative, transdisciplinary approach that integrates socio-economic and socio-cultural complexities. For this assessment, we used a case study approach to elucidate that the mental health impacts of climate change are unequally distributed, disproportionately affecting vulnerable groups based on age, gender, race, and socioeconomic status. The assessment presented in this study concluded that adequate mental health support programs are limited due to sociocultural stigmas and limited socioeconomic resources in some regions. Existing climate-related mental health services mechanisms lack coordination and specific action plans, leaving affected populations underserved. Unlike traditional understandings of the climate-health nexus, this research calls for experts from multiple fields to work together and for enhanced attention to and investment in CCMH research to bridge the gap between scientific knowledge and practical solutions. Such solutions will lead to scalable and lasting change as communities can implement research findings to support those in need and enhance disaster resilience. Furthermore, by collectively recognizing the climate and mental health nexus, global commitments such as the SDGs and the Paris Declaration can advance awareness and action in climate-related mental health, ultimately promoting a healthier relationship between humanity and nature.

**Keywords:** climate change; mental health; policies; interventions; support; vulnerable communities

## 1. Introduction

Climate change is a global challenge that burdens humanity but not equally, as it renders developing countries more vulnerable as capacity gaps and support systems cannot carry the burden of disaster events (Charlson et al., 2021; Patel et al., 2020). For instance, change-related disasters have devastated communities worldwide, causing significant loss of life, assets, and well-being. Despite this, the definition of loss linked to climate change and extreme events in climate change management strategies remains vague and is limited to financial compensation (Boyd et al., 2021; Hrabok et al., 2020). One such aspect is the loss of mental health and well-being. WHO defines mental health as “a state of well-being in which every individual realizes his or her potential, can cope with the stresses of life, can work productively and fruitfully, and can make a contribution to her or his community” (WHO, 2018). In

addition, the term mental health is encapsulated in the definition of psychosocial health. Psychosocial health refers to psychological and social well-being (Hayes et al., 2019 ).

Significant gaps exist in addressing the broader impacts of these disasters, such as the psychosocial effects on communities and individuals. Climate change significantly impacts individuals' mental health and psychosocial well-being. The frequency and intensity of climate change impacts and disaster events have increased in recent years, resulting in the loss of lives, assets, infrastructure, and environments, ultimately affecting the mental health and well-being of communities and citizens (Charlson et al., 2021; Cunsolo & Ellis, 2018; Hayward & Ayeb-Karlsson, 2021). In 2022, according to the EM-DAT on emergency events, 387 natural hazards and disasters worldwide resulted in the loss of 30,704 lives and affected 185 million individuals. Economic losses totaled around US\$ 223.8 billion ( EM-DAT, 2022). Climate change impacts on the mental health and psychosocial well-being of individuals and communities is a direct influence of the frequency and intensity of climate change impacts and disaster events annually and over a time range, resulting in the loss of lives, assets, infrastructure, and environments, ultimately affecting the mental health and wellbeing of communities and citizens (Charlson et al., 2022; Corvalan et al., 2022).

Floods are the most common form of significant climate-related disasters associated with several adverse health outcomes (Li et al., 2023). Despite the profound social, ecological, and economic damage inflicted by climate change, significant gaps persist in effectively addressing its multifaceted impacts. Notably, it is within developing regions and underserved areas that the harshest consequences of climate change's manifestations are experienced. These consequences include but are not limited to phenomena such as sea level rise, heightened frequency and intensity of extreme weather events, and prolonged droughts (Boyd et al., 2021; Xatamovich & Maidanovich, 2022). The recent Intergovernmental Panel on Climate Change (IPCC) report highlights climate change's impact severity. It highlights that there are still research and policy gaps in terms of implementation and enforcement of measures to mitigate and adapt to its multiple effects, and the most vulnerable people and fragile ecosystems continue to be affected the most severely (Chowdhury et al., 2021; IPCC, 2022).

Both direct and indirect drivers influence the mental health impacts of climate shocks and disasters. Direct drivers pertain to the immediately observable effects of disasters on individuals, giving rise to short-term stress disorders like PTSD and contributing to long-term manifestations such as depression, anxiety, aggressive behavior, and contemplation of suicide. Indirect drivers encompass more latent or gradual factors influencing mental health outcomes. These factors contain shifts in social and economic circumstances, such as the erosion of livelihoods, constriction of social networks, perpetuation of social inequality, and disruption of access to critical services. (Cianconi et al., 2023; Corvalan et al 2022; Lawrance et al., 2021; WHO, 2022). In addition, there is a growing recognition of the adverse effects of climate change on mental health, including feelings of grief due to the loss of valued species, ecosystems, landscapes, and the cultural context associated with nature. Though the term eco-anxiety certainly implies the presence of anxiety as a key symptom, individuals who suffer from it experience a constellation of emotions, including fear, anger, exhaustion, powerlessness, feelings of loss, helplessness, and even phobia and despair (Baudon & Liza Jachens, 2021). However, while the climate-health connections are increasingly well documented, the linkages between climate change and mental health remain less explored. However, these aspects are not mainstreamed when addressing the mental health impacts of climate change. Moreover, little has been written about interventions (e.g., programs, policies, and practices) to enhance, protect, and promote psychosocial health and support psychosocial adaptation, particularly regarding improving health equity ( Hayes et al., 2020)

Emerging scholarship on the topic suggests that climate change can have a significant impact on people's mental health (Nagabhatla et al., 2021). It can cause many problems, including stress, anxiety, depression, and difficulty sleeping. It can also lead to strained relationships and problems with thinking clearly. In some cases, people may turn to drugs or alcohol or even have thoughts of suicide (WHO, 2022). The condition could include and overlap with what is outlined below.

-Eco-anxiety- the condition people face from constantly being surrounded by the wicked and threatening problems associated with a changing climate.

-Eco-paralysis is the complex feeling of being unable to take effective action to mitigate climate change risks significantly.

- Solastalgia- distress and isolation caused by the gradual removal of solace from the present state of one's home environment

Generally speaking, people and communities increasingly feel apprehensive and stressed about climate change and how the impacts lead to problems like feeling helpless and trapped or sad as their surrounding landscapes and environments change.

Based on the above context, we have outlined three research questions.

- What direct and indirect drivers influence the mental health consequences of climate shocks and disasters, and how do these factors interact with individuals' short-term and long-term mental health outcomes?
- How can climate change-related disasters' mental health and psychosocial well-being impacts be effectively integrated into climate change and disaster risk management strategies, moving beyond focusing solely on response, recovery, and adaptation?
- What interventions, programs, policies, and practices can be developed and implemented to enhance, protect, and promote psychosocial health in the context of climate change impacts, mainly focusing on health equity and vulnerable populations?

These research questions delve into the multifaceted impacts of climate change on mental health and psychosocial well-being, exploring both the direct effects of climate-related disasters and the broader social, economic, and environmental factors that contribute to mental health challenges. They also address the potential interventions and strategies needed to mitigate these impacts and promote better mental health outcomes in the face of climate change.

## 2. Project and the Methodological Approach

The UNU Climate Resilience Initiative, a project in response to Summer Floods 2021 in Europe, triggered the need for investing in CCMH research to help bridge the gap between scientific knowledge and practical application and enable stakeholders from various sectors to develop scalable solutions for human well-being and resilient future. We discussed innovative solutions to foster a deeper understanding of complex problems like climate-change-mental health nexus by involving experts from different disciplines. Prepared communities and countries can implement research findings, promoting greater understanding and cooperation towards integrated climate action is the central research query of a specific work package within the project. The anticipated point is that CCMH research can lead to practical, scalable solutions that can make a real and lasting difference in community resilience. Toward this agenda, the flagship event of the project – The Flood Knowledge Summit ( July 2022) Panel Session (See Figure), discussed the mental health impact of climate change as the event brought together scholars and experts from various geographies from the Global South and Global North to exchange knowledge for supporting a holistic framework for climate-secure future that is both acknowledging and addressing CCMH. Sharing their insights, the experts agreed that different gaps and needs support capacities for coordinated action. For instance, communities in various socioeconomic and sociocultural settings need systemic improvements or context-specific adaptation measures. This may involve short-term and long-term interventions that can be integrated into resilience strategies at national and sub-national levels.

To build on the research queries (questions) outlined in this project, this synthesis adopted a discourse and case study approach to illustrate how community involvement is critical in addressing the mental health impacts of climate change. First, the discourse analysis describes this nexus from three perspectives: media, academia, and policymakers. Second, we provide diverse insights from three case studies representing developed, developing, and emerging economies, revealing many psychosocial challenges and mental stress individuals and communities face in settings of climate crises.

In the case studies, we conducted a comparative perspective of impacted individuals, communities, services, and healthcare providers on the mental health implications of climate change-related disasters. We aimed to put together a set of narratives to explain the CCMH nexus and gaps



in existing climate action plans. As well as call for more comprehensive policies and interventions to address these gaps and support those affected by climate change-related disasters. This synthesis also highlights the crucial role of community involvement in tackling the mental health impacts of climate change. Through this set of investigations, we aim to provide a comprehensive understanding of this nexus by assessing how different agents and agencies address these issues. Each case study provided a unique lens through which we could observe the psychosocial challenges and mental stress experienced by individuals and communities impacted by climate change-related disasters. We also examined the critical discourses on mental health implications of environment change-related disasters on affected individuals, communities, services, and healthcare providers, for example, climate change and mental health-focused discussion sessions at Climate COP 27 in Egypt held in 2022. This diverse approach allowed us to identify common themes, disparities, and specific needs that emerged in various contexts, enabling a comprehensive understanding of the complexities surrounding CCMH.



Full session from COP 27 on climate -change mental health nexus available for reference at : <https://www.youtube.com/watch?v=UoQvjobjNoY&list=PLBcZ22cUY9RjC1scZLmb8SdZeq3IM00i&index=206>



**Figure 1. a:** The COP27, Egypt session by UNU discussed multiple CCMH impacts, including a dedicated discussion on health impacts, and also highlighted the need to improve support services. **Figure 1b:** Snapshots from Panel Session 4A: 'Mental health impact of climate change and climate-induced discourse' at Flood Knowledge Summit of the UNU Climate Resilience Initiative.

### 3. Results

#### 3.1. *The Climate Change and Mental Health Discourses*

##### Academic Discourse

Understanding the many causes of ecological sorrow and how individuals feel and express it demands a pluralistic and multidisciplinary approach, combining research methodologies, academic viewpoints, and lived experiences, quotes Cunsolo and Ellis (2018). For over 15 years, a range of terms for climate-related distress has been coined to reflect the various and diverse emotional implications of environmental/climate change, with ecological grieving serving as a primary example, often cited in the literature (Comtesse et al., 2021). The emerging scholarship asserts that climate change and mental health are two severe and urgent dimensions confronting nations worldwide (Lawrance et al., 2021), and up-to-date knowledge and specific expertise are crucial to diagnosing and treating the episodes of climate grief/eco-anxiety (Baudon & Jachens, 2021). The mental health impacts of climate change include distress, trauma, fear, anxiety, and anger related to climate change, natural disasters, extreme climate events, and (anticipated) loss of nature, belongings, family, and friends. This area remains under-researched and generally overlooked (Nagabhatla et al., 2021). Current scholarship states that such impacts can be direct or indirect, short- or long-term. It could lead to psychological reactions such as grief or post-traumatic stress that require professional support and interventions. Charlson et al. (2021) noted that, despite the overwhelming evidence linking climate change to mental illness, which was also confirmed by Clayton and Karazsia (2020), various national surveys provide evidence of negative emotions associated with climate change. Most research efforts have focused on identifying the many hazards related to mental health rather than prioritizing the development of solutions, support networks, and legislative measures to mitigate these risks. Thus, although there are gaps in understanding the impact of climate change on mental health and psychosocial well-being, current knowledge is sufficient to act (Corvalan et al., 2022).

##### Media Discourse

The Guardian's report published on May 21st, 2021, presented scientists' conclusions on the enormous hidden costs of the climate crisis on the mental health of hundreds of millions worldwide. It states how heatwaves are connected to increasing rates of suicide, and extreme weather, such as floods and wildfires, leaves victims traumatized. Furthermore, losing food security, homes, and livelihoods increases stress and depression in affected communities (The Guardian, 2021). On January 28th, 2022, CNN broadcasted a piece on '*How climate change affects our mind, body, and spirit*'. The segment included a conversation with the author and former CNN meteorologist Bonnie Schneider, who discussed her opinion on this nexus. The discussion included experts of the Climate Psychiatry Alliance and the Climate Psychology Alliance, who reflected that individuals' struggles, especially young people, are dealing with anxiety triggered by climate change. Over time, this may trigger severe disruptions to their daily life, intrude on their thoughts, and cause sleep disruptions (CNN, 2022). In the BBC Earth publication from 1 March 2022, entitled "*GLOBAL WARMING -The invisible impact of climate change*," Martin Montague discussed critical findings related to eco-anxiety. He explained that fear of climate change's current or predicted effects and the increasing frequency of extreme events (i.e., hurricanes, wildfires, floods, etc.) can create trauma for anyone affected (BBC, 2022). The increasing attention from media outlets to the mental health implications of climate change and extreme weather events contributes to heightened public awareness and understanding of this issue. The media plays a pivotal role in fostering empathy and encouraging action by amplifying stories of individuals and communities grappling with the psychological aftermath of disasters.

##### Community and Policy discourse (Stakeholders, policymakers, and community organizations )

There has been a consensus among various stakeholders, policymakers, and community-scale organizations on the impact of climate change on mental health. The Committee on the Environment, Public Health and Food Safety (ENVI), a committee of the European Parliament, pointed to the

disproportionate effect of climate change impacts on the mental well-being of the most marginalized (IPOL, 2020). It can act as a health risk amplifier and reinforce inequalities in different settings worldwide, at regional and national levels, and between population groups. This was further confirmed by the National Institute for Health Care Management (NIHCM) Foundation, a Washington-based non-profit, nonpartisan organization dedicated to transforming health care through evidence and collaboration. On March 17, 2022, the NIHCM alluded to how climate and eco-anxiety/climate distress is a form of psychological distress related to the climate crisis (NIHCM, 2022).

The academics and leaders of more than 40 national, regional, and international psychological associations worldwide have signed a resolution asserting that climate change *“is a serious global threat, is occurring faster than previously anticipated, and is contributed to by human behavior.”* During their participation in The International Summit on Psychology and Global Health (ISPGH): A Leader in Climate Action in November 2019, they argued for focused research to understand the vital link between natural disasters and mental disorders, where climate change affects mental health in unpredictable ways on diverse demographic groups and how the vulnerable are immediately exposed and more susceptible due to a lack of resources, awareness, and protection (ISPGH, 2019).

Cross-cutting discourse : Climate change-induced human mobility and cascading (mental) health impacts.

A critical dimension of these cascading impacts of climate change is human mobility. Displacement from climate-related hazards, such as storms, floods, or wildfires, can occur suddenly. However, slow-onset processes, such as sea level rise, erosion, changes in rainfall, or drought, can also force individuals to leave impacted areas. The impact on migration is closely linked to the level of agency of those migrating. When individuals have some degree of control over the conditions of their migration, such as where, when, and how they move, migration can be an adaptive response to the impacts of climate change (Oakes et al., 2019), forced migration and displacement due to the multidimensional effects of climate change can also result in mental and emotional stress, including trauma due to the loss of habitat, assets, and socio-cultural identity. For the first time, Assessment Report 6 of the IPCC highlighted the mental health challenges caused by rising temperatures and extreme weather events in its landmark assessment of climate risks and humankind's ability to adapt (IPCC, 2022). Climate change is also increasingly forcing population displacement, better described by climate change-induced human mobility (Abhilash, 2023; Lawrance et al., 2022). Among the public health consequences of climate change, environmentally induced forced migration is one of the harshest and most harmful outcomes, always involving a diversity of profound resource and social losses and frequently exposing migrants to trauma and violence—more details about climate change-induced human mobility and cascading (mental) health impacts.

Climate-related migration's short- to medium-term effects can lead to poverty, homelessness, and excessive emotional distress as people struggle for basic needs like shelter, food, water, and sanitation (Haque et al., 2020). In such settings, the health burden of climate change remains a crucial challenge. This was acknowledged further in the Lancet Countdown Report (2021), which represents the consensus of leading researchers from 43 academic institutions and international agencies, including the United Nations, on the unabated rise in the impacts of climate change on human health. The report documents global health challenges and provides a clear imperative for accelerated action that prioritizes the health of people and the planet.

To establish a cohesive agenda, it is crucial to evaluate and grasp diverse perspectives on the influence of climate change on mental health and psychosocial well-being, as highlighted in Romanello et al.'s recent research (2021). This area of study is still evolving and gaining recognition.

### 3.2. Case-study approach to explain various psychosocial challenges and mental stress communities experience.

The case study methodology helped to evaluate the mental health consequences of climate change on populations particularly susceptible to factors such as age, gender, race, and

socioeconomic position. The objective was to discern the commonalities and disparities across various communities to understand the issue comprehensively.

### 3.2.1. Case Study 1: Developing state with a high frequency of disaster events (i.e., floods, storms, etc.) – Bangladesh

Bangladesh is one among the list of countries classified as most vulnerable to severe effects of climate change as economic, social, technological, and institutional structures and support systems still need to work to achieve climate resilience for people and communities (Chowdhury et al., 2021). The state is ranked 5th in the Global Climate Risk Index, which ranks 170 countries that are most vulnerable to climate change consequences such as cyclones, floods, droughts, riverbanks, and coastal erosion, where people are facing multifaceted exposure to a wide variety of environmental stress (Hayward & Karlsson, 2021); (Raihan et al., 2020). In observing post-disaster mental health conditions and the perceived need for support in Bangladesh, the survivors of disaster events expressed despair, frustration, grief, and guilt. They emphasized having experienced feelings of loneliness, grumpiness, excessive talking, irritation, and rage as long-term symptoms (Hasan et al., 2020). Other psychosocial responses experienced by survivors included denial of experiences they witnessed. As a mother stated:

*"I lost my only son in front of my own eyes to the increasing tidal waves. Every night I have nightmares till then, and I feel frightened, sad and cry for the whole night"* (excerpt from Hasan et al., 2020)

Additionally, affected individuals shared that visiting the hospitals and support centers to seek help with mental health-related symptoms was stigmatized and often viewed with shame. This is because it is viewed as a financial burden and perceived that money spent on signs without physical pain is money wasted, as an individual shared,

*"After seeing the most deaths in one day, I lost my normal speech and logical thinking capacity, but I have never talked to any doctor about this as I thought they would laugh at me."* (Hasan et al., 2020)

During his work in the area impacted by the recent flood, a non-governmental health professional noted his experience:

*"I have seen many people after the natural disaster, detached from the home and normal life with intense restlessness very sensitive to the loss."* (Hasan et al., 2020)

Effective mental health programs and focused health interventions for psychosocial well-being remain limited in Bangladesh (Islam & Mozumder, 2021). A lack of understanding of the significance of mental health at the policy level is a persisting gap. The experts also alluded that health services are influenced by socio-cultural norms and limited socio-economic dimensions. For instance, in Bangladesh and many other communities in other parts of the world, the acceptance of mental health as a condition requiring support is either limited or completely missing (Islam & Mozumder, 2021; Hayward & Karlsson, 2021; Lawrance et al., 2022).

### 3.2.2. Case study 2: How are emerging economies building a holistic climate resilience – Indonesia

In recent years, increasing number of landslide disasters and their effect on the population in Indonesia is a crucial concern (Bachri et al., 2022). As a country reflects high disaster risk ranking with climate and weather-related scenarios such as landslides, volcanic eruptions, and tsunamis (Muhammad et al., 2022). Burrows et al., (2021) investigation into how landslides displaced people from their dwellings and influenced their mental health and overall well-being was conducted in discussion with the local stakeholders indicating broad consequences such as disruption of economic stability, family relationships' dynamics, and communal cohesiveness. The study investigated the impacts of landslide displacement on mental health and well-being in Banjarnegara, Indonesia, focusing on local understanding. The researchers conducted qualitative interviews with 21 participants displaced by landslides and analyzed the data using a phenomenological approach. While recent attention to the mental health impacts of climate change and other risks in Indonesia offers hope, it is evident that further research and concerted action are required to address this pressing issue comprehensively (Burrows et al., 2021; Rahman et al., 2022). These studies examined



the well-being of individuals affected by disaster events, particularly those who experienced displacement, across three distinct phases. In Phase 1, individuals grapple with the aftermath of the disaster, facing the devastation and formulating recovery plans. This phase can trigger stress and anxiety due to the overwhelming loss and uncertainty about the future. Phase 2 entails coping with temporary living arrangements and the challenges of day-to-day survival, often called an "in-between" phase. The prolonged instability and precarious conditions during this period can contribute to heightened stress and potentially lead to mental health disorders. In Phase 3, individuals strive to rebuild a sense of normalcy and belonging in new environments, which may involve migration. Adapting to new settings and establishing a sense of place can induce emotional distress and exacerbate mental health issues. These scenarios highlight the potential sources of stress and mental health disorders during and after a disaster, emphasizing the need for tailored support services that address individuals' unique challenges in each recovery phase.

The impact of a disaster can be pervasive and have spillover effects, more so when the frequency and intensity of the disaster events are increasing. In this case, multiple phases of such experiences are explained as profound grief, changes in interpersonal relationships with communities and families, disconnected sense of self and place, the uncertainty of livelihoods and survival/sustainability, and the growing importance of luck, particularly in the context of long-term plans and future goals.

Experts also comments how extreme climate events and disasters negatively influence overall life satisfaction in the country. The cascading risks from some disaster events, are sudden. Residents who have experienced multiple disasters report lower life satisfaction than those who have experienced fewer disasters (Rahman et al., 2022 ) and report expression such as a "nightmare," "surreal," and that they "did not want to believe [it]" (Rahman et al., 2022). Survivors report extreme loss, hopelessness, profound sorrow, pain, and anguish compounded by disbelief and shock argues Burrows et al., (2021). while calling for the need for long-term support strategies and strengthening community health approaches while shaping disaster risk management strategies and climate services.

### ***Case Study 3: Local and Indigenous Communities responding to climate-induced mental health concerns – Canada.***

Canadians are increasingly vulnerable to climate change impacts, including impacts on mental health. In 2018, the St. John River rose over 6 m in some areas and caused significant damage in low-lying areas of New Brunswick, Canada. The impact of the 2018 St. John River flood in Canada on the mental health and well-being of communities that experienced residential damage and displacement was examined by Woodhall-Melnik and Grogan (2019). The study asserts that natural disasters have devastating impacts on mental health, and financial stress experienced by residents adds to the condition. Also, the communities are positively impacted by a collective and collaborative response to the flood. Key findings are pointed out in Box 2.

*"When the Chips are Down, People Come out and Help": This represents the Canadian community's Responses to Flooding" (Woodhall-Melnik & Grogan, 2019).*

In the same context but on another aspect of the climate-related disaster, Hayes et al. (2020) provided an exploration of health and social service responses to the long-term mental health impacts of the 2013 Southern Alberta flood in High River, Alberta, with a particular focus on learning about and hearing from those most at risk with a highlight on the community-level impacts of these response interventions in High River. The study discussed the capacity of these response interventions to support psychosocial adaptation to climate change in High River, Alberta. It investigated how the psychosocial consequences of a significant event were addressed via public health responses (e.g., programs, policies, and practices) that aimed to enhance, protect, and promote mental health. The findings of this study suggest: (1) the long-term psychosocial impacts of extreme weather and climate change require sustained recovery interventions rooted in local knowledge and interdisciplinary action; (2) there are unintended consequences related to psychosocial interventions that can incite complex emotions and impact psychosocial recovery (For instance, overwhelmingly, respondents noted that engagement with the local community and community capacity building

were crucial elements missing from the flood response that contributed to unintended, negative consequences; and (3) perceptions of mental health care, among people exposed to climate-related trauma, can guide climate change and mental health response and recovery interventions.

The Canadian study by Woodhall-Melnik and Grogan (2019) investigates the experiences of mental health in New Brunswick, Canada, residents who experienced residential damage and displacement during the 2018 spring flood, and the below 4 points are noted.

1. Climate change and extreme events have multifaceted impacts on individuals and communities; community support and engagement positively affect mental health in post-disaster situations.
2. While communities usually show solidarity during crises, some individuals feel guilty for not being able to help others while trying to save their own homes.
3. People affected by flooding suffer adverse mental health impacts, including exhaustion, stress, anxiety, and uncertainty. They feel fear and isolation during the flood events.

To ensure that the CCMH nexus is addressed well, measures like early warning systems and coordinated emergency management plans are crucial in Canada's Flood Risk management approach.

The analysis of the case studies highlights that economic and political inequalities hinder access to services and resources during disasters. Response measures focus on relief supplies, water, sanitation, and trauma treatment. Mental health care is under-reported in post-disaster institutions. Lack of facilities, experts, and stigma hinder access to support for individuals, households, and communities. When communities experience the devastating impacts of natural disasters, such as floods and storms, their mental health is significantly affected, leading to stress, anxiety, and uncertainty. While community solidarity is usually prevalent during crises, some individuals may experience guilt for not aiding others while trying to protect their homes. In post-disaster settings, community engagement and support can benefit mental well-being. However, challenges arise as communities sometimes need help accessing crucial information and support systems, hindering their decision-making about rebuilding, relocating, or implementing effective risk mitigation and management strategies.

Communities and people affected by flooding experience various negative mental health consequences during and after the disaster event and commonly report feelings of exhaustion, fear, and isolation during the event. The uncertainty surrounding their living conditions exacerbates stress and anxiety levels, making it challenging for them to cope with the aftermath; this situation makes community support systems a vital element to the mitigation of mental health impacts as people face the difficulty of balancing their individual needs and also helping others/ actively participating in the community response. This dilemma can lead to additional emotional strain during an already distressing time. However, despite the challenges, most of the available empirical research about this nexus reflects that community engagement and support play a significant role in addressing CCMH as volunteers from the community, country, and region offer assistance in creating a sense of belonging and support. People who receive help in such settings also tend to experience a positive effect on their mental health as they feel thankful and less isolated during the response and recovery process.

Also, in the aftermath of disasters, communities must access reliable and timely information and support systems, as studies report that people could face obstacles in obtaining such crucial resources due to a lack of clear guidance and guidelines, not knowing how to proceed with rebuilding or relocating or unable to understand the risk and management strategies. Toward addressing this challenge, acknowledging the multifaceted impacts of climate change and extreme events and acknowledging the significance of early warning systems and coordinated emergency management plans is crucial. The disaster risk management approaches should minimize the mental health impact of disasters on communities by enhancing the accessibility of information and support systems and empowering communities to make informed decisions and take proactive measures to mitigate risks effectively.

While disasters affect mental health, community engagement and support can positively influence recovery outcomes. However, for communities to thrive in such challenges, it is essential to address the barriers that impede their access to information and coordinated/integrated response measures by providing clear communication and investing in strengthening the capacity ( and resilience) of communities to make well-informed choices, the challenges can be addressed.

Based on the case study assessment, a list of methods that can be referred to while designing solutions and services to address CCMH is compiled, which expounds on the need for proactive measures for enhancing community resilience, taking note of these challenges. Having well-prepared citizens can significantly minimize the mental health impact of disasters and reduce the burden on response efforts. To this narrative, investing in programs and training, promoting public awareness campaigns, conducting community structures that utilize collective knowledge, and providing resources that equip individuals and families to deal with the traumatic aftermath of emergencies like floods and other disasters remain pertinent. Also, encouraging active community involvement and shared responsibility fosters support during challenges. This engagement leads to innovative solutions, more robust social support, and community well-being. Furthermore, capacity building is critical for disaster readiness and recovery, empowering informed actions and stress management. Attention to vulnerable groups like the elderly, children, and low-income families is crucial for tailored support. Based on the UNU Climate Resilience Initiative's findings after the July 2021 Europe events, it is clear that learning from best practices benefits both practitioners and communities; the project report highlights how customized recovery plans improve disaster responses and address challenges effectively (Hagenlocher et al., 2023) and integrating mental health and psychosocial support aspects into disaster management enhances climate action strategies. Subject experts comment on how communities could actively involve and support initiatives exploring post-disaster adjustment and coping approaches. Moreover, states/ nations can create a more resilient, prepared, and supportive environment, effectively navigate the challenges of disasters, and emerge more decisive in their aftermath. Figure 2 further illustrates these dimensions, showcasing a set of actions and interventions related to the context.



**Figure 2.** Illustration of actions and interventions that can be adopted to address the climate change-mental health nexus based on the assessment of available data, information, and knowledge sources from various sources ( Source: compilation by authors).

## 5. Key Discussion Points

### *Multifaceted narratives*

Through a collection of narratives, we have highlighted that climate change's repercussions go beyond the environment, extending to overall well-being and mental health. It is crucial to acknowledge and comprehend the distinct impact on both vulnerable and other communities. By fostering conversations about mental health and integrating it into climate action strategies, we aspire to dismantle the stigma attached to these situations. This research is situated within the UNU Climate Resilience Initiative, aiming to enhance existing commitments and initiatives for an accelerated response to these risks. Our assessment aims to enhance awareness and emphasize the role of comprehensive climate action plans in safeguarding the collective well-being of communities. We have shown via case examples that psychological symptoms caused by the multifaceted impacts of extreme weather events could vary from acute stress disorder, sleep disorder, post-traumatic stress disorder (PTSD), generalized anxiety disorder, suicidal ideation, and depression, particularly among vulnerable groups like women, children, ethnic minorities, and the elderly.

People and communities living in vulnerable settings require specific support needs. However, mental health professionals often have limited availability or capacity to meet these needs, as noted in Bangladesh. Despite the importance of mental health care following disasters, it is often overlooked in existing post-disaster institutional measures, response systems, and disaster risk management strategies. It is crucial to prioritize mental health care as part of disaster response measures and ensure that affected communities can access appropriate support and resources. Furthermore, there is growing recognition that many existing response structures and institutions lack the necessary facilities and expertise to address the psychosocial impacts of disasters in developed, emerging, and developing economies (WHO, 2022). These impacts are often intensified and stigmatized when viewed through a mental health lens. This gap worsens the suffering of individuals, households, and communities, making it more difficult for them to access support even when available.

The Canadian case study revealed that residents impacted by flooding and extreme climate events frequently experienced stress. This stress was often related to financial concerns, evacuations, rebuilding, and recovery. Evacuation, in particular, was a stressful experience for residents who tried to preserve their homes and personal assets. As the nations are outlining climate resilience plans, it is crucial to consider how climate change impacts mental health and psychosocial well-being in different socioeconomic and sociocultural contexts. For example, the research in indigenous communities from Canada highlights the need to increase capacity support and engagement for community responses following disasters. This will aid in assessing the strengths and barriers to communal coping mechanisms, i.e., the process of communities coming together to become cohesive, resilient groups who view uncertainty and stress as solvable through collaborative and collective action and specific support systems to mitigate and manage mental health needs while building climate-resilient societies.

### *Gaps and Needs*

Communities worldwide are impacted by climate change differently, and it is essential to recognize their similarities and differences. To address their well-being and mental health, policies and interventions should consider the unique challenges and vulnerabilities specific to each community/people and habitation (Cianconi et al., 2020; Lawrance et al., 2022; WHO, 2022). Despite the devastating effects of climate-related disasters on mental health, many communities continue to face limited or nonexistent government interventions addressing their mental health needs (Charlson et al., 2021). It is crucial to recognize the importance of addressing mental health in climate change policy and to provide the necessary resources to support affected communities. The lack of proper services and professionals and the stigma associated with mental health have intensified the misery of people and communities distressed by disaster events (Okamoto, Nagabhatla, 2022). However, in some instances, such as communities in Canada, the feeling of connection with their surroundings and support channels within the communities helps them cope and adapt to disasters (Woodhall-



Melnik & Grogan, 2019). By actively engaging with communities and understanding their specific needs and concerns, policymakers can develop more effective interventions and address the mental health needs of impacted populations (Corvalan et al., 2022). In this synthesis, we adopted a case study approach to showcase how community involvement is critical in addressing the mental health impacts of climate change.

*Need for Collaborative and interdisciplinary approach.*

We need to emphasize the need for collaboration and understanding of interlinkages to address the mental health challenges arising from climate change, disasters, and other environmental crises. Ten key points to this suggestion are listed below:

1. *Acknowledging the Complex Challenges:* Interconnected challenges such as climate change, water stress, disasters, and health crises, directly and indirectly, impact sustainable development for states and communities, and they require collaborative solutions; in this discourse, finding the focus for CCMH nexus is essential.
2. *Prioritize overlooked issues in climate research, policy, and action:* mental health impacts of climate change have recently come to the forefront of climate impact discussion, sometimes noting the direct and often indirect connection between climate crises-mental health- psychosocial well-being and taking note of the emerging scholarship on this topic, this primarily overlooked aspect in climate action planning must get priority attention.
3. *Integration of Climate-Related Direct and Indirect Drivers of Mental Health in Climate Services:* Addressing both direct and indirect drivers of mental health impacts is critical for designing prevention, support systems, and long-term resilience building in affected communities, particularly in the settings of disaster, where shock and trauma can set in immediately.
4. *Boosting Collaborative Research:* CCMH research necessitates an innovative and cooperative approach involving experts from multiple fields to understand the socio-economic and socio-cultural complexity of the problem. In addition, such systems must be configured for specific climate crisis settings like heat impact causing immediate anxiety.
5. *Reckoning Unequal Distribution of these impacts:* Mental health impacts of climate change disproportionately affect certain groups based on age, gender, race, and socioeconomic status. These elements remain key while collecting data and information and conducting assessments toward mapping the situation.
6. *Understanding the 'locale context' while creating Support Programs:* Effective mental health support programs and interventions are limited due to sociocultural and socioeconomic dimensions. In such a context, designing such programs to be sensitive to these factors and identifying entry points for better 'buy in' the community, for example, working with village or community elders.
7. *Challenges the gaps in existing Support Mechanisms:* The processes and mechanisms to support climate-related mental health services often lack coordination, clear action plans, and initiatives to address specific challenges and support affected populations adequately. For example, the guidelines for managing the impacts of heat can significantly differ from addressing the shock and trauma after a disaster like a flood. While the need for standards of practice for a CCMH plan is essential, a blueprint for action has to be situation-specific.
8. *Importance of Research and Research Funding:* Noting the above-outlined gaps and needs, investing in CCMH research can bridge the gap between scientific knowledge and practical application, leading to scalable solutions and transformative change toward creating resilient

societies. Interdisciplinary research involving stakeholders from various sectors is pertinent for understanding and addressing complex problems like the CCMH nexus.

9. *Preparedness and Collective Action:* Prepared communities and countries can effectively implement research findings, best practices, and innovative solutions and support efforts, including research and community capacity building toward a deeper understanding of these complex issues.
10. *Steering integrated agendas for coordinated climate action:* The need for enhanced recognition of the climate and mental health nexus in global climate change-focused commitments such as the Paris Declaration, SDGs, and Sendai Framework for Disaster Risk Reduction. Integrated climate action planning could help address mental health impacts in the context of climate change and disaster events via coordinated efforts across various stakeholders to provide appropriate care and policy support.

The discussion points reiterate that climate change's impacts on mental health represent a rapidly growing area of research; it needs to accelerate and broaden in scope to respond with evidence-based mitigation and adaptation strategies. These ten points reiterate that by recognizing and addressing the mental health implications of climate change, communities can be better equipped to cope with and respond to climate challenges and realize long-term resilience. Amid critical gaps noted in providing mental health-related support services, action through policies, interventions, and collaborative efforts to aid vulnerable populations affected by climate-related disasters, fostering resilience and well-being remains pertinent. Understanding this nexus is also key to assess and address the spillover impacts of stress and the psychosocial condition often leading to conflict and domestic violence, having experienced loss and stress during disasters. Therefore, developing targeted climate policies and improving the education facilities and more focus on capacity building needs of communities remain critical for residents to anticipate and mitigate the risk.

## 5. Conclusions

We highlight the critical importance of addressing the nexus between climate change impacts and mental health (CCMH) as part of the broader global sustainability agenda, reiterating that taking appropriate action on the (mental) health consequences of climate change requires interventions rooted in climate services, including adaptation discourses and planning across sectors and geographies and in various, diverse sociocultural settings. Multiple strategies must be discussed and outlined through collective agenda-setting for communities to enhance adjustment and coping with post-disaster situations. This includes improving access to care, inter-agency cooperation, increasing resiliency, and strengthening capacities and competencies. In addition, healthcare systems require priority action to safeguard the mental health of individuals and communities and boost their resilience to increasing climate risks. Practitioners' training programs and related policy action for climate-specific mental health consequences must be developed towards the stated need. A resilient, responsive, gender-sensitive, and self-sustaining health system for this vulnerable population can only be designed by considering their perceived need and mapping the status to how existing local services function. This understanding remains central to outlining and deploying 'fit to purpose solutions.' There is potential to develop comprehensive training and capacity in disaster psychiatry and psychology in the medium to long term. This effort could be complemented by innovative infrastructure development and administrative reforms. These reforms would ensure that both public spaces and dwellings are designed with disaster resistance in mind. While the various facets of building resilience might not immediately directly impact mental health and psychosocial well-being, they indirectly enhance people's safety. Ultimately, this safety has a profound and lasting connection to overall well-being over the long term.

Another critical gap is the lack of clarity as to how information and support service flow from the source to delivery points; for instance, flood warnings are provided to residents via multiple

channels using the information and communication tools (ICT) advances and may often lack information or instruction to handle sudden stress or post-event trauma. Communities can significantly enhance their ability to adjust and cope effectively after a disaster by implementing key strategies, such as ensuring that residents have access to care facilities, mental health resources, and counseling services. Also, communities could explore ways to foster strong partnerships between local authorities, relief organizations, and local/subnational/national/regional volunteer groups. By working together, these entities can streamline efforts, share resources, and respond more efficiently to disaster situations.

As we face the increasing frequency and severity of climate change impacts, we must build community resilience through a collective and collaborative approach. This requires government agencies to take the lead in working together with major groups and stakeholders at global, regional, and national scales to design integrated disaster risk governance strategies. To ensure the effectiveness of these strategies, scientifically validated local and customary knowledge that captures dimensions of the sense of identity, values, and cultural context must be incorporated. Furthermore, we must acknowledge the psychological impact of climate change and disasters by pursuing research on climate change-induced suffering. By identifying solutions and implementing restorative actions, it is possible to strengthen the psychosocial well-being of affected individuals and communities. Treatment plans should be holistic and multi-pronged and incorporate multiple and specific contexts of mental health needs for communities, genders, and age groups.

To this end, taking note of the Summer Floods 2021 in Western Europe, UNU's Climate Resilience Initiative recognizes the importance of mental health in climate change. It aims to support research toward a climate-secure, resilient future that promotes human well-being. It also puts together this narrative to explain CCMH gaps and call for more comprehensive policies and interventions to address these while providing tailored support to those affected by climate change-related disasters. The anticipation is that by actively engaging with communities and understanding their specific needs and concerns, policymakers can develop more effective interventions and ensure that the mental health needs of impacted populations are addressed. We also highlight the need for further research to develop evidence-based strategies.

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