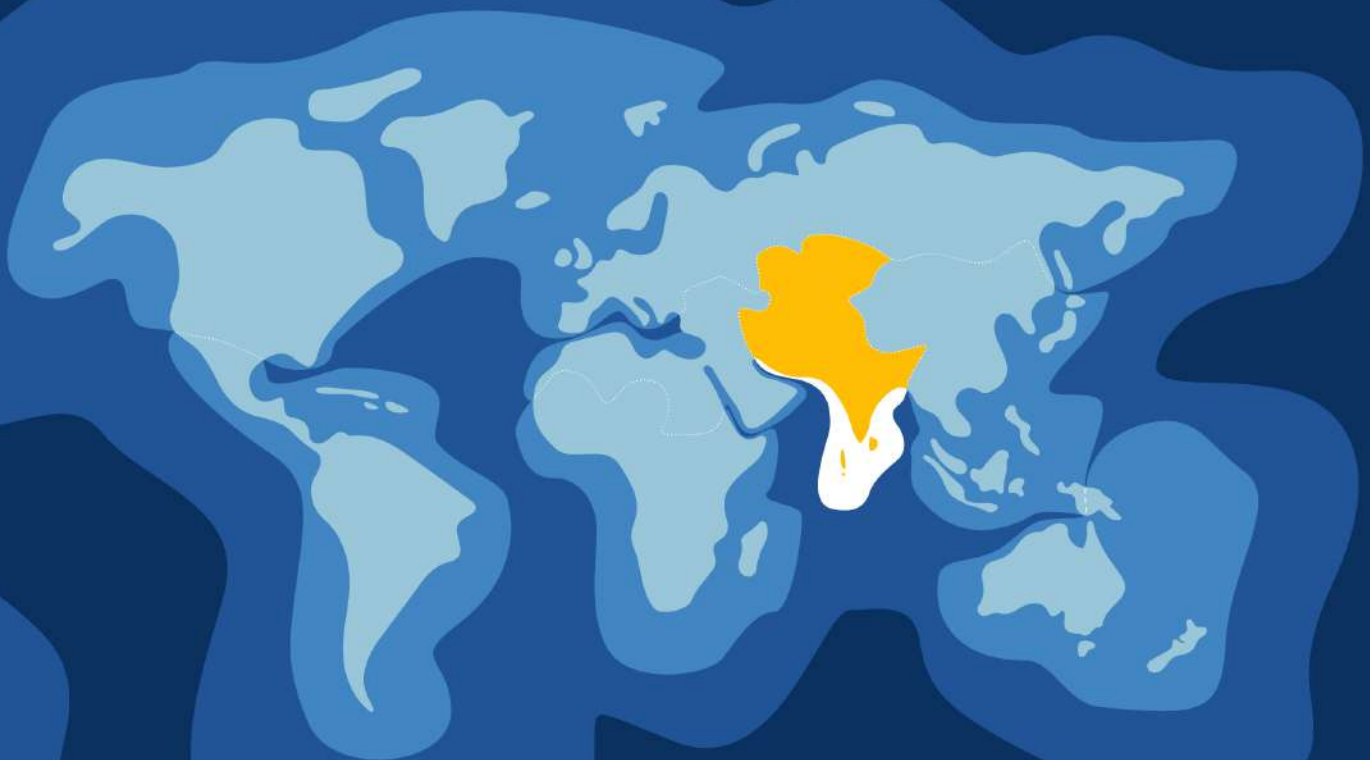
SUMMARY AGENDA

# Climate and Mental Health Regional Research & Action Agenda

# Central & Southern Asia



connecting climate minds

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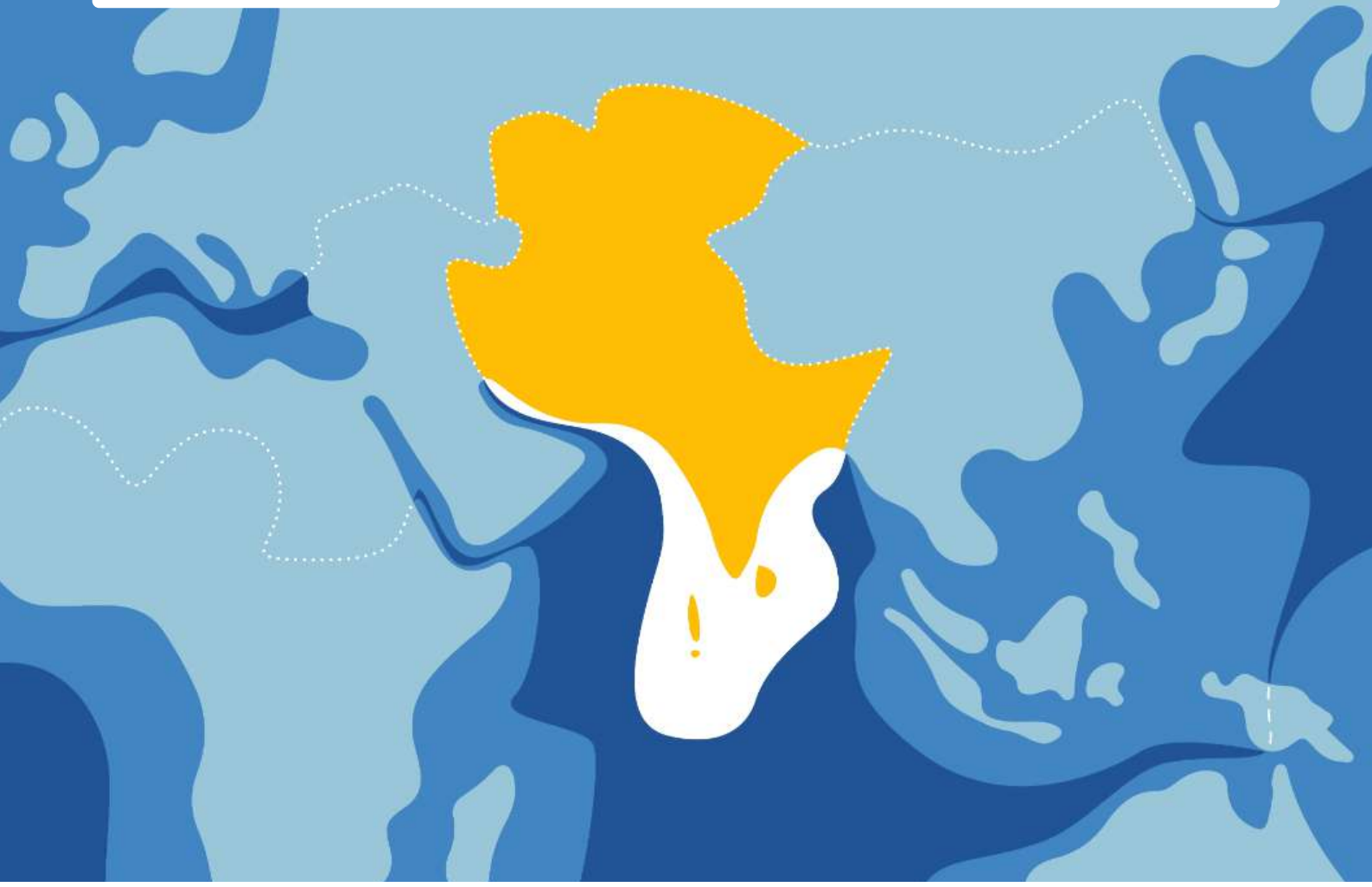

REGIONAL AGENDA LEADS:

connecting climate minds

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# Executive summary

Connecting Climate Minds (CCM) is a Wellcome-funded initiative which aims to cultivate a collaborative, transdisciplinary climate change and mental health field with a clear and aligned vision. Over the last year, we have convened experts across disciplines, sectors and countries to develop regional and global research and action agendas. These agendas set out 1) research priorities to understand and address the needs of people experiencing the mental health burden of the climate crisis, and 2) priorities to enable this research and translate evidence into action in policy and practice. This report summarises the research and action agenda for climate change and mental health in Central and Southern Asia (CSA); the full agenda[1] has been published separately and is available **here**.

CSA – which, according to the Sustainable Development Goal regional groupings, includes Afghanistan, Bangladesh, Bhutan, India, Iran (Islamic Republic of), Kazakhstan, Kyrgyzstan, Maldives, Nepal, Pakistan, Sri Lanka, Tajikistan, Turkmenistan and Uzbekistan – faces increasing climate-related hazards such as floods, landslides, extreme heat and storms. These climate issues impact mental health through various mechanisms, including the destruction of livelihoods, infrastructure and social bonds. Furthermore, many countries in the region experience multiple burdens of climate disasters (e.g., prolonged drought and flooding), which leads to external and internal migration, compounding the effects on the mental health of individuals and their communities.

We identified a total of 43 research priority themes (the top 30 of which are highlighted in this summary document; the complete list can be found in the appendix and full agenda) at the nexus of climate change and mental health, covering areas including:

- **Unequal impacts of climate disasters** on the most vulnerable and neglected groups. These groups include children (under age five), students, urban slum dwellers/migrants, single female household heads, the elderly, urban poor, pregnant women and adolescents.
- **Low levels of public mental health knowledge**, which create difficulties in addressing climate-induced mental health issues.
- **Effects of climate disasters**, such as migration (internal & external), adverse effects on physical health, destruction of households and communities, and the aggravation of household-level conflict and gender-based violence, which lead to mental health challenges.
- **Developing a comprehensive, culturally sensitive biopsychosocial model** that can be applied to understand mental health experiences and challenges in the context of climate change.
- **Incorporating lived experiences** alongside traditional means of assessing mental health (psychometric measures).
- **Developing, implementing and evaluating integrated interventions** that include contributions from researchers, governments and lived experience individuals and, where possible, enhancing existing interventions to better reach marginalised groups.

In order to address these research topics, regional online dialogue participants emphasised the need for inclusive research, which strengthens community-based adaptation initiatives. This will require sustained collaboration efforts between researchers, governments, funders and those delivering interventions.

This regional research and action agenda serves a critical role in synthesising and disseminating many of the key issues in the climate-mental health space in CSA. Additionally, it sheds light on marginalised groups whose issues and opinions have not traditionally been considered within formal research. Furthermore, strengthening this Research Community of Practice (RCoP) has the potential to produce research outputs that prioritise vulnerable and marginalised groups within the region, enabling representation of lived experiences at all levels; this will eventually strengthen existing and emerging interventions for climate-related mental health challenges.

# Introduction

## Climate hazards in Central and Southern Asia

Central and Southern Asia (CSA) is facing an increase in the frequency and severity of a range of climate hazards, including the following, modelled to approximately 2030 as compared to historical baseline (generally 1986-2005):[2,3,i]

- **Extreme heat** particularly across the western parts of CSA, with an increase of more than 20 hot days per year in Iran, Afghanistan, Turkmenistan and southern India (high confidence);[4]
- **Heavy precipitation events** east of the Caspian Sea in Kazakhstan and India (high confidence); and
- **Sea level rise** across the region, resulting in more coastal flooding (high confidence).

## Climate change and mental health in Central and Southern Asia

### Existing research

Although climate-related hazards such as floods, landslides, extreme heat and storms strongly impact the CSA population, little is understood about the climate-related effects on mental health (see the appendix for a high-level summary of existing literature). Concentrated efforts are required to address the gaps in research and action on climate-related mental health challenges with respect to differing cultures, as well as neglected vulnerable groups.

### Findings from the Connecting Climate Minds project

The following sections present findings from the Connecting Climate Minds (CCM) project – including pre-dialogue scoping, two dialogues, two surveys and expert consultations (refer to the appendix for details on methods) – to explore: perceptions of mental health risks associated with climate exposures; whose mental health may be most at risk; and the pathways through which climate exposures might produce or exacerbate existing mental health challenges. Please note that the summaries in the following sections are reports or perceptions from diverse experts, including those with lived experience, rather than drawing from published evidence.

[i] *Future projections are based on the middle of the road emissions scenario (SSP2-4.5 Shared Socio-economic Pathway) from the CMIP6 multi-model ensemble provided in the IPCC, 2021*

[ii] *Within the IPCC and other major sources of climate projections, confidence levels are given on a scale of low, medium, high. The ranking refers to the robustness of the evidence available and the agreement between climate models.*

## What mental health outcomes appear to be impacted?

- Bipolar disorder
- Panic attacks
- Post-traumatic stress disorder (PTSD)
- Depression and apathy (particularly associated with seasons of heavy air pollution and smog)
- Neurological disorders (e.g., Alzheimer's disease, Parkinson's disease and multiple sclerosis)
- Schizophrenia
- Stress and anxiety
- Suicidal ideation

In the context of CSA, mental health effects are mostly described and understood by laypeople in terms of changes in emotional states. As such, the following were also raised:

- Emotional variability including sadness
- Heat-related stress and discomfort

## Who appears to be particularly affected by the mental health impacts of climate change?

- Children
- Coastal communities
- Lower socio-economic groups
- Agricultural workers (farmers, fisher peoples) and their families
- Migrants and those in temporary, remote or insecure housing
- Urban poor or people living in informal settlements
- Outdoor workers
- Students
- The elderly
- Urban poor or people living in informal settlements
- Women

## What appear to be the pathways and mechanisms linking these climate hazards to mental health outcomes?

- Economic insecurity
- Loss and damage to infrastructure
- Displacement and relocation
- Heat-related complications
- Increases in violence and conflict due to climate-induced migration
- Air quality reduction leading to neurological effects
- Limited services and capacities for mental health treatments that address the impact of climate change on mental health
- Disruptions to livelihoods for those with high dependence on agriculture and fisheries
- Immature or insufficient government action and aid programmes that don't adequately prevent or address climate-related mental health challenges

# Research agenda

## Priority research themes

This research agenda presents an aligned vision to guide the climate and mental health field in CSA. Research priorities have been generated through extensive consultation with experts across disciplines, sectors and geographies in the region and iterated with experts regionally and globally; they are presented within four overarching research categories that were identified as areas of critical need for further work globally, based on an initial review of the literature (see appendix for further details). The priority research themes represent areas where targeted research investment could create a full picture of climate-related impacts on mental health challenges, their mechanisms, and solutions across both mental health and climate actions.

RESEARCH CATEGORY

### Impacts, risks and vulnerable groups

**Priority research themes:**[iii]

Understanding the climate-specific mental health risks and challenges for vulnerable groups (such as farmers, the elderly, adolescents, informal urban workers, Indigenous communities, women and children) across CSA.

Understanding how responding to climate-related disasters impacts the mental health of caregivers and service providers during and after disasters, and the key factors contributing to this.

Identifying which mental health challenges are increasing in frequency or severity in the region as a result of climate change, particularly considering challenges beyond PTSD, stress, anxiety and depression. These may include alcohol abuse, substance misuse, self-harm and suicidal ideation.[4,5]

Exploring how climate change intersects with gender-based violence and understanding the related mental health impacts, particularly on vulnerable populations across age groups.

Understanding how reproductive health problems related to the effects of climate change (such as salinity or climate disasters) affect the mental wellbeing of women and may increase the risk of mental health challenges. *(Research should cut across socioeconomic strata and include those living in rural, semi-urban and urban poor localities.)*

Understanding how different factors (community resilience, social support, government and NGO support) shape community perceptions of climate change-induced mental health challenges, including the perceived degree of urgency to address these challenges.

Understanding the long-term impact on mental health resulting from the direct impacts (extreme and slow-onset climate events such as increased temperature, extreme heat and drought, cyclones, flooding) and indirect impacts (such as food insecurity, loss of livelihood, damage to housing) of climate change.

Understanding how frequent glacial flooding affects Indigenous communities (e.g., effects on infrastructure, education and livelihood) in the Himalayan region and the likelihood of experiencing mental health challenges related to these effects. This includes identifying specific groups that are most affected. (*Note: this would likely need to be a qualitative study given the scarce population in the Himalayan region.)*

Measuring the extent to which the impact of heat on ecosystems, livelihoods and overall mental wellbeing in the region leads to an increased prevalence of stress, anxiety and depression.

Understanding the climate-related anxieties of coastal populations and their impacts on mental health challenges.

Improving the psychometric measures of climate-specific mental health and wellbeing outcomes resulting from climate-induced disasters. For example, exploring ways to incorporate lived experiences into these assessments.
*(In addition to quantitative surveys, qualitative phenomenological methods would provide an understanding of the lived experience of a phenomenon [climate disaster] at the individual level as well as the social contexts in which they are embedded. This would assist in the development of context-specific interventions and the appropriate application of mental health measures.)*

[iii] *See appendix for complete list of priority research themes*

RESEARCH CATEGORY

## Pathways and mechanisms

**Priority research themes:**

Designing a comprehensive, effective and culturally-sensitive biopsychosocial model to conceptualise and assess the mechanisms of climate-induced mental health challenges in the region. *(This should incorporate biological, psychological, socioeconomic, sociopolitical, cultural, ecological and environmental determinants.)*

Working with governments, civil society, NGOs, volunteer organisations and research organisations to create an inclusive framework for developing interventions for climate-related mental health challenges. *(This framework should incorporate perspectives of those directly impacted by climate change, such as farmers, and experts in the field, such as climate scientists/ researchers.)*

Exploring the pathways and mechanisms by which extreme temperatures contribute to increased symptoms of mental health challenges (such as anxiety and depression) and mental wellbeing challenges (such as solastalgia and grief) in CSA.

Understanding the extent to which awareness or lack of information/misinformation/uncertainty about climate change/ climate hazards affects the mental health of affected individuals and vulnerable groups (e.g., frontline workers, Indigenous populations).

Assessing the extent to which climate change-related financial losses (loss of livelihood, infrastructure damage), exposure to air pollution and climate-induced vector-borne diseases contribute to mental health challenges in affected communities across all age groups. *(Note: specific focus on certain vulnerable groups such farmers, women, children, locals in coastal regions, people in flood-prone areas in the region.)*

Understanding how the immediate social impacts arising from climate disasters (e.g., loss of social capital, disruption in education, gender-based violence) contribute to psychosocial distress and affect mental health in affected communities.

RESEARCH CATEGORY

## Mental health benefits of climate action (adaptation and mitigation)

**Priority research themes:**

Identifying and evaluating the climate change adaptation strategies/interventions undertaken by local communities, NGOs, civil society organisations, and local and national governments (e.g., new agricultural practices, water management, infrastructure) in CSA and their benefits (direct or indirect) on mental health.

Identifying the mental health benefits of actions that protect farmer livelihoods from prolonged periods of drought, salinity intrusion and flooding.

Assessing the variation in perceptions and understandings of climate change and climate hazards across diverse regions in CSA, taking into account local knowledge, cultural perspectives and regional contexts. This includes determining which factors contribute to these variations and how a nuanced understanding of these differences might inform region-specific climate adaptation strategies that benefit mental health.

Assessing the mental health benefits of actions that reduce air pollution in CSA as part of climate mitigation initiatives, such as reducing the burning of fossil fuels.

RESEARCH CATEGORY

# Mental health interventions/solutions in the context of climate change

**Priority research themes:**

Outlining effective, locally-relevant coping strategies to address mental health challenges induced by climate change and exploring how to integrate these strategies with established methods of psychosocial treatment.

Identifying and evaluating strategies to raise awareness of the mental health challenges of climate change among affected individuals to enable them to identify when and how to seek necessary support (e.g., by understanding the causes and symptoms associated with these experiences), and among policymakers to enable them to design and advocate for effective policies.

Understanding how cultural, social and economic characteristics influence perceptions and responses to climate change and mental health in CSA and how these factors should be considered when developing mental health interventions.

Understanding the roles of an individual's support network (e.g., friends, family members), community and external resources (e.g., professional counselling, online resources) in improving outcomes for people experiencing mental health challenges following climate disasters and exploring how these can be strengthened.

Understanding the local terminology and definitions used to discuss mental health challenges and mental wellbeing issues and how they influence discussions about mental health in the context of climate change. This includes exploring how this terminology can be incorporated into new and existing interventions.

Evaluating strategies to ensure the widespread availability and accessibility of mental health interventions (including identifying stakeholders to implement and scale up these strategies).

Identifying and evaluating training and interventions (through different sectors: government, non-government, research institutions) to equip community health workers to deliver frontline climate-related mental healthcare services.

Understanding how health systems and services can be made more responsive to climate-induced mental health needs within the community.

Determining the most effective short- and long-term preventive, promotive and rehabilitative interventions to address climate-specific mental health challenges.

# Action agenda

This action agenda sets out a shared vision as a rallying focus of the mental health and climate change fields in CSA. It sets out the challenges which must be addressed, opportunities that can be harnessed and priority actions to work towards a thriving climate and mental health field.

## Regional vision for mental health in a changing climate

CSA envisions a future as a leader of a climate-conscious revolution, where a 'healthy climate mind'[iv] drives transformative action for mental health. Achieving carbon neutrality, resilient infrastructure and global collaboration, we cultivate a green economy that creates jobs and significantly cuts carbon emissions. Picture a 42-year-old father holding his once drought-burdened 12-year-old son's hand, proudly showing him a lush, green land—a testament to international support for climate change initiatives. Our vision encompasses social equity, inclusivity and proactive mental health preparedness. Our future thrives on exponential growth in inclusive spaces, a platform for identifying the mental health impacts of climate change and empowering vulnerable groups in climate response. With rational pasture use, resilient communities and environmentally sustainable practices, we minimise the impact of climate change, protecting mental health and providing mental health support for affected communities.

[iv] *This concept encompasses recognising the interconnectedness of mental health and environmental factors, understanding the mental health implications of climate change and actively promoting community support, coping strategies and practices that lead to ecological and psychological wellbeing.*

# Creating an enabling environment for research and translating a growing evidence base into action

## Creating an enabling environment for research at the intersection of climate change and mental health

### Challenges:

- **Social taboo and stigma** around mental health
- **Gender restrictions** preventing inclusion of women and children in research
- **Lack of funding**
- **Language barriers and varied cultural understandings** of mental health
- **Mismatch of priorities** between researchers and communities
- **Lack of local representation** in research

### Opportunities and enablers:

- **Lack of community awareness** of the link between climate change and mental health
- **Poor coordination** among relevant stakeholders
- **Inequalities in funding processes**, which favour the Global North

### Relevant potential partners:

- Activists
- Civil society organisations, including faith-based organisations and non-government organisations
- Communities impacted by climate change
- Disaster agencies and all levels of government
- Education groups and associations
- Environmentalists
- Funders
- Health and clinical practitioners and networks
- Indigenous peoples
- Regional partners
- Universities and research institutions

## Translating a growing evidence base into action that can respond to the interconnections between climate change and mental health

### Challenges:

- **Lack of community awareness** of the link between climate change and mental health
- **Poor coordination** among relevant stakeholders
- **Inequalities in funding processes**, which favour the Global North

### Opportunities and enablers:

- **Absence of policies** pertaining to the mental health impacts of climate change providing an opportunity for lobbying efforts
- **Growing awareness** of climate-mental health
- **Existing research on climate change** in the region that can be used to inform integrated climate mental health policies
- **Collaboration across sectors**

### Relevant potential partners:

- Celebrities, influencers and public figures (to help raise awareness and for advocacy)
- Civil society organisations
- Community organisations
- Funders (including Asian Development Bank, EU, FCDO, Green Finance Centre Bishkek, SIDA and USAID)
- Government bodies (including ministries of agriculture, housing, environment, earth sciences and health and family welfare)
- International NGOs (such as CARE, PATH International, Plan International, Save the Children and WaterAid)
- Medical student associations
- Mental health stakeholders (including mental health activists, professionals and experts)
- National/grassroots NGOs (such as Air Quality Central Asia Dialogue Platform, BRAC, International Fund for Saving the Aral Sea and the Regional Environment Centre for Central Asia)
- Religious leaders
- Research organisations
- UN organisations (including UNDP and UNICEF)
- Youth activists

# Priority next steps/recommendations to investors and actors

## Creating an enabling environment for research at the intersection of climate change and mental health

Addressing the intersection of climate change and mental health in CSA requires comprehensive, collaborative efforts and a nuanced understanding of the region's unique contextual factors. Some priority next steps are listed below:

- **Foster a better understanding of the linkage between climate change and mental health.**
  ***Stakeholders***: Research organisations, community health clinics, NGOs
- **Empower communities through training and awareness raising.**
  ***Stakeholders***: Community leaders, government agencies, community health workers
- **Strengthen collaboration between climate experts, mental health researchers and social scientists through a series of research workshops.**
  ***Stakeholders***: Researchers and universities (spanning social sciences, mental health, psychology, psychiatry, neuroscience), independent think tanks (spanning health, policy)
- **Prioritise co-production of knowledge with affected individuals and communities and set up data sharing protocols across different disciplines.**
  ***Stakeholders***: Research organisations, universities, health clinics, hospitals, NGOs
- **Leverage research collaborations to ensure knowledge transfers to interventions.**
  ***Stakeholders***: Research organisations, universities, NGOs, government agencies
- **Address the funding gaps in research by establishing dedicated funds at the national level.**
  ***Stakeholders***: Local & international NGOs, government ministries, multilateral and bi-lateral agencies

## Translating a growing evidence base into action that can respond to the mental health impacts of climate change

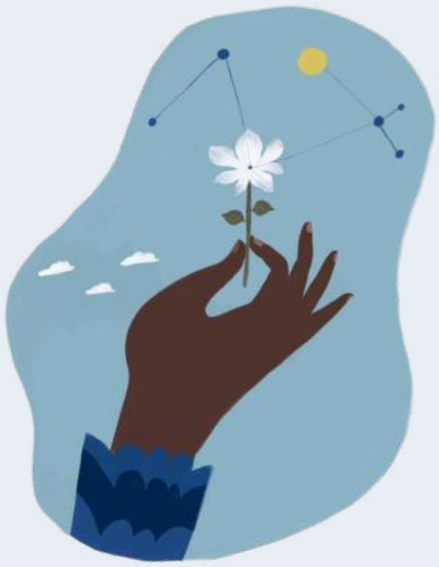
Translating emerging evidence into impactful policies and practices requires collaboration and targeted efforts. Some priority next steps are listed below:

- **Incorporate climate-induced mental health issues in formal medical education.**
  ***Stakeholders***: Medical professionals, psychologists, psychiatrists, medical school regulatory bodies, government ministries
- **Raise awareness of mental health services that address psychological effects of climate change in order to encourage affected individuals to seek care.**
  ***Stakeholders***: Communities (including marginalised groups), influential community members (religious leaders, school teachers, local politicians), NGOs, radio and TV stations, local government bodies
- **Identify groups or organisations working on mental health resilience to identify areas for synergy and increase multisectoral and inter-ministerial collaboration.**
  ***Stakeholders***: NGOs, government ministries and agencies, grassroots organisations, research institutions
- **Create more funding opportunities for programmes/initiatives that promote mental health resilience among communities affected by climate hazards.**
  ***Stakeholders***: Funders, NGOs, government agencies
- **Promote policy advocacy at the nexus of climate change and mental health.**
  ***Stakeholders:*** Government ministries, local government bodies, donors, international NGOs, local organisations, vulnerable communities

# Conclusion

The intersection of climate change and mental health is an emerging area of research; efforts to understand this area in CSA have thus far been dispersed and limited. Through an innovative participatory approach, the CSA Regional Community Team (RCT) organised two regional dialogues, which brought diverse researchers, individuals with lived experiences, practitioners and policymakers in climate and mental health together for a united initiative. This enabled the region to produce an informative regional research and action agenda that highlights the most pressing issues and possible action points as they relate to climate change and mental health.

To ensure continued collaboration of our diverse RCoP and that the research themes are carried forward in the region, there is a pressing need for further investment in this area. Increased funding will strengthen the RCoP, enabling this group to produce research that prioritises vulnerable and marginalised groups within the region, promoting representation of lived experiences at all levels. This research will in turn strengthen existing and emerging interventions to address climate-induced mental health issues.



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2. Israr Hasan
3. Nafisa Benazir Bhuiyan
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5. Maliha Mehnaz Mitu
6. Amal Chowdhury
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8. Yasmin Ara
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10. Tahia Hasan
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# Conflicts of interest

The authors have no conflicts of interest to declare.

# Appendix

## Connecting Climate Minds (CCM) overview

Connecting Climate Minds (CCM) is a Wellcome-funded project launched in 2023 to develop an inclusive agenda for research and action in climate change and mental health. The project has two key, intertwined aims. The first is to develop an aligned and inclusive agenda for research and action that is grounded in the needs of those with lived experience of mental health challenges in the context of climate change, to guide the field over the coming years. The second is to kickstart the development of connected communities of practice for climate change and mental health in seven global regions (designated by the Sustainable Development Goals), equipped to enact this agenda. We aim to combine the strengths of a global perspective and regional focus, and bring together diverse disciplinary perspectives into a shared vision that can ensure research is effective at addressing priority evidence gaps and informing changes in policy and practice at the intersection of climate change and mental health.

## Regional Community Team

In CSA, CCM is led by a Regional Community Team (RCT), responsible for convening diverse expertise across the region and building regional capacity to create and enact the research and action agenda. The structure of the RCT is outlined below.

| RCT Structure | Role | Members |
|---|---|---|
| Regional Community Convenor (RCC) | Responsible for developing and delivering project activities in the region, including convening and supporting a regional community of diverse expertise. | BRAC James P Grant School of Public Health, BRAC University, Bangladesh<br>• Dr Farzana Misha<br>• Wafa Alam<br>• Sameen Nasar<br>• Md Tanzirul Alam |
| Co-Convenors | Bringing additional breadth of expertise across disciplines and countries, providing technical advice and review, and supporting project delivery. | • Roufa Khanam, Assistant Director, Centre for Climate Change and Environmental Research (C3ER), BRAC University, Bangladesh<br>• Zul Merali, Founding Director, Brain and Mind Institute, Aga Khan University, Pakistan |
| Lived Experience Advisory Group (LEAG) | Advisory board of experts with lived experience of mental health challenges in the context of climate change and/or belonging to vulnerable population groups and living with climate hazards. Drawing on their unique expertise and wisdom, LEAGs provide vital community-centred perspectives and guidance that inform the overarching approach and outputs of the project. | • Monira Rahman, Founder, Innovation for Wellbeing Foundation, Bangladesh<br>• Poornima Prabhakaran, Director, Centre for Health Analytics Research and Trends, Trivedi School of Biosciences, Ashoka University, India<br>• Matrika Devkota, Founder and Executive Director, KOSHISH, Nepal |

| RCT Structure | Role | Members |
|---|---|---|
| Youth Ambassador(s) (YAs) | Youth advisors (aged 18-29) with lived experience of mental health challenges in the context of climate change and/or belonging to vulnerable population groups and living with climate hazards. YAs bring unique youth-centered perspectives to the development and implementation of project activities. | • K.M. Miraj Sujoy, Student, BRAC University, Country: Bangladesh<br>• Kezang Wangmo, Student, BRAC University, Country: Bhutan<br>• Kunnuru Duishobekova, Student, Kyrgyz-Turkish University Manas, Country: Kyrgyzstan<br>• Aishath Enash, Environmental Manager, Board Member, U-Inspire Maldives;<br>• Program Officer, Ministry of Climate Change, Environment and Energy, Maldives, Country: Maldives |

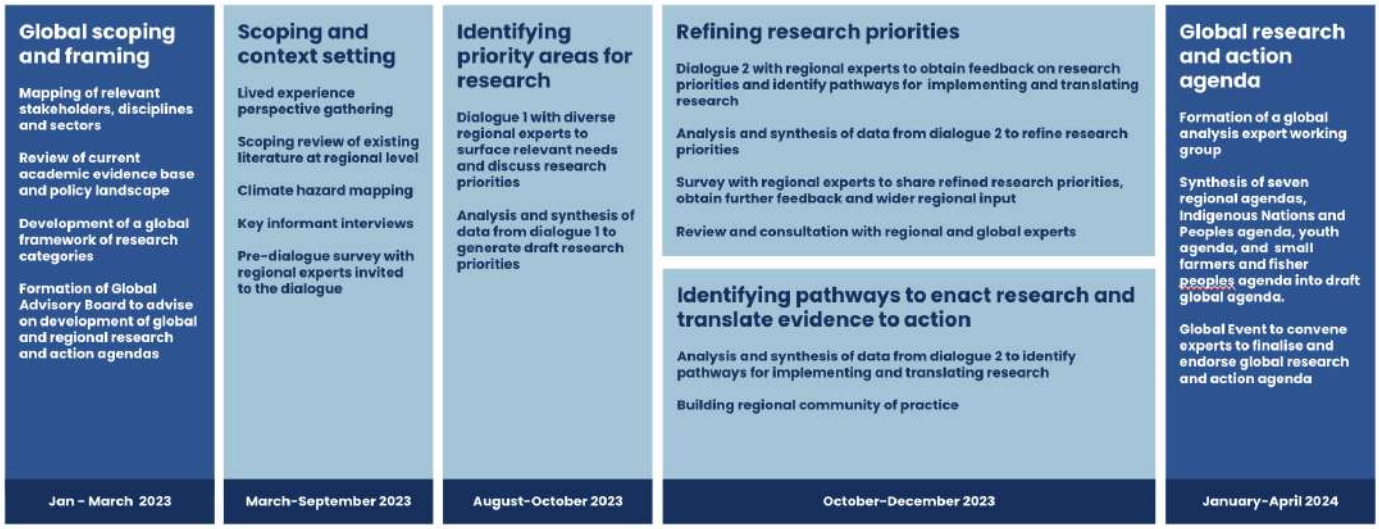
# Methods

We produced this research and action agenda through a robust and inclusive methodology to capture, combine and refine a rich diversity of perspectives while fostering connection across a growing community of practice. Experts across disciplines, sectors and countries were convened in two virtual dialogues and consulted through two online surveys.

The CCM core team developed this methodology at a global level in consultation with the RCT, a Global Advisory Board and Wellcome. Methods and materials were adapted regionally by the RCT to ensure a balance of global standardisation with regional appropriateness and flexibility. Continuous sharing between regions of processes, learnings and challenges facilitated iterative development of the methodology. The process for developing the regional research and action agendas is shown below.

Participants were recruited firstly through the networks of the RCT, CCM core team and Wellcome, with further recruitment through snowball sampling to reach a broad range of experts across disciplines, sectors and geographies.

Full methods can be found here.



# Generation of research and action priorities

Priorities for research were generated, refined and finalised through the following process:

- **Developing research categories**: Through a global landscaping exercise of relevant existing climate change and mental health reviews [8–17] four broad research categories were identified as areas of critical need for further work globally. This framework was used as the basis for structuring discussions within dialogues to generate research priorities and formed the global coding framework for analysis. These were:
  - **Impacts, risks and vulnerable groups**: improving our understanding of the ways in which mental health is affected by climate change. For example: what mental health outcomes are impacted or at risk; the prevalence, severity, economic and societal costs of these impacts; and who is most vulnerable to these impacts.
  - **Pathways and mechanisms**: improving our understanding of how mental health is affected by climate change and, in particular, whether there are factors specific to climate change that increase mental health risks. This includes considering biological, psychological, societal or environmental pathways and mechanisms.
  - **Mental health benefits of climate action (adaptation and mitigation)**: understanding and quantifying when and how climate adaptation and mitigation actions, across sectors, can also have win-win benefits for mental health.
  - **Mental health interventions/solutions in the context of climate change**: identifying the most effective mental health interventions/solutions/actions to support mental health in the context of climate change, across diverse sectors. This encompasses providing support to people already experiencing negative mental health impacts and reducing risk or severity of future negative mental health impacts.
- **Generating priority research themes**: Participants in dialogue 1 were led through a structured discussion to surface their views on 1) emerging and likely mental health consequences of current and future regionally-relevant climate hazards and opportunities for mental health benefits of action in both mental health and climate, and 2) where more research is needed to understand and respond to identified consequences and opportunities.
- **Analysis**: Dialogue data (transcripts of breakout rooms and notes) was analysed using the Framework Method [18] – a matrix-based approach that allows qualitative researchers to undertake deep interrogation of transcripts and written notes.
- **Draft priority research themes**: This matrix was used in combination with data from pre-dialogue scoping (interviews/literature review/pre-dialogue survey) conducted in the region to draft a list of priority research themes. These were refined through consultation with the RCT and triangulation across breakout notes, transcripts, pre-dialogue scoping and expert consultation.
- **Refinement of priority research themes**: Research themes were shared with participants in Dialogue 2 for their feedback. Research themes were refined in response to this feedback and shared with dialogue participants and a wider sample of experts in the post-dialogue survey.
- **Finalisation of priority research themes**: A final list of priority research themes was generated based on incorporation of post-dialogue survey feedback, consultation with the RCT and regional experts, CCM core team, Global Advisory Board and Wellcome.

Priorities for action were generated, refined and finalised through the following process:

- **Developing action categories**: Through consultation with experts across the global CCM team, two high-level categories for priority actions were identified. These were: 1) creating an enabling environment for research at the intersection of climate change and mental health and 2) translating a growing evidence base into action that can respond to the mental health impacts of climate change. Within each, sub-categories were: 1) a desired future state, 2) opportunities and enablers, 3) challenges, and 4) partners and stakeholders.
- **Generating priority actions**: Participants in Dialogue 2 were led through a structured discussion to surface their views on 1) how the research agenda for climate change and mental health research could best be implemented in the region and 2) how a growing evidence base could be translated into action in policy and practice.
- **Analysis**: Dialogue data (transcripts of breakout rooms and notes) was analysed using the Framework Method (as described above).
- **Finalisation of priority actions**: An action agenda summarising insights from Dialogue 2 and outlining identified priority actions was generated based on consultation with the RCT and regional experts, CCM core team, Global Advisory Board and Wellcome.

# Participants

Dialogue participants were a diverse group across geographical spread, gender, sector and discipline. All participants were invited to both dialogues, however in some cases participants were unable to attend both dialogues.

In total 65 participants attended Dialogue 1 and 56 participants attended Dialogue 2. The tables below provide a breakdown of participant characteristics.

### Geographical spread:

| | Dialogue 1 | | Dialogue 2 | |
|---|---|---|---|---|
| **Country** | **Number** | **Percentage** | **Number** | **Percentage** |
| Afghanistan | 4 | 7% | 3 | 9% |
| Bangladesh | 25 | 42% | 21 | 60% |
| Belgium | 0 | 0% | 1 | 3% |
| Bhutan | 1 | 2% | 0 | 0% |
| India | 8 | 13% | 5 | 14% |
| Iran (Islamic Republic of) | 1 | 2% | 0 | 0% |
| Kazakhstan | 1 | 2% | 0 | 0% |
| Kenya | 0 | 0% | 1 | 3% |
| Kyrgyzstan | 1 | 2% | 0 | 0% |
| Maldives | 3 | 5% | 0 | 0% |
| Nepal | 4 | 7% | 1 | 3% |
| Pakistan | 6 | 10% | 1 | 3% |
| Sri Lanka | 4 | 7% | 2 | 6% |
| United Kingdom of Great Britain and Ireland | 1 | 2% | 0 | 0% |
| Uzbekistan | 1 | 2% | 0 | 0% |

**Expertise:**

| | Dialogue 1 | | Dialogue 2 | |
|---|---|---|---|---|
| **Expertise** | **Number** | **Percentage** | **Number** | **Percentage** |
| Climate change | 38 | 38% | 25 | 44% |
| Mental health | 25 | 25% | 12 | 21% |
| Healthcare | 27 | 27% | 16 | 28% |
| Other | 7 | 7% | 2 | 4% |
| I do not know/ Prefer not to say | 3 | 3% | 2 | 4% |

**Discipline:**

| | Dialogue 1 | | Dialogue 2 | |
|---|---|---|---|---|
| **Discipline** | **Number** | **Percentage** | **Number** | **Percentage** |
| Activism | 20 | 9% | 11 | 10% |
| Community | 43 | 20% | 21 | 18% |
| Education | 20 | 9% | 9 | 8% |
| Expert through my own lived experience | 12 | 5% | 5 | 4% |
| Funding | 4 | 2% | 0 | 0% |
| Healthcare | 14 | 6% | 7 | 6% |
| Non-governmental organisation | 43 | 20% | 21 | 18% |
| Policy | 20 | 9% | 14 | 12% |
| Research | 38 | 17% | 26 | 23% |
| Other | 6 | 3% | 1 | 1% |

**Gender:**

| | Dialogue 1 | | Dialogue 2 | |
|---|---|---|---|---|
| **Gender** | **Number** | **Percentage** | **Number** | **Percentage** |
| Men | 19 | 33% | 8 | 35% |
| Women | 37 | 64% | 13 | 57% |
| Other | 2 | 3% | 1 | 4% |
| I do not know | 0 | 0% | 1 | 4% |

### Survey participants:[v]

Pre-dialogue survey: 85

Post-dialogue survey: 30

# Ethics, data collection and storage

### Ethics

This study has been reviewed and given an ethically favourable opinion by the Imperial College Research Ethics Committee (study title: "Global Dialogues to set an actionable research agenda and build a community of practice in climate change and mental health"; study ID number: 6522690).

### Data storage and sharing

Dialogues were conducted virtually on Zoom following informed consent from all participants. Dialogues and breakout groups were recorded and transcribed by third party providers (Way with Words and Absolute Translations). Survey distribution and data collection was carried out using the online platform Qualtrics. Data was stored and managed by Imperial College London using a secure server. BRAC University was a Joint Data Controller for the data provided to this project for CSA and responsible for securely storing and sharing data with Imperial College London and with regional analyst teams. Data will be stored by Imperial College London for 10 years after study completion.

# Summary of existing research on climate change and mental health in CSA

Although climate-related hazards such as floods, landslides, extreme heat and storms strongly impact the CSA population, little is understood about the climate-induced effects on mental health. This is partly due to the low levels of mental health knowledge among the public within the region.[19] Despite this lack of mental health literacy, many South Asian countries have some of the highest rates of common mental health disorders globally.[4] With respect to countries in Central Asia, mental health needs are under-researched;[20] while some efforts have been made to address mental health issues, stigmatisation prevents further research efforts. Together with an insufficient allocation of resources and low prioritisation by governments, stigmas and psychiatric myths persist within Central Asia.[21]

Vulnerabilities associated with climate events in the region include socioeconomic status (with higher risk for low socioeconomic status), age (higher risk for very young and very old people) and those with pre-existing health conditions. Climate-related mental health impacts among these groups can arise from food insecurity, lack of water access and migration.[22] While there is scant literature making the links between climate events and mental health impacts in the region, such climate impacts and individual vulnerabilities have been negatively associated with mental health and wellbeing in other regions.[23] Other relevant documented issues within the region include forced migration, increases in women's responsibilities, extreme heat and its impact on psychological burden. Gender-based violence is also prevalent; it has been established that hot temperatures can increase aggressive motives and behaviours.[24] Furthermore, severity of climate events have led to increasing farmer suicides; suicides have been documented amongst farmers in India and Bangladesh.[25,26]

Concentrated efforts are required to address the gaps in research and action on climate-induced mental health challenges with respect to differing cultures, as well as neglected vulnerable groups.

[v] *Please note numbers are approximate and do not account for duplicate or incomplete responses.*

# Priority research themes (complete list)

RESEARCH CATEGORY

## Impacts, risks and vulnerable groups

**Priority research themes:**

Understanding the climate-specific mental health risks and challenges for vulnerable groups (such as farmers, the elderly, adolescents, informal urban workers, Indigenous communities, women and children) across CSA.

Assessing the long-term direct and indirect mental health impacts of extreme climate events and climate disasters (extreme heat and drought, cyclones, flooding, etc.).

Understanding how frequent glacial flooding affects Indigenous communities (e.g., effects on infrastructure, education and livelihood) in the Himalayan region and the likelihood of experiencing mental health challenges related to these effects. This includes identifying specific groups that are most affected. (Note: this would likely need to be a qualitative study given the scarce population in the Himalayan region.

Understanding the specific mental health risks faced by the most vulnerable groups of climate-induced migrants (e.g., persons with disabilities, the elderly, adolescents, pregnant and lactating women, informal urban workers, children and gender-diverse communities) during and after climate-related displacement.

Measuring the extent to which the impact of heat on ecosystems, livelihoods and overall mental wellbeing in the region leads to an increased prevalence of stress, anxiety and depression. With respect to farmers in the region, understanding livelihood impacts on the increased rates of suicides.

Understanding how climate disasters and slow-onset climate impacts like increased temperatures affect children's risk of mental health challenges.

Improving the psychometric measures of climate-specific mental health and wellbeing outcomes resulting from climate-induced disasters. For example, exploring ways to incorporate lived experiences into these assessments. (In addition to quantitative surveys, qualitative phenomenological methods[29] would provide an understanding of the lived experience of a phenomenon [climate disaster] at the individual level as well as the social contexts in which they are embedded.[30] This would assist in the development of context-specific interventions and the appropriate application of mental health measures.)

Understanding the long-term effects on mental health resulting from the indirect impacts of climate change, such as food insecurity, loss of livelihood, damage to housing, etc.

- Quantifying the additional mental health burden related to food insecurity attributable to climate change.
- Quantifying the additional mental health burden related to loss of livelihood due to climate change.
- Quantifying the additional mental health burden related to loss/ damage to housing due to climate change.

Understanding how responding to climate-related disasters impacts the mental health of caregivers and service providers during and after disasters, and the key factors contributing to this.

Identifying which mental health challenges are increasing in frequency or severity in the region as a result of climate change, particularly considering challenges beyond PTSD, stress, anxiety and depression. These may include alcohol abuse, substance misuse, self-harm and suicidal ideation.[27,28]

Exploring how climate change intersects with gender-based violence and understanding the related mental health impacts, particularly on vulnerable populations across age groups.

Understanding how reproductive health problems related to the effects of climate change (such as salinity or climate disasters) affect the mental wellbeing of women and may increase the risk of mental health challenges. (Research should cut across socioeconomic strata and include those living in rural, semi-urban and urban poor localities.)

Understanding the climate-related anxieties of coastal populations and their impacts on mental health challenges.

Understanding how different factors (community resilience, social support, government and NGO support) shape community perceptions of climate change-induced mental health challenges, including the perceived degree of urgency to address these challenges.

RESEARCH CATEGORY

# Pathways and mechanisms

**Priority research themes:**

Designing a comprehensive, effective and culturally-sensitive biopsychosocial model to conceptualise and assess the mechanisms of climate-induced mental health challenges in the region. (This should incorporate biological, psychological, socioeconomic, sociopolitical, cultural, ecological and environmental determinants.)

Working with governments, civil society, NGOs, volunteer organisations and research organisations to create an inclusive framework for developing interventions for climate-related mental health challenges. (This framework should incorporate perspectives of those directly impacted by climate change, such as farmers, and experts in the field, such as climate scientists/researchers.)

Exploring the pathways and mechanisms by which extreme temperatures contribute to increased symptoms of mental health challenges (such as anxiety and depression) and mental wellbeing challenges (such as solastalgia and grief) in CSA.

Understanding how cumulative exposures to multiple climate-related stressors contribute to deteriorating mental health among vulnerable groups.

Understanding how different communities perceive climate change-induced mental health challenges, including the perceived degree of urgency to address these challenges.

Understanding the extent to which awareness or lack of information/misinformation/uncertainty about climate change/climate hazards affects the mental health of affected individuals and vulnerable groups (e.g., frontline workers, Indigenous populations).

Assessing the extent to which climate change-related financial losses (loss of livelihood, infrastructure damage) contribute to or worsen mental health challenges in vulnerable populations (farmers, locals in coastal regions and people in flood-prone areas) in the region.

Understanding how the immediate social impacts arising from climate disasters (e.g., loss of social capital, disruption in education, gender-based violence) contribute to psychosocial distress and affect mental health in affected communities.

Exploring the relationship between climate change-related air pollution exposure and the risk of developing depression, anxiety, psychosis or neurocognitive disorders such as dementia across age groups in CSA.

Assessing the impact of climate-induced vector-borne and infectious disease spread on the mental health of affected individuals and their families.

RESEARCH CATEGORY

# Mental health benefits of climate action (adaptation and mitigation)

**Priority research themes:**

Identifying and evaluating the climate change adaptation strategies/interventions (e.g., new agricultural practices, water management, infrastructure) in CSA and their benefits (direct or indirect) on mental health.

Assessing the impact of community-based adaptation strategies (e.g., social strategies utilising peers, building connections between health workers and the community) on the mental health and mental wellbeing of vulnerable populations.

Identifying actions taken by local and national governments to address the impacts of climate change and climate hazards and evaluating their effects on the mental health of individuals affected by climate hazards.

Identifying the mental health benefits of actions that protect farmer livelihoods from prolonged periods of drought, salinity intrusion and flooding.

Assessing the variation in perceptions and understandings of climate change and climate hazards across diverse regions in CSA, taking into account local knowledge, cultural perspectives and regional contexts. This includes determining which factors contribute to these variations and how a nuanced understanding of these differences might inform region-specific climate adaptation strategies that benefit mental health.

Assessing the mental health benefits of actions that reduce air pollution in CSA as part of climate mitigation initiatives, such as reducing the burning of fossil fuels.

RESEARCH CATEGORY

# Mental health interventions/solutions in the context of climate change

**Priority research themes:**

Outlining effective, locally-relevant coping strategies to address mental health challenges induced by climate change and exploring how to integrate these strategies with established methods of psychosocial treatment.

Understanding the local terminology and definitions used to discuss mental health challenges and mental wellbeing issues and how they influence discussions about mental health in the context of climate change. This includes exploring how this terminology can be incorporated into new and existing interventions.

Evaluating strategies to ensure the widespread availability and accessibility of mental health interventions (including identifying stakeholders to implement and scale up these strategies).

Identifying and evaluating training and interventions (through different sectors: government, non-government, research institutions) to equip community health workers to deliver frontline climate-related mental healthcare services.

Exploring strategies to strengthen community-based initiatives and support systems to make communities more resilient to and responsive in supporting climate-specific mental health challenges.

Understanding how health systems and services can be made more responsive to climate-induced mental health needs within the community.

Determining the most effective short- and long-term preventive, promotive and rehabilitative interventions to address climate-specific mental health challenges.

Identifying the government support schemes (at all levels) across the region to address mental health concerns/distress during and after climate disasters or climate extremes (e.g., heat wave/cold waves).

Identifying and evaluating strategies to raise awareness of the mental health challenges of climate change among affected individuals to enable them to identify when and how to seek necessary support (e.g., by understanding the causes and symptoms associated with these experiences), and among policymakers to enable them to design and advocate for effective policies.

Identifying methods to incorporate the cultural, contextual and local perspectives of on-the-ground mental health professionals when developing interventions for climate-related mental health challenges.

Understanding how cultural, social and economic characteristics influence perceptions and responses to climate change and mental health in CSA and how these factors should be considered when developing mental health interventions.

Understanding the roles of an individual's support network (e.g., friends, family members), community and external resources (e.g., professional counselling, online resources) in improving outcomes for people experiencing mental health challenges following climate disasters and exploring how these can be strengthened.

Exploring strategies to provide training and interventions to equip community health workers to deliver frontline healthcare services to individuals affected by climate hazards and assessing the mental health benefits of these services.

# Glossary

For a glossary describing relevant concepts and key words for the Connecting Climate Minds research and action agendas, please download from here.

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