

Global Research and Action Agenda for Climate Change and Mental Health

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Abstract

The climate crisis is increasingly contributing to a mental health crisis. Policy and practice inadequately account for the mental health costs of climate change and the mental health benefits of climate action. The climate and mental health field is expanding rapidly but unevenly. Connecting Climate Minds (CCM), a global initiative, aimed to develop a guiding vision to ensure investment in and implementation of future research aligns with lived experience needs and appropriately informs policies. CCM convened 1184 contributors with diverse expertise across 126 countries, through 21 online and in-person dialogues. Their insights produced a Global Research and Action Agenda for climate change and mental health. This paper outlines the 53 research priorities structured into four high-level themes (impacts, risks and vulnerable groups; pathways and mechanisms; mental health benefits and risks of climate action; mental health interventions). It also outlines how to implement research and translate evidence to action.

Main Text

Burning fossil fuels is increasing the frequency, intensity, and severity of climate-sensitive hazards, with increasingly clear harms to physical and mental health.¹⁻³ Current evidence highlights increased risks from climate change for the prevalence and severity of mental and physical morbidities and mortality, resulting in higher rates of people living with mental health challenges, suicidal behaviour, and worsened population mental wellbeing.^{1,4,5} These mental health outcomes have been associated with direct experiences of climate change-related events such as floods, typhoons, droughts, wildfires, heatwaves, glacial melt, salinity and sea-level rise.^{1,6} Further impacts stem from chronic and compounding stressors associated with the influence of climate change on the social, economic and environmental determinants of mental health. These include food and water insecurity, disruptions to healthcare, education, livelihoods and cultures, forced displacement and migration, and increased exposure to inequality, violence, poverty, infectious disease, air pollution and other risk factors for poor mental health.^{1,2,4} Awareness of the current and future threats, their unjust causes, and their roots in insufficient leadership and corporate interests can act as psychological stressors that worsen mental health and wellbeing.⁷⁻¹¹ This is recognized by the Intergovernmental Panel on Climate Change (IPCC) which reports that "in assessed regions, some mental health challenges are associated with increasing temperatures (high confidence), trauma from extreme events (very high confidence), and loss of livelihoods and culture (high confidence)".

While the economic toll of increased mental health burden associated with climate hazards is estimated at over \$245billion USD per year by 2050,¹² the true toll is likely vastly underestimated,¹³ in both economic and non-economic terms. This is despite a rapid expansion of research. Peer-reviewed publications in climate and mental health increased by 210% between 2016 and 2023, making it one of the most rapidly growing areas of research in climate and health.^{14,15} However, research is yet to fully capture the true extent of the nature, prevalence and severity of the mental health effects of climate

change, and the mental health benefits of climate action.^{2,13,16} Previous reviews highlight the skew of research towards high-income contexts,^{16,17} with uneven focus on certain topics (e.g., eco-anxiety), despite the higher climate risks in low-income contexts and the complex mechanisms through which climate change impacts mental health across time, place and generations.¹⁵ There is also limited data to demonstrate the human capital costs of diminished collective efficacy, productivity, agency, and wellbeing essential for successful climate adaptation. The unevenness of the field precludes recognition of and action on the mental health burdens associated with a changing climate in many of the most affected contexts, and weakens the field's ability to learn from diverse knowledge systems. Recognition is also lacking of cultural and epistemological differences in conceptualising and addressing "mental health" challenges, both in general terms and in relation to climate change.^{15,18-21} The resultant gaps in data and conceptual frameworks hamper leading global research initiatives, like the Lancet Countdown on Climate and Health, in developing usable global mental health indicators.¹⁴

Despite growing recognition in multilateral spaces (e.g., the World Health Organisation,^{2,22} the UN Framework Convention on Climate Change⁶ and UN climate conferences (COPs),^{23,24} the World Psychiatric Association),²⁵ the climate and mental health intersection is largely not reflected in policy and practice. Only 17% of national adaptation plans include actions to address mental health and psychosocial needs,²⁶ and children's mental health is missing from national adaptation policies globally.²⁷ Just 3% of Nationally Determined Contributions reference mental health.²⁸ Most (75.9%) of assessed heat-health action plans mention mental health, but only 21.7% include targeted interventions.²⁹ There are areas of progress; as of 2024 over 80% of countries offered mental health and psychosocial support in the context of disasters, compared to 39% in 2020.³⁰

Research must provide decision-makers with actionable evidence on the full extent of the impacts of climate change on mental health, and what actions work, where and for whom. Yet, compared to physical health impacts of climate change, mental health has seen less investment to date.³¹ In this crisis discipline, what is known must be *connected with what can be done*. Implementation and translation science is key to enabling solutions. The nascent climate and mental health field must not perpetuate legacies and ongoing experiences of colonialism and inequalities that drive both the climate crisis and health disparities. The research community must therefore reflect not just on what research is done, but - as importantly - on *how it is done*.^{15,18}

To address these gaps and create an aligned and inclusive global research and action agenda for climate change and mental health, the Wellcome-funded Connecting Climate Minds (CCM) initiative sought diverse global input to identify research and action priorities. The initiative drew on the expertise of academics, practitioners, policy professionals, civil society organisations, communities and lived experience experts. This paper builds upon the CCM Global Research and Action Agenda report,³² presenting a novel in-depth analysis of global research priorities, including a comparative analysis of priorities developed across regions and with Indigenous communities,³³ young people,³⁴ and

smallholder farmers and fisher peoples,³⁵ and situating this global agenda within the evolving climate and mental health literature.

Global Research and Action Agenda process

The Global Research and Action Agenda was created to guide investment and future endeavours in the emerging field of climate and mental health through an iterative consensus-building process. The Global Agenda is a synthesis of ten agendas³³⁻⁴² created through Connecting Climate Minds, covering each of the seven Sustainable Development Goal regions⁴³ and the lived experience communities of: young people, Indigenous communities, and smallholder farmers and fisher peoples. Agendas highlight priority areas for research on climate and mental health (research agendas) that reflect lived experiences and can most helpfully inform policy and practice. They also outline a desired vision for this emerging field, and challenges and opportunities for conducting this research and translating evidence to action (action agendas). Consensus for the Regional, Lived Experience and Global Agendas were created through 21 online and in-person dialogues, surveys, a CCM Global Event and iterative consultation with an expert working group, Advisory Board and the CCM global, regional and lived experience leads (Newberry Le Vay et al., in preparation).

The global agenda consists of: 1) a research agenda, to generate evidence that will support decision-makers responding to emerging challenges in mental health and climate change; and 2) an action agenda, to guide how research is conducted and ensure evidence translates into policy and practice.

The CCM consensus-building process had a conservatively calculated total of 1184 contributors in 126 countries. Figure 1 breaks down contributions to CCM by region. We engaged experts across climate change, and/or mental health and/or other relevant fields, with climate change fields often most highly represented. For example, 55% of contributors in the first regional dialogues held climate change expertise (compared to 49% in mental health, 52% in health more broadly, and 25% in other fields). A further breakdown of expertise can be found in Supplementary Information 1 and Newberry Le Vay et al. (in preparation).

Figure 1: Breakdown of CCM contributors across SDG regions. Note that only contributors with available data are included, so this is an underestimation of true contributor numbers (e.g., due to not all dialogue attendees completing the pre-dialogue survey demographic data). Members of Regional Community Teams (e.g., advisors, co-convenors, analysts and agenda writers) who participated in the dialogues, surveys, global event and expert working group in each region are included.

Global research agenda

Structure

The global research agenda contains 18 priority research topics and 53 priority research questions, across four high-level research categories.

The global research agenda is structured in four levels (Figure 2, Table 1). Four *high-level research categories* set out broad areas requiring further research attention. Within each of these categories, *priority research topics* provide concise summaries of more defined research areas. Each topic contains a set of specific *priority research questions*, with illustrative examples. Cutting across these levels are three *foundational research themes*, identified as critical for ensuring cohesion within the field and underpinning the rest of the agenda (Table 1). Climate and mental health research both relies on this foundational understanding, and can also contribute knowledge to reinforce and build these foundations. This structure aims to ensure cohesion and give equal prominence to different research areas. In practice, there are complex interactions across levels and between research categories, topics, questions and themes.

Figure 2: The structure of the Global Research Agenda consists of cross-cutting Foundational Research themes; and 1) High-Level Research Categories; and Priority Research 2) Topics and 3) Questions under each High-Level Category. The lines under priority research topics indicate the number of topics in each category, while the dots under the priority research questions indicate the number of priority research questions in each category.

The four high level research categories are: 1) ***Impacts of climate change on mental health and factors that may increase risk for or be protective against these impacts***: this encompasses the nature, severity, incidence and prevalence of climate-related mental health challenges, examining attribution of these effects to human-induced climate change; and identifying mental health challenges that are novel to climate change. 2) ***Pathways and mechanisms***: how climate change affects mental health through psychological, social, cultural, environmental, behavioural, biological, political and commercial pathways and mechanisms. 3) ***Mental health benefits and risks of climate action***: the benefits and risks to mental health of mitigation and adaptation actions across sectors to reduce the impact of climate change on human or natural systems. 4) ***Mental health interventions in the context of climate change***: interventions, strategies, tools, resources, policies, practices or approaches to support people already experiencing climate change related mental health challenges, and reduce the risk or severity of future negative mental health impacts.

Priority research topics and questions

A total of 18 priority research topics and 53 priority research questions are presented in the global agenda (Table 1), across four high-level research categories.

While all 53 priority research questions were identified to be of global importance, some were featured more frequently, resonating through every regional and/or every lived experience agenda. These themes can be considered the most globally relevant and pressing for the field of climate change and mental

health. Figure 3 highlights the global priority research questions expressed in 1) all ten regional and lived experience research and action agendas, 2) every regional agenda and, and 3) every lived experience agenda. Full distribution of global priority research questions across the ten agendas can be found in Supplementary Information 2.

Figure 3: Global priority research questions expressed in 1) all ten regional and lived experience research and action agendas, 2) every regional agenda and, and 3) every lived experience agenda.

Four priority research questions emerged as relevant to all regions and lived experience communities included. Specifically, understanding: 1) **the risk and protective factors** that influence the impact of climate change-related hazards on mental health outcomes (priority research question 1.1.1, Table 1); 2) **the impacts of extreme and compounding events**, occurring simultaneously and sequentially on mental health (priority research question 1.2.1); 3) identifying and evaluating **existing relevant interventions** to support mental health in a changing climate across scales and contexts (priority research question 4.1.1) and 4) effective **cross-sectoral approaches** to reduce CC-related MH risks and respond to CC-related MHCs (priority research question 4.4.1).

"One of the pieces that is very important to understand is, what are the different factors that tend to impact mental health a lot more. So, for instance, apart from the social-economic challenges, there can also be loss of identity, loss of cultural identity, especially for tribal communities, we've seen, which might impact mental health a lot more and especially for migratory population, that's going to be quite critical." **Central and Southern Asia dialogue**

"Despair and uncertainty for the future. Worn down by repeatedly having to recover. How do we respond when things are happening so often?" **Farmers dialogue**

"So many of the answers are already in community, in spirituality, in faith, in activism, in governments just doing better." **Oceania dialogue**

"People working together is critical to this, rather than individual therapy and individual solutions. The problem is political and systemic, therefore interventions need to happen at this level." **Oceania dialogue**

Four further priority research questions were shared in all seven regional agendas. Namely, measuring the mental health impacts of 1) **climate mitigation** (priority research question 3.1.1) and 2) **climate adaptation** (priority research question 3.1.2) actions, and 3) **community leadership in climate action** (priority research question 3.2.1), and 4) understanding the **behaviours, cultural contexts and beliefs that influence the effectiveness of mental health interventions** (4.2.2).

"We can have a bottom-up approach with the people who go through this mental suffering of climate change, and then we can discuss with them how to effectively do something so that their lives won't be hampered by climate change" **Central and Southern Asia dialogue**

"You can create these policies, but you still need the support of the community to really help drive it into action" **Latin America and the Caribbean dialogue**

"A lot of the problems in the so-called West [are] because of the isolation that people feel because it's very individualistic and not communal or ubuntu based like Africa is. It's a whole new area of enquiry that needs to evolve out of Africa of how do we look at these things in a unique way, that has substantial advantages over the traditional Western perspective." **Sub-Saharan Africa dialogue**

A further six priority research questions were shared across all lived experience agendas. First, to understand the impact of climate-related **disruptions to mental health determinants** (priority research question 1.2.2). Shared priorities focused largely on understanding *how* mental health is affected by: **psychological responses to climate awareness** (priority research question 2.1.1); **climate-related disruption to living and working conditions** (priority research question 2.2.2); **climate-related displacement and migration** (priority research question 2.2.5); and participation in **climate-related careers, governance and decision-making** (priority research question 2.2.6). The final shared priority was to build evidence on the role and efficacy of **community participation and leadership in mental health support** (priority research question 4.2.1).

"My country is currently experiencing excruciating impacts of climate change across society, and the environment is not conducive to learning. And it exacerbates existing mental health issues. As a student, it limits the possibilities, wellbeing, and educational capacity in the classroom." **Youth dialogue**

"One thing we talk about in my spiritual care world is anticipatory creep. You go through the trauma of experiencing things, but then the foreknowledge of how bad things can get... You're already anticipating grieving even before things actually manifest. It's a part of the heart of people to do so, but it can also really take a wear and tear on the spirit and psyche." **Indigenous dialogue**

"At the Farmworker Association of Florida, we developed community gardens as a way to have access to ethnic, affordable food, which workers are unable to get in the farms they work for. Mentally it was helpful for farm workers - being without stress." **Farmers dialogue**

The priority research topics and questions that constitute the global research agenda are summarised in Table 1, with full details for each research question available in Supplementary Information 3.

Applying the Global Research Agenda: considering diverse climate change-relevant exposures, mental health outcomes and relevant sub-populations

Applying the Research Agenda requires consideration of what constitutes a climate change-related exposure, what constitutes a mental health outcome, and relevant sub-populations. Connecting Climate Minds drew on existing frameworks for categorisation of climate change hazards.^{6,32} While mental

health definitions were defined in concert with the funder prior to the consensus-building activities, the insights shared during these activities served to significantly broaden the scope.

Consensus on the need for breadth and diversity in conceptualisations and experiences of mental health

'Mental health' is conceptualised, experienced and expressed in diverse ways, with the context and collective experiences of climate change heightening the need to widen the field's understanding of what constitutes 'mental health' (Box 1).

Box 1: Diverse experiences, expressions and conceptualisations of mental health heard from CCM contributors

CCM contributors shared diverse experiences, expressions and conceptualisations of mental health. This included:

Example mental health definitions highlighting a desire for the climate and mental health field to support not only preventing mental ill-health but to enable thriving

"(The) ability to function behaviourally and socially and maintain a general feeling of wellbeing and positive emotions"

"A mind that is able to function optimally for self and society."

"Good cognitive processing and emotional regulation that fosters connectedness"

"The unseen space of our humanity that involves emotions, spirituality, and relationships."

Experiences of mental health issues that affect daily life and functioning

"The major mental health impact I have observed and also experienced is anxiety and depression from loss of farm crops." **Farmers dialogue**

"...because of natural disasters, and growing concerns for our climate survival. I have sleepless nights and overwhelming stress." **Virtual youth dialogue**

"Environmental change has led to increases in suicide rates, addiction, increased mortality – even among elders." **Indigenous dialogues**

Complex experiences that span multiple mental health diagnoses

"The victim of this negative climate impact are stressed mentally. Due to this stress they not value futures, they are disappointed about the futures, and decided to do suicide. So, the future is not bright, it is black rather than bright." **Virtual youth dialogue**

"Families have no income and turn to cutting trees to make charcoal and get income. Cutting trees worsens climate change. This vicious cycle leads to depression, trauma, and hopelessness." **Farmers dialogue**

The need to acknowledge a vision of mental health beyond a biomedical approach, including inherent interconnectedness of emotional, social, spiritual, cultural, and land health and wellbeing

"Giving energy to mental health in isolation to wellbeing is a biomedical introduced reductionist approach that inadvertently disempowers Indigenous solutions." **Indigenous dialogue**

I think the harms I've seen so much is the demanding of a biomedical and a colonial model before creating space for a different view. That can create so much damage and lose a lot." **Indigenous dialogue**

"There's clear connectivity to spiritual and cultural health and, as we place negative impact on these important practices, it also clearly has an impact on mental health [...] There's also spiritual health, emotional health, and cultural health."

"A lot of people don't have the privilege of our feeling a sense of belonging or learning from our land; which has profound impacts to our sense of self, sense of belonging, and mental and spiritual health."

"When we are allowed to be Māori, we are allowed to be well."

Stigma, lack of awareness and/or lack of opportunities to speak about mental health

"We need to stop that taboo that mental health is something that is, you're not just strong enough. Be a man and be a woman, face it or something. That's what they think that people would say to them. And that's what makes them vulnerable." **In-person (India) youth dialogue**

Experiences of mental health impacts related to climate change hazards

Applying the Global Agenda in a particular geography requires an understanding of currently experienced and predicted climate change-related hazards for that region. Figure 4 highlights example mental health impacts associated with experiencing climate change-related hazards across Sustainable Development Goal regions, as shared by CCM contributors.

Figure 4: Mental health impacts of climate change across regions and communities, heard by Connecting Climate Minds contributors.

Sub-populations with particular vulnerabilities and sources of resilience

Contributors highlighted diverse groups that experience particular sources of climate-related vulnerability, where research efforts should inform policies that offer these groups protection (e.g. outdoor workers affected by extreme heat). It was noted that vulnerabilities may exist independently of the climate crisis but be exacerbated by it, and understanding who these groups are and how they are affected is vital for targeting support. Highlighted vulnerabilities related to: health status (including pre-existing mental and physical health conditions), disability, occupation, gender and sexuality, race and ethnicity, socioeconomic status, geographic location, residence in institutional settings, and age and life-stage (Supplementary Information 4). These attributes also intersect and many people will be living with multiple vulnerabilities and resiliencies. For instance, dialogue contributors noted:

"Rising temperatures have increased hospitalisations for psychiatric emergencies, increase in self-harming and suicidality. For people with psychiatric conditions such as bipolar disorders, these outcomes can be even more extreme." **Central and South Asia dialogue**

"Young widows are a major gap. They don't have a livelihood to depend on, usually dependent on husbands who died during the crisis in Cameroon. They're really struggling." **Indigenous dialogue**

"I am a woman of sea Country [a traditional owner of lands by and on the sea] and we have lost over 95% of our kelp species in the past few years. without our kelp, I feel that we are losing the veins and arteries of the sea country body. Our inshore body is collapsing and that has material effect on our bodies as women who are custodians." **Indigenous dialogue**

A clear theme emerged that those particularly vulnerable also have particular sources of resilience and often hold numerous relevant solutions and agency, often driven by necessity as a result of injustices. For instance, a youth research and action agenda research priority is to identify population sub-groups that may face increased vulnerability to climate-related events, that *"includes groups that may*

*have **increased resilience or specific coping strategies that they have developed out of necessity.***
(emphasis added)"

The most affected groups are likely to be context and time dependent, with the potential for new vulnerabilities and resiliencies to arise. Those highlighted here should not be taken as comprehensive, but rather as a starting point based on the perspectives of CCM contributors. The research topics and questions in this agenda are agnostic to the particular groups that would be the research focus, and can be applied with all relevant groups. The action agenda highlights how research can be conducted appropriately with and ultimately benefit these groups.

Global action agenda

How research is done is as important as what research is done. The global action agenda outlines how climate and mental health research can be better implemented and translated into policy and practice. It contains five components underpinning the desired vision for the climate and mental health field. We share consensus recommendations for researchers, research funders and civil society to enable relevant research to be conducted and translated.

Appropriate research infrastructure, capacity, methods and data

This consensus statement envisions consistent climate and mental health methods and metrics, enabled by robust, available and appropriate data, with shared understandings across relevant disciplines of key concepts (e.g. 'resilience'). These are developed and applied with consideration of diverse wisdoms and support inclusive, culturally sensitive, and policy-relevant research. Researchers across disciplines are supported to engage in climate and mental health research, in ways that support their own wellbeing.

Achieving this vision will require balancing the need for standardisation, which aids comparison, with measurement approaches that are grounded in and adapted to local contexts to reflect cultural and linguistic diversity. Investment in good quality, consistent and accessible data and data platforms, particularly for mental health population-level and surveillance data, is needed for policymakers to monitor relevant climate-related mental health impacts and the effect of relevant policies. Investment and institutional support to build climate and mental health capacity is needed, including to enable people from diverse backgrounds typically underrepresented in climate and mental health research to enter the field. Appropriate psychological support and skill-building should accompany capacity building to avert burnout as a response to psychologically difficult work in climate, mental health and related fields.

"I think the harms I've seen so much is the demanding of a biomedical and a colonial model before creating space for a different view. That can create so much damage and lose a lot." **Indigenous dialogue contributor**

Transdisciplinary approaches that combine and equally value multiple forms of expertise

This consensus statement envisions deep, sustained relationships across disciplines, sectors, communities and contexts that are built at 'the speed of trust' (i.e., with appropriate investment of time and relationship building that is responsive to needs). Diverse climate and mental health understandings coexist and learn from each other. Systems thinking enables the field to learn from and connect what is already known and is already being applied (e.g., successful responses to other societal challenges requiring urgent and collective responses, relevant methods in other disciplines, and community-based knowledge). Such approaches underpin knowledge generation, sharing and translation.

Such approaches can be enabled by investment in connective infrastructure, such as research and action platforms to connect currently disparate actors, and bridge siloed research efforts with decision-making in policy and practice. While this applies across much of the research and policy landscape, the highly time sensitive and applied nature of climate-mental health research makes this a field necessity.

Contributors highlighted the need for research and programme funding structures and academic incentives that enable equal participation from multiple disciplines and/or countries; for instance, the ability for multiple lead academics (co-PIs) from different disciplines. A globally inclusive transdisciplinary climate and mental health field also requires journals that enable diverse scopes, and reduced barriers for researchers from LMICs to publish.

Investment in field building needs to ensure sustainability of funding, with short-term and/or one-off funding limiting the true value of relationship building efforts to be realised, and can undermine trust with community partners. Investors should consider novel ways to measure impact that account for ripple effects occurring from the relationship and capacity building.

"We're talking about having the community members, including the youth, as important stakeholders or partners, more partners than stakeholders, in the research" Latin America and Caribbean dialogue contributor.

Inclusive, non-extractive and co-creative approaches

This consensus statement envisions climate and mental health research that centres community and lived experience leadership, ensuring tangible community benefit. Research avoids perpetuating the harms of extractive, colonial and unjust practices based in historical and current inequities of power, which are both the causes and consequences of climate change and which compound mental health harms. Research and funding structures enable – and, where appropriate, mandate – co-creative approaches that appropriately share power with and benefit the communities involved, and prioritise local leadership.

Inclusive approaches mean centring, supporting and compensating the voices of people with relevant lived experiences, groups most affected by climate change, and Global South expertise in research and action. This includes abiding by data sovereignty and providing adequate timelines in funding grants to account for logistical challenges, including climate-vulnerable settings experiencing delays due to exposure to climate change hazards and infrastructural damage. Climate and mental health research funding must address processes that implicitly favour or make access easier for Global North researchers, including in the scope of climate change and mental health definitions. Research approaches that work with and benefit the communities involved must consider and mitigate extractive research practices that remove insights without community benefit or ownership, leading to participant fatigue, research distrust and limited impact.

"How do I put this? They're still colonising [the mental health field] in a sense by bringing in experts from outside." Indigenous dialogue contributor

Political and policymaking environments that enable integrated climate and mental health policies, practices and frameworks

This consensus statement envisions a climate and mental health field where researchers are equipped to advise and learn from policymakers, both in skills and opportunities. This enables evidence-building to target the approaches and outcomes needed to inform decision-makers, for instance the cost-benefit of different interventions, or the population prevalence of mental healthcare burden attributable to climate hazards. This can reduce the gaps in actionable evidence that can lead to reactive or piecemeal climate and mental health policy responses. In some climate and mental health policy domains, the urgency of the issues are outpacing relevant research (e.g. lack of evidence-based interventions), or the responses are adding strain to overburdened and under-resourced systems (e.g. health systems) who perceive limited capacity to consider climate change, especially if seen as a siloed task with unclear benefit.

Cross-sector roundtables and knowledge sharing platforms can connect policymakers and researchers across existing sector siloes to share the latest evidence, integrate mental health into relevant climate and/or health policies, practices and frameworks (and vice versa), and ensure parity of mental and physical health in climate policies. This also enables the creation and public buy-in for mental health and wellbeing policies with 'climate co-benefits' (or vice versa, as most appropriate for the setting), and improved evaluation of policy responses from both climate and mental health perspectives.

Building such platforms nationally and internationally can improve the integration of decision-making, governance and budgets across climate change and mental health, to make limited funds go further, and to realise benefits in one sector from spending in another. Investing in researcher efforts to highlight to the public and decision-makers the interconnectedness of climate and mental health challenges and policy benefits with other issues (e.g. conflict and cost of living) could aid in fostering the required political will and reduce mental health stigma and politicisation of climate change. Relevant research in

this field can support the required understanding of climate psychology, culturally appropriate mental health and wellbeing concepts, and the power dynamics embedded in current systems.

“...you want to bring in stakeholders who will be influential in policy development. [...] You want them on board from the beginning, so that [...] they become a part of the solution from day one.” LAC dialogue contributor

Awareness among key actors of climate change and mental health impacts and what actions they can take to better understand and respond to these impacts

This consensus statement envisions embedding of climate and mental health into relevant trainings and awareness-raising for all key actors (e.g. health workers, policy makers, disaster respondents, educators) to ensure that they are equipped with the knowledge, tools and capacity to respond effectively and collaboratively to the diverse climate and mental health interconnections. Climate and mental health communication is culturally contextualised, aligns with and is led by community understandings, and actively works towards mental health de-stigmatisation.

Developing materials and narratives together with relevant audiences can help to counter attitudinal and belief barriers (e.g. mental health stigma, climate change scepticism and denialism) and social, cultural and religious norms that can inhibit research and action. Awareness-raising activities with media representatives, climate and health policy makers, mental health professionals, research funders and affected communities should convey the full breadth of interconnections between climate change and mental health and wellbeing, in contrast to the disproportionate media attention for certain constructs (e.g. climate anxiety). Understanding and communicating how the climate and mental health field relates to diverse efforts across the mental health and wellbeing space (e.g., the global mental health field) and climate science and action communities is vital for successful integration and collaboration.

“I think the most important challenge, when we think of climate change, is the knowledge or awareness of climate change among the community. So, when it comes to climate change and health, health literacy in relation to climate change among populations, I think, is lacking. So, we need to find means and mechanisms to ensure climate risk communication, so we can get people more engaged in climate-related activities.” Central and Southern Asia dialogue contributor

Recommendations

Implementing and translating climate and mental health research in line with the consensus vision outlined in this research and action agenda requires coordinated and collaborative action from researchers, funders, policymakers, practitioners and civil society. Table 2 presents a summary of key

actions, identified through the CCM process (full recommendations available at Lawrance & Newberry Le Vay et al., 2024).

Discussion

This consensus statement provides an urgently needed global agenda to prioritise research and action in the rapidly growing climate and mental health field. It aims to target the what and how of evidence generation to where it can best serve decision-makers in responding to escalating mental health needs exacerbated by climate change-related hazards and risks. While others have called for such an agenda⁴⁴ or recognised the existing gulf between climate change-related mental health needs with funding,³¹ there has been no prior global consensus roadmap. Synthesised from the ten Connecting Climate Minds regional and lived experience agendas,³³⁻⁴² it represents contributions from 1184 experts in 126 countries, convened through dialogues, surveys and a global event. Experts came from diverse mental health and climate backgrounds in research, policy, healthcare, civil society and lived experience with a near even split between climate-related and health-related backgrounds. The research agenda presents 53 priority questions to target climate and mental health research efforts globally.

Some global research priorities were highlighted in every lived experience and regional agenda. First, the need to more comprehensively and quantitatively examine the impact of extreme weather and climate events on mental health challenges, including a particular focus on the compounding nature^{45,46} of such events where affected communities struggle to recover from one disaster before the next one hits. Similarly, vicious cycles can be created whereby, for instance, a climate change-related disaster removes a family's livelihood, leading to increased gender-based violence or forced migration, and disruptions to children's education - experiences known to impact mental health.^{1,47-49}

The second globally common research priority was the need to better identify and understand the factors that increase risk or protect against poor mental health outcomes in the context of the climate crisis, in order to target interventions and enhance resilience. The protective nature of social connection, particularly in the aftermath of climate-related disasters, was a common dialogue theme. Quality social connections are one of the most potent determinants of physical and mental health.^{50,51} This is an area of clear convergence between mental health fields and climate fields, with participatory and community-based approaches underpinning effective climate action.⁶ Research to identify these key protective factors can form the basis of targeted co-beneficial interventions, while mitigating identified risk factors.

This links to the other research priorities common among all agendas: 1) the need to identify, evaluate, adapt and implement existing interventions for climate change-related mental health challenges, and 2) the need to identify effective approaches for climate-related mental health risk reduction and response across governments, health systems, educators and civil society. Previous research has highlighted a dearth of evidence for the effectiveness of interventions and policies explicitly targeting climate change-related mental health challenges. A review of relevant interventions found only 16 represented in

academic literature and 24 in grey literature.⁵² The UK Health Security Agency⁵³ and the WHO European Regional Office⁵⁴ issued calls in 2025 for case studies of mental health interventions relevant to climate change. Relevant suggestions for effective cross-sector approaches include integration of mental health in relevant climate policies and plans (e.g., national adaptation plans, heat health action plans, climate change education).⁵⁵

Contributors emphasised that helpful interventions and policies already exist in diverse cultures and disciplines. These included drawing on traditional and Indigenous wisdoms (e.g., as heard in the Indigenous dialogues:

"We have been able to do Indigenous, spiritual, cultural diagnosis and interpretation about climate change and mental health. We actually built interventions, not just public health interventions but also cultural, spiritual, and ancestral interventions to healing."

Other examples included ecological water treatment systems and food systems (to reduce food and water insecurity which can drive mental health crises) and insurance schemes for farmers to protect against extreme economic distress in the face of climate-driven crop failures.³⁵ There are still significant missed opportunities in learning from existing initiatives, particularly those led by Global South communities. The CCM Global Online Hub offers a repository of relevant case studies. Existing models to enable this learning include the Resilience Observatory being piloted to connect the CCM global community of researchers with early adopters of partnerships between psychological and climate resilience initiatives (Belkin et al., in preparation). Identifying, evaluating and scaling up appropriate interventions and best-buys will be aided by linking with other global research priorities research on appropriate evaluation metrics, quantifying mental health impacts, and identifying pathways and mechanisms to highlight appropriate intervention targets. Capacity building is needed to link those who can help evaluate (researchers) with those who are already doing the work (often communities, civil society groups, practitioners or policy makers) (Belkin et al., in preparation) and to share learnings from the "grass roots to the tree tops" (Natalie Greaves, Connecting Climate Minds Global Event, 2023).

Investment in foundational research to underpin the climate and mental health field was emphasised. Funding is needed to convene expertise to create appropriately standardised but pluralistic and flexible approaches and terminologies. These must reflect and respect the diversity of mental health and climate change experiences globally, while also enabling studies to build on each other and diverse experts entering the transdisciplinary field to create shared understandings. In the diverse expressions and experiences of mental health shared by contributors, clinical definitions of mental health outcomes, for instance as defined by the DSM or ICD codes, often sat at odds with the holistic and interconnected expressions of spiritual, emotional, and cultural wellbeing described by many contributors, including Indigenous contributors. Experiences of climate-related mental health impacts were typically framed as collective, as were the required solutions described by contributors, needing co-created responses, and building community resilience. Contributors also highlighted the strong mental health stigma that remains in many places. This foundational research gap has been identified by others, including the

Lancet Countdown on health and climate change, which highlights the challenges in measuring mental health in the climate crisis due to both missing data and inconsistencies in metrics and conceptualisations.¹⁴ Fundamentally, there is a need to clarify what exposures, pathways, outcomes and actions are relevant and valuable to measure.

How research is done matters as much as what research is done. The action agenda showcases a collective vision for how research could be conducted, as well as how evidence could be translated into effective policy and practice. History is rife with research endeavours, including well-intentioned ones, that reinforced or exacerbated existing inequalities through extractive practices, marginalisation or even vilification of non-Western epistemologies and exploitation of colonial or post-colonial dynamics.⁵⁶⁻⁵⁸ Contributors highlighted that research must be undertaken with, or preferably led, by the communities, groups and individuals at the centre of the issue. The research must directly benefit them and ideally be driven by self-empowerment. Thus, there is a clear need for more critical research and policy-making that is reflexive, acknowledges how power structures operate to create systemic inequalities and shape distinct lived experiences. The ultimate goals should be to facilitate transformation by questioning existing paradigms. These reflections resonate with guiding principles outlined by others,⁵⁹ highlighting the importance of revealing underlying assumptions about being and knowing, as well as the power structures tied to them, to foster more respectful engagement with diverse worldviews and promote the integration of knowledge across disciplines when addressing wicked problems such as climate change and biodiversity loss. People coming from diverse backgrounds and geographies will strengthen the climate and mental health field. Funding models need to support equitable capacity building and facilitate fair collaborations across researchers in low- and high-income settings, and support research results to be shared back with communities and lead to action that benefits those communities.

Agenda implementation requires contextualising and adapting the global research priorities across diverse contexts and needs, including varying exposure to climate hazards and the full spectrum of diverse mental health and wellbeing experiences. To help foster a truly global and transdisciplinary field, the Global Online Hub accompanying this agenda provides a 'Collaborate' area and toolkits to support people coming from diverse backgrounds. Contributors coming from a policy perspective highlighted the need for existing evidence to be more effectively translated into formats that can reach and influence policy. The methods chosen to conduct these research priorities should be targeted to what can best inform decision-makers and respond to lived experience needs, e.g. cost/benefit analyses, quantification of impacts, evaluation of interventions. Research and action will benefit from national- and local-level collaborative partnerships between researchers, policymakers, practitioners and communities to dynamically respond to emerging needs as contexts evolve, and to ensure mutual understanding.⁶⁰⁻⁶² This will require investment in connective infrastructure.

Decision-makers who care about the mental health, wellbeing, and cognitive capacities of the people they serve must invest in building capacity to enact this agenda, to reduce climate change-related mental health harms and to reap the mental health benefits of climate action. The inclusion of a mental health indicator in the Global Goal on Adaptation presents a key opportunity for embedding mental health in

global climate action monitoring efforts.⁶³ This, alongside significant inclusion of mental health in the first global plan for adaptation in the health sector (the Belem Health Action Plan launched at COP30)²⁴, suggests growing momentum for aligned climate action and mental health action which can be harnessed for implementing this global agenda. The whole-of-government and whole-of-society approaches needed to create better population mental health and wellbeing and a safer climate simultaneously requires upskilling relevant teams in climate-mental health considerations, forging cross-sector collaborations, and embedding emerging evidence from this agenda in relevant climate and health policies. Policymakers and practitioners will also benefit from working with researchers and communities to identify what already works (Belkin et al., in preparation). This can bridge place-based and contextualised research with the identification of more widely applicable insights to inform multilateral decision-making fora.

This consensus statement presents the first global agenda for the climate change and mental health field, fulfilling previous calls for such a guiding roadmap. People globally are already experiencing the compounding and interacting stressors associated with the climate crisis. While there is sufficient available evidence to integrate considerations of climate-mental health links into policy and practice, decision-makers and advocates desire and will benefit from improved documentation of the mental health and wellbeing impacts of climate change, the pathways and mechanisms of impact, and the evidence-based climate actions and mental health interventions that can protect and promote mental health and wellbeing in a changing climate.

Multiple research, funding and policy initiatives have built upon the work of CCM since the dialogues and publication of the regional, lived experience and global agenda reports. Examples include a Lancet Psychiatry Commission on climate change and mental health, consultations on a mental health indicator for the Lancet Countdown on health and climate change, the UK Health Security Agency report on climate change and mental health, and a specific funding call on heat and mental health issued by Wellcome drawing on CCM-identified research gaps. CCM was identified for the COP30 Action Agenda working group on health, supporting development of the Belem Health Action Plan. The CCM Global Online Hub has iterated in response to needs of the Hub community. We hope this consensus statement will support continued impact and utility of the work of CCM.

We hope this agenda will contribute to building a just, diverse and connected climate and mental health field. This will ultimately protect and benefit the mental health and wellbeing of people living with the worst impacts of the climate crisis and create a safer climate future.

Methods

A global consortium conducted a series of online and in-person dialogues, supported by online surveys, between March 2023 - May 2024 (Figure 5). The study design was informed by other relevant approaches.^{64,65} Detailed methods and learnings from the CCM process are available in Supplementary Information 6 and Newberry Le Vay et al. (in preparation).

Pre-dialogue scoping: Scope Definition

The project scope and processes were developed in consultation with and led by the needs of the funder (Wellcome). As a health funder, the relevant scope included a focus on mental health as it is relevant to health systems.

By **mental health challenges**, the defined scope included: thoughts, feelings, and behaviours that affect a person's ability to function in one or more areas of life and involve significant levels of psychological distress. Psychological responses to climate awareness (such as eco-anxiety) were out of scope as a mental health outcome of interest, but were relevant as a potential mechanism affecting other mental health outcomes (see Supplementary Information 5 for full definition of mental health scope developed in partnership with Wellcome).

By **experiences of the effects of climate change**, the defined scope included:

- Directly experiencing the impact of extreme weather and climate events,⁶⁶ such as more frequent and intense heatwaves, wildfires/bushfires, drought, extreme rainfall and floods, tropical storms (e.g., typhoons, hurricanes, cyclones), sea level rise, salinization, glacial melt.
- Experiencing climate change-related disruption to the social and environmental determinants of good mental health, such as being forced to move home, not being able to access food or water, losing livelihood or homelands, or disruption to cultural practices.

Summary of methods

Connecting Climate Minds was led by a global project team, which included Regional Community Teams in all seven Sustainable Development Goal regions, a Lived Experience Working Group, and working groups with young people, Indigenous communities and smallholder farmers and fisher peoples. We sought to meaningfully centre lived experience in all stages of the process.

We conducted a multi-stage, participatory process to develop a global research and action agenda on climate change and mental health. First, we mapped the research and policy landscape and, through expert consultation, created a global framework of four high-level research categories which served to underpin the agenda development process. We convened 21 dialogues and 24 surveys across all SDG regions and with priority populations (Indigenous communities, young people, smallholder farmers and fisher peoples) to inform ten regional and lived experience agendas. We synthesised the 382 research priorities and vision statements held in these ten agendas using meta-aggregation.⁶⁷ This informed a draft global research agenda (through deductive analysis based on the four high-level research categories) and a draft global action agenda (structured around five inductively developed themes). Iterative feedback from contributors was gathered through expert reviews, a hybrid global event, and a global prioritisation survey (which refined and ranked global research questions).

Strengths and Limitations

The strength of this consensus statement comes from its volume and diversity of contributors, with a nearly even split across climate change-related and health-related backgrounds. A key strength is that lived experience perspectives are centred in the agenda, with representation in dialogues, surveys and the global event (Wray et al., in preparation). Programmes of work led by and with a focus on Indigenous communities, young people, smallholder farmers and fisher peoples enabled a deeper exploration of their particular vulnerabilities and sources of resilience in the climate crisis. An additional strength is the representation of both research and action priorities, with inherent recognition of their deep interconnectedness. Limitations include the potential during the global synthesis process for missed nuance in capturing the regional or community-specific perspectives originally documented across ten rich agendas and from many hours of input from many contributors. To mitigate this, contributors provided feedback on the draft global priorities at multiple stages. We encourage readers to examine the other agendas.³³⁻⁴² We attempt to recognise and outline the diverse perspectives on mental health and wellbeing, and on climate change, that exist and were raised throughout CCM, though we acknowledge that there are many more understandings and expressions of what it is to thrive or be unwell in the context of the climate crisis that require and deserve further exploration and recognition. There are many communities with unique sources of vulnerability and resilience that were noted by contributors but were not directly engaged; examples include people living with disabilities, children, older adults, and people living with severe mental illness. A key risk for implementation of this agenda is a current lack of sufficient resources in the field to enable sustained capacity building and community-led research and action through communities of practice like CCM. Without this, the field may remain uneven, disconnected and siloed¹⁵ across knowledge systems, disciplines, sectors and geographies. Further elaboration on strengths and limitations is recorded elsewhere (Newberry Le Vay et al., in preparation).

Declarations

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Tables

Table 1: The global research agenda, encompassing foundational research themes for the climate and mental health field and priority research topics and questions within high-level research categories. CC refers to climate change, MH refers to mental health, and MHC to mental health challenges. 'How' in high-level category two questions refers to the pathways and mechanisms underlying the effect. For high-level category 3, all questions refer to actions across all sectors and at all levels of governance (i.e. individual, local, national, regional and global levels).

Foundational research themes for the climate and mental health field

0.1 Developing terminology, language, definitions and concepts for climate and mental health to inform standardised research, measurement and shared understandings across disciplines and settings, while acknowledging that terms are conceptualised in diverse ways across geographies and cultures.

0.2 Identifying and developing research methods, metrics and datasets to identify, understand and evaluate the mental health impacts of climate change, climate actions and climate change-related mental health support.

0.3 Identifying and evaluating existing knowledge, practices, interventions and solutions to understand and respond to the mental health impacts of climate change, including the expertise of those with lived experiences.

High-level category 1: Impacts, risks and vulnerable groups

Priority Research Topic

Priority Research Questions

1.1 Risk and protective factors for climate change-related impacts on mental health challenges

1.1.1 Risk and protective factors: What factors increase or reduce the risk of CC-related impacts on MHCs?

1.2 Impacts of climate change on mental health challenges

1.2.1 Extreme weather and climate events: What is the impact of different types of CC-related extreme weather and climate events on MHCs?

1.2.2 Disruptions to determinants: What is the impact on MHCs of CC-related disruptions to the conditions that foster good MH ('determinants')?

1.2.3 Climate change-related awareness and perceptions: What is the impact on MHCs of psychological responses to CC awareness, and what is the threshold at which such psychological responses (e.g., distress) disrupt daily functioning and can become a mental health challenge or compound pre-existing MHCs?

1.2.4 Cumulative impacts: What is the cumulative impact on MHCs of directly experiencing climate events, *and/or* disruptions to MH determinants, *and/or* CC-related psychological distress?

1.2.5 Long-term impacts: What are the long-term impacts to MHCs of experiencing climate events, *and/or* CC-related disruptions to MH determinants?

1.2.6 Transgenerational impacts: What transgenerational impacts on MHCs in offspring may result from CC-related experiences of the parents during the preconception period and perinatal development (i.e., before, during, after birth)?

1.3 Assessing costs of climate change-related impacts on mental health challenges	1.3.1 Attributing costs: What current and future economic, social, cultural and physical health costs are attributable to CC-related impacts on MHCs?
High-level category 2: Pathways and mechanisms	
2.1 Psychological and cognitive pathways and mechanisms	2.1.1 Psychological responses to climate awareness: How are MHCs affected by psychological responses to CC-related perceptions, awareness, trust of information, communication and narratives, and their interaction with other psychological traits?
	2.1.2 Cognitive and affective changes: How are MHCs affected by CC-induced cognitive problems and/or affective (mood/emotional) changes?
2.2 Social and cultural pathways and mechanisms	2.2.1 Breakdown of interpersonal relationships: How are MHCs affected by CC-related breakdown of interpersonal relationships, social connection and community cohesion?
	2.2.2 Disruption to living and working conditions: How are MHCs affected by CC-related disruption to living and working conditions?
	2.2.3 Disruptions to culture and identity: How are MHCs affected by CC-related disruptions to culture, identity, community, spiritual practices and relationships with nature?
	2.2.4 Influence of mental health stigma: How are CC-related MHCs compounded by stigma, discrimination and cultural perceptions?
	2.2.5 Climate change-related displacement and migration: How are MHCs affected by CC-related forced and chosen migration, relocation and displacement?
	2.2.6 Climate change-related careers: How are MHCs affected by participation (or lack of) in CC-related careers, governance and decision-making?
	2.2.7 Influence of structural inequalities: How are CC-related MHCs compounded by historic and current structural inequalities, inequities and colonialism?
	2.2.8 Influence of other crises: How are CC-related MHCs compounded by previous and/or ongoing crises?
2.3 Environmental pathways and mechanisms	2.3.1 Food, water and sanitation insecurity: How are MHCs affected by CC-related food insecurity and water, sanitation and hygiene insecurity?
	2.3.2 Disruption to natural environments: How are MHCs affected by CC-related disruption to natural environments?
	2.3.3 Disruption to built environments: How are MHCs affected by CC-related disruption to built environments, including indoor and outdoor conditions?

2.4 Behavioural pathways and mechanisms	2.4.1 Disruptions to sleep: How are MHCs affected by CC-related disruptions to sleep?
	2.4.2 Climate change-imposed behaviour changes: How are MHCs affected by CC-imposed behaviour changes?
2.5 Biological and pharmacological pathways and mechanisms	2.5.1 Climate change-related physical health impacts: How are MHCs affected by CC-related impacts on physical health?
	2.5.2 Hormonal and/or physiological changes: How are MHCs affected by CC-related impacts on hormonal and/or physiological pathways and mechanisms?
	2.5.3 Neurobiological changes: How are MHCs affected by CC-related impacts on neurobiological pathways and mechanisms, including known impacts of climate change on the brain?
	2.5.4 Genetic and epigenetic changes: How are MHCs affected by CC-related impacts on genetic and epigenetic pathways and mechanisms?
	2.5.5 Psychotropic (or other mental health-related) medications: How does the use of psychotropic (or other) medications prescribed for MHCs influence physiological responses to extreme weather and climate events? How are MHCs impacted by CC-related disruption in access to or efficacy of these medications?
2.6 Political and commercial pathways and mechanisms	2.6.1 Political factors: How are MHCs affected by CC-related political factors, such as insufficient climate action from political and industry leaders?
	2.6.2 Extractive practices: How are MHCs affected by perpetuation of extractive practices as part of fossil fuel extraction or certain climate actions?
2.7 Interactions and mediating factors across pathways and mechanisms	2.7.1 Interactions between different pathways and mechanisms: How do pathways and mechanisms by which CC affects MHCs interact with or compound each other, and how can they best be conceptualised and accounted for?
	2.7.2 Risk, protective, mediating and moderating factors: What are the risks and protective factors and/or mediating and moderating factors for the relevant pathways and mechanisms, and how do they confer their effect?
	2.7.3 Climate attribution of pathways and mechanisms: How can the impact on MHCs by psychological, social, cultural, environmental, behavioural, biological, political and commercial pathways and mechanisms be attributed to CC, versus other influences on MH? When is it necessary, feasible and appropriate to make this distinction?
High-level category 3: Mental health benefits and risks of climate action	
3.1 Benefits and risks of climate action for mental health challenges	3.1.1 Climate mitigation: What are the potential benefits and risks to MH of different climate mitigation policies and

	actions?
	3.1.2 Climate adaptation: What are the potential benefits and risks to MH of different climate adaptation policies and actions?
3.2 Governance mechanisms to integrate mental health considerations into climate policies and actions	3.2.1 Community involvement and leadership in climate action: How can community involvement and leadership in CC-related decisions facilitate the integration of MH into climate action?
	3.2.2 Transdisciplinary collaboration and knowledge sharing: How can collaboration and knowledge sharing support the development and implementation of climate actions that integrate MH considerations, and vice versa?
	3.2.3 Barriers and levers: What are the barriers and levers for integrating MH considerations into climate action, and vice versa?
	3.2.4 Climate financing: What climate financing mechanisms are available or required to integrate MH considerations into climate action?
3.3 Motivating, enabling and sustaining climate action, particularly in ways that can support mental health	3.3.1 Best-buy interventions for enabling co-beneficial climate action: What are the best-buy interventions to enable sustained climate action and transformative societal change that also strengthen or leverage good MH?
	3.3.2 Communication strategies: How can communication and information sharing strategies best report on CC in ways that protect MH and mobilise climate action that is co-beneficial for MH?
	3.3.3 Awareness of mental health co-benefits: Does awareness of improved MH as a co-benefit of climate action motivate individual, collective or political action, and/or does it increase public support for climate policies?
High-level category 4: Mental health interventions in the context of climate change	
4.1 Current mental health interventions affected by or responding to climate change	4.1.1 Existing interventions: What interventions exist to support CC-related MHCs across sectors, disciplines, countries, cultures and communities, and how can these be rapidly evaluated, adapted and/or implemented across contexts?
	4.1.2 Climate change-related influences on intervention access, suitability and efficacy: What are the consequences of CC and associated MH needs on the accessibility and suitability of existing MH interventions, and how are these being or will these need to be adapted to ensure continued access and efficacy?
4.2 Community-led interventions to prevent and address climate change-related impacts on mental health challenges	4.2.1 Community participation and leadership in climate change-related mental health support: What is the role and efficacy of community and peer participation and leadership in CC-related MH interventions?

	4.2.2 Behaviours, beliefs and attitudes: What individual and community behaviours, beliefs, spiritual systems, faiths, attitudes and practices influence the acceptability and efficacy of different CC-related MH interventions?
4.3 Capacity building and awareness raising of climate change-related mental health and interventions	4.3.1 Capacity building: What are the capacity-building needs of relevant actors to respond to CC-related MHCs, and what are effective methods to build this capacity?
	4.3.2 Awareness raising: What strategies effectively and appropriately raise awareness of CC-related MHCs and available interventions?
4.4 Identifying effective modes of delivery for mitigating mental health risks of climate change and responding to climate change-related mental health challenges	4.4.1 Effective approaches for risk reduction and response across sectors: What are the evidence-based interventions for governments, health systems, educators and civil society to effectively mitigate CC-related MH risks and respond to CC-related MHCs?
	4.4.2 New technology and low-technology approaches: What are effective and context-appropriate ways to deliver CC-related MH interventions using new- and/or low- technology approaches?
4.5 Leadership, governance, and financing mechanisms for mental health interventions in the context of climate change	4.5.1 Best-buy interventions for extreme weather and climate events: What are the best-buy interventions to implement before, during and after extreme weather and climate events to protect MH and respond to CC-related MHCs?
	4.5.2 Transdisciplinary collaboration and knowledge sharing mechanisms: How can experts across disciplines, sectors and communities effectively collaborate, share knowledge, co-create and implement mental health interventions?
	4.5.3 Frameworks and governance structures: What existing and new policy frameworks and governance structures can facilitate the development and implementation of MH interventions appropriate for CC?

Table 2: A summary of key actions for actors involved in research on climate change and mental health to enable the consensus global vision for the field

Researchers

- **Prioritise inclusion of communities and groups most affected by climate change and its mental health consequences**, to improve alignment between research aims, outcomes and benefits to communities. Build these relationships over time and be led by community needs. Support civil society to translate research findings into action.
- **Convene experts to establish conceptual frameworks, consistent indicators, metrics and methods to measure the mental health impacts of climate change and of climate action**, that are appropriate for different local contexts and that can be disaggregated across relevant population groups.
- **Build, maintain and seek funding for relevant networks (and platforms)** to share best practice, elevate existing knowledge (e.g., held in communities) and improve shared understandings across disciplines of relevant climate and mental health concepts, terminology, methods and dissemination
- **Leverage existing areas of research interest, data and capacity where mental health impacts of climate change could be integrated** (e.g., growing interest in climate change and physical health and in impacts of heat exposure, food security) and build relationships with decision makers to elevate awareness of the full scope and importance of the climate and mental health field and ensure equal status between physical and mental health in climate and health work.
- **Establish (in partnership with communities) open data security, privacy and sharing protocols** which encourage data sharing and increase trust in research for potential participants, translated into multiple languages. Link with existing principles and protocols for data collection, management and sharing, such as data sovereignty and the Findable, Accessible, Interoperable and Reusable (FAIR) guiding principles.

Research Funders

- **Collaborate with other funders from different disciplines**, such as health and environmental funders (e.g., establishing or joining cross-issue networks, leveraging existing funding structures that do prioritise transdisciplinary climate and mental health research).
- **Fund platforms** to collate and update relevant climate and mental health data, methodologies, literatures, initiatives, interventions and organisations, which can be tailored to specific contexts.
- **Fund capacity- and field-building initiatives**. This includes the development and maintenance of transdisciplinary climate and mental health research networks, establishing conceptual frameworks and consistent climate and mental health metrics, capacity building in countries with less climate and mental health research to date, and establishing the impact of such connective and capacity-building activities.
- **Increase access to and inclusivity of funding across geographies and expertise** relevant to climate and mental health, including access to in-country and direct civil society funding, to allow true ownership of the research.
- **Mandate (where appropriate) inclusion of communities and community-based organisations** in climate and mental health research funding applications, with clear and tangible benefits back to the communities involved based on their stated desires and needs.

Civil Society

- **Lead on effective climate and mental health monitoring and communication** mechanisms to feed data into research, policy and practice.
- **Partner with researchers to drive co-creation of research** and incorporate relevant evidence and research outputs into advocacy efforts and work on the ground. This includes incorporating mental health considerations into climate and health or climate mitigation and adaptation activities being led by civil society (and vice versa).

Figures

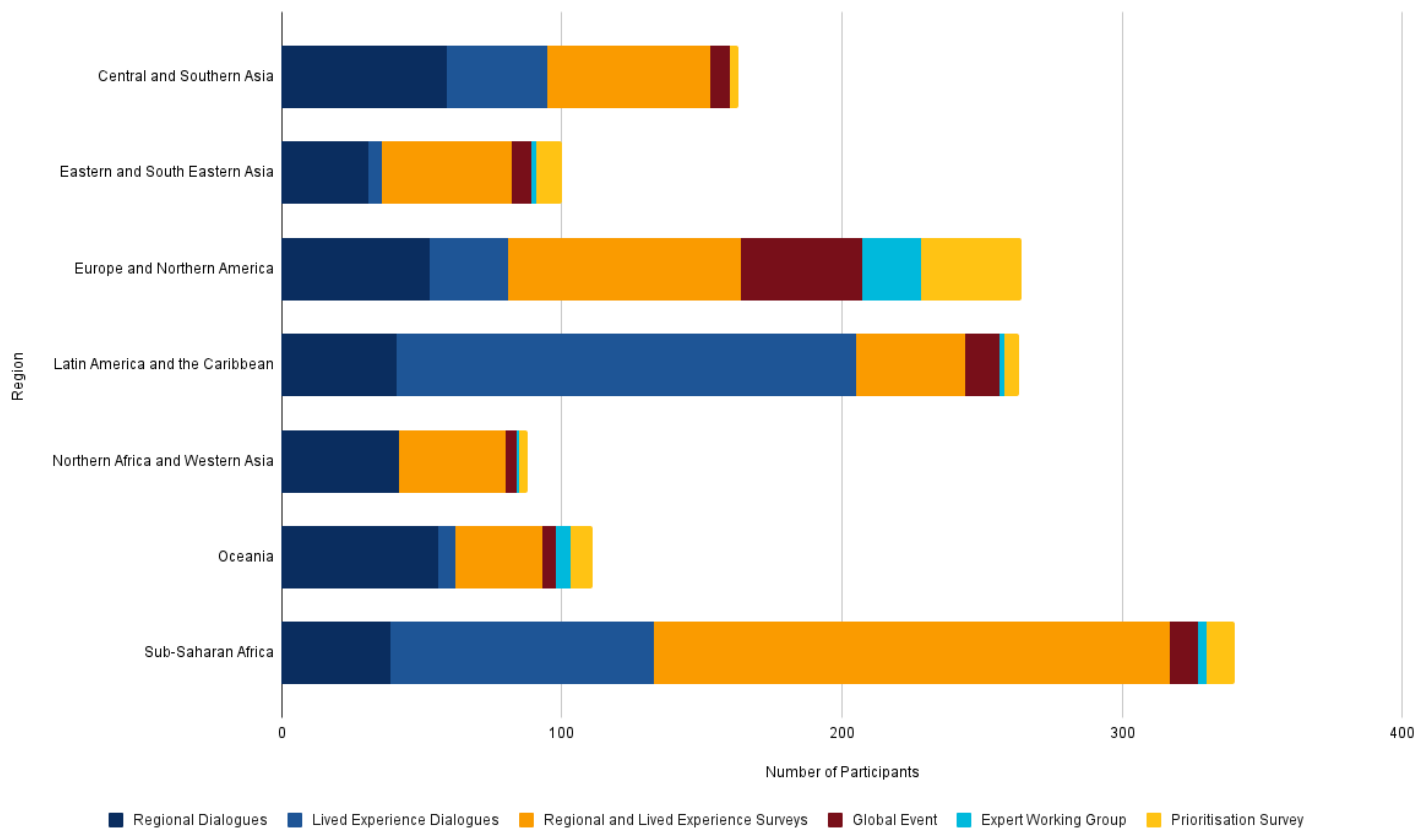


Figure 1

Breakdown of CCM contributors across SDG regions. Note that only contributors with available data are included, so this is an underestimation of true contributor numbers (e.g., due to not all dialogue attendees completing the pre-dialogue survey demographic data). Members of Regional Community Teams (e.g., advisors, co-convenors, analysts and agenda writers) who participated in the dialogues, surveys, global event and expert working group in each region are included.

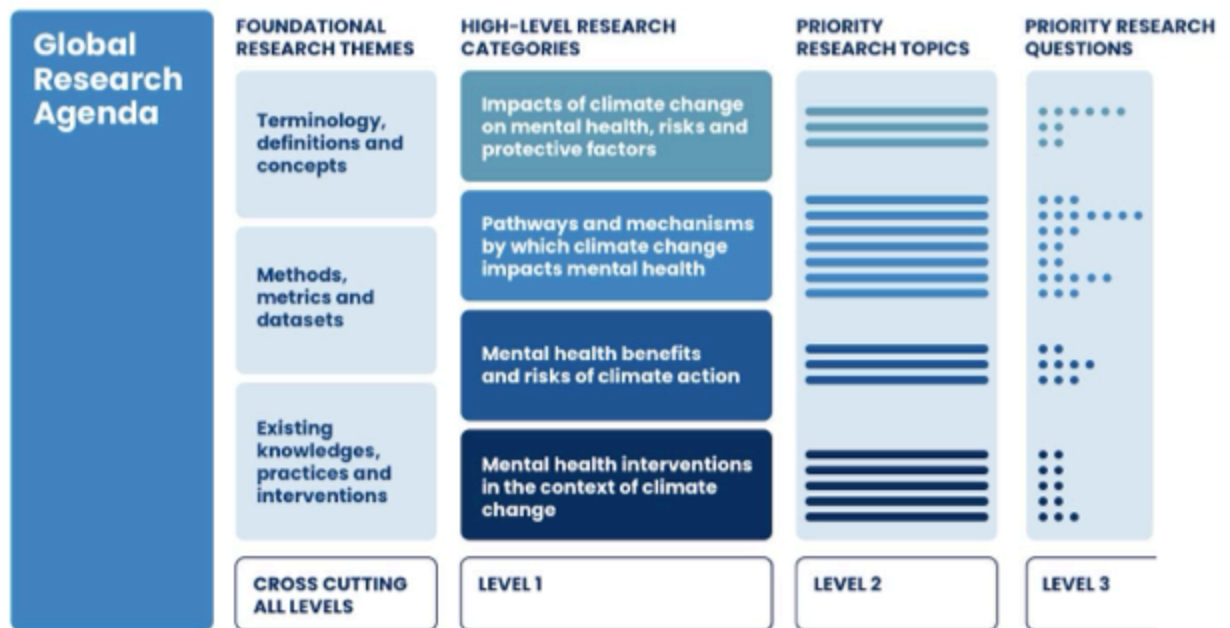


Figure 2

The structure of the Global Research Agenda consists of cross-cutting Foundational Research themes; and 1) High-Level Research Categories; and Priority Research 2) Topics and 3) Questions under each High-Level Category. The lines under priority research topics indicate the number of topics in each category, while the dots under the priority research questions indicate the number of priority research questions in each category.

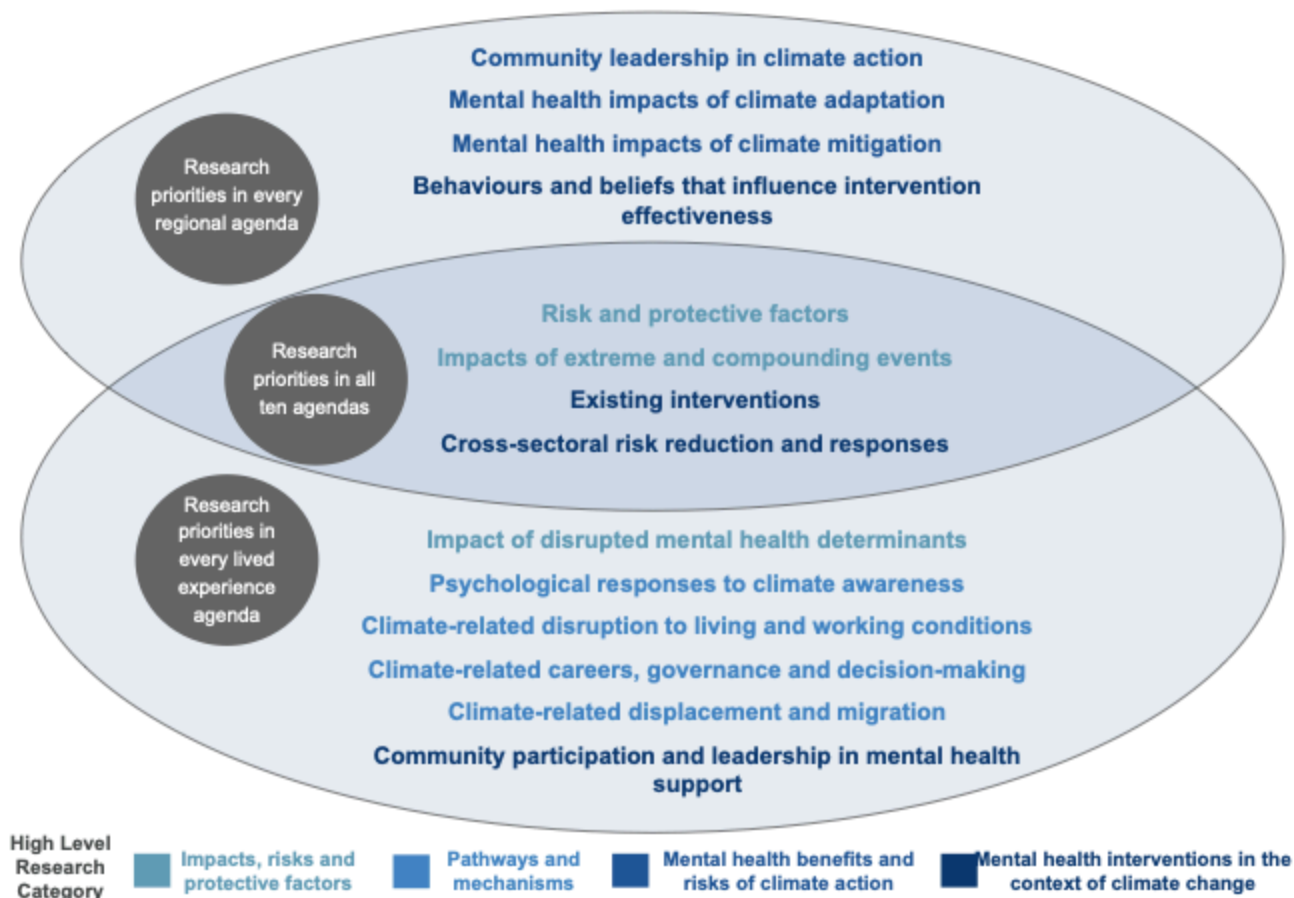


Figure 3

Global priority research questions expressed in 1) all ten regional and lived experience research and action agendas, 2) every regional agenda and, and 3) every lived experience agenda.

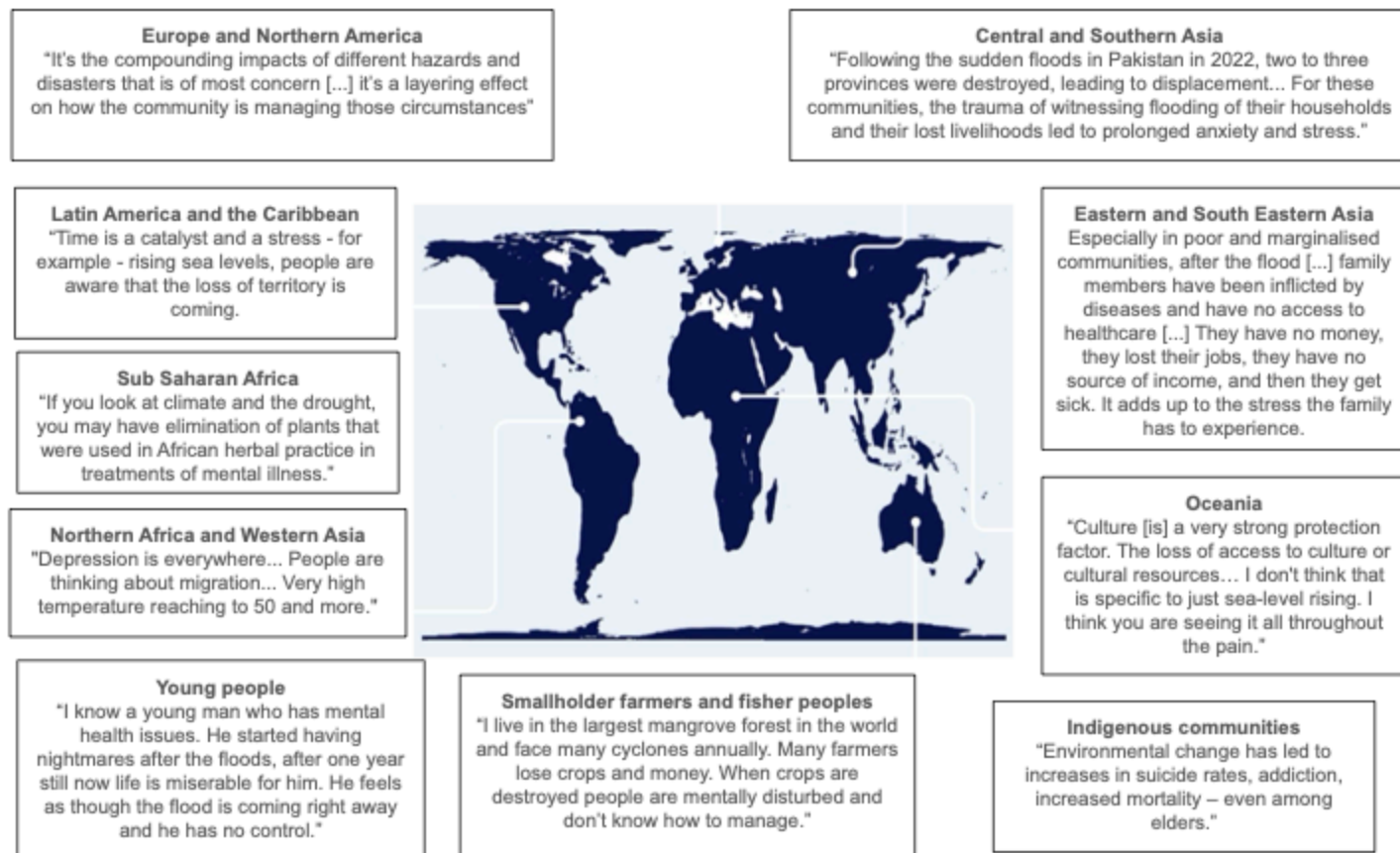


Figure 4

Mental health impacts of climate change across regions and communities, heard by Connecting Climate Minds contributors.

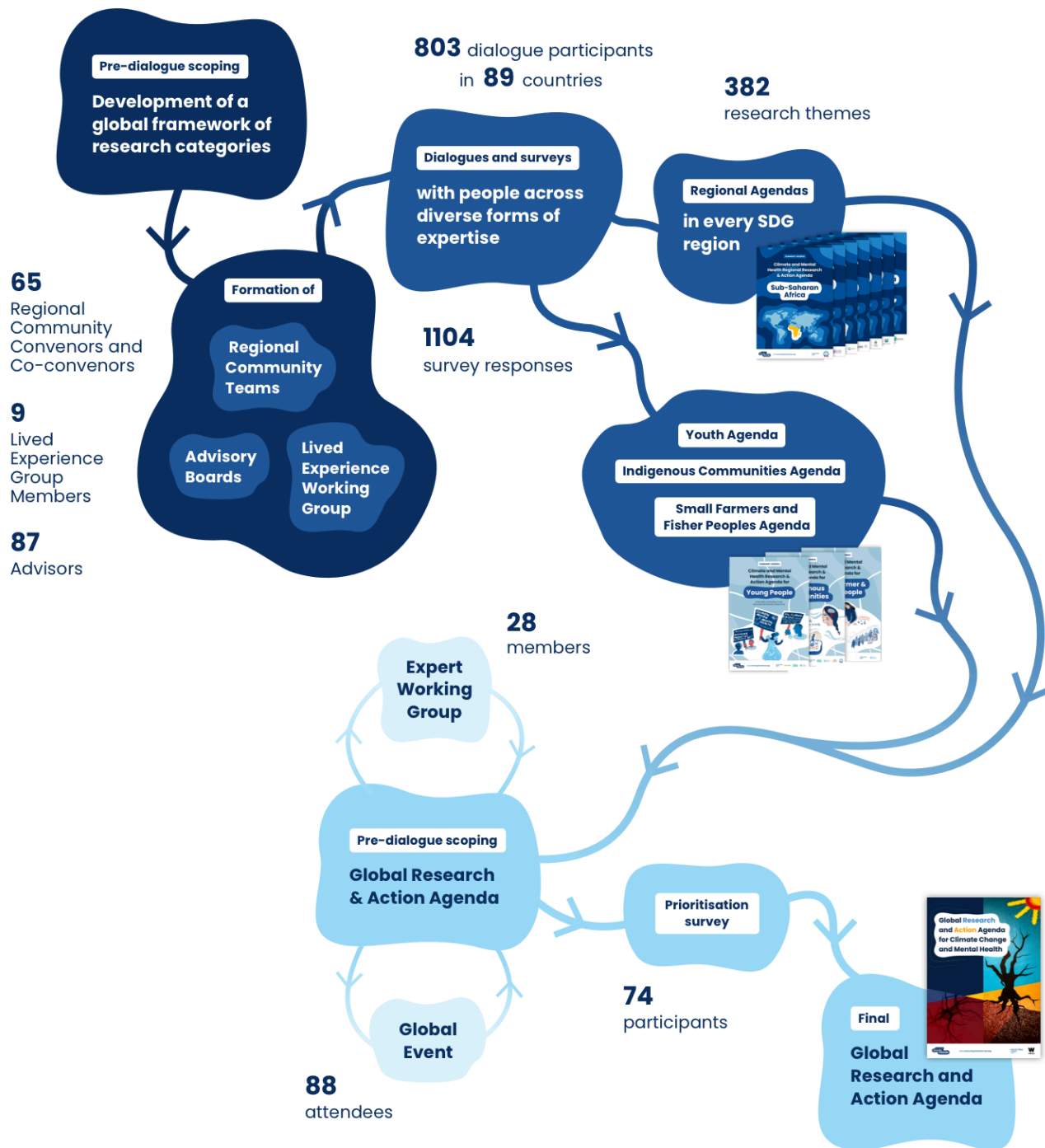


Figure 5

Overview of methods used to develop the Connecting Climate Minds research and action agendas.