Climate Crisis and Humanitarian Health Situation Analysis

External Report

Commissioned by Elrha's
Research for Health in Humanitarian Crises (R2HC)

Authored by Katie Bigmore

August 2024

Contents

Table of Acronyms

AA	Anticipatory Action
CfP	Calls for Proposals
COP	UN Climate Change Conference of Parties
EGM	Evidence Gap Map
FAO	Food and Agricultural Organisation
HIC	High Income Countries
HIF	Humanitarian Innovation Fund
HIH	Humanitarian Innovation Hub
IPCC	Intergovernmental Panel on Climate Change
KII	Key Informant Interviews
LIC	Low Income Countries
MIC	Middle Income Countries
R2HC	Research for Health in Humanitarian Crisis
VfM	Value for Money
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organisation
UNHCR	United Nations Refugee Agency

1. Executive Summary

Scope and Methods

This situation analysis is focused on the climate crisis and humanitarian health.

It aims to help Elrha understand the evidence available, and to identify the main stakeholders. It serves to inform what Elrha's Research for Health in Humanitarian Crises (R2HC) programme, and other programmes, might do in this space. The focus is on the links between climate change and health in existing humanitarian contexts.

There are three main objectives in the situation analysis[1]. These are listed below, alongside a high-level summary of the methods:

Table 1. Objectives and methods for the Situation Analysis

Objective	Method Summary
1. **Evidence Gap Identification**	• Design methods for rapid narrative review. • Undertake narrative review of literature. • Analysis of evidence gap maps.
2. **Stakeholder Map – Horizon Scanning**	• Develop interview topic guide. • Conduct key informant interviews with different stakeholders. • Analysis of responses and suggestions.
3. **Identify a Niche for R2HC research (internal report only)**	• Create a database of stakeholders. • Facilitate an internal Elrha workshop to scope role. • Recommend actions for Elrha.

Findings on the first two objectives are covered in this External Report. The third objective is for an internal audience only and the findings on this are covered in a separate Internal Report.

The Evidence Base

There is a growing body of global evidence available on climate and health, but little specific to humanitarian populations.

- The evidence available on climate-health has been driven by the need to demonstrate causation between climate-health, to understand pathways and package knowledge to inform high level decision making. There are significant time lags (2+ years) from when research is designed and funded, and when literature is peer reviewed, shared, critically appraised and systematically reviewed.
- Research on climate and health takes place across various disciplines and silos, representing a fragmented landscape of niche discourses that hinders efforts to synthesise key insights and identify trends and evidence gaps.
- Humanitarian organisations are documenting and generating evidence on the implications of climate change in humanitarian settings. There are interesting lessons from individual case studies generated, but there are (or seem to be) no strong

[1] The Situation Analysis was undertaken by an external consultant with guidance by the R2HC team and inputs from wider Elrha teams. It took place between February-July 2024, with an inception phase completed in March.

messages emerging from primary research. Consequently, the evidence generated is not reaching a large audience or influencing wider policy.

The Evidence Gap

There are high levels of uncertainty (amongst funders and knowledge brokers) on what to do about the evidence gap for populations already affected by humanitarian crisis.

There does not seem to be a clear conceptual approach or joined-up way forward on what to do for vulnerable populations in existing humanitarian settings. There is a need to present a **clear humanitarian evidence gap and research question** to be addressed.

Populations already affected by crisis in humanitarian situations are largely absent from research priorities and plans, signalling high levels of uncertainty around addressing this glaring evidence gap. There seems to be no clarity on how to learn from community level responses (and resilience), or from transdisciplinary or multisectoral programming, and how to assess what mix of interventions work in different contexts.

Policy Action

A series of high-level commitments have been made, guiding the way for action and new initiatives.

At COP28, new commitments were made on climate and health[2], and climate, relief, recovery and peace[3]. As the momentum grows to translate commitments into action many new initiatives are underway. Elrha should consider engaging with initiatives where there is already some coordinated action and build on existing efforts to influence new research and policy agendas.

Stakeholders

There is a diverse and rapidly growing group of stakeholders working across climate-crisis-humanitarian-health.

It is a fast-moving area, where policy actors, funders, donors, foundations and knowledge brokers, as well as LMIC researchers, are all engaging. The research-policy space is being shaped and priorities are being set; however humanitarian stakeholders appear absent within it, and the evidence gaps and research needs lack visibility. Nevertheless, many organisations are on a similar journey to Elrha, seeking solutions to alleviate the impact of the climate crisis on humanitarian health.

Elrha

Although this is Elrha's first explicit exploration of what it can do to address the climate crisis, the organisation is already well positioned to engage.

The main recommendation from this situation analysis is for Elrha to stay true to its strengths and build on existing expertise to demonstrate added value in addressing the critical evidence gaps across climate-emergency-humanitarian-health. This includes:

- Maintaining its strong humanitarian research focus.
- Seeking to understand local community knowledge and solutions.

[2] COP28 UAE Declaration On Climate And Health
[3] COP28 Declaration On Climate, Relief, Recovery And Peace

- Building local research capabilities to learn from practice.
- Speeding up ways to get research off the shelf – to influence practice and inform policy.
- Combining research and innovation (R&I) solutions to tackle evidence gaps.

Numerous observations and suggestions are captured throughout the report.

Next Steps

The recommendation is for Elrha to take more time to explore and consider the findings of this situation analysis and suggested options for the way forward.

This situation analysis outlines the concepts, frameworks and current agendas on climate-crisis-humanitarian-health. It has set out the available evidence and gaps, has mapped key stakeholders and initiatives, and identified challenges to be aware of. Options on the way forward have been discussed and explored, but some further internal discussion and decision is very much needed. At the same time, given its expertise, Elrha should engage in relevant external events, and partner with new organisations and initiatives also working in this area.

2. Background

Climate Change is the defining crisis of our time. Vulnerable communities are already experiencing climate impacts on food, water, land and other ecosystems necessary for human health, livelihoods and survival. Women, children, older people, people with disabilities and indigenous peoples are disproportionately affected. Resilience to climate shocks, environmental degradation and displacement is often lowest in fragile and conflict-affected contexts. Vulnerable individuals and at-risk communities already affected by humanitarian emergencies are facing additional shocks and risks from the climate crisis. Research shows that without ambitious climate action and disaster risk reduction, climate-related disasters could double the number of people requiring humanitarian assistance to over 200 million each year by 2050 (UNHCR[4]).

Climate change has not been a significant focus of Elrha's work to date. So far Elrha's R2HC programme, established in 2013, has not launched a call for proposals (CfP) with a specific climate focus. However, through recent open calls, four studies have been funded with links to climate impacts, covering topics including heat exposure, urban health and clean fuel. The Humanitarian Health Evidence Reviews (HHER), conducted in 2015 and updated in 2021, have likewise not had an explicit focus on climate change, although the 2021 report noted the research gaps on populations affected by climate change. As of 2024, a climate adaptation in humanitarian WASH scoping study is underway, led by Oxfam with financial and technical support from Elrha's Humanitarian Innovation Fund (HIF) and R2HC programmes.

This situation analysis is focused on climate crisis and humanitarian health. It aims to help Elrha understand the evidence available, identify who the main stakeholders are, and inform what R2HC might do in this space. The focus is on the links between climate change and health in existing humanitarian contexts.

There are three main objectives of the situation analysis. They are to undertake an:

- Evidence Gap Identification

[4] 'Climate change is the defining crisis of our time and it particularly impacts the displaced' | UNHCR

- Stakeholder Map – Horizon Scanning
- Identify a Niche for R2HC research

3. The Concepts

There are multiple concepts (and constructs) in place within the sphere of climate-emergency-humanitarian-health. Some of the key ones to be familiar with which are relevant to this situation analysis are:

Climate Concepts

There are many Climate concepts[5], two key ones are Mitigation and Adaptation:

Mitigation: Action to reduce or prevent greenhouse gas emissions. Transitioning to renewable energy

Actions Now: to limit global warming in future.

Adaptation: Actions to reduce vulnerability to the current or expected impacts of climate change. Action needs to happen at the local level.

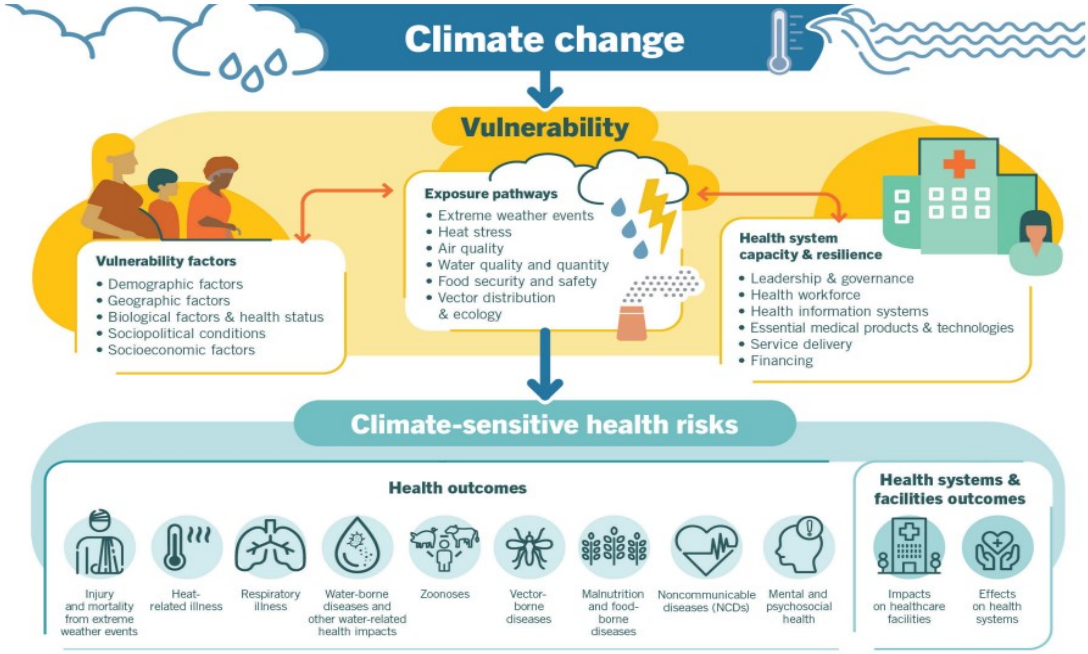
Actions Now: to adjust and protect from current and future climate change now.

Cause and Effect

Figure 1 below gives an overview of climate-sensitive health risks, their exposure pathways and vulnerability factors. Climate change impacts health both directly and indirectly, and is strongly mediated by environmental, social and public health determinants.

[5] The Climate Dictionary | United Nations Development Programme (undp.org)

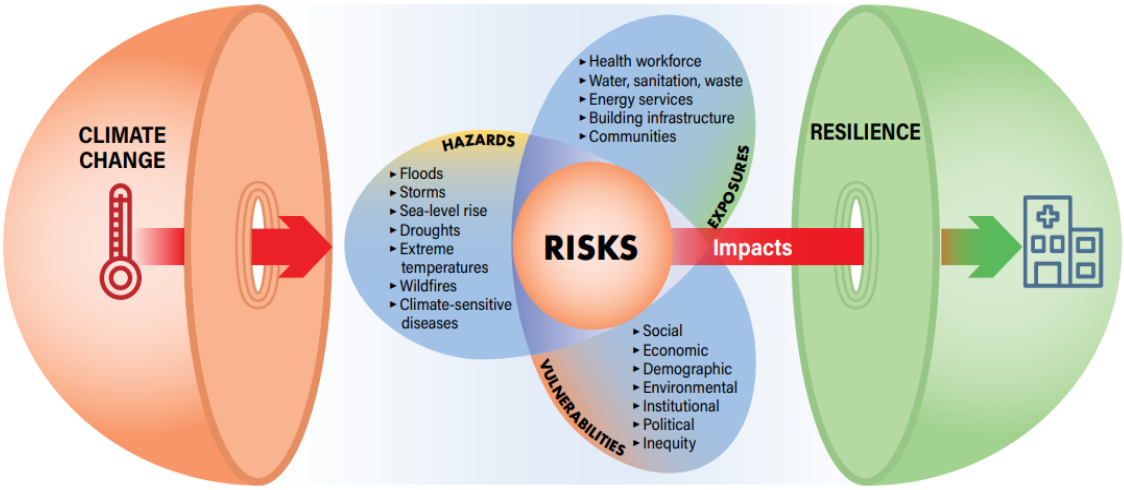
Figure 1: WHO climate change risks to health, health systems and outcomes[6]



The concept of cause and effect, serves to show that the climate crisis leads to a health crisis.

Risks and Vulnerability

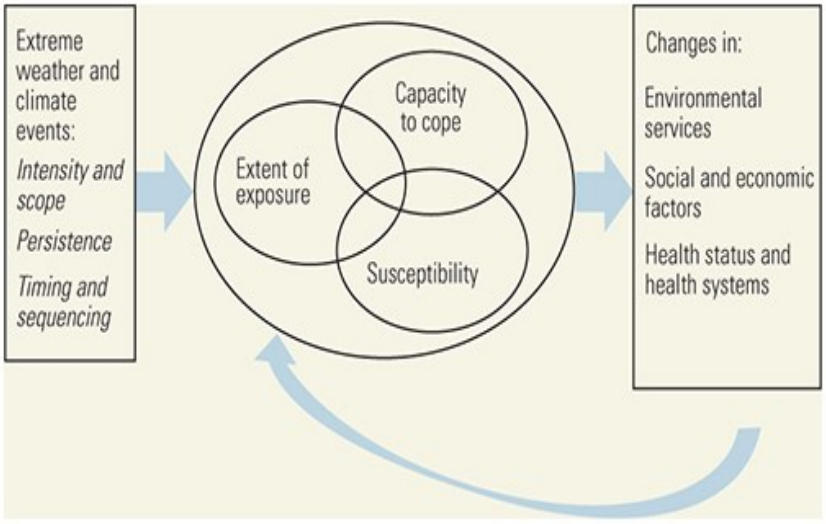
Figure 2: WHO impacts of climate-related health risks on health care facilities[7]



The concept of risks shows how a combination of hazards, vulnerabilities and exposures effect health care and community resilience. Vulnerabilities include a range of social, economic, institutional and political contextual factors, including demography and inequity.

[6] WHO, p4 Operational framework for building climate resilient and low carbon health systems (who.int)
[7] WHO, Checklists to assess vulnerabilities in health care facilities in the context of climate change p 79789240022904-eng.pdf (who.int)

Figure 3: Health Risks of climate variability and change[8]



Additional factors of intensity and scope, persistence, timing and sequencing are also key variables.

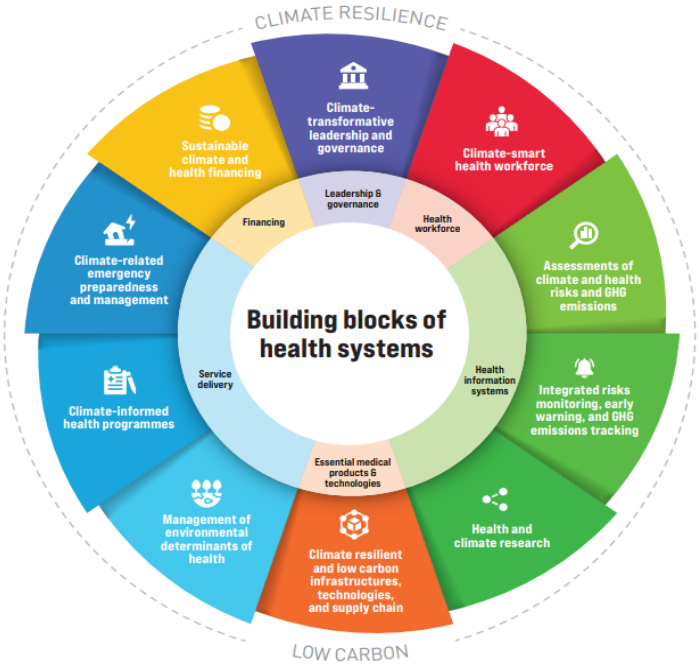
Polycrisis

Climate change acts as a threat multiplier, a new and growing crisis which alters interconnections between contributing factors and creates new risks and interactions between events. These concurrent shocks and interconnected risks lead to even more complex crises, including the simultaneous occurrence of several catastrophic events also referred to as a 'polycrisis'[9] A polycrisis research approach is useful to explore, to understand the connections between the contributing factors and the risks and crisis events across climate emergency and health. It is an approach that builds on the foundations of good public health practice, recognising that there are a wide set of interrelated socio-economic-political and environmental determinants of health outcomes.

[8] Vulnerability to Health Risks of climate variability and change (Chapter 8) 9789240048102-eng.pdf (who.int)
[9] We're on the brink of a polycrisis. How worried should we be? | World Economic Forum (weforum.org)

Systems and Resilience

Figure 4: WHO Operational framework for climate resilient and low carbon health systems[10]



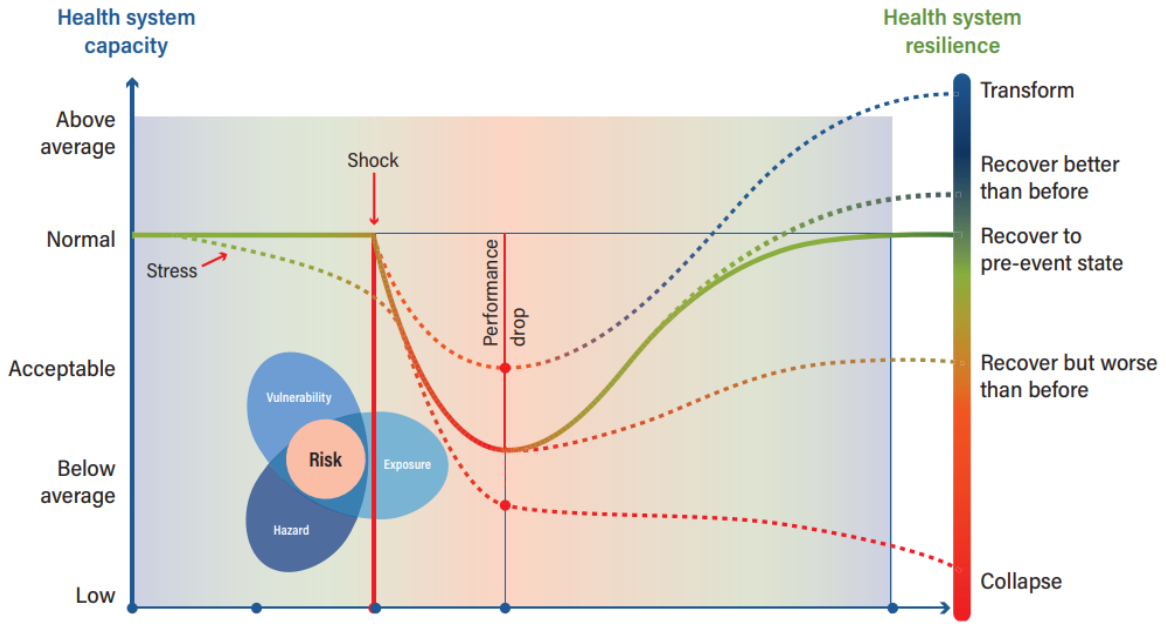
WHO has adjusted the six **Health System Building Blocks**, to add in new climate sensitive action, such as reducing health sector emissions through low carbon supply chains and technology.

Under Health Information Systems there are assessments of risks (vulnerability and adaptation assessments), plus integrated risk monitoring and health and climate research. Another addition is climate-related emergency preparedness management.

Climate resilience is the capacity of a community or environment to anticipate and manage climate impacts, minimise their damage, and recover and transform as needed after the initial shock.

[10] WHO p viii Operational framework for building climate resilient and low carbon health systems (who.int)

Figure 5: WHO Health System Resilience[11]



The concept of system resilience to shocks and stresses shows potential pathways from collapse to transformation. This includes awareness of pre-existing stress prior to the shock event which may affect the capacity of the system to recover. The example here is of the health system but can be equally applied to other systems and communities' coping systems.

[11] WHO, p7 Operational framework for building climate resilient and low carbon health systems (who.int) Measuring the climate resilience of health systems 9789240048102-eng.pdf (who.int)

4. Methods and Approach

This is a rapid situation analysis and scoping study. The process for undertaking the situation analysis was designed to be iterative, with each part of the analysis informing and helping to refine the next.

Table 2: Summary of Methods

Objectives	Approach	Summary of methods	Details
Evidence Gap Identification	Design of rapid narrative review	Narrative literature review method was updated based on initial desk review	**Annex A**
	Narrative review of literature, including log and analysis of articles	40 relevant articles identified: • 3 Umbrella/meta-analysis • 22 Systematic reviews (by health sub discipline) • 7 Primary research (risks, vulnerability, geog/pop) • 8 Reports/grey literature (humanitarian)	**Annex B**
	Evidence gap analysis	Evidence gaps maps review (6+ reviewed)	**Section 6**
Stakeholder Mapping	Consultations	Key stakeholders identified, approached and 10 key informant interviews conducted (KII)	**Internal only**
	Interview topic guide/notes	Consultations held to discuss and identify existing evidence, the evidence gaps, the stakeholders, and initiatives.	**Internal only**
	Database	100 entries for stakeholders and initiatives were identified and organised according to: • Funders, policy actors, knowledge brokers, LMIC researchers, events.	**Internal only**
Identifying a Niche	Internal workshop	A workshop involving R2HC and wider Elrha programme teams took place in May after the data reviews and consultations. It entailed a discussion on findings and potential future niche areas for Elrha's work.	**Internal only**

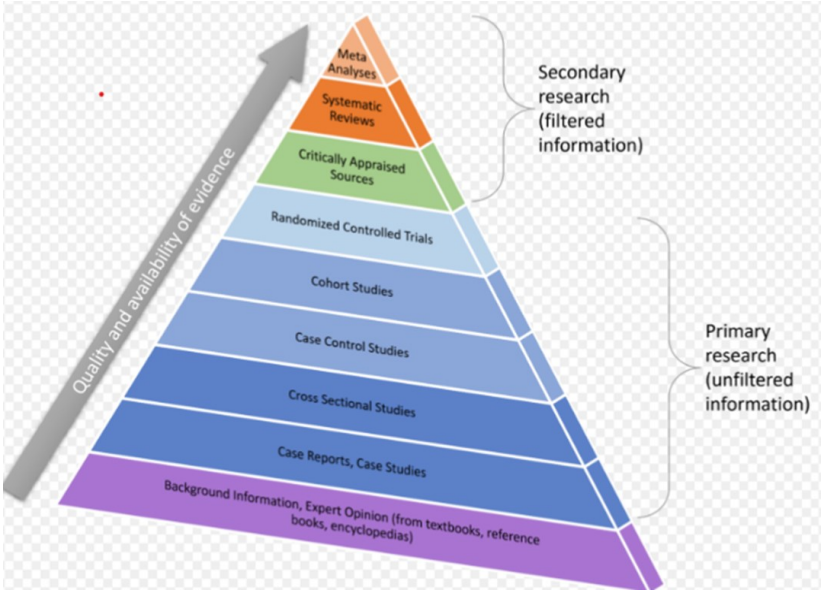
Key Informant Interviews (KIIs) were used to gather information on the evidence available, the gaps and the stakeholders active in this space. Throughout this report there are anonymised opinions, feedback or suggestions made by different stakeholders in the KIIs. Some of these are direct quotes, others are paraphrased to maintain meaning, but protect anonymity of respondents. These are shown in ***italics***.

5. Summary of the Evidence

Overview

The methods for the rapid narrative review are outlined in **Annex A**. The narrative review searched the published articles and reports with a focus on climate-emergency-humanitarian-health. It sought to identify both the available evidence as well as the evidence gaps at various levels of the evidence pyramid. Over 40 articles were found of relevance, and the findings are grouped according to three tiers of the Evidence Pyramid set out in Figure 6.

Figure 6: Evidence Pyramid, setting out the three tiers used for this Evidence Review



Three Tiers:

Top:

Umbrella + Meta Analysis

(Secondary) **3**

Upper Middle:

Systematic Reviews

(Secondary) **22**

Lower Middle and Base:

Articles and Reports

(Primary + Grey) **15**

This narrative summary overview of the evidence presents the findings and evidence gaps for each of the three tiers of the pyramid. For each section, the evidence is categorised by (i) the evidence type, (ii) the thematic scope (iii) the context/geography its generated from and (iv) findings specific to humanitarian settings/populations.

A full list of all 40+ papers can be found in **Annex B**. Reference to specific articles are made (1-40 in line with the references in Annex B), but as this as this is not a systematic review of the literature, it should not be considered a comprehensive presentation of all the findings, rather an overview of the evidence available.

Top of the Pyramid – Umbrella, Meta Analysis (3 articles)

Evidence Type: The top of the evidence pyramid includes ongoing initiatives to assess the full breadth of the scientific evidence base in a robust and systematic way. This includes meta-analysis and umbrella reviews, with major contributions from the IPPC[12], the Lancet Countdown[13], and the Pathfinder Commission[14] (1). The links between climate change and human health have only recently started to receive more attention in the climate change discourse at global levels.

[12] Climate change: a threat to human wellbeing and health of the planet. Taking action now can secure our future — IPCC
[13] Lancet Countdown Lancet Countdown - Lancet Countdown
[14] Pathfinder Commission Pathfinder Initiative | LSHTM

With the rapid increase in scientific literature[15] on climate and health has come a greater need for evidence synthesis, to critically appraise and summarise the evidence base and make this available for decision making. Each study identified and reviewed thousands of records, identifying and selecting (less than 100) articles each that met the criteria for inclusion in the analysis. A large part of this type of evidence is generated through modelling, using existing data (showing cause and effect), to estimate the future impact of specific climate change events on health outcomes. Recent systematic evidence maps on climate and health used machine learning to help sort and review the growing number of publications in this area (3).

Thematic scope: There is a growing body of compelling evidence, particularly at a global level, to show that climate change poses significant threats to health outcomes (IPCC Climate Change Synthesis Report[16]). A big driver of the push for new evidence has been the need to make the case that a climate crisis equals a health crisis, providing proof that climate change presents a fundamental threat to human health. The evidence available has a focus on aggregating the impacts of the climate crisis on health, with a view to demonstrating the effects (including co-benefits) of climate change mitigation and adaptation actions on health outcomes at a macro level.

- The evidence on **mitigation** has showed that actions for climate change mitigation are also positive for human health, promoting co-benefits. The Pathfinder Study (1) is a good example – it aims to accelerate the transition to net zero societies by providing evidence-based emission reduction strategies that also benefit human health.
- The evidence on **adaptation** is less clear on the co-benefits to health (2). While there are a growing number of studies on WASH, infectious disease and food security, there is a weak focus on health outcomes (in adaptation responses). The limited and disparate evidence, and lack of economic evaluations, represents a missed opportunity for learning and evidence-based policy action.

Context/Geography: The evidence at the top of the pyramid is generated from data in HIC and MIC with strong research and modelling capabilities and resources. Evidence from LIC is often excluded, with weaker research capabilities, where evidence has not been systematically reviewed or critically appraised, and the diversity of the data makes it more challenging to aggregate.

Humanitarian populations/settings: At the top tier of the pyramid, there is no evidence on particular humanitarian populations or contexts, and information on specific vulnerable groups is scarce.

OBSERVATION: The evidence base has been driven by the need to demonstrate causation between climate-health, to understand pathways and package knowledge to inform decision making. There are significant time lags (2+ years) from when research is designed and funded, and when literature is peer reviewed, shared, critically appraised and systematically reviewed.

[15] Visual summary - Lancet Countdown Indicator 5.3 tracking papers published

[16] IPCC. Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [core Writing Team, IPCC Lee H and Romero J(eds.)]. Geneva, Switzerland, (in press): IPCC; 2023. Available from: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf.

Upper Middle of the Pyramid – Systematic Review by Health Sub Sector (22 articles)

Evidence Type: The evidence at the upper middle of the Pyramid, includes a mixture of systematic reviews, and critically appraised published secondary literature. The evidence base begins to broaden out with more sub-sector specialisms and diverse outcomes of interest.

Thematic scope: There is strong evidence being generated to examine the multiple effects of climate change on separate sub-disciplines in health. Several systematic reviews were found for different sub sector areas in health (using selected focus areas), documenting the various direct and indirect effects of climate change on a range of health outcomes. There is also some recognition that health consequences of climate change are unevenly distributed. A total of 16 systematic reviews were identified as linked to the seven selected focus areas (show in Table 3 below).

Table 3: Summary and Examples of the Systematic Reviews by Health Sub Sectors

Systematic review reference	Examples of sub sector evidence, by thematic area
Nutrition (4–5)	• It is projected that malnutrition will be the greatest contributor to climate change-associated morbidity and mortality. • Weather and climate-related disasters, including floods, impact undernutrition through multiple pathways, including food security, inadequate childcare practices, and water and sanitation.
Sexual and Reproductive Health and Rights (SRHR) (7–10)	• Climate change is a risk factor for reproductive health, with a range of negative effects caused by heat, air pollution and floods, which increase risks and disrupt access to available SRH services. • Effects of exposure to high temperatures in pregnancy is associated with increased risk for preterm birth, low birth weight, and stillbirth.
Water Sanitation and Hygiene (WASH) (11)	• There are multiple pathways by which climate change negatively affects WASH outcomes (droughts, floods, changing temperatures, water and vector borne disease). • WASH interventions reduce the risk of diarrhoea in children[17], a leading cause of child mortality and morbidity in LMICs (malnutrition increases vulnerability to deaths). • Improved WASH enhances health resilience against climate change.
Mental Health and Psychosocial Support (MPHSS) (12–14)	• Extreme weather events such as storms, floods and heatwaves can adversely affect mental health, and lead to disruptions in mental health services. • Crisis situations can lead to increased aggressive behaviours as well as gender-based violence. • There is limited data available from LICs on this.
Infectious Disease Prevention and Response (inc. vector-borne disease) (15–17)	• The effects of Climate Change on infectious disease are multifaceted (with several pathways) resulting in shifts in zoonoses and food, water and vector borne diseases. • The geographical distribution, duration of transmission and human-pathogen interactions are changing – as seen with new outbreaks of malaria, dengue and cholera.

[17] Diarrhoeal disease (who.int)

Non-Communicable Disease (18–19)	• Heat waves, air pollution, food quality/poor diets can lead to increased conditions such as stroke, heart disease, pulmonary disease, lung cancer and cardiovascular disease. • Climate change and NCDs both pose a disproportionate burden on low- and middle-income countries that are unprepared to cope with their synergistic effects.
Health Systems (in crisis contexts) (20)	• The health sector is accountable for 5% of greenhouse gas emissions and needs to reform to decarbonise and reduce emissions. • Climate change places significant pressure on health systems which can be disrupted due to damage from extreme weather events. • Resilient health systems are crucial to enhance, maintain and restore population health.

OBSERVATION: Research on climate and health takes place across various disciplines and silos, representing a fragmented landscape of niche discourses that hinders efforts to synthesise key insights, and identify trends and evidence gaps.

"The challenge of siloed working styles is recognised; however, it can be addressed through interdisciplinary requirements in funding calls." (Funder)

Outside of the seven health sub-areas above, there is a growing body of evidence being generated in other areas such as heat, conflict and migration (21-25). Six additional systematic reviews have been identified with relevant evidence, shown in Table 4.

Table 4: Summary and Examples of the Systematic Reviews by other Sub Sectors

Systematic review reference	Examples of sub sector evidence, by thematic area
Heat (21–23)	• New evidence is being generated on the effects of temperature extremes, particularly on younger and older demographic groups, with specific physiological, anatomic and social factors which increase vulnerability. • Children, particularly infants, are affected by extreme low and high temperatures. • Heat exposure is an important risk factor contributing to cardiovascular disease. • There are important temporal and spatial trends in heat vulnerability (with strong evidence from HIC), however LIC are under-represented in research.
Conflict (24)	• Climate change is a risk amplifier for people living in conflict-affected areas. • There are large gaps in breadth and depth of climate change adaptation in conflict-affected countries. • Specific gaps include urban areas, the health sector, early warning systems and humanitarian programming for climate adaptation in conflict-affected countries.
Migration (25–26)	• There have been varied estimates of the number of people likely to face displacement, resettlement and migration due to climate change. • Applying the concept of a 'human climate niche' where humans can comfortably live and thrive, where exposure outside the niche could result in increased morbidity, mortality, adaptation in place or displacement (migration) – it is estimated that global warming (since 1990) has put 600m people outside this niche, in less favourable temperature conditions. • The extent of health hazards caused by displacement associated with the climate crisis cannot be predicted, but it is expected that displaced populations are likely to face similar poor health outcomes as refugees.

Context/Geography: The evidence at the middle of the pyramid is generated from a broader number of countries. In addition to HIC, there is a large body of evidence from MIC/upper-MIC such as India, Nigeria, South Africa and some LIC countries, such as Pakistan.

In relation to topics such as migration, for example, there is data prepared in the World Bank Groundswell Report[18] which shows Africa will be hit the hardest by climate change and could push 86 million Africans to migrate within their own countries by 2050. It reports that data from West Africa and the Lake Victoria basin shows migration hot spots could emerge as early as 2030.

Humanitarian: The effects of climate change on specific emergencies and fragile contexts with existing crises is scarce, as is data specific to humanitarian populations or humanitarian settings. Academic literature is sparse for many conflict-affected countries. The available

[18] Climate Change Could Further Impact Africa's Recovery, Pushing 86 Million Africans to Migrate Within Their Own Countries by 2050 (worldbank.org)

studies on adaptation tend to have a narrow focus on the agriculture sector and rural contexts, rather than the health sector and humanitarian contexts.

Lower Middle and Base of the Pyramid – Primary research plus Grey Literature (15 articles)

Evidence Type: At the base of the pyramid is a body of more diverse primary evidence. At the lower-middle sections of the pyramid the types of evidence include case reports, case studies and cross sectoral studies which can be found in academic papers. At the base of the pyramid are expert opinions and programmatic reports as well as learning papers which share insights on the operational response to the climate crisis by humanitarian stakeholders (37). The evidence is described as weak as it is not systematically collected, it uses different data points, and learning is often located within organisations and not widely shared (35).

"The research to date has focused more on health impacts than climate adaptation." (LMIC Researcher)

Thematic scope: It is well documented that individuals and communities in humanitarian settings face worsening impacts, often triggered by climate change. Problems are amplified when they are already faced with multi-dimensional obstacles (39). There are a number of studies assessing vulnerabilities as well as risks, including how the risks of the climate crisis vary across spatial (geographical) and temporal (time) scales (29). Given the complex layering of risks in humanitarian settings, the traditional risk management approach is criticised for being limited to single hazards, rather than multiple hazards (35). The climate crisis and its effects on poor health is not the only threat that marginalised and vulnerable communities face. There are many other threats driving future humanitarian needs, such as overuse of resources, damage to biodiversity and earth systems, and conflict and poor governance. Climate change will interact with all these elements in ways that cannot be reliably predicted with any specificity.

Context/Geography: At the lower-middle tier of the pyramid there are many more academic papers with evidence generated from LIC. This includes evidence from specific settings such as urban, informal settlements (33). There is a far greater focus on individual and community level responses. It is recognised that the health risks of the climate crisis are and will continue to be distributed inequitably, with vulnerable populations and regions affected differently.

Humanitarian populations/settings: A number of humanitarian organisations such as Médecins Sans Frontiers (MSF), The International Federation of Red Cross (IFRC) and International Medical Corps (IMC), as well as ODI, have undertaken their own research to understand the effects of climate change on the populations they serve and their work overall. The IFRC has its own Climate Centre (38) supporting the Red Cross and Red Crescent Movement, which conducts a large number of country focused studies and analyses. Other organisations such as the Jameel Observatory are providing local insights on anticipatory action to mitigate against the climate crisis. Humanitarian organisations have generated a number of case studies with evidence on different adaptation responses serving different humanitarian populations or contexts (35-41). There is a strong message on climate injustice, arguing that many populations which are among the first and hardest hit by the climate crisis are also those which have contributed least to causing the problem (39).

OBSERVATION: Humanitarian organisations are documenting and generating evidence on the implications of the climate crisis in humanitarian settings. Individual case studies are generating interesting lessons, but there are (or seem to be) no strong messages emerging from primary research. Consequently, the evidence generated is not reaching a large audience or influencing wider policy.

6. The Evidence Gaps

Evidence gap maps (EGM[19]) are a relatively new approach to systematically identify and report the range of research activity in broad topic areas or policy domains. An EGM reviews impact evaluations and systematic reviews to consolidate what we know and do not know about 'what works'. They entail a systematic search of the evidence to show areas with strong, weak or non-existent research on the effects of interventions or initiatives.

To date, most EGMs have been funded by donors such as FCDO and USAID, and have been conducted by the International Initiative for Impact Evaluation, known as 3iE[20] (which started conducting EGMs from 2010), and by The Campbell Collaboration (which started conducting EGMs from 2017)[21]. A search of the EGMs available online found those listed in Table 5 that are most relevant to the search terms of *climate, emergency, humanitarian, health.*

Table 5. Evidence Gap Maps

EVIDENCE GAP MAP	KEY POINTS OF RELEVANCE
A map of evidence maps relating to sustainable development in L&MICs | gapmaps.3ieimpact.org	**Multisector**: This 2017 mapping of EGMs shows that the distribution of the EGMs across intervention sectors and Sustainable Development Goals (SDGs) is relatively uneven, with some significant gaps. It shows the highest number of EGMs is in health, population and nutrition (SDG3), with very few EGM available on combating climate change (SDG13). At the intersection between the two are EGMs on land use, natural resource management, forestry conservation, and ecosystem change adaptation, revealing a fragmented body of evidence linking biodiversity and human wellbeing. There is one EGM on humanitarian settings dated 2009, with no overlap to any of the other search terms.
Africa Evidence Gap Map | gapmaps.3ieimpact.org	**Multisector**: An Africa-focused EGM mapping conducted in 2019, shows similarly high numbers of EGM in health (SDG3) and very few on climate change (SDG13). It shows no EGM completed at the intersection between the two.
Explore (and use) 3ie's maps on WASH, resilience, nutrition and agriculture | 3ie (3ieimpact.org)	**Sub Sector**: There are multiple EGMs on relevant sub-sector areas of WASH, nutrition, agriculture and resilience[22], with reports and briefs on each of these. • The WASH EGM includes resilience[23] as one of the outcome areas, but deliberately excludes health. • The nutrition EGM does not include health outcomes. • The resilience[24] EGM shows relevant evidence linking a number of intervention areas, such as disaster risk financing and early warning systems against a range of outcomes, from adaptive psychological and livelihoods to transformative societies.

[19] For a conceptual introduction to 3ie EGMs, please read Evidence gap maps: a starting point for strategic evidence production and use, 3ie Working Paper 28.
[20] Evidence gap maps | 3ie (3ieimpact.org).
[21] Better evidence for a better world - The Campbell Collaboration.
[22] Why you should explore (and use) 3ie's maps on WASH, resilience, nutrition and agriculture | 3ie (3ieimpact.org)
[23] The definition of Resilience used in this study comes from USAID resilience framework - The ability of people, households, communities, countries, and systems to mitigate, adapt to and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. — USAID 2012
[24] Building resilient societies in low- and middle- income countries: an evidence gap map (3ieimpact.org)

Interestingly, the resilience EGM brief[25] reports that while multi-sectoral and multi-component interventions are present in resilience programming, many primary evidence and secondary synthesis gaps exist, hindering the ability to understand which approaches and or combinations are effective in which contexts, and how they compare to other approaches. Similarly, the WASH EGM[26] highlights gaps linking evidence on WASH and resilience, and wider conflict and the climate crisis, recommending more causal research is needed on these links.

In short, this review of two multisector EGMs and the 3-4 relevant sub-sector EGMs shows that there has been little evidence generated at the intersections of, and interconnections between climate crisis and humanitarian health. Also, for all these EGMs there is insufficient geographical representation across the evidence base, with significant gaps in understanding from fragile, challenging or humanitarian contexts. The evidence is also weak on vulnerability dimensions such as gender and equity.

Critical Evidence Gaps

Wars, droughts, floods and other effects of climate change are leading to pervasive and complex emergencies globally, causing displacement, famine and crop failure, among many other adversities. As several of these events occur in tandem, there is a need to have a multi-dimensional understanding of how threats such as the climate crisis, conflict and other sectoral factors (such as health) intertwine. This understanding is currently lacking and unaddressed by the current evidence and research. The specific and combined health impacts of the climate crisis on individuals and communities already affected by crises, such as war, famine, epidemics and disasters, are notable by their absence in the literature. Other critical evidence gaps are noted below.

Conclusions on the Evidence Gap

There is a need:

a. To generate evidence at all points of the pyramid. There is a scarce and uneven distribution of the evidence. More focus is required to generate primary research from the base.
b. For more monitoring and learning from practice (not models) of what works.
c. To speed up evidence sharing from base of the pyramid, including rapid evidence reviews, and to draw on grey literature and use this to inform policy.
d. To examine factors driving inequity, specifically for vulnerable groups/populations.
e. For greater transdisciplinary research to address multiple dimensional connections and pathways.
f. For evidence from a wider range of adaptation activities (i.e. other than agriculture and rural settings) to include health and humanitarian/conflict settings.
g. For improved standardised reporting across climate change and health, e.g. assessments of the benefits of adaptation interventions to consider health outcomes.

"Evidence on climate–health links in humanitarian contexts is very limited. More rigorous evaluations of anticipatory action pilots are needed." (LMIC researcher)

[25] Resilience-REAPER-EGM-brief.pdf (3ieimpact.org)
[26] Water, Sanitation, and Hygiene (WASH) Evidence Gap Map: 2020 update | gapmaps.3ieimpact.org

7. Research Action

"It is recognised that there are evidence gaps and uncertainty about supporting research for populations already facing humanitarian crisis." (Funder)

There does not seem to be a clear conceptual approach or joined-up way forward on what to do in existing humanitarian settings where populations are already affected by crisis. There is a need to present a **clear humanitarian evidence gap and research question** to be addressed.

The research question could seek to better understand the adaptive measures taken by those vulnerable populations who bear the brunt of the climate crisis. Populations already affected by crisis in humanitarian situations are absent from research priorities and plans, signalling high levels of uncertainty on ways to address this glaring evidence gap. Looking at the evidence available, there seems to be no clarity on how to learn from community level responses, how to support multidimensional or multisectoral programming, and how to assess what mix of interventions work in different contexts.

"Framing the research question for humanitarian settings could be quite difficult." (Knowledge Broker and Funder)

"Gaps exist in generating actionable evidence and solutions, beyond just describing the problems." (Funder)

More research and policy advocacy are needed to put humanitarian needs - in this case humanitarian health - at the heart of climate research and action. The current research and policy agendas need to focus on:

- **Finding Solutions:** There is a shift in demand for evidence generation, to examine what works, under what conditions, for who, why and when.
- **Locally Relevant:** Local evidence is required to involve service users, encourage indigenous solutions and democratise evidence generation and use.
- **Building Partnerships:** Build transdisciplinary research teams [27], working across disciplines as well as across stakeholder groups – from academics to policy makers, civil society to health workers/medical schools – bringing together a broad range of expertise to respond to the multiple causes and effects of climate change, and to address the negative impacts on health.
- **Learning and Knowledge Transfer:** Examine the transferability of evidence and solutions across different contexts and learn how best to deliver interventions for greatest impact in different settings. Address the overarching question: *What learning can be generated from humanitarian settings where pre-existing crises overlap or intertwine with climate crisis threats and poor health.*

"There is a need for interdisciplinary research combining climate and health methods and concepts." (Knowledge Broker and Funder)

[27] Addressing societal challenges using transdisciplinary research | OECD Science, Technology and Industry Policy Papers | OECD iLibrary (oecd-ilibrary.org)

8. Policy Action

At COP28 new commitments were made on climate and health[28] and climate, relief, recovery and peace[29]. As the momentum grows to translate commitments into action many new initiatives are underway. Elrha should consider engaging in initiatives where there is already some coordinated action and build on existing efforts to influence new policy agendas. Some examples of initiatives Elrha could engage with and build on are outlined below:

The Climate Centre[30]: The Climate Centre acts as a think tank/reference centre for the Red Cross Red Crescent Movement and its partners. It has several thematic teams focused on health, anticipatory action, conflict, innovation, urban issues, and youth engagement. The focus areas for the health team include anticipatory action for infectious diseases, climate change and mental health, heat/air pollution impacts, and climate-smart health programming. The centre is active in knowledge generation, using literature reviews and KIIs to produce practical guidance for National Societies.

The Lancet Countdown Africa Regional Centre[31]: Planning to launch this year, this initiative aims to bring more African researchers into the global Lancet Countdown collaboration and fill data gaps on climate change and health in the region. The focus is on research and advocacy, to bring voice and local data to inform African policy makers. The first Countdown Africa technical report was released in 2023, with the second due out soon.

National Adaptation Plans[32]: Countries are working to develop their National Adaptation Plans (NAPs), outlining the actions needed to reduce vulnerability to impacts of climate change and to identify what is needed to strengthen adaptive capacity and resilience. NAPs are also being developed on a sector-by-sector basis, with Health NAPs (HNAPs) underway in several countries[33]. There is increased recognition of the need for more research and evidence-based programming to inform the development of these plans.

Anticipatory Humanitarian Action SSA[34]: Anticipatory action (AA) refers to actions taken to reduce the humanitarian impacts of a future hazard before it occurs. The decision to act is based on a forecast, or collective risk analysis, of when, where and how the event will unfold (IFRC 2020). AA is gaining considerable momentum across Africa with engagement from various stakeholders, including, the Red Cross and Red Crescent Movement, Food and Agriculture Organization (FAO), World Food Programme (WFP), OCHA, START Network, governments, National Meteorological and Hydrological services, research institutions and universities. These stakeholders are partnering at country, regional and global levels to implement anticipatory action projects and initiatives.

Amongst these humanitarian stakeholders, efforts are also underway to step up the operational response to the climate crisis. In June the Inter Agency Standing Committee (IASC) will launch its new climate crisis roadmap[35], to step up the collective response to the growing climate-related humanitarian needs.

[28] COP28 UAE Declaration On Climate And Health
[29] COP28 Declaration On Climate, Relief, Recovery And Peace
[30] Health – Red Cross Red Crescent Climate Centre
[31] We're growing our collaboration in Africa! - Lancet Countdown
[32] Building Climate-Resilient Health Systems: Four key actions to follow in National Adaptation Plan (NAP) processes (who.int)
[33] Review of Health in National Adaptation Plans (who.int)
[34] Anticipatory Humanitarian Action in Sub-Saharan Africa - Anticipation Hub (anticipation-hub.org)
[35] IASC Briefing: Launch of IASC Climate Crisis Roadmap | IASC (interagencystandingcommittee.org)

9. Conclusion

As shown by this situation analysis, the issues most relevant to HICs are over-represented in the literature and subsequently in the policy agendas. The issues affecting LICs, particularly issues facing populations in humanitarian contexts, are underrepresented, if not absent. There are many reasons for this, not only due to the type of evidence being collected, and where this evidence is being generated, but also due to how, when and where this evidence becomes available and is shared.

More evidence and action are needed to identify the most appropriate strategies to protect the health of those most vulnerable and most affected by climate emergencies. In short, there is a need to generate locally relevant evidence, to inform policy and practice.

We can expect to see lots of new work within this space and a fast moving field of new partnerships, new initiatives and new funding, which is likely to require specific research support to learn from implementation.

Elrha is well positioned to build on its past experience and draw on its existing skills and expertise to tackle the evidence gaps and contribute to this agenda.

ANNEXES

Annex A: Methods for the Rapid Narrative Review of Literature

Methods: The methods for the rapid narrative review of the literature were revised in April, following a quick desk review. The methods set out in the inception report have been updated and revised, mainly to change the sequencing of the steps planned and ensure focus on populations and settings of interest. The latest methods updates are outlined below.

Timing: Given the rapid increase in evidence over the last few years, the search applied filters to limit the date of the literature published to the last **5-6 years (2018-24)**.

Search terms: The search initially used a combination of the four key words: climate, emergency, humanitarian, and health. As the search progressed through Stages 1-4, additional search terms were added on crisis, risk, vulnerabilities and humanitarian populations or settings – to narrow the search for relevant material related to the thematic scope, the study populations and the contexts/humanitarian settings of interest.

Limitation: The main limitation of the narrative review is the limited days allocated to this task which meant that the review was extemely rapid, narrative in nature and does not provide a comprehensive, systematic review of the published literature, or the grey literature as a result. It does provide a high-level overview of the evidence and evidence gaps.

Key Steps:

Step 1: High level Reviews. The first step of the **narrative literature review** was to conduct a scoping search of published literature using PubMed (PubMed [nih.gov], or MEDLINE). A filter was applied for studies which are meta-analysis, umbrella reviews and systematic reviews

Step 2: Health Systematic Review. After completing Step 1, a further scan was made of the existing systematic reviews to check for the presence of the following seven sub terms (in line with selected focuses identified through Elrha's work):

1. Nutrition
2. Sexual and Reproductive Health and Rights (SRHR)
3. Mental Health and Psychosocial Support (MPHSS)
4. Infectious Disease Prevention and Response (including vector-borne disease)
5. Water Sanitation and Hygiene (WASH)
6. Non-Communicable Disease
7. Health Systems (in crisis contexts)

During the review three additional subcategory searches were added for heat, migration, and conflict.

Step 3: A further search was conducted of other primary literature published articles in health and other non health journals with additional search terms of risks and vulnerability (vulnerable populations and vulnerable geographies/settings).

Step 4: A broader hunt of the grey literature was conducted (on the internet) to search for published reports specific to emergency settings and humanitarian populations. This included research organisations mentioned during the consultations as well as known organisations working on humanitarian reponses.

Annex B: A Narrative Review of Literature – Findings

The narrative review searched the published articles and reports with a focus on climate-emergency-humanitarian-health. It sought to identify both the available evidence as well as the evidence gaps at various levels of the evidence pyramid. Over 40 articles were found of relevance, and the findings are grouped according to three tiers of the Evidence Pyramid set out in Figure 6 (page 10).

Top of the Pyramid: Umbrella, Meta Analysis (3)

	REFERENCES
1	Quantifying the effectiveness and health co-benefits of climate change mitigation actions across sectors: a protocol for an umbrella review.
	Belesova K, Green R, Clercq-Roques R, Falconer J, Waddington HS, Whitmee S, Reynolds T, Hassan S, Haines A.Wellcome Open Res. 2022 Aug 25;7:98. doi: 10.12688/wellcomeopenres.17498.2. eCollection 2022.PMID: 37441158 Free PMC article.
2	The effects on public health of climate change adaptation responses: a systematic review of evidence from low- and middle-income countries.
	Scheelbeek PFD, Dangour AD, Jarmul S, Turner G, Sietsma AJ, Minx JC, Callaghan M, Ajibade I, Austin SE, Biesbroek R, Bowen KJ, Chen T, Davis K, Ensor T, Ford JD, Galappaththi EK, Joe ET, Musah-Surugu IJ, Alverio GN, Schwerdtle PN, Pokharel P, Salubi EA, Scarpa G, Segnon AC, Siña M, Templeman S, Xu J, Zavaleta-Cortijo C, Berrang-Ford L.Environ Res Lett. 2021 Jul;16(7):073001. doi: 10.1088/1748-9326/ac092c. Epub 2021 Jul 13.PMID: 34267795 Free PMC article. Review.
3	Systematic mapping of global research on climate and health: a machine learning review.
	Berrang-Ford L, Sietsma AJ, Callaghan M, Minx JC, Scheelbeek PFD, Haddaway NR, Haines A, Dangour AD.Lancet Planet Health. 2021 Aug;5(8):e514-e525. doi: 10.1016/S2542-5196(21)00179-0. Epub 2021 Jul 14.PMID: 34270917 Free PMC article. Review. links between climate change, climate variability, and weather (CCVW), and health (including impacts, adaptation, and mitigation),

Upper Middle of the Pyramid – Systematic Reviews by Health Sub discipline (22 from 4–26)

	NUTRITION
4	A systematic review and meta-analysis assessing the impact of droughts, flooding, and climate variability on malnutrition.
	Lieber M, Chin-Hong P, Kelly K, Dandu M, Weiser SD.Glob Public Health. 2022 Jan;17(1):68-82. doi: 10.1080/17441692.2020.1860247. Epub 2020 Dec 17.PMID: 33332222 Free PMC article.
5	Impact of floods on undernutrition among children under five years of age in low- and middle-income countries: a systematic review.
	Agabiirwe CN, Dambach P, Methula TC, Phalkey RK.Environ Health. 2022 Oct 24;21(1):98. doi: 10.1186/s12940-022-00910-7.PMID: 36274126 Free PMC article. Review.

	SRHR
6	Systematic review of climate change effects on reproductive health.
	Segal TR, Giudice LC.Fertil Steril. 2022 Aug;118(2):215-223. doi: 10.1016/j.fertnstert.2022.06.005.PMID: 35878942 Free article. Review.
7	Associations between high temperatures in pregnancy and risk of preterm birth, low birth weight, and stillbirths: systematic review and meta-analysis.
	Chersich MF, Pham MD, Areal A, Haghighi MM, Manyuchi A, Swift CP, Wernecke B, Robinson M, Hetem R, Boeckmann M, Hajat S; Climate Change and Heat-Health Study Group.BMJ. 2020 Nov 4;371:m3811. doi: 10.1136/bmj.m3811.PMID: 33148618 Free PMC article.
8	Drawing the Linkage Between Women's Reproductive Health, Climate Change, Natural Disaster, and Climate-driven Migration: Focusing on Low- and Middle-income Countries - A Systematic Overview. Afzal, Fahad[1]; Das, Arindam[1]; Chatterjee, Soumitra[2] *Indian Journal of Community Medicine* 49(1):p 28-38, Jan–Feb 2024. | *DOI:* 10.4103/ijcm.ijcm_165_23
9	Frontiers | A Scoping Review to Assess Sexual and Reproductive Health Outcomes, Challenges and Recommendations in the Context of Climate Migration (frontiersin.org) Frontiers Womens Health, 15 October 2021, van Daalen Kim Robin, Dada Sara, Issa Rita, Chowdhury Maisoon, Jung Laura, Singh Lucy, Stokes Diarmuid, Orcutt Miriam, Singh Neha S.
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	WASH
11	Effectiveness of interventions to improve drinking water, sanitation, and handwashing with soap on risk of diarrhoeal disease in children in low-income and middle-income settings: a systematic review and meta-analysis.
	Wolf J, Hubbard S, Brauer M, Ambelu A, Arnold BF, Bain R, Bauza V, Brown J, Caruso BA, Clasen T, Colford JM Jr, Freeman MC, Gordon B, Johnston RB, Mertens A, Prüss-Ustün A, Ross I, Stanaway J, Zhao JT, Cumming O, Boisson S.Lancet. 2022 Jul 2;400(10345):48-59. doi: 10.1016/S0140-6736(22)00937-0.PMID: 35780792 Free PMC article.
	MENTAL HEALTH
12	Climate change, climate-related disasters and mental disorder in low- and middle-income countries: a scoping review.
	Sharpe I, Davison CM.BMJ Open. 2021 Oct 14;11(10):e051908. doi: 10.1136/bmjopen-2021-051908.PMID: 34649848 Free PMC article.
13	The Impact of Climate Change on Mental Health: A Systematic Descriptive Review.
	Cianconi P, Betrò S, Janiri L.Front Psychiatry. 2020 Mar 6;11:74. doi: 10.3389/fpsyt.2020.00074. eCollection 2020.PMID: 32210846 Free PMC article.
14	Is there an association between hot weather and poor mental health outcomes? A systematic review and meta-analysis.

	Liu J, Varghese BM, Hansen A, Xiang J, Zhang Y, Dear K, Gourley M, Driscoll T, Morgan G, Capon A, Bi P.Environ Int. 2021 Aug;153:106533. doi: 10.1016/j.envint.2021.106533. Epub 2021 Mar 30.
	INFECTIOUS DISEASE
15	The Impact of Meteorological Factors on Communicable Disease Incidence and Its Projection: A Systematic Review.
	Baharom M, Ahmad N, Hod R, Arsad FS, Tangang F.Int J Environ Res Public Health. 2021 Oct 22;18(21):11117. doi: 10.3390/ijerph182111117.PMID: 34769638 Free PMC article. Review.
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	Kulkarni MA, Duguay C, Ost K.Global Health. 2022 Jan 3;18(1):1. doi: 10.1186/s12992-021-00793-2.PMID: 34980187 Free PMC article. Review
17	Moreira, R.P., Costa, A.C., Gomes, T.F. *et al.* Climate and climate-sensitive diseases in semi-arid regions: a systematic review. *Int J Public Health* 65, 1749–1761 (2020). https://doi.org/10.1007/s00038-020-01464-6
	NCDs
18	The relationship between climate change, globalization and non-communicable diseases in Africa: A systematic review.
	Siiba A, Kangmennaang J, Baatiema L, Luginaah I.PLoS One. 2024 Feb 23;19(2):e0297393. doi: 10.1371/journal.pone.0297393. eCollection 2024.PMID: 38394170 Free PMC article.
19	Ambient air pollution and non-communicable respiratory illness in sub-Saharan Africa: a systematic review of the literature.
	Glenn BE, Espira LM, Larson MC, Larson PS.Environ Health. 2022 Apr 14;21(1):40. doi: 10.1186/s12940-022-00852-0.PMID: 35422005 Free PMC article. Review.
	HEALTH SYSTEMS
20	Strategies to strengthen a climate-resilient health system: a scoping review PMCID: PMC10463427, DOI: 10.1186/s12992-023-00965-2 Ali Mohammad Mosadeghrad [1], Parvaneh Isfahani [2], Leila Eslambolchi [3], Maryam Zahmatkesh [4], Mahnaz Afshari[5]
	HEAT
21	The Effect of High and Low Ambient Temperature on Infant Health: A Systematic Review.
	Lakhoo DP, Blake HA, Chersich MF, Nakstad B, Kovats S.Int J Environ Res Public Health. 2022 Jul 26;19(15):9109. doi: 10.3390/ijerph19159109.PMID: 35897477 Free PMC article. Review.
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	CONFLICT
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	MIGRATION
25	Migration health crisis associated with climate change, A systematic review Mazhin, Sadegh Ahmadi[1,2]; Khankeh, Hamidreza[1,3]; Farrokhi, Mehrdad[1]; Aminizadeh, Mohsen[1,4]; Poursadeqiyan, Mohsen[5,6,] Author Information *Journal of Education and Health Promotion* 9(1):p 97, | *DOI:* 10.4103/jehp.jehp_4_20 https://journals.lww.com/jehp/fulltext/2020/09000/migration_health_crisis_associated_with_climate.96.aspx
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Lower Middle – case reports, case studies, cohorts (Primary) (7 from 27–33)

	VULNERABILITIES
27	Assessing Health Vulnerabilities and Adaptation to Climate Change: A Review of International Progress. Berry P, Enright PM, Shumake-Guillemot J, Villalobos Prats E, Campbell-Lendrum D.Int J Environ Res Public Health. 2018 Nov 23;15(12):2626. doi: 10.3390/ijerph15122626.PMID: 30477122 Free PMC article. Review.
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30	Health Risks and Costs of Climate Variability and Change - Injury Prevention and Environmental Health - NCBI Bookshelf (nih.gov) Chapter 8 of WB book – includes health risks of climate variability and change Good graphics, sections on how health risks of climate change will vary across temporal and spatial scales.
	RISKS
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	Ebi KL, Hess JJ, Watkiss P.In: Mock CN, Nugent R, Kobusingye O, Smith KR, editors. Injury Prevention and Environmental Health. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017 Oct 27. Chapter 8.PMID: 30212118 Free Books & Documents. Review.
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Base – GREY LITERATURE – (8 from 34–41)

34	IASC Key Messages - Common Narrative on the Climate Emergency and Humanitarian Action, Results Group 3 on Collective Advocacy (April 2021).pdf
35	**ODI** Humanitarian action on climate and conflict: narratives, challenges and opportunities | ODI: Think change
36	**IMC** Humanitarian Evidence Report: The Impact Of Climate Change - Adapt - A Climate And Humanitarian Crisis Initiative (adaptinitiative.org) April 2023 IMC review of evidence on the impacts of climate change on humanitarian health, nutrition, WASH, food Security, livelihoods and mental health (MHPSS).
37	ALNAP Lessons Paper: Adapting humanitarian action to the effects of climate change | ALNAP 2021
38	**10 Case Studies IFRC** Displacement in a Changing Climate: Localized humanitarian action at the forefront of the climate crisis - Mozambique | ReliefWeb Monica Rull
39	**MSF** Impacts of climate change on human health in humanitarian settings: Evidence gaps and future research needs. PLOS Clim 3(3): e0000243. McIver L, Beavon E, Malm A, Awad A, Uyen A, Devine C, et al. (2024) https://doi.org/10.1371/journal.pclm.0000243 https://journals.plos.org/climate/article?id=10.1371/journal.pclm.0000243
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41	**JAMEEL OBSERVATORY –** Anticipatory Action to mitigate drought-induced crisis in Kenya and Somalia. JO_AAreport_summary_en.pdf (ed.ac.uk)