

SUMMARY AGENDA

Young People

Climate and Mental Health Research & Action Agenda for

Vulnerability and Resilience in the Generation Inheriting the Climate Crisis



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YOUTH AGENDA LEADS:



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, thematic 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 for youth; the full agenda¹ has been published separately and is available [here](#).

This agenda provides lived experience-based and evidence-based justification for further research at the nexus of climate change and the mental health of young people. The outputs of this agenda are myriad, and this document should be used as a robust 'starting point' from which to identify areas of interest for further research and advocacy.

The agenda puts forth 63 priority research themes (the top 30 of which are highlighted in this summary document; the complete list can be found in the appendix and full agenda) across four key areas: impacts, risks and vulnerable groups; pathways and mechanisms; mental health benefits of climate action (adaptation and mitigation); and mental health interventions/solutions in the context of climate change. Many of these themes take a youth lens on research priorities identified as being of general interest in the field of climate and mental health; others are particular to young people, identifying unique risks, barriers and opportunities that are influenced by young peoples' lived experiences of climate change. These include, among others:

Developmental stages of interest (critical or significant periods of development that may render young people's mental health particularly vulnerable to climate shocks);

Intersectional and compounding variables (geographical location, demographic characteristics, self-identifying factors and socioeconomic circumstances that may contribute to young people's experiences of climate events);

Biopsychosocial pathways linking climate events to mental health impacts;

Taboo, stigma and prejudice related to climate-mental health;

Climate-aware healthcare/therapeutic interventions (both clinical and at the community level); and

The role of climate action (individual and systems-level) in impacting the mental health of youth.

Individuals reading this agenda are strongly encouraged to see these themes not just as opportunities for targeted research, but also as windows into the most pressing issues of mental health facing young people in a rapidly changing world. Thus, the research priorities presented here may be used as seeds that, when sown, can give rise to paradigm-shifting evidence, producing groundswell changes in policy and practice.

The integrity and sustainability of this research are dependent on the meaningful and respectful engagement of young people, from the conception of research questions through to the translation of evidence into policy and practice. The team learned several lessons from the approach taken in this project, and these process lessons have been captured in the agenda as well.

This agenda intends to provide a vessel for the expertise of young people's lived experience around the world and a guide, in their own words, for how they want to be honoured, protected and championed.

Introduction

Climate change and mental health for youth

Existing research

While emerging research about the impact of climate change on mental health and emotional wellbeing has led to a groundswell in interest and advocacy,² there is currently limited evidence available discussing the consequences for children and young people. Existing frameworks for research, policy and action remain siloed and single-disciplinary, focusing on some dimension of youth, climate change or mental health, but rarely joining the dots between these three factors. Further information on existing research in this area can be found in the appendix.

Findings from the Connecting Climate Minds project

The following section sets out the context of the research undertaken with youth as part of the Connecting Climate Minds (CCM) project, presenting a synthesis of what we heard through dialogue, expert consultations and a literature review as key emerging needs for these groups for mental health in the context of climate change.

What mental health outcomes appear to be impacted?

Anxiety	Depression	Learning disorders
Mood dysregulation	Stress	Suicidal ideation
Strong emotional responses, such as fear, grief and anger (which are not mental health outcomes themselves, but may act as ongoing stressors that interact with mental health outcomes)		Post-traumatic stress disorder (PTSD)

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

Girls	Indigenous youth	Those living in coastal communities
Those with existing health or mental health conditions	Those from poor families	

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

Climate change-related air pollution	Climate change-related cultural and social disruptions	Educational and economic disruptions
Forced migration	Heat-related mechanisms	Climate-induced violence
Community, infrastructure and livelihood impacts	Disruption of access to mental health and healthcare services	Mental health consequence of climate change-related physical health diseases

Research agenda

Priority research themes

This research agenda presents an aligned vision to guide the climate and mental health field for youth. Research priorities have been generated through consultation with youth experts across disciplines, sectors and geographies and iterated with experts 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 themesⁱ:

Understanding how climate change disrupts key educational events in the lives of young people, and how this contributes to their vulnerability to mental health challenges.

Understanding how young people from Indigenous backgrounds/cultures experience mental health challenges related to climate change and how their background contributes to unique resiliency and/or unique vulnerability.

Understanding how persistent uncertainty about the future (due to climate-related disturbances and disruptions) affects young people's mental health in the long term and how this is similar or different to the effects of other disturbances, such as civil war or economic downturns.

Understanding the specific outcomes (e.g., anxiety disorders, post-traumatic stress disorder, mood disorders, etc.) that are associated with different climate events (e.g., floods, heatwaves, drought, etc.) for young people, in both the short and long term.

Understanding if there are specific societal stigmas and taboos associated with mental health due to climate-related events.

Understanding how young people living in areas prone to flooding and/or coastal areas/small island nations susceptible to the risk of sea level rise conceive/experience the mental health impacts of these phenomena.

Understanding how disabled youth may have different experiences of climate and mental health challenges. This may include investigating specific scenarios, for example, in the circumstances of forced migration.

Understanding how the experience of witnessing government inaction or counterproductive actions against climate change may amplify feelings of helplessness in young people and the extent to which this impacts their mental health.

Understanding the psychological impacts of climate change awareness from personal or vicarious experiences in young people, how these experiences vary (between individuals and culturally) and how they might impact mental health and wellbeing outcomes.

ⁱ See appendix for complete list of priority research themes.

Pathways and mechanisms

Priority research themes:

Understanding how different climate events (e.g., floods, typhoons, drought) operate through non-biological pathways (e.g., social, infrastructure or economic disruptions) to exacerbate mental health challenges (e.g., anxiety, depression, mood disorders).

Understanding how the loss of traditional lands and livelihoods affects young peoples' relationships with their culture and how this influences their mental health.

Understanding how heat influences young peoples' experience of mental health challenges – particularly neurological symptoms and symptoms of stress such as headaches, mood dysregulation, depression and suicidal ideation – and exploring whether there is a causal pathway between heat and the onset or worsening of these conditions.

Understanding the pathways by which young women and girls' mental health is disproportionately affected by climate change.

Understanding how forced migration due to environmental disasters affects the mental health of young people and which specific aspects of youth mental health are particularly affected.

Understanding the effects on mental health challenge prevalence among youth when climate events disrupt their abilities to engage in pro-social behaviour – such as being employed, volunteering or engaging with their community – and how this might lead to changing mental health outcomes.

Identifying which economic sectors (e.g., fisher peoples, small farmers, informal sector workers) are particularly vulnerable to climate events and losses, and how this influences the mental health of the young people whose families depend on these sectors.

Understanding how pollution (land, water and air) can affect young people's development and likelihood of experiencing mental health challenges.

Understanding the role, if any, of intergenerational knowledge exchange in helping young people cultivate hope, perceived agency and action in the face of climate change and how this impacts mental health outcomes.

Exploring whether young people experience increased exposure to violence in the wake of climate events and how this impacts their mental health.

Mental health benefits of climate action (adaptation and mitigation)

Priority research themes:

Understanding the role of peer networks in supporting young people to develop perceived agency in the context of climate change and how this impacts mental health outcomes.

Understanding which co-beneficial activities may contribute to encouraging positive and sustainable climate actions and fostering good mental health and wellbeing in youth communities.

Evaluating how educational institutions can best provide support and leadership for young people in taking climate action that improves individual and collective mental wellbeing (e.g., climate activism, education, community groups, etc.).

Evaluating strategies to meaningfully include young people – through co-creation, participatory research or other means – in designing, evaluating and implementing climate and mental health interventions.

Understanding how burnout contributes to young people's mental health challenges when engaging in climate action.

Mental health interventions/solutions in the context of climate change

Priority research themes:

Identifying robustly tested therapeutic interventions concerning climate change and mental health for young people and understanding for whom they are accessible and what barriers exist to accessing them.

Identifying, developing and evaluating continuing mental health and emotional wellbeing education programs that include climate change information for healthcare practitioners, medical students and other health professionals who work with young people.

Understanding the role of strengthening psychosocial resilience at the community level, versus at the individual level and how this affects climate-related mental health outcomes for young people.

Understanding which aspects of Indigenous knowledge and holistic views of health protect and help communities when experiencing the mental health consequences of climate change and which of these can be effectively integrated into or supported by the healthcare system.

Assessing the readiness of the mental health workforce and healthcare system to deal with climate change and mental health in young people. This could include managing impacts of reduced service accessibility during and following climate hazards; reviewing climate literacy, training needs and wellbeing of service providers; and enhancing community-based support.

Understanding the role of mental health promotion strategies in creating positive mental health outcomes for young people in the context of the climate crisis.

Understanding the role of religious, spiritual or faith-based interventions in supporting young people as they face the mental health challenges associated with climate change.

Action agenda

The identified research priorities will only be of value if they are enacted. The climate and mental health field is relatively new and rapidly growing, and now is the time to ensure that it is designed to deliver a mentally healthier future in the context of the climate crisis.

Vision for climate change and mental health for young people

We envision a world where the health of our planet and the health of our minds and bodies are one. In this world, young people look towards their futures as places of opportunity, growth and connection. They can live, play and learn in landscapes and waterscapes that provide them with nourishment and education, instead of being sources of pollutants. The air they breathe fills their lungs with life-giving oxygen that fuels their curious minds and limbs. The things that bring them happiness and security are the same things that make the world around them a place of opportunity and safety: connectedness, friendships and family, a bond to nature, relationships with their neighbours (human, animal, plant and otherwise), ease of mobility, an understanding of their place in the world and community leaders who are their custodians.



We envision a world where young people don't worry about what they've done wrong to deserve natural disasters; where they go to school hand-in-hand with their friends, instead of staying at home to help their parents piece their lives back together after floods. When issues arise, they take action in local ways, and their voices are heard by leaders who recognise them as the architects of the next tomorrow. Healthcare services exist to affirm, validate and serve their vision of health. For many youth, the natural world is their best friend and greatest teacher. They learn ways of being from older generations, drawing on the wisdom of the land and of the people who have come before them. These older generations are trusting, considerate and patient, looking to younger people to learn new ways of navigating a changing world. In this world, young people find solace in community-centred spaces that safeguard their mental and physical health and speak to one another about their hopes, fears and dreams.

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

Challenges

Several barriers appear to hinder progress in furthering research on climate change and the mental health of young people and in creating and implementing appropriate solutions in policy and practice. These issues – listed below – are further compounded by bureaucratic bottlenecks and other multisectoral laxity in perceiving, identifying and bringing these issues to the forefront to drive meaningful change. Addressing these barriers is crucial for advancing research and action in this important area.

Youth underrepresentation:

The insufficient engagement of young people as co-creators, contributors or actors in research, policy and intervention systems has led to their perspectives and experiences being overlooked, leading to a disconnect between their needs and proposed solutions.

Existing (structural) inequalities/power dynamics:

Power dynamics and structural barriers within institutions and systems can limit the inclusion of youth (particularly those who are marginalised) in research and policy discussions, perpetuating inequalities in the response to youth climate mental health challenges.

Language/communication barriers:

The use of complex clinical language in climate-related mental health discourse creates a barrier for young people, often leading to feelings of stigmatisation and a lack of grounding in lived realities. Simplifying language to resonate more with young people's experiences is key for effective communication and engagement.

Youth tokenism:

Tokenistic approaches, which involve superficially including young people in initiatives without genuinely valuing their contributions or giving them a meaningful stake in decision-making processes, can lead to a lack of genuine youth perspectives and insights being considered in the development of interventions and policies. Meaningful youth engagement, particularly in the realm of policy advocacy, requires young people to have a deep understanding of the issues for which they are advocating.

Lack of intersectionality and recognition of potential mediating and/or confounding factors:

Young people from different socioeconomic positions, races, ethnicities, genders, sexes, sexualities and disabled communities have different experiences of youth, climate and mental health. The implementation of research and its subsequent translation into policy and action must actively acknowledge and validate these intersectional identities so that any steps taken do not uphold or exacerbate existing harmful paradigms.

Opportunities and enablers

Co-production with young people:

Young people must be meaningfully engaged as co-creators of research, support and interventions that will ultimately serve them. Any truly impactful and sustainable means of advancing the agenda for a climate-resilient future for young people requires their buy-in at every step, starting with deep listening to their needs and continuing with participatory means of creating research and interventions for youth mental health. Practitioners and researchers should see young people as lived experience experts.

Leveraging existing social structures and groups to provide mental health and psychosocial support for young people in the climate crisis:

Faith-based groups, sports teams, educational spaces and cultural practices should all be recognised as legitimate and essential forms of psychosocial support. Special attention should be paid to using language and terminology that resonates with young people, instead of ascribing dense clinical paradigms to their experiences, which may both stigmatise them and discourage them from seeking help.

Relevant potential partners

Youth organisations

spanning local partners, grassroots organisations at a subnational level and crosscutting global initiatives

Educational institutions

Religious, spiritual or faith-based organisations

Local healthcare systems and staff

including psychologists and psychiatrists

Those with **Indigenous and traditional views** of understanding health, healing and trauma



Priority next steps/recommendations to investors and actors

Below is a summary of key actions and priority next steps to implement the research agenda and to translate evidence generated through research into policy and practice.

1. Increase investment in climate-mental health services for youth

Policy-makers and investors need to prioritise evidence-based climate-related mental health services and expand the scope of the research as well as access to services in this area. This will uncover gaps and enhance our understanding of the nuanced mental health impacts from climate change while also ensuring robust climate change and mental health support systems are in place.

2. Integrate mental health assessments into climate impact assessments

Integrating mental health assessments into climate impact assessment ensures a comprehensive understanding of the psychological implications of climate change, enabling more informed decision-making and targeted interventions.

3. Develop climate-aware programs for therapists, counsellors and other medical professionals (i.e., promoting climate education)

There are often insufficient numbers of climate-aware therapists, counsellors and medical professionals to support communities experiencing climate disasters. Expanding the development of specialised programs to equip mental health professionals, medical professionals, therapists and counsellors with climate-awareness training would provide holistic management of the impacts. Promoting climate education within the health space to enhance their capacity may help to address eco-anxiety and climate-related stressors.

4. Advocate for youth-inclusive policymaking

This project highlighted young people's overwhelming interest in and connection to climate change and mental health. Policy-makers should be aware of internalised biases and stereotypes (such as casting young people as naïve, foolish, brash or idealistic) that may lead them to exclude young people from decision-making spaces. Specific recommendations may include youth representation in policy roundtables, panels for discussion and focus groups.

Conclusion

This research and action agenda is a response to the urgent need to streamline, expedite and unite the generation and sharing of knowledge at the intersection of youth, climate change and mental health. Young people are uniquely vulnerable to the consequences of climate disasters, and they also face unique challenges in the field of mental health; these two threats to good health and wellbeing interact through a series of complex pathways. Young people's experience of 'climate change and mental health' is not simply an aggregation of the two categories, but rather, it is their lived and embodied experiences of growing up in a rapidly changing world.

Equally, young people are some of the most powerful advocates in climate change and mental health spaces. They exercise unique forms of resistance, build bridges in their communities and rise to the challenges of leadership that will be required in an uncertain future. When given the opportunity and resources, their energy and wisdom are a powerful guide towards interventions and solutions to climate and mental health challenges.

This agenda identifies that there is much work to be done, but also much to be gained. We need to: better understand and quantify the magnitude of the association between climate change and mental health problems; identify and safeguard those particularly vulnerable to the effects of climate-induced mental health challenges; tailor and expand existing effective interventions; and design new evidence-based interventions to address the mental health impacts of climate change. Researchers, funders, policymakers and others in positions of power must prioritise the tangible realities of people living through these crises and lend credence to the solutions being championed by communities on the front lines. Underrepresented voices should be not only represented in decision-making in policy, research and health care; they should be actively sought out and elevated.

This research and action agenda presents a starting point for exploring the complex experiences of young people and should be taken as a call to action to prioritise the right of young people to survive and thrive in a just future.



Who produced this report

This report is the result of a collaborative and dedicated effort by the combined teams of SustyVibes and Force of Nature. The team, driven by a shared commitment to advancing knowledge and understanding in the realms of climate change and mental health, worked collectively to bring forth valuable insights and perspectives. Through the synergy of these two teams, each contributing expertise and perspectives, the report embodies a rich synthesis of ideas, research, and practical approaches. This joint endeavour underscores the strength that emerges when diverse talents and passions converge toward a common goal, highlighting a united commitment to fostering positive change in the intersecting domains of climate and mental health.

Authorship team

Sacha Wright, Research and Curriculum Coordinator, Force of Nature

Sacha is the Research and Curriculum Coordinator at Force of Nature, a social enterprise that exists to mobilize young people to tackle the world's messiest problems - starting with their mental health. She holds a Master's Degree in Public Health from the London School of Hygiene and Tropical Medicine. All of her work centres around studying the confluence of social, biological and environmental factors that contribute to the wellbeing of life on Earth.

Hope Lekwa, Head of Research, SustyVibes

Hope Lekwa is a sustainability researcher, with research publications in international peer-reviewed journals. He currently serves as the Head of Research at SustyVibes and has a background in International Relations. Lekwa passionately engages in the critical intersections of climate change, youth, and mental health. Hope's active involvement in the sustainability space reflects his commitment to addressing pressing challenges through research and advocacy.

Jennifer Uchendu, Founder SustyVibes

Jennifer Uchendu is the founder of SustyVibes, a youth-led and youth-focused organisation driving sustainability advocacy and implementation in Africa. Recently, her work has focused on climate change and mental health where she is exploring safeguarding and support systems for Africans through research, advocacy and community action. Jennifer has a master's degree in Development Studies from the Institute of Development Studies, UK under the prestigious Chevening Scholarship. She is also an alumnus of the Cambridge Institute For Sustainability Leadership and the Lagos Business School. In 2017, Jennifer co-authored the e-book: "A Guide to Business Sustainability in Nigeria."

Svetlana Chigozie Onye-Sanya, Project Lead, The Eco-anxiety Africa Project

Svetlana is a writer and researcher who focuses on environmental justice, ecofeminism, and the impact of colonialism on societal structures. She also explores the historical causes of global environmental disparities. Recently, her research on the environmental and human consequences of green colonialism in countries experiencing conflict was published. As the Project Lead of The Eco-Anxiety Africa Project, she examines the connections between climate change and mental health in Africa.

Ayomide Olude, Project Manager, The Eco-anxiety Africa Project

Ayomide is a sustainability project manager with over three years of experience with nonprofits. She works with environmental-focused social enterprises to develop and deliver data-driven impact projects aligned with sustainable development goals. Ayomide is interested in the intersections between environment and mental well-being, especially for Africans. She currently explores this intersection through her work at The Eco-anxiety Africa Project.

Molly Ogbodum, Researcher, SustyVibes

Molly has a multidisciplinary background in Public Health, Mental Health, Research, Communications and community development with research publications in international peer-reviewed journals as well as presentations in scientific conferences. Molly is currently a Climate Justice advocate where she seeks to understand & establish the nexus between climate change and mental health among vulnerable populations. Her aspirations include continued advocacy & increased access to mental health services for Young People, and collaboration with researchers and other experts to advance the field of mental health.

This is the independent work of the authors with the support and input of the Connecting Climate Minds team.

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Conflicts of interest

The authors have no conflicts of interest to declare.

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*Connecting Climate Minds Global Methods Group:

- Climate Cares Centre, Imperial College London: Emma Lawrance, Jessica Newberry Le Vay, Nienke Meinsma, Omnia El Omrani, Neil Jennings, Peter Howitt, Mala Rao, David Nabarro
- Red Cross Red Crescent Climate Centre: Meghan Bailey, Margot Curl, Marcel Goyoneche, Renate Meyer, Devin O'Donnell, Malcolm Mistry, Martha Vogel
- Lived Experience Working Group Lead: Lian Zietz
- Regional Community Development Group: Renzo Guinto, John Aruta, Sandeep Maharaj, Natalie Greaves, Kenneth Yongabi Anchang
- Wellcome: Alessandro Massazza, Irini Pantelidou

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.

Methods

Full methods can be found [here](#).

The methodology for crafting this agenda was a collaborative effort involving the Connecting Climate Minds core team, Lived Experience Working Group, Regional Communities of Practice, a Global Advisory Board, and Wellcome. Methods and materials were tailored to the youth thematic context ensuring a balance between global standardisation and youth adaptability. Ongoing collaboration among the youth population facilitated the iterative development of the methodology, with processes, learnings, and challenges continuously shared across regions. The process for developing the youth research and action agendas is outlined below.



Dialogue Methodology

The youth dialogues took place through 1) a global virtual dialogue and 2) two in-person pop-up dialogues in Port Harcourt, Nigeria, and Bangalore, India. The decision to conduct both physical and virtual youth dialogues on climate change and youth mental health aimed at inclusivity and understanding diverse perspectives. The global virtual dialogue allowed for wide participation, with online surveys supporting involvement for young people unable to attend. The physical dialogues held in Port Harcourt and Bangalore were essential for collecting localised insights. This hybrid model, encompassing both physical and virtual dialogues, acknowledged both universal and locally nuanced impacts, fostering a holistic exploration of the subject matter. Trained Mental Health First Responders were on standby throughout the dialogues, and were available to participants should they express the need. Recruitment of participants involved targeted invitations extended to global youth networks, organisations, and groups. Emphasis was placed on prioritising individuals aged 18-29 with pertinent experiences in either or both climate change and mental health. Participants were financially compensated with 20 USD to recognise their time and contributions to the dialogue, acknowledging their value in the process.

Survey Methodology

We distributed a **pre-dialogue online survey** to virtual dialogue participants to inform dialogue design and to solicit perceptions on climate impacts, climate-related mental health impacts, and research priorities that are relatable to young people.

We distributed a **post-dialogue online survey** after dialogues to obtain a second round of feedback on the dialogue they attended and to detail any issues or further additions to the contributions towards the dialogue.

We also distributed a **contribution form** for individuals who were unable to attend our dialogues. This form served as an inclusive avenue for those facing challenges such as time zone differences or other uncontrollable issues that prevented their participation.

Analysis methodology

A comprehensive mixed-method approach was utilised, incorporating both qualitative and quantitative methods. A coding framework was developed, merging predefined research categories related to climate change and mental health with emergent themes from the dialogues. Thematic analysis was employed to identify, refine, and prioritise these themes. Inclusion/exclusion criteria were established to maintain relevance and focus, ensuring alignment with research objectives.

Participants

Dialogue participants were a diverse group across geographical spread, gender, sector, and discipline.

In total, 57 participants attended the virtual dialogue and 37 participants attended the in-person dialogues in Nigeria and India.

The tables below provide a breakdown of virtual dialogue participant characteristics.

Geographical spread

Country	Dialogues	
	Number	Percentage
Austria	1	1%
Belgium	1	1%
Cameroon	1	1%
China	1	1%
Ecuador	1	1%
Ethiopia	1	1%
Finland	1	1%
France	1	1%
Gambia	1	1%
India	21	22%
Kenya	5	5%
Malawi	2	2%
Mongolia	1	1%
Nepal	1	1%
Nigeria	37	39%
Pakistan	3	3%
Peru	1	1%
Philippines	1	1%
Sierra Leone	3	3%
South Africa	1	1%
United Kingdom of Great Britain and Northern Ireland	2	2%
United Republic of Tanzania	2	2%
United States of America	3	3%
Zimbabwe	2	2%

Gender

Gender	Dialogues	
	Number	Percentage
Men	45	47%
Women	45	47%
Non-Binary	4	4%

Survey participants: ⁱⁱ

Pre-dialogue survey: 269

Post-dialogue survey: 72

ⁱⁱPlease note numbers are approximate and do not account for duplicate or incomplete responses.

Ethics, Data Collection and Storage

Ethics

This study has been reviewed and given an ethical favorable 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).

This dialogue followed the ethics protocol aligned with the overarching CCM project. This included an ICREC approved consent process.

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 a third-party provider (Way with Words). 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. Data will be stored by Imperial College London for 10 years after study completion.

Summary of existing research on climate change and mental health for youth

Young people are uniquely vulnerable to the effects of climate change, and they have also emerged in the environmental movements as ardent voices calling for climate action and reform. While climate-related events are perilous and have ramifications for the physical health of young people, they also present serious mental health risks – with post-traumatic stress disorder, heightened levels of anxiety, depression and learning disorders being just some of the climate-related trauma effects documented in young people.³ Furthermore, young people are often left out of decision-making spaces, conversations about their future and barred from agency-cultivating actions, which can lead them to bearing the consequences of the climate crisis with no opportunities to advocate or voice their needs. Young people are still developing the psychological and physiological capacity to process the consequences, while possessing little influence over the economic, political and social systems charged with responding to or preventing climate events. Adolescence and emerging adulthood are also developmental periods when the risk of developing a mental health challenge is heightened; around three quarters of mental health challenges begin for the first time before the age of 24.⁴

For these reasons, young people are considered a particular group of interest. However, their participation in this conversation is not defined by their vulnerability; they are also a population who will inherit the future of the climate and will become members and leaders in their communities. They are an essential part of the resilience of communities and underpin their capacity to mitigate and adapt to climate change. Young people are a part of this research, therefore, not just as a vulnerable group, but also as stakeholders, actors and custodians of solutions at the intersection of climate change and mental health.

Research on climate change and mental health is in its nascence, although emerging research about the impact of climate change on mental health and emotional wellbeing has led to a groundswell in interest and advocacy.² There remains limited evidence available to fully capture the consequences of the climate crisis for the mental health of children and young people. Evidence bases tend to focus on the experiences of children in disaster or investigate trauma systems under the broad umbrella of disaster,^{5,6} and fail to identify and investigate the specific risks associated with climate change and climate-related disasters. However, large research, policy and action bodies have started to explicitly identify the mental health consequences of the climate crisis, with calls for attention from the World Health Organisation (WHO), the Intergovernmental Panel on Climate Change (IPCC) and Wellcome. There have also been numerous studies investigating and quantifying the impact of specific extreme weather events on mental health outcomes in young people.^{7,8}

In recent years, some studies have looked more broadly at mental wellbeing amongst youth in the context of climate change, moving beyond traditional paradigms of mental health and illness and into a more holistic view of the dimensions of health. For instance, a study of 10,000 young people from 10 countries examined young people's psychological responses to the climate crisis and how their climate-related feelings affected their daily life and functioning.⁹ The young people from countries reporting the most profound effects were also those where climate-related hazards loom largest (e.g. the Philippines). Other researchers (including many involved in CCM) have examined psychological responses to the climate crisis in young people and the interactions with mental health outcomes, future planning and climate agency and engagement in India,¹⁰ several Caribbean nations,¹¹ the UK^{12,13} and the USA (under review). Research focussed particularly on young people is also available from the Philippines,¹⁴ Australia^{15,16} and Tanzania.¹⁷ There have been calls for a focus on the impacts of climate anxiety on youth mental health outcomes,¹⁸ including for instance the influence of climate education.¹⁹ Climate-aware mental health professionals and scholars, and young people themselves, have called for the importance of not pathologising strong emotional responses, and even distress and anxiety in the face of significant climate threats.^{20,21} At the same time they have called for more climate-aware mental health support,²² noting that prolonged stress and distress arising from the climate crisis, and particularly the insufficient action from older adults supposed to keep them safe, may constitute an adverse childhood event.¹⁸ Such stresses and traumas in early years are related to poorer mental health outcomes later in life.¹⁹

While it is unclear how exactly fears for the future may relate to specific mental health outcomes for young people, and whether eco-anxiety and related experiences are unique or overlap with experiences such as generalised anxiety, it is becoming apparent that there are likely complex interactions between the psychological consequences of climate awareness and climate experience.¹⁸ For instance, US young people self-reporting direct experiences of climate events have significantly higher levels of eco-anxiety and worry more frequently about a range of issues regarding their personal futures (under review); while antenatal distress and postpartum depression in parents has been shown to be predicted by higher climate anxiety - this has potential implications for the children as well as the mother.²³ A study of Tanzanian young people reported: "Living in conditions worsened by climate change and feeling distressed over climate change have mental health implications among young people from low-resource settings, indicating that climate change can impact youth mental health through multiple pathways."¹⁵ Another global review noted that "Generation Z worries in the global North and suffers in the global South",²⁴ while Australian data indicates that, among other things, young people are grieving a dead future, and the authors note: "The present impacts of anticipated climate change in the lives of young people need greater recognition in research, policy and public discussion about climate change."²⁵

Still, the field remains fragmented; existing frameworks for research, policy and action remain siloed and single-disciplinary, focusing on some dimension of youth, climate change or mental health, but rarely joining the dots between these three factors. Historically, research on climate change-driven health impacts often overlook complex biopsychosocial interactions, suggesting a need to work on preventive strategies to reduce vulnerability and build individual child resilience,²⁶ and this remains true today. Evidence remains sparse, frameworks absent, early warning systems non-existent, and many of the local-level, relevant interventions are direly under-resourced. Cascades of evidence, policy and action from international to sub-national and local levels explicitly centring youth health, with its various complex dimensions, in the context of the climate crisis, are essential. In the words of young people themselves, "Allowing the climate crisis to go unchecked threatens the safety, mental health and dreams of young people around the world."²⁰

While Koder et al note: "Younger people, notably, are experiencing climate distress disproportionately and will bear a larger share of the mental health burden caused by climate change, and yet their voices are underrepresented in theoretical and practical interventions. Enlisting young people as research collaborators and co-designers will facilitate more effective responses to the psychological aspects of the climate crisis."²⁷

This research and action agenda is doing just that.

Terminology clarification: Mental health challenges or problems, emotions and mental wellbeing

Within this agenda, you will find several words relating to mental health problems. We did our best to reflect what we heard from dialogue participants; for example, if they discussed a particular weather event influencing their emotions, we captured that without assuming that this implied a mental health challenge or problem. Because mental health challenges or problems specifically refer to a set of illnesses or conditions that may impact on a person's thoughts, perceptions, feelings and behaviours, we did not want to assume a biomedical or pathologized lens on individuals' experiences unless it was directly mentioned. In some cases, these terms refer to an individual's affect rather than a condition.

However, emotions and mental wellbeing related to our affect are well-known to influence our adaptive functioning, the occurrence (or non-occurrence) of mental illness and our ability to cope with or be resilient to mental health challenges. For this reason, emotions and mental wellbeing are included in this agenda because they exist as a part of the constellation of mediators and factors that contribute to young people's mental health status.

Priority research themes (complete list)

**Categories marked with a double asterisk are priority research themes that emerged during pre-dialogue scoping, and not through the dialogues themselves.

Research Category	Priority Themes
Impact, risks and vulnerable groups	<p>Educational disruptions</p> <p>Understanding how climate change disrupts key educational events in the lives of young people, and how this contributes to their vulnerability to mental health challenges.</p> <p>Identifying specific educational milestones during which youth are particularly susceptible to the negative mental health impacts of climate change.</p>
	<p>Indigenous youth, climate and mental health**</p> <p>Understanding how young people from Indigenous backgrounds/cultures experience mental health challenges related to climate change and how their background contributes to unique resiliency and/or vulnerability.</p>
	<p>Coastal vulnerability</p> <p>Understanding how young people living in areas prone to flooding and/or coastal areas/small island nations susceptible to the risk of sea level rise conceive/experience the mental health impacts of these phenomena.</p> <p>Understanding how young people in small island nations that will experience loss of land in coming years are coping with and responding to these threats and how this affects their mental health outcomes.</p>
	<p>Comorbidities with poor mental health in the context of climate change (e.g., disability, chronic illness)**</p> <p>Understanding how disabled youth may have different experiences of climate and mental health challenges. This may include investigating specific scenarios, for example, in the circumstances of forced migration.</p> <p>Understanding how young people with existing health issues (e.g., diabetes, autoimmune disorders, etc.) face specific vulnerabilities to climate-related mental health challenges.</p>
	<p>Anxiety, depression and mood disturbance due to uncertain future outlook</p> <p>Understanding how persistent uncertainty about the future (due to climate-related disturbances and disruptions) affects young people's mental health in the long term and how this is similar or different to the effects of other disturbances, such as civil war or economic downturns.</p>
	<p>Taboo/stigmatisation of mental health in society</p> <p>Understanding if there are specific societal stigmas and taboos associated with mental health due to climate-related events.</p> <p>Understanding how mental health stigma and historical trauma affect help-seeking behaviour and access to care for young people experiencing the mental health impacts of climate change.</p>
	<p>Helplessness and government inaction</p> <p>Understanding how the experience of witnessing government inaction or counterproductive actions against climate change may amplify feelings of helplessness in young people and the extent to which this impacts their mental health.</p>
	<p>Disruptive events and trauma</p> <p>Understanding how extreme weather events (including but not limited to drought, floods, tropical cyclones, typhoons, extreme heat and wildfires) that directly disrupt young people's lives influence the prevalence, severity and nature of mental health outcomes, challenges and experiences.</p> <p>Understanding the specific outcomes (e.g., anxiety disorders, post-traumatic stress disorder, mood disorders, etc.) that are associated with different climate events (e.g., floods, heatwaves, drought, etc.) for young people, in both the short and long term.</p> <p>Identifying specific risks, triggers and stressors related to climate change that increase mental health burdens for particularly vulnerable youth sub-groups.</p>
	<p>Indirectly disruptive events and trauma</p> <p>Understanding the psychological impacts of climate change awareness from personal or vicarious experiences in young people, how these experiences vary (between individuals and culturally) and how they might impact mental health and wellbeing outcomes.</p>

Research Category	Priority Themes
Pathways and mechanisms	<p>Exacerbation of existing mental health challenges</p> <p>Understanding how different climate events (e.g., floods, typhoons, drought) operate through non-biological pathways (e.g., social, infrastructure or economic disruptions) to exacerbate mental health challenges (e.g., anxiety, depression, mood disorders).</p> <p>Understanding the climate change-related mechanisms that increase the risk of mental health challenges within population subgroups in young people and identifying the most vulnerable groups.</p> <p>Proposed vulnerable groups for further study include the young poor living in informal settlements, youth in Indigenous populations, youth living in rural areas, youth with pre-existing mental health or health conditions, disabled young people, young women and girls (particularly those living in drylands, arid/semi-arid regions and coastal areas prone to flooding and rising sea levels), young people belonging to families of fisher peoples or (subsistence) farmers situated in drought and fire-prone regions, and displaced youth such as migrants, asylum seekers and climate refugees.</p>
	<p>Disruption of daily life and economic impact</p> <p>Understanding the effects on mental health challenge prevalence among youth when climate events disrupt their abilities to engage in pro-social behaviour – such as being employed, volunteering or engaging with their community – and how this might lead to changing mental health outcomes.</p> <p>Understanding whether experiencing mental health challenges as a result of climate-related events affects young people's ability to participate in pro-social behaviour – such as being employed, volunteering or contributing to their community – and what effect, if any, this has on their social bonds or cultural connection to their community.</p> <p>Identifying which economic sectors (e.g., fisher peoples, small farmers, informal sector workers) are particularly vulnerable to climate events and losses and how this influences the mental health of the young people whose families depend on these sectors.</p>
	<p>Cultural and social fragmentation and acculturation**</p> <p>Understanding how the loss of traditional lands and livelihoods affects young peoples' relationships with their culture and how this influences their mental health.</p> <p>Understanding how mental health challenges brought on by climate change may contribute to the absence or underdevelopment of connections within groups of young people or between young people and other social groups.</p> <p>Understanding how forced migration due to climate events brings young people into contact (or conflict) with other cultural groups (acculturation) and how this impacts their mental health.</p>
	<p>The onset of heat-related mental health challenges and symptoms, such as stress headaches, depression, suicidal ideation and mood dysregulation</p> <p>Understanding how heat influences young peoples' experience of mental health challenges – particularly neurological symptoms and symptoms of stress such as headaches, mood dysregulation, depression and suicidal ideation – and exploring whether there is a causal pathway between heat and the onset or worsening of these conditions.</p>
	<p>Disproportionate impact on women and girls</p> <p>Understanding the pathways by which young women and girls' mental health is disproportionately affected by climate change.</p> <p>Assessing the effect of increases in gender-based violence brought on by climate-related events on young women and girls' mental health.</p> <p>Understanding the role of young women and girls as community leaders in creating connected, cohesive, climate-resilient societies and how this impacts their mental health.</p> <p>Determining whether climate-related events disrupt young women and girls' ability to access family planning support and how this impacts their mental health.</p> <p>Understanding whether the mental health impacts of the climate crisis influence young women and girls' relationship with motherhood or their family planning choices.</p>
	<p>Forced migration due to environmental disasters</p> <p>Understanding how forced migration due to environmental disasters affects the mental health of young people and which specific aspects of youth mental health are particularly affected.</p>
	<p>Pollution and health concerns</p> <p>Understanding how pollution (land, water and air) can affect young people's development and likelihood of experiencing mental health challenges.</p>
	<p>Disruption of access to health care and mental health services</p> <p>Understanding the readiness of the mental health workforce and healthcare system to deal with climate change and mental health in young people.</p> <p>Understanding how technology can be used to improve the provision of, and access to, mental health support for young people affected by climate change.</p>
	<p>Intergenerational understanding**</p> <p>Understanding how intergenerational divides (e.g., perceived stigma, disillusionment, distrust, etc.) contribute to climate-related mental health challenges in young people.</p> <p>Understanding the role, if any, of intergenerational knowledge exchange in helping young people cultivate hope, perceived agency and action in the face of climate change and how this impacts mental health outcomes.</p> <p>Exploring how traditional and Indigenous ways of knowing can help young people cope with climate change, especially in light of the loss of land, culture or livelihoods, and how this impacts young people's mental health and wellbeing.</p>
	<p>Exposure to violence**</p> <p>Exploring whether young people experience increased exposure to violence in the wake of climate events and how this impacts their mental health.</p> <p>Understanding how the loss of traditional or long-standing means of subsistence or ways of living can contribute to young people's propensity to violence and how this influences the prevalence of mental health challenges in those affected.</p>

Research Category	Priority Themes
Mental health benefits of climate action (adaptation and mitigation)	<p>Strengthened hope and action</p> <p>Understanding the role of peer networks in supporting young people to develop perceived agency in the context of climate change and how this impacts mental health outcomes.</p> <p>Assessing the effects on mental health outcomes of young people who take climate action in the community versus in isolation.</p>
	<p>Inclusion of youth in decision-making processes</p> <p>Evaluating strategies to meaningfully include young people – through co-creation, participatory research or other means – in designing, evaluating and implementing climate and mental health interventions.</p> <p>Understanding the extent to which fostering agency in young people by including them in climate and environmental decision-making spaces within communities (and beyond) affects their mental health outcomes.</p>
	<p>Rest</p> <p>Understanding how burnout contributes to young people’s mental health challenges when engaging in climate action.</p> <p>Exploring how rest can act as a means of addressing the mental health impacts of climate change without interfering with young people’s adaptation and mitigation methods.</p> <p>Identifying and evaluating ways to measure climate change’s impact on young people’s ability to rest and exercise self-care and how this affects their mental health.</p>
	<p>Activities and spaces that enable co-beneficial action</p> <p>Understanding which co-beneficial activities may contribute to encouraging positive and sustainable climate actions and fostering good mental health and wellbeing in youth communities.</p> <p>Understanding which community gathering spaces (for example, sports teams or parks and nature-related recreational activities) might be supportive mechanisms for the mental health of youth in the context of climate change.</p>
	<p>Education and awareness</p> <p>Evaluating how educational institutions can best provide support and leadership for young people in taking climate action that improves individual and collective mental wellbeing (e.g., climate activism, education, community groups, etc.).</p> <p>Identifying strategies for schools to provide education about climate change, especially amongst young students, that is informative, strengthens perceived agency and mental wellbeing, and protects against creating or exacerbating mental health challenges.</p>

Research Category	Priority Themes
Mental health interventions/solutions in the context of climate change	<p>Strengthening of healthcare systems</p> <p>Assessing the readiness of the mental health workforce and healthcare system to deal with climate change and mental health in young people. This could include managing impacts of reduced service accessibility during and following climate hazards; reviewing climate literacy, training needs and wellbeing of service providers; and enhancing community-based support.</p> <p>Understanding the role of mental health promotion strategies in creating positive mental health outcomes for young people in the context of the climate crisis.</p> <p>Exploring how to implement early warning signals that allow healthcare systems to prepare and plan to support young people as they experience the mental health impacts of climate events.</p> <p>Evaluating the role of technology to improve the provision of and access to, mental health support for young people affected by climate change.</p>
	<p>Creating safe spaces/connecting with others</p> <p>Understanding whether and how discussion, contemplative practice and sharing of the mental health impacts of climate change affect the mental health of young people.</p> <p>Identifying robustly tested therapeutic interventions concerning climate change and mental health for young people and understanding for whom they are accessible and what barriers exist to accessing them.</p> <p>Assessing the comparative effects on young people's mental health outcomes from therapeutic interventions concerning climate change and mental health conducted at the individual level versus in communities or groups.</p>
	<p>Climate-informed mental health training for practitioners</p> <p>Identifying, developing and evaluating continuing mental health and emotional wellbeing education programs that include climate change information for healthcare practitioners, medical students and other health professionals who work with young people.</p> <p>Measuring the degree to which young people feel seen, heard and validated by healthcare practitioners when seeking mental health care in the context of climate change.</p> <p>when they come seeking mental health care in the context of climate change.</p>
	<p>Religious, spiritual or faith-based interventions</p> <p>Understanding the role of religious, spiritual or faith-based interventions in supporting young people as they face the mental health challenges associated with climate change.</p>
	<p>Community-focused interventions</p> <p>Understanding the role of strengthening psychosocial resilience at the community level, versus at the individual level and how this affects climate-related mental health outcomes for young people.</p>
	<p>Indigenous knowledge and holistic health paradigms**</p> <p>Understanding which aspects of Indigenous knowledge and holistic views of health protect and help communities when experiencing the mental health consequences of climate change, and which of these can be effectively integrated into or supported by the healthcare system.</p> <p>Understanding how young people access Indigenous knowledge and holistic health paradigms to address climate-related mental health challenges.</p> <p>Assessing how integrating Indigenous knowledge and holistic views of health into healthcare systems and interventions affects climate-related mental health outcomes.</p>

Glossary

Climate change, mental health and their intersection are complex and wide-ranging fields. For the purpose of this agenda, we define the scope of these terms as follows.

By **mental health challenges**, we mean thoughts, feelings and behaviours that affect a person's ability to function in one or more areas of life and often involve significant levels of psychological distress. This includes, but is not limited to, anxiety, depression, post-traumatic stress, psychosis, suicidal thoughts and substance misuse.

By **experiences of the effects of climate change**, we mean: 1) experiencing direct impacts of climate hazards, such as more frequent and intense heatwaves, wildfires/bushfires, drought, floods or storms (for example, typhoons, hurricanes, cyclones), and 2) experiencing 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 as a result of climate change.

Mental health challenges in the context of climate change include:

- How climate change may lead to worsening pre-existing mental health challenges.
- How climate change may contribute to the prevalence or impact of existing mental health challenges.
- How climate change may impact treatment access or effectiveness for those with mental health challenges.
- How climate change may lead to new mental health challenges.
- Definitions of additional key terms used in this agenda are listed in the table below.

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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