Feeling the Heat: How Humanitarians Should Respond to Rising Temperatures

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LSE Department of International Development

DISASTERS EMERGENCY COMMITTEE

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Keywords

Extreme Heat

There is no clear definition or consensus on what constitutes ‘extreme heat’ (Eltahir and Krol, 2022). Several regional factors contribute to the experience of extreme heat, including living in an urban versus a rural area, or living in an area with high humidity. Considering this, we define extreme heat throughout this report as ‘periods that are much hotter than usual for the time and place where they happen’ (ibid).

Heatwave

Used throughout this report to refer to ‘prolonged periods of excessive heat’. However, it is important to note that there is no ‘universal heatwave metric’, and the experiences of a ‘heatwave’ will vary greatly by region and individual (Perkins-Kirkpatrick and Green, 2023).

Vulnerability

“The characteristics of a person or group and their situation influencing their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard” (Neumayer and Plümper, 2007). Different forms of social identity also intersect with one another to create unique forms of vulnerability.

Anticipatory Action

“A set of actions taken to prevent or mitigate potential disaster impacts before a shock or before acute impacts are felt. The actions are carried out in anticipation of a hazard impact and based on a prediction of how the event will unfold” (IFRC, 2022).

Abbreviations

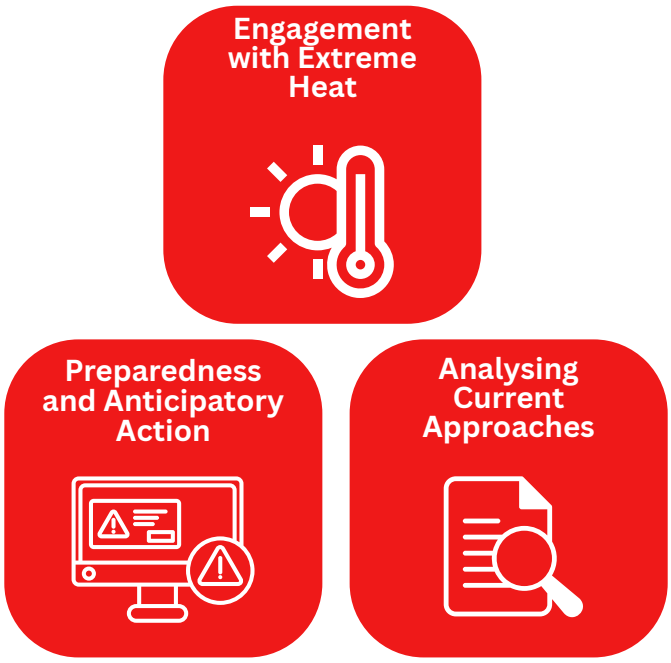
BDRCS: Bangladesh Red Crescent Society
DEC: Disaster Emergency Committee
IFRC: The International Federation of Red Cross and Red Crescent Societies
ILO: International Labour Organization
IOM: International Organization for Migration
IRC: International Rescue Committee
UNHCR: United Nations High Commissioner for Refugees
WASH: Water, Sanitation and Hygiene

Executive Summary

Extreme heat is an urgent global challenge, affecting billions worldwide. It poses severe risks to human health, livelihoods and society as a whole. Human-driven climate change is increasing the intensity and frequency of heatwaves, increasing the risks for the most vulnerable, while measures to protect them remain insufficient, disjointed and underfunded. For humanitarians, extreme heat is a critical concern. Heatwaves can be a crisis in and of themselves and they exacerbate existing crises by disrupting supply chains, increasing pressures on local healthcare systems and threatening water security. It's about time humanitarians started taking extreme heat more seriously.

This report examines the role of extreme heat in driving new and exacerbating existing humanitarian need. It outlines the extent of current engagement with extreme heat by members of the Disasters Emergency Committee (DEC), particularly within the health and shelter clusters, and analyses current measures to tackle extreme heat across the membership and beyond. Finally, it makes recommendations to DEC members on how responses to extreme heat could be improved. The report draws on case studies from Pakistan and Bangladesh, given their vulnerability to extreme heat and the recent involvement of DEC members in these regions.

The data consists of 19 interviews with employees at member agencies and external organisations, alongside a review of members' internal documents relating to recent appeals and a broader academic and grey literature review. The findings are categorised into three thematic areas:



1. Humanitarian Engagement with Extreme Heat

Our research indicates that extreme heat is an increasingly important issue among humanitarians, although on the whole, engagement across the DEC membership and beyond is nascent. The lack of a standardised definition of extreme heat and of concrete statistics that indicate its health implications act as barriers for DEC members to fully understand its impacts and to advocate for increased attention from governments and donors. In addition, extreme heat is a cross-cutting issue and its effects are felt across the humanitarian system. There are promising signs of increased coordination between humanitarian organisations, such as the Global Shelter Cluster Extreme Heat Working Group. However, there is a need to improve coordination within organisations, between organisations and governments, and, most of all, between organisations and those who regularly experience extreme heat. Within these communities, there is often a wealth of existing adaptation strategies and coping mechanisms. In many cases, rather than imposing new programmes onto communities, INGOs should learn from indigenous and intergenerational knowledge, amplify the voices of those experiencing extreme heat and support them to strengthen existing efforts by coordinating with governments and providing resources.

2. Preparedness

Effective extreme heat response requires preparedness. This report identified three key areas in which DEC members could focus attention in addressing heat: heat action plans, anticipatory action and early warning systems. Effective heat action plans include a strong definition of extreme heat, cross-sector collaboration and communication, as well as comprehensive vulnerability mapping and should have the potential to inform longer term preparedness strategies. DEC member organisations should support governments with the development and implementation of these plans, filling gaps where necessary. Anticipatory action is a growing and important aspect of disaster response which aims to mitigate the worst impacts of a crisis before it hits. Organisations should improve anticipatory action wherever possible to effectively address extreme heat, as forecasting technologies and seasonal patterns make heatwaves predictable in many places, making it a useful approach. The report outlines two different approaches to anticipatory action (the IFRC in Bangladesh and IRC in Guatemala) and the benefits and drawbacks of each approach. Early warning systems are an integral part of anticipatory action and should be embedded in any anticipatory action strategy. Messaging must be holistic, varied in delivery and locally led to ensure vulnerable groups receive it.

3. Analysing Current Approaches

Current approaches from humanitarian organisations to address health concerns from extreme heat include awareness raising, cooling stations and provision of heatwave kits. While sometimes effective, these responses could be improved by better integrating gender concerns into their design and implementation. The first case study analyses current measures to address the health impacts of extreme heat in Karachi, Pakistan. Karachi is a particularly vulnerable region to experiencing extreme heat, and heatwaves that have struck the city in the past have had devastating consequences. An analysis of approaches to addressing extreme heat in Karachi will allow for an exploration of the benefits and limitations of current humanitarian responses.

Another key area to address extreme heat is in shelter and settlements. Thermal discomfort is common in camp settings but can be improved by cost effective measures, such as creating external shaded areas, using reflective materials and adding vegetation. Our second case study looks at features of a typical shelter in Cox's Bazar, where residents are vulnerable to heat stress, due in part to overcrowding and shelter design, which provides little space for adequate ventilation. A lack of external and shaded space exacerbates heat concerns, both of which are core recommendations for cooling in the literature. Through this case study we suggest further recommendations for accommodating shelter design for rising temperatures.

We conclude this report with our key recommendations on how the DEC can most effectively respond to extreme heat. We recommend increased humanitarian engagement with extreme heat, via research and coordination across the sector, as the first step to addressing the issue. We then recommend improving preparedness and anticipatory action systems in order to most efficiently respond to extreme heat. Finally, we highlight ways in which current approaches to extreme heat can be improved.

We also recommend ways in which the impact of extreme heat can be addressed for humanitarian actors working in Myanmar in the aftermath of the 2025 earthquake. It is likely that high temperatures will be a compounding factor in the scale and severity of the crisis, so addressing extreme heat should be a critical concern.

A copy of our key recommendations, and our context-specific recommendations for Myanmar, can be found below:

Recommendations for the DEC

Research and Advocacy:

- Engage with research and utilise open-source data to build a strong evidence base.
- Advocate for extreme heat to be recognised as a serious humanitarian issue.

Coordination:

- Mainstream local and indigenous knowledge on cooling measures into humanitarian responses.
- Start at a community level to support and strengthen existing approaches to extreme heat.
- Improve discussions on extreme heat within and between organisations.

Preparedness:

- Support government agencies in the development and implementation of heat action plans.
- Expand anticipatory actions, using forecasting technologies to trigger early action.
- Advocate for more flexible funding and explore early action financing models such as financed based forecasting and 'follow the forecast' approaches.
- Ensure early warning systems messaging is holistic, community-led and reaches vulnerable populations.

Actionable Measures for Addressing Heat:

- Mainstream gender and vulnerability into every heat adaptation measure.
- Provide mental health support for those in care-giving roles.
- Reject a one-size-fits-all approach to dealing with extreme heat by actively involving a local community in evaluating heat adaptation measures.
- Use cost-effective measures to address extreme heat and factor these measures into DEC response budgets.
- Ensure shelters conform to the Sphere standards.
- Gather feedback from the local community post-heatwave and meaningfully onboard this for future responses.

Recommendations for Humanitarians in Myanmar

- Distribute simple cooling kits, similar to the ones used to address heat in Karachi, Pakistan. These kits can include materials for shade and water, as well as some basic information on the health impacts of extreme heat. Providing safe drinking water will also be imperative in preventing cholera outbreaks among affected populations.
- Providing umbrellas within heatwave kits will be beneficial in sheltering individuals from heavy rainfalls, while also providing a source of shade as a cooling measure.
- Transmit information on extreme heat quickly and effectively by collaborating with community leaders or by using loudspeakers in streets.
- Ensure humanitarians working on the ground in Myanmar are adhering to Sphere standards where possible, in order to improve ventilation within shelters for survivors.

Heat-Aware Shelter Checklist

- Ventilation: ensure the shelter has adequate ventilation by positioning shelters taking into account wind speed and direction and the position of the sun.
- Making sure shelters have windows ideally on opposite walls for through flow of air.
- Use reflective material for shelter roofs; this can also be done by using light coloured paint or spray on the roofs.

Photo: Khaula Jamil/DEC

SECTION 1: Introduction

1.1 Extreme Heat

The past decade has been the hottest on record, with 2024 marking the warmest year ever recorded (WMO, 2025). The frequency, intensity and duration of heatwaves is increasing and is largely driven by human-induced climate change (IPCC, 2022), with climate change quadrupling the likelihood of extreme heat events (Masson-Delmotte et al., 2021). Events considered 'extreme' today may become the norm in the future (Russo et al., 2014). Not only is the nature of extreme heat events changing, but an increased number of people are exposed to them. By 2050, the number of urban poor living in extreme heat is projected to increase by 700% (UCCRN, 2018).

Extreme heat has negative effects on human health. Between 2000 and 2019 there were approximately 489,000 heat-related deaths each year (Zhao et al., 2021). Further, high temperatures have wide-ranging effects on societies: decreasing economic productivity, increasing the cost of social care, expanding energy demands and stressing infrastructure, agriculture and natural environments (UNSG, 2024).

The effects of extreme heat are felt disproportionately by lower income countries (IFRC et al., 2022) and they will likely bear the brunt of extreme heat in the future (Fig.1.). For this report, we have drawn on case studies from Pakistan and Bangladesh, given these countries' vulnerability to extreme heat and prominence in adaptation literature. Given the rise in anthropogenic greenhouse gas emissions is primarily attributed to countries in the Global North (IPCC, 2022), addressing extreme heat is also an issue of climate justice.

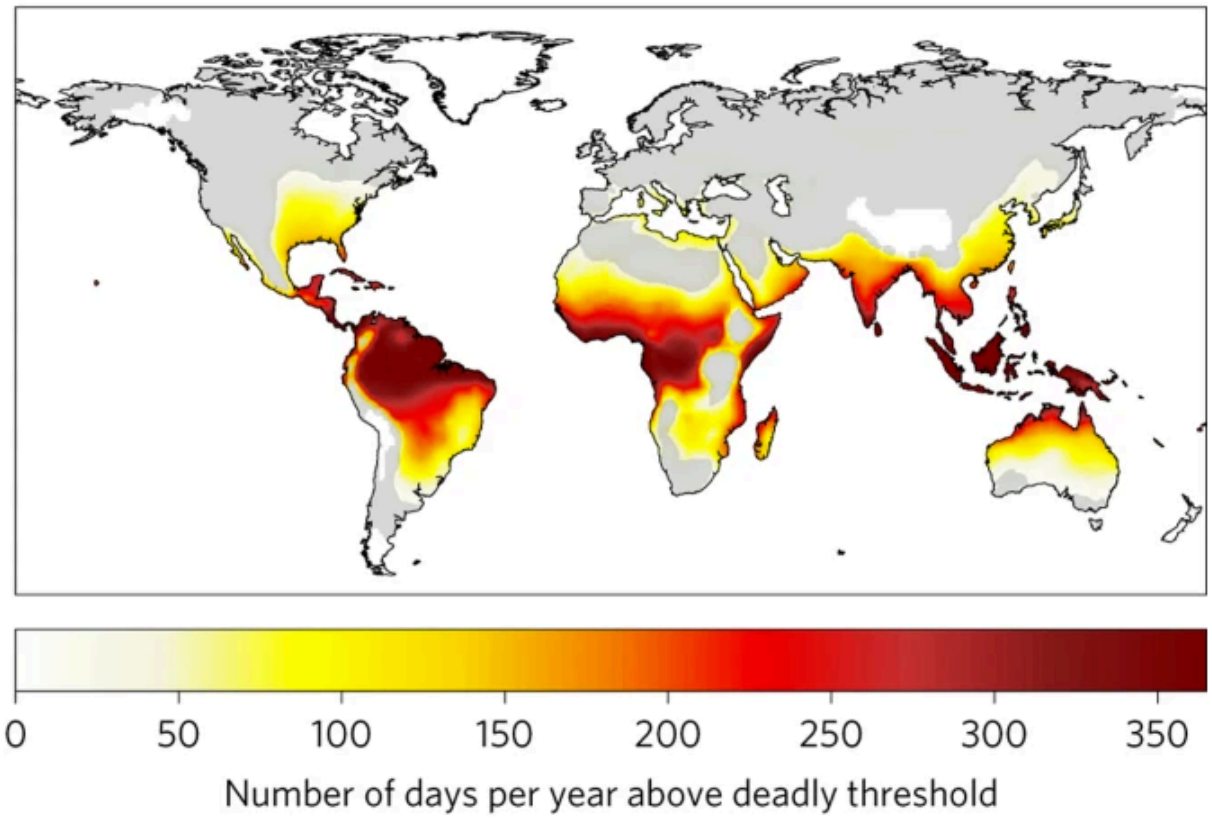


Figure 1. Projected number of days per year exceeding the threshold of temperature and humidity beyond which climatic conditions become deadly between 2090-2100 (Mora et al., 2017)

1.2. Heat and the Humanitarian Sector

Humanitarian engagement with climate change is increasing. For example, all DEC members are signatories to the Climate Charter (2021), committing them to reducing vulnerability through adaptation, disaster risk reduction and anticipatory action, embracing local leadership, better understanding climate risks and working collaboratively; all critical goals to addressing extreme heat. Furthermore, the UN's Early Warnings for All initiative will be crucial to preparing for extreme heat. Currently, it is unclear how the recent aid cuts will affect organisations' approaches to climate change, although it is possible that immediate, reactive relief will take precedence over proactive measures. Nonetheless, our report highlights the value of anticipatory action and early warning systems as critical measures for an effective response to extreme heat.

Extreme heat is a complex and cross-cutting issue which impacts all areas of the humanitarian cluster system. WASH, food security, health, shelter and education are all significantly impacted by rising temperatures, however in this report we focus specifically on health and shelter. We have focused on these clusters given their significant intersection with heat in the literature and in our initial interviews. Despite this, our findings are relevant to a wider audience, given the cross-cutting impacts of extreme heat on the humanitarian system.

Although the effects of extreme heat are widespread, it disproportionately affects certain groups. Some of the most vulnerable groups to extreme heat are highlighted in the table below:

Group	**Risk**
Young children and infants	• Children are less able to reduce heat exposure (IFRC et al., 2024). • Higher temperatures are associated with lower academic attainment (UNICEF, 2023).
Elderly individuals	• People over 65 are less physiologically resilient to heat. • Over 90% of heat-related deaths in the EU in 2022 were among those aged 65 and above (Ballester, Quijal-Zamorano and Méndez Turrubiates, 2023). • Can be socially isolated.
People with pre-existing or chronic medical conditions	• Exacerbation of pre-existing conditions such as cardiovascular disease, respiratory illnesses or kidney disease (IFRC, 2019).
Outdoor labourers	• 9 out of 10 outdoor workers globally are exposed to heat stress (ILO, 2024).
People with disabilities	• May have restricted mobility. • Potential social isolation.
Women	• 'Represent the largest share of mortality', due in part to gendered norms in many regions which prohibit women leaving the house unaccompanied (Clarke et al., 2024). • More often responsible for cooking which can drastically increase temperatures indoors. • Increased care burden during a heatwave (UNSG, 2024). • Rising temperatures associated with an increase in gender-based violence (Abdullah, et al., 2022). • Lactating women require significantly higher volumes of water.

Low-income groups	• May lack infrastructure such as drinking water or electricity for cooling. • A temperature increase of just 1°C will result in a 9.1 % increase in poverty around the world (Dang, Nguyen and Trinh, 2023), pushing low-income groups further into poverty. • Homeless individuals are at an increased risk of heat exposure and may have limited access to warning messages.
Refugees and internally displaced people	• Shelters often have poor ventilation and lack access to infrastructure such as water, electricity, and shade (Anwar, 2023). • Exclusion from support systems. • Language barriers.

Figure 2. Table of different vulnerabilities to extreme heat. Adapted from IFRC Heatwave Guide for Cities (2019).

Throughout this report we expand on how and why certain groups are more vulnerable than others, keeping in mind that identifying and aiding those most vulnerable is central to an effective humanitarian response to extreme heat.

In sum, the impact of rising temperatures should be a greater consideration for humanitarians going forward, not only to reduce the risk of heat stress for vulnerable populations, but also to stay true to commitments on climate change and to tackle widening economic, health and gender inequality.

In this vein, this report assesses the extent of engagement with extreme heat by DEC member organisations. It then analyses current approaches to addressing extreme heat within and beyond the membership to highlight effective approaches and current gaps in responses. We conclude with recommendations for how responses to extreme heat can be improved. We also include some more context-specific recommendations for humanitarians working in Myanmar in the aftermath of the 2025 earthquake.

1.3. Methodology

The findings outlined in this report have been informed by a combination of three research methods:

- 19 semi-structured interviews with key informants. Of our interviewees, 12 worked for a DEC member organisation and seven worked in external organisations (for more detail refer to Appendix 4). Initial candidates were obtained from our client and additional candidates from snowball sampling.
- A systematic review of grey and academic literature.
- A review of DEC member's internal reports.

Our interviews have been seminal to our research. They were key to understanding DEC member organisations' engagement with and approaches to extreme heat, which was mostly lacking from the literature. They also enabled cross-analysis between organisations.

The literature review has greatly informed our research. Most sources are from the last three years, ensuring our findings remain relevant.

Information about extreme heat has been somewhat lacking from internal DEC reports. Nonetheless, this finding is itself important, and understanding *why* this information may be lacking has formed part of our analysis.

Limitations

We were only able to interview nine out of 15 DEC members and so the report is not representative of the entire membership's approaches to extreme heat.

Additionally, we were unable to speak directly with people receiving aid to learn more about their experiences of extreme heat and to gather their feedback on humanitarian responses. As such, this report lacks this crucial perspective. This was compounded by the fact that many interviewees were not based in the countries on which we focused our research. It is crucial that future research should begin with local contexts and experiences of heat.

Finally, the research team comprises three students from the United Kingdom. We are aware that we are writing about others' experiences in contexts we are not necessarily familiar with and have tried to maintain cultural sensitivity throughout our project as a result.

SECTION 2: Humanitarian Engagement with Extreme Heat

Photo: Khaula Jamil/DEC

2.1. Review of DEC Engagement with Extreme Heat

While interviews showed that extreme heat is an increasingly important issue for DEC members, they revealed that focus on the issue is still emerging. Engagement varies between member organisations; few mentioned heatwave risks and responses in the internal documents we reviewed.

Furthermore, despite increasing attention being paid to anticipatory action and disaster risk reduction across DEC member organisations, actions on extreme heat remain predominantly reactive. Seasonal patterns and forecasting technologies mean heatwaves are predictable for much of the world, although climate change may render extreme heat events more erratic in the future. Consequently, effective action to address extreme heat involves adequate planning and preparedness, which will be explored further in section three.

Our literature review and interviews revealed that a lack of a clear definition of extreme heat limits action. The literature acknowledges there is no single definition of a heatwave and no standard understanding of extreme heat (McGregor et al., 2015). Perceptions of heatwaves are usually formed along two lines - by measuring temperatures or health outcomes, with most countries relying on temperature thresholds for classifying a weather event as a heatwave (Sai Venkata Sarath Chandra et al., 2025).

Interviewees defined extreme heat in a range of ways, from focusing on the Heat Index, to measuring levels of humidity or sustained high temperatures. However, the impact of extreme heat is extremely context-specific, relative to local climates and temporally and geographically subjective (IFRC et al., 2022).

Interviewees stressed that establishing a more standardised and data driven definition of extreme heat is essential for triggering funding. This underscores the need for a health-based, evidenced and context-specific definition of extreme heat, which will allow for a clearer understanding of the impacts of heat as well as providing an identifiable threshold for humanitarian responses.

Possible operational threshold

It is important to establish comprehensive, context-specific heat definitions that incorporate health data, to enable preparedness strategies to be developed and effective responses to be undertaken. However, a more immediate operational threshold for action could be when forecasts predict a temperature of 38 degrees and a heat index score of 38 for two or more consecutive days, as used by the

Bangladesh Red Crescent in Dhaka. (IFRC, 2023) This should be adapted for context, but could serve as a point of reference as it includes temperature measurements as well as how it is felt by the body.

2.2. Lack of Data and Research on Extreme Heat

Many interviewees identified a lack of data and research on extreme heat as a key factor limiting action. Without strong data, humanitarian organisations are limited in their understanding of the impacts of extreme heat. Furthermore, the lack of data means humanitarian organisations are unable to provide sufficient evidence to attract donor funding. The full extent of the impacts of extreme heat remains under-appreciated and underreported, especially in low and middle income countries, due to gaps in data exacerbated by reporting biases amongst marginalised groups (Caleton et al., 2020 in IFRC, 2022). As such, heat remains a 'silent killer' (UNSG, 2024), as opposed to a disaster that has observable and measurable consequences. It is vital that these perceptions are addressed so that extreme heat is understood as a disaster with severe impacts. A more thorough understanding of extreme heat, rooted in data, would allow humanitarian actors to create more effective interventions.

Furthermore, interviewees emphasised the distinct lack of health data linking illness and fatality to heat as a limiting factor in understanding and addressing extreme heat. This was supported in our literature review, which found that few countries have any reliable data on heat-related fatalities (IFRC et al., 2022). Drawing a causal link between extreme heat exposure and death is difficult as the impacts of heat on the body are often complex (McGregor et al., 2015). Interviewees emphasised that this gap in heat-health data is a significant barrier when advocating for funding. It is therefore essential that heat is understood and cited as a probable cause of death, and that heat-related fatalities are accurately recorded to aid humanitarians in research and advocacy efforts (WMO, 2024).

Humanitarian agencies will also benefit greatly from engaging with ongoing research. Some DEC members are already engaging with emerging research, such as the shelter team at CARE International UK and Oxfam who are conducting research on extreme heat in partnership with the FCDO.

Furthermore, humanitarian organisations should take advantage of open-source climate and health data, and partner with research institutions, universities and meteorological agencies who are developing advanced forecasting technologies.

It is also important to utilise data sharing platforms and toolkits such as the C40 toolkit, Anticipation Hub, ALNAP, the Alliance for Transformative Action on Climate and Health and the Global Heat Health Information Network (GHHIN), to access and contribute to best practices and emerging research.

Finally, new technological developments, such as AI-driven heatwave prediction tools currently being developed by C40 Cities Climate Leadership Group and IBM, could be beneficial in helping humanitarian organisations build a strong evidence base on extreme heat for donors. DEC members should engage with such technologies to aid in facilitating access to funding and supporting planning for extreme heat events.

2.3. Media and Advocacy around Extreme Heat

Extreme heat receives far less media and humanitarian attention than other disasters. This was highlighted by many interviewees who noted inconsistencies across countries and organisations as to whether heatwaves are considered disasters in their own right. Sometimes lacking in immediate, dramatic imagery, heatwaves are often overlooked by the public and policymakers despite their severe impacts on a population (Calhoun, 2004). Indeed, coverage of heatwaves in the media often fails to portray the severity and health-implications of extreme heat events, as exemplified by images in the media of people enjoying the sun during the 2022 heatwave in the UK (O'Neill, 2022).

Figure 3. Image of a couple in deck chairs during the UK's 2022 heatwave used by the BBC (BBC, 2023).

Interviewees noted that heat is frequently seen as a natural or seasonal occurrence, especially in regions with naturally warmer climates, leading to complacency. Interviewees remarked that this perception gap limits urgency in response efforts. Stronger advocacy and media engagement are needed to highlight extreme heat as a public health threat (Ghhin, 2025).

2.4. Limitations of Current Funding Structure

Humanitarian funding models remain reactive, releasing funds after a disaster has occurred. However, many heat-related interventions require pre-emptive action to allow for preparedness, contingency planning, establishing heat action plans and anticipatory action. This is already being used by the IRC and Tearfund, who are both piloting anticipatory funding mechanisms. The Anticipation Hub emphasises that financing for extreme heat needs flexible, prearranged and easily released funding once trigger thresholds are met (Anticipation Hub, 2023). However, this is complicated by the difficulties in creating standardised definitions of extreme heat, as highlighted in Section 2.1. The Start Network's (2022) Pakistan Heatwave Model is a promising disaster risk financing system which humanitarian organisations should monitor in the coming years.

An interviewee from Sphere stressed the importance of a nature-based humanitarian approach, in which the risks of extreme weather events are written into project descriptions, and flexible funding is allocated in advance. Embedding climate variability (including unseasonal and changing climate patterns) into project descriptions will ensure a faster release of funds.

2.5. Exploring Alternative Funding Models

Humanitarian organisations should engage with alternative funding sources such as the Start Network and Green Climate Fund (IFRC et al., 2022), which allocate funds in anticipation of crises. These systems provide organisations with rapid and early access to funding allowing for faster responses to extreme heat. One interviewee also highlighted the potential role that the DEC could play in shifting the way that humanitarians approach emergencies. They saw the unique structure of the DEC as one which offers a platform for shared analysis which provides a strong foundation for collaboration and anticipatory, flexible global funding in the future. Greater collaboration and more flexible funding mechanisms are key in responding to extreme heat.

2.6. Coordination and Collaboration

Start with communities

Responding effectively to the challenge of extreme heat requires coordination between various actors at differing levels (Guterres, 2024). However, communities affected by heat should drive responses (IFRC et al., 2022). Many communities have lived in extreme heat conditions for millennia, so have a wealth of coping mechanisms and adaptation strategies that have proven successful in combating high temperatures. Civil society organisations support vulnerable populations with extreme heat, particularly through awareness-raising and advocacy, so INGOs should ensure they support, and not duplicate, this work. February 2025 saw the Global South Civil Society Month of Action on Heatwaves, bringing together organisations and unifying voices advocating for action on extreme heat (Khan, 2025). Additionally, within community networks, faith-based organisations play a key role in existing approaches and, due to their wide social reach, can disseminate information efficiently. Engaging with these organisations and learning from indigenous, intergenerational knowledge must be a starting point for INGOs who are trying to support vulnerable populations. In doing so, INGOs will honour the third commitment of the Climate Charter, which decrees that "action will be guided by the leadership and experience of local actors and communities" (Climate Charter, 2021). Despite a consensus from DEC interviewees that bottom-up approaches were necessary to tackle extreme heat, there is significant evidence to suggest that there is still a long way to go in this regard, echoing more general findings from the Flagship Initiative (Sida et al., 2024).

Engage laterally

Coordination within and between humanitarian clusters is key to addressing the cross-cutting challenges of extreme heat. Humanitarian responses to climate change are often siloed and fragmented, resulting in an incomplete understanding of the effects of extreme heat, and risks duplicating work while leaving critical gaps. The Global Shelter Cluster is leading the way to boost collaboration within the humanitarian sector with its Extreme Heat Working Group.

Extreme Heat Coordination Case Study: Global Shelter Cluster Extreme Heat Working Group (2024)

Extreme heat is an increasingly salient issue in the context of shelter and settlements, but no unified approach to improving extreme heat responses currently exists. To address this, the Global Shelter Cluster created an Extreme Heat Working Group in October 2024. Its initial objectives are to:

1. "Raise awareness of the significance of extreme heat as a factor affecting safe use and design of shelters and settlements, and,
2. Provide resources to Shelter Cluster partners and others on how to reduce the impact of extreme heat on shelter users."

The working group is open to partners from other sectors, echoing interviewees' calls for lateral collaboration across the humanitarian system to take a holistic approach to heat. For example, members would benefit from collaboration between WASH, Health and Shelter clusters to coordinate responses (Anthony, 2024), such as to implement cooling centres, the responsibility for which is currently unclear.

Work with governments

Another key role for DEC members is engaging with governments, who hold primary responsibility for addressing extreme heat by adapting infrastructure for cooling and healthcare provision (IFRC et al., 2022). Interviewees stressed the importance of engaging with governments, often urging authorities to consider extreme heat as a disaster and a serious, urgent issue. In particular, during largescale crises, such as the Rohingya response, government leadership is a key factor alongside sectoral collaboration. Some governments devise heat action plans which can streamline and structure responses to heatwaves, and INGOs can support the development of these using the knowledge gained from working with communities. Working in fragile and conflict-affected states with limited forecasting technology or cross-sector coordination may be more difficult for INGOs, but advocating for these technologies, and encouraging these governments to devise a heat action plan is an important first step.

Internal coordination

Interviewees highlighted the need for stronger links between those conducting climate change-related research in their organisations and service teams, to focus on heat in a cross-cutting manner. This should also be extended to external

extreme heat researchers, who should themselves engage with practitioners to create stronger links between research and implementation. This need is even more important in an age of evidence, when donors heavily focus on measurable responses and 'value for money' (Eyben, 2013).

The role of INGOs

Responding to extreme heat requires engagement from a range of stakeholders. Interviews with DEC members highlighted how INGOs could assume a variety of potential roles within this network. A frequently reiterated idea was the need for a collaborative, coordinated approach. In fact, when responding to extreme heat many interviewees believed INGOs should often have a lighter-touch role.

> *In most cases, the role of INGOs is not to impose novel programmes onto communities, but instead to amplify their voices and support local organisations in strengthening existing efforts through capacity sharing and providing resources.*

Advocacy should be aimed towards local and donor governments, urging them to take extreme heat more seriously, and laterally across the humanitarian system to better coordinate responses and share learning.

Photo: Ali Haj Suleiman/DEC/Fairpicture

SECTION 3: Preparedness

The most effective way to deal with extreme heat is through early action before a heatwave strikes (Fig.4). To properly address extreme heat, the humanitarian system needs to think in a more proactive, rather than reactive way. Three important aspects of preparedness to focus on are heat action plans, anticipatory action and early warning systems. While some organisations are introducing more anticipatory action, interviews revealed that this remains a significant gap in DEC members' response to extreme heat.

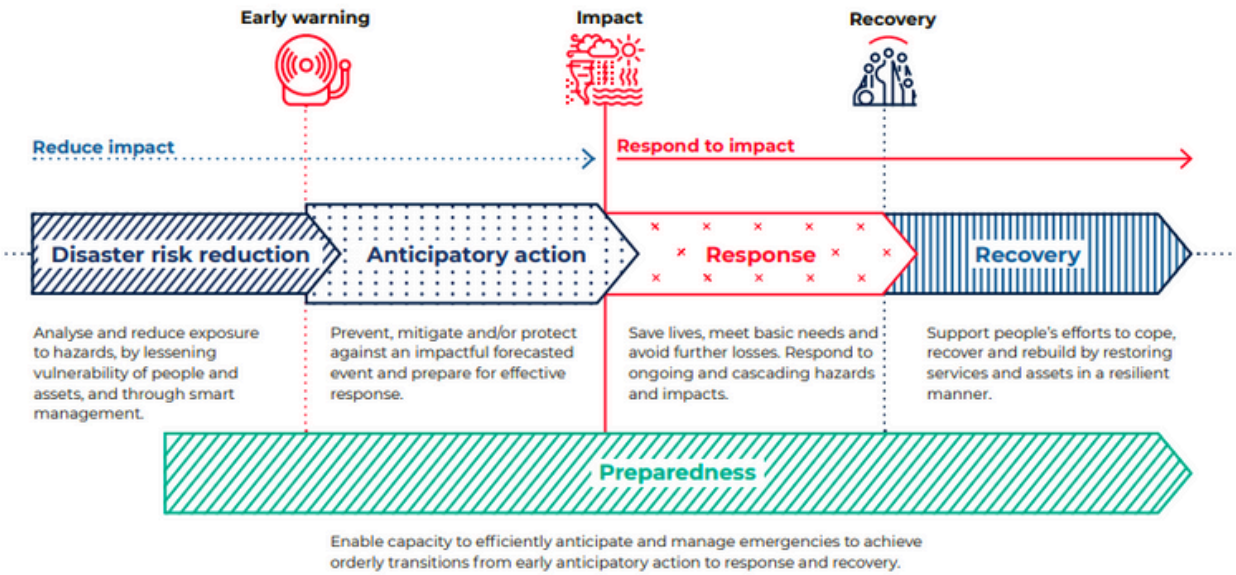


Figure 4. An overview of preparedness and where anticipatory action fits into the process. (Cash Hub, n.d.)

3.1. Importance of Early Action in Addressing Heatwaves

Interviewees and the literature repeatedly emphasised the importance of heat action plans in tackling extreme heat. The most effective way to mitigate the impacts of extreme heat is through early action and the development of frameworks which can be actioned when forecasts indicate a heatwave. Despite this, many of the most vulnerable countries to extreme heat lack such plans (IPCC in WMO, 2023). Moreover, analysis of existing plans reveals significant gaps, particularly regarding vulnerability mapping and multi-sector collaboration (Ghhin et al,. 2024). A review of heat action plans from across India, for example, identified that only two out of 37 regional heat action plans included vulnerability assessments (Singh, 2023). Recognising this, the Global Heat Health Information Network, Climate and Disaster Resilience Centre of Excellence, and Duke University's Nicholas Institute have analysed heat action plans from 12 countries and identified that most plans could be improved by:

- Incorporating longer term resilience action and vulnerability assessments.
- Ensuring early warning systems are proactive, not reactive, and that they include integrated health data.
- Addressing the lack of coordination across sectors which have resulted in inconsistent designs and implementations of HAPs (Ghhin et al,. 2024).

They suggest effective heat action plans should include:

- Heat definitions tailored to geographical contexts, such as those which are more vulnerable to the Urban Heat Island effect.
- Vulnerability assessments and mapping.
- Short- and long-term preparedness strategies, grounded in data, including early warning systems.
- Cross sectoral planning and coordination, with clearly defined roles.
- Adaptation for long-term projected temperature increases
- Clear plans for implementation and monitoring including funding, timelines and evaluations.

(ibid.)

Recommendations for DEC members:

The most important actors in designing heat action plans are local and national governments, informed by local experiences (UNSG, 2024). It is important that heat action plans include more long-term social protection (ALNAP, 2023), which is where humanitarian organisations can play a vital supportive role.

DEC member organisations should support governments in the development and implementation of heat action plans, filling gaps where necessary by providing technical expertise, information sharing, and assisting in mapping vulnerable populations and outreach (WHO, 2023).

3.2. Mapping Vulnerable Populations

As discussed,

> *vulnerability must be mainstreamed in all stages of preparedness planning.*

Individuals from different social groups experience heat differently, which impacts risk exposure and coping strategies, and increases vulnerability (Anwar, 2023). Much of the literature emphasises the importance of vulnerability mapping (IFRC, 2022) as a key component in the development of effective heat action plans and anticipatory action plans.

When conducting vulnerability assessments, humanitarian organisations should consider the risk exposure of these groups, and the social and geographical context they are in. C40 Cities and IBM are currently developing an AI powered heat risk assessment tool, which combines data on climate, socio-economic status, and spatial factors to help identify vulnerable populations. Such a tool could be extremely useful for humanitarian organisations (Andrews, 2025). It is essential to ensure that interventions reach those most vulnerable; something which is currently lacking from heat action plans (as outlined above).

Pre-existing social inequalities affect mortality rates among certain groups. This was observable during the 2015 heatwave in Karachi, where women and low-income groups were disproportionately represented in the number of fatalities (Anwar, 2022). This trend is also observable in higher income countries, such as France and the US, where mortality rates from extreme heat are significantly higher among the urban poor (IFRC et al., 2022). Older people (60+) are amongst the most vulnerable to extreme heat. For instance, over 90% of heat-related deaths in the EU in 2022 were amongst those aged over 65. (Ballester, Quijal-Zamorano and Méndez Turrubiates, 2023) The WHO and other global sources project a significant rise in heat-related mortality in this group by 2050 (WHO, 2018).

3.3 Expanding Anticipatory Action

Anticipatory action is carried out before an expected extreme weather event unfolds (Anticipation Hub, 2023) with the intention to mitigate the most acute effects of disasters before they are felt. It is increasingly used to address climate-related emergencies and was identified by interviewees as a key area for development across the DEC.

For DEC members, this reiterates the need for clear definitions of extreme heat, to allow for the development of anticipatory action frameworks with a clear trigger for action. Organisations should increase their use of forecasting in planning by utilising open-source data, emerging AI technologies and collaborating with meteorological and health organisations, governments and other NGOs to establish thresholds for early action (IFRC, 2020).

An anticipatory action approach requires flexible financing with an amount that is usually predetermined, ideally un-earmarked and which can be used wherever and whenever the need is greatest. This allows planned actions to be implemented rapidly once trigger thresholds are met, before a disaster hits (Anticipation Hub, 2023).

Forecast-based financing

Forecast-based financing is an anticipatory approach used by Red Cross Red Crescent national societies in over 60 countries (IFRC, 2020). It is used with Early Action Protocols which incorporate weather forecasts and data to assess the potential impacts of extreme weather and establish trigger thresholds for action. Forecast-based financing then links the predefined triggers to the release of prearranged funds, allowing for swift action to be taken. (Red Cross, 2023).

CASE STUDY : Bangladesh Red Crescent Heatwave Early Action Protocol

In 2023 the IFRC approved a CHF 499,930 budget for the Bangladesh Red Crescent Society's (BDRCS) Heatwave Early Action Protocol in Dhaka city. The early action protocol focuses on reducing the impact of heat on livelihoods for outdoor labourers, reducing negative health outcomes and minimizing health spending for vulnerable groups, particularly those in informal settlements. It aims to reach 123,700 people through awareness raising and early warning communications, distributing drinking water and saline solutions, cash grants, cooling systems and ambulances.

Vulnerability assessments to decide target groups:
Target groups will be decided by overlaying forecast information with vulnerability and exposure. Once the trigger for pre-activation is reached, they intend to target both communities and groups, as well as individuals and households identified as most vulnerable.

Trigger thresholds:
The plan includes a two phased trigger system:

1. A pre-activation trigger, with a five-seven day lead time, is activated when forecasts by the European Centre for Medium- Range Weather forecast or Global Forecast System predict a temperature of 38°C and heat index of 38 for two or more consecutive days. This will activate the pre-action readiness phase.
2. Early action protocol implementation is triggered when the Bangladesh Meteorological Department confirms this forecast, two to three days out.

Collaborative implementation:
The BDRCS will collaborate across sectors with a range of key actors to implement the early action protocol. These actors include other IFRC agencies, national government agencies, Dhaka City Corporation and the Bangladesh Post Office and Bangladesh Meteorological Department.

(IFRC, 2023)

Some benefits of this mechanism include its proactive approach to addressing heatwaves, which ensures interventions are initiated before an emergency unfolds. The early action protocol's focus on identifying the most vulnerable populations is also key. Moreover, the two phased trigger protocol improves the reliability of forecasts and reduces the risk of funds being wasted in the event of the heatwave not materialising.

A drawback of this approach, however, is the cost and scalability. While it has a reach of 123,700 people, Bangladesh has a total population of 171,466,990, (WHO, 2023) with a significant number of people identified as vulnerable to heat (Adnan et al. 2024). Furthermore, the cost of such early action protocol interventions may present a barrier for smaller organisations with less access to funds than the IFRC.

An alternative approach to anticipatory action is the IRC's 'Follow the Forecast' strategy, which was implemented in 2024 to address flooding in Guatemala. Although Guatemala is not in our region of focus, this approach is a useful example of anticipatory action which could be implemented in other countries.

CASE STUDY : International Rescue Committee's Anticipatory Action 'Follow the Forecast approach' in Guatemala (IRC, 2025)

In June 2024, the IRC implemented its anticipatory action in the flood-prone Malacatán region.

IRC's model involves monitoring forecasts to create rapid contingency plans once thresholds are reached. Their plan focused on two areas: cash grants and early warning messages.

The IRC's approach followed four stages

1. Long range forecasting: the IRC monitored global long-range forecasts by the University of Columbia's International Research Institute for Climate and Society.

2. Rapid contingency planning: the contingency planning process began three weeks prior to the expected flooding. They used live data and AI to map flood locations and create guidance for staff.

3. Cash distribution and early warning systems: the IRC delivered unconditional cash transfers for households to prepare themselves for the imminent flooding and transmitted early warning systems through SMS messages to households receiving cash transfers and the information sharing platform 'Cuentanos'.

4. Monitoring and evaluation: two-three months post-action the IRC evaluated the lessons learned from the implementation of the project.

(Bober et al., 2025)

Adapting this approach to extreme heat

Long-range temperature forecasting, though developing rapidly, is still uncertain (McGregor et al. 2015), and there are no reliable forecasts with a range of more than ten days. (Thompson, 2018). This would mean a significantly shorter lead-in time for early action protocols to be implemented. Nonetheless, the IRC are currently investigating ways of adapting this framework to address extreme heat in Afghanistan and Iraq.

A 'follow the forecast' based approach could be a cost-effective approach to anticipatory action for organisations with less access to funds. However, anticipatory action cannot be a stand-alone intervention and must be integrated alongside wider preparedness and disaster risk reduction actions from governments and other international organisations to be effective (Bober et al., 2025). This is especially true where remote areas lack weather forecasting stations, limiting the effectiveness of anticipatory action.

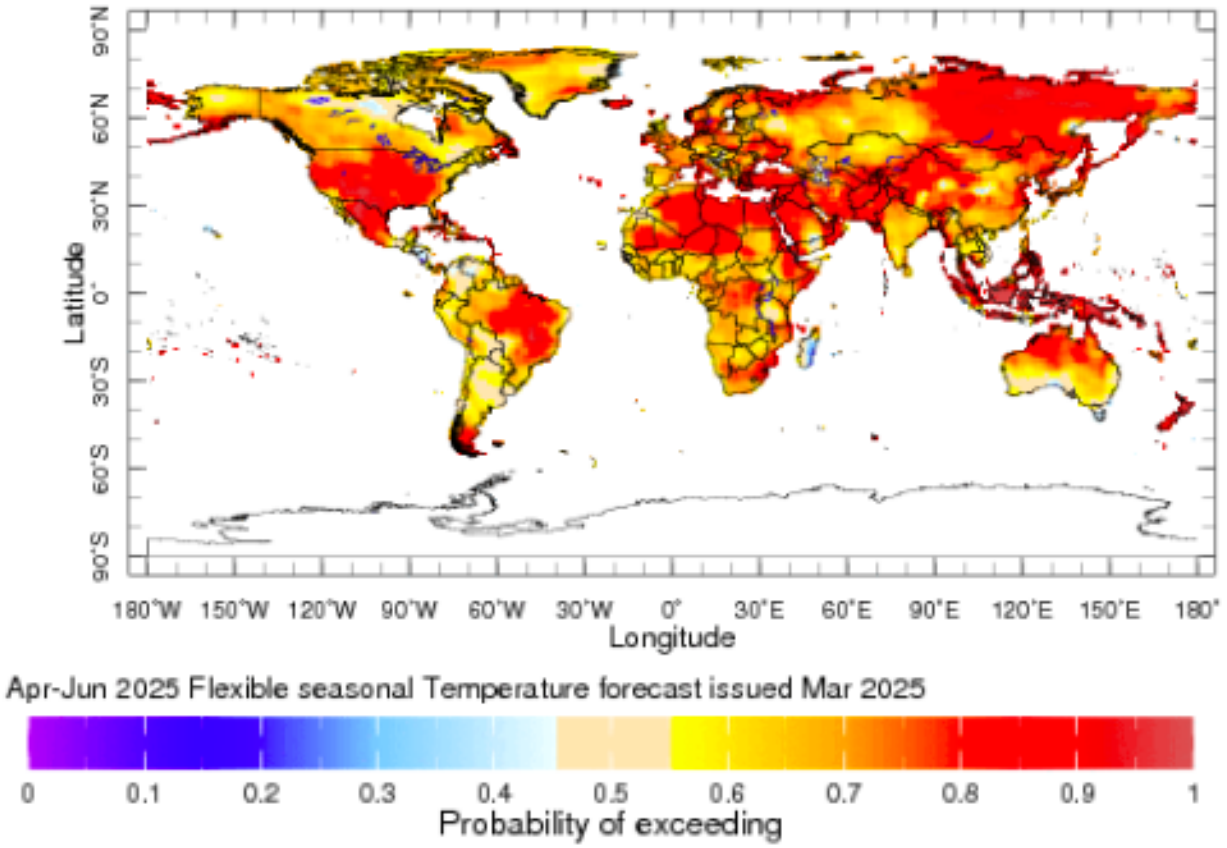


Figure 5. University of Columbia's International Research Institute for Climate and Society's probability seasonal forecast, projecting above average temperatures for many countries (IRI, 2025).

3.4. Early Warning Systems: Messaging and Education

Early warning systems are a crucial aspect of anticipatory action. They play a vital role in raising awareness and communicating heat risks to decision makers, government actors and the public (McGregor et al., 2015; IFRC, 2019). The IFRC suggests that effective public messaging on heat should contain information on timing, location, scale, impact, probability and response (IFRC, 2019). The IFRC also suggests that addressing the public's perception of their own risk is essential, as people often do not perceive themselves as at risk and accordingly fail to take necessary precautionary actions (ibid).

Challenges of early warning systems delivery

Many countries lack early warning systems, and messaging around risks often fails to reach all communities and vulnerable groups; reducing the overall impact of heat action plans (UNSG, 2024). One interviewee noted that there is an over reliance on using digital media such as television, radio, or phones to deliver messaging on extreme heat. Yet, much of the global population still lacks access to digital media. Humanitarian organisations should ensure that early warning messaging systems are embedded in heat action programming, and these messages must have a local focus if they are to be delivered effectively.

Furthermore, people from different social groups receive messaging differently. A recent study conducted in Bangladesh found that most marginalised women received early warning messaging for cyclones and floods by word-of-mouth (UN Women, 2022). Announcements in local markets and messaging from mobile phones reached a significant number of the women surveyed, although access to mobile phones amongst women in Bangladesh can be limited (ibid). SMS messages were also virtually ineffective due to low levels of formal education amongst the women (ibid). Men, however, received warning messages through mobile phones, television and community leaders (ibid). Therefore, it is important that early warning system frameworks are holistic, taking into consideration gendered differences in how messaging is transmitted and received.

Humanitarian organisations should be led by communities in awareness raising efforts. The women in the study played a vital role in communicating risk messaging to members of their family and the wider community. This key information-sharing role should be considered during the design of early warning systems.

Furthermore, in countries where religion is central to the culture, humanitarians could work with faith leaders to disseminate information. This may be particularly useful in Pakistan, where around 96% of the population identify as Muslim (Hamid and Nadeem, 2020). Exploring the potential role of local businesses and technology partners in forecasting, early warning systems, and adaptive infrastructure could help overcome some of the challenges in early warning and forecasting gaps.

Photo: Khaula Jamil/DEC

SECTION 4: Current Approaches to Address Extreme Heat

4.1. **CASE STUDY:** Addressing Human Health During Periods of Extreme Heat

Extreme heat can have devastating impacts on human health. Karachi is a particularly vulnerable area to extreme heat, due to its semi-arid climate and urban heat island effect resulting from the high concentration of buildings which trap heat, and a lack of green spaces (Ejaz, et al., 2025). In the past, heatwaves in Karachi have resulted in large-scale loss of life. This case study highlights a few measures currently being taken to mitigate heat stress and heat-related fatalities.

CASE STUDY : Addressing Extreme Heat in Karachi, Pakistan

Karachi is the most populated city in the Sindh province of South-East Pakistan. In 2015, Karachi was hit with the deadliest heatwave in over 50 years, resulting in over 1200 fatalities (Fig.6.)(Abdullah et al., 2022). Most of the deaths were caused by heat stroke and severe dehydration, causing overcrowding in hospitals and leading to a state-of-emergency being declared in many healthcare facilities. Critics argue that the high death toll was preventable, had the authorities taken 'serious' and more 'timely decisions' to mitigate heat-related deaths (Masood et al., 2015).

Since, progress has been made to address extreme heat in Pakistan from a range of actors. Some measures of addressing extreme heat in relation to human health in Karachi include:

1.Cooling stations: Water, shade and fans are publicly provided in busy areas to alleviate heat stress. These stations are communal and temporary.

2. Provision of heatwave 'kits', which may contain umbrellas, water bottles and towels, distributed on an individual or household level, particularly to those most vulnerable.

3. Shaded waiting areas in healthcare facilities.

4. Awareness campaigns to make children and vulnerable groups aware of the health impacts of extreme heat.

(Glow Consultants, 2025)

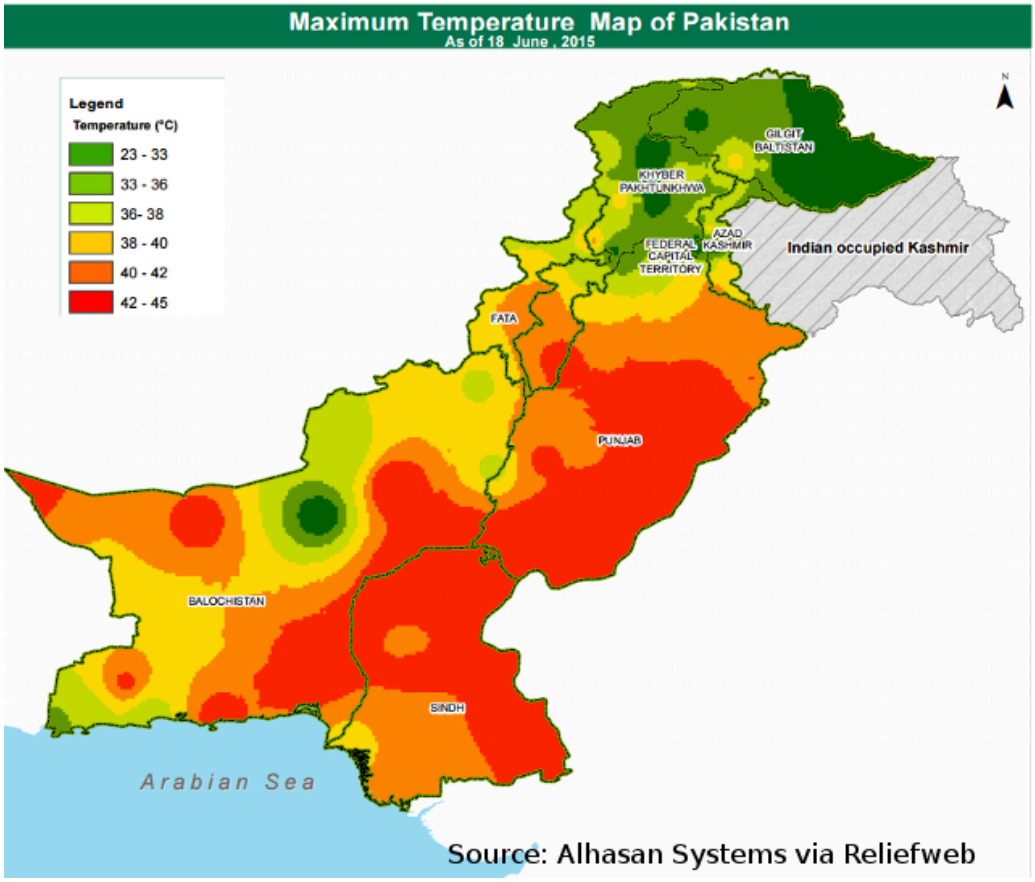


Figure 6. Temperatures in Pakistan on 18 June 2015. Karachi frequently experienced temperatures within the range of 42-45 °C (Alhasan Systems, 2015).

4.2. Benefits of Existing Approaches

While simple in design, the adaptations used to address extreme heat in Karachi have generated some significant benefits.

Increasing awareness on the health impacts of extreme heat is an important first step in mitigating heat-related fatalities. A 2022 study found that Karachi residents who had been educated on the health impacts of extreme heat had a 38% reduction in unscheduled hospital visits compared to a control group. They were also better at recalling the signs and symptoms of heat stress, and the steps needed to 'ensure life-saving emergency care' (Razzak et al., 2022, p.8). This study shows that a greater awareness on the impacts of extreme heat can reduce overcrowding in hospitals and provide potentially life-saving knowledge. Having understood the benefits of awareness-raising, Tearfund works to improve heat literacy within communities in Pakistan; something which could be implemented across the DEC membership.

Additionally, providing heatwave 'kits' for the most vulnerable is a simple and cost-efficient way of mitigating heat-related casualties. In Pakistan, taking action to reduce the risk of heat stress for outdoor labourers is imperative, as 71.1% of the paid labour force are in informal employment and experience limited social protection (Ifran, 2024). Additionally, as the average water bottle price in Pakistan is $0.23 (World Population Review, 2024), providing water for vulnerable groups in urban areas may be relatively inexpensive for humanitarian actors to implement, and could reduce the number of hospitalisations. However, one interviewee noted that transporting water long distances to access vulnerable individuals can be expensive. Therefore, the provision of water and heatwave kits by humanitarian actors could be one of the most effective ways of reducing heat-related fatalities, but the costs of transporting water must be considered.

4.3. Potential Limitations of Existing Approaches

Adequacy and suitability

Despite electric fans being frequently recommended (McGregor et al., 2015) and implemented in cooling stations, these may be ineffective in places such as Pakistan which experiences frequent power outages and limited access to electricity. 25% of Pakistan's population lack electricity, rendering electric fans and air conditioners useless for many (Rasool et al., 2024). Recommending solar powered fans may circumvent this problem. However, the initial implementing costs can be significantly higher than traditional electric fans, making solar-powered fans perhaps less feasible for poorer communities (Alico Solar, 2024).

One interviewee urged humanitarians to assess the appropriateness of fans when making such recommendations. When body temperature exceeds 38℃, fans can induce heat stress due to the 'limits of conduction and convection' (McGregor et al., 2015). Therefore, encouraging the use of fans during a heatwave may not only be a misguided recommendation, but may actually increase heat risk during the hottest days (Singh et al., 2019).

Potential for gender-blind approaches

Currently, many measures to address extreme heat fail to include the experience of women in their design. One interviewee remarked that many women are hesitant to use cooling stations as they become overcrowded and male dominated.

Additionally, a fear of using public washroom facilities can make many women more reluctant to drink water (Karachi Urban Lab, 2022), placing them at risk of severe extreme dehydration and heat-related health complications. To mainstream gender into cooling mechanisms, humanitarians and local governments could work together to provide women-only cooling stations and washrooms in public areas to reduce women's reluctance to hydrate themselves. Ultimately, humanitarian actors must consider gender in extreme heat adaptation design and implementation.

While many current measures taken to address extreme heat are effective and cost-efficient, a few critical flaws remain. We urge DEC members and the wider humanitarian sector to consider social and regional contexts when implementing mechanisms to mitigate heat stress within a certain population.

4.4. CASE STUDY: Shelter Design in Cox's Bazar

Shelter design can impact individual experiences of heat. Cox's Bazar is one of the largest refugee camps globally, and is particularly vulnerable to extreme heat, owing partially to its frequently high levels of humidity. This case study highlights the typical features of a shelter in this area, and how these features can cause thermal discomfort for residents.

CASE STUDY: Shelter Design in Cox's Bazar, Bangladesh

Bangladesh hosts 'almost one million refugees', the majority of which live in makeshift settlements in and around Cox's Bazar in the South-East of the country (Klansek et al., 2021). A typical shelter in this area has the following features:

1. Shelters are constructed on a bamboo frame which is then covered in tarpaulin. When the tarpaulin becomes worn-out, it is replaced with black plastic polyethylene sheets.
2. There are on average 5.5 people per household in a shelter.
3. The average space per person within the shelter is 3.8m^2 (although this can be as low as 1.33 m^2 per person).
4. Shelters are close together. As a result, there is little external space within the camp for residents to seek rest from the shelter's heat (Fig.7.).
5. 91% of shelters have very poor ventilation. Most do not have windows.
6. Most shelters have a roof pitch of under 20 degrees, which is considered as too low.

(Klansek et al., 2021)

A combination of high humidity, high air temperatures and features of shelter design in Cox's Bazar means that overheating is a major issue. Over 95% of participants were dissatisfied with the thermal conditions in the camp, as internal temperatures within shelters frequently exceeded 30°C (Fig.8.).

Figure 7. Pictures from Cox's Bazar, highlighting the proximity of shelters to one another (Klansek et al., 2021).

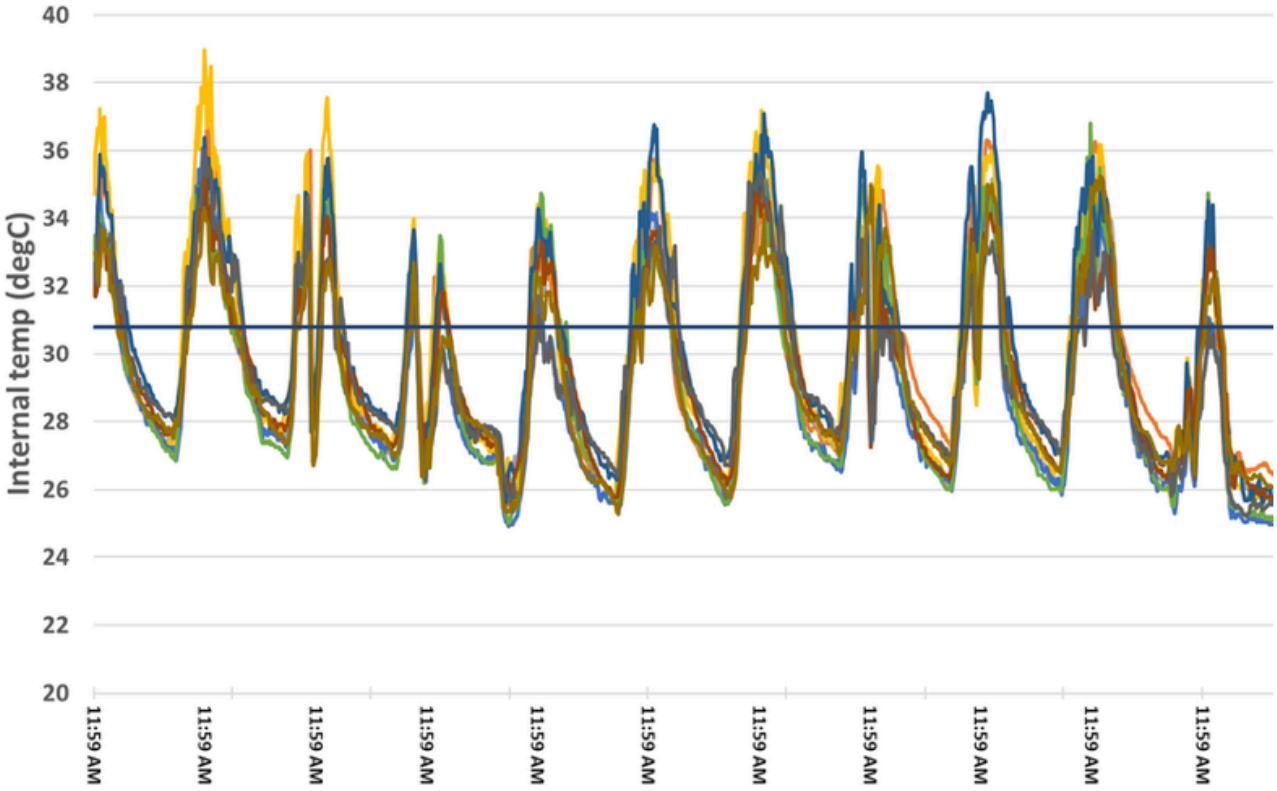


Figure 8. A graph showing the internal temperatures in nine different shelters in Cox's Bazar over 11 days. The black horizontal line represents the 'comfort limit' for heat (Klansek et al., 2021).

4.5. Adapting Shelters for Extreme Heat

Highlighting the typical features of shelters in Cox's Bazar shows why thermal discomfort can be prevalent for many residents. Outlined below are three adaptations humanitarians can advocate for, or enact themselves, to address extreme heat in shelters:

Adhering to Sphere Standards

Some residents only have 1.33m² of space within the shelter per person, which can exacerbate heat stress and is woefully beneath the Sphere standard minimum (3.5m²) (Sphere Association, 2018, p.254). Additionally, the UNHCR recommends a minimum shelter roof height of two metres to increase air circulation and ventilation (UNHCR, 2024), which is particularly beneficial for shelters without windows. These Sphere and UNHCR guidelines on maximising space should be observed by humanitarians as much as possible to address extreme heat when constructing new shelters.

Using reflective materials

Using black polyethylene sheets for the walls of a shelter will absorb heat and increase temperatures inside. Indoor temperatures can be significantly lowered if reflective materials are used for roofs and walls (Baidya, 2024). 'Cool roofs' (roofs made from reflective materials) are cost-effective (Singh, 2023), energy-efficient and have proven to enhance indoor comfort (Baidya, 2024). 'Cool roofs' are already being used in other areas of Bangladesh, so humanitarians may be able to work with local actors to implement these roofs in Cox's Bazar.

Creating shaded areas

Shaded areas outside of shelters can provide respite from indoor temperatures. In fact, IOM suggests that individuals should have at least 30m² of space outside of their shelters (IOM, 2025). Creating shaded external space is also more cost-efficient than active cooling measures such as air conditioning (Singh, 2023), and can reduce how hot an individual feels by more than 10°C (WHO, 2024). CARE International addressed the importance of creating shade in their 2022 Pakistan flood response. CARE workers distributed fruit plants which acted as a short-term food supply and long-term source of shade. Using vegetation and tree cover in camps as sources of shade will be cost-effective and beneficial for cooling. While measures like these may be more difficult to implement in Cox's Bazar where shelters are very close together, humanitarians could work with local government authorities to create shaded areas outside of the camps. Humanitarians should also work to ensure women and girls have separate shaded areas to encourage movement outside of shelters.

4.6. Barriers to Improving Shelter Design

There are some social and sectoral factors that may prohibit critical adaptations being made to shelter design. These are outlined below:

Gender norms

As aforementioned in 4.5., encouraging individuals to stay outside of their shelters during heatwaves can significantly relieve heat stress (Baidya, 2024). However, in many cultural contexts deeply ingrained gender norms around the free movement of women outside of the domestic space persist. This was highlighted when a study of residents in Karachi found that 60% of women surveyed spend most of their time indoors (Abdullah et al., 2022). Interviews with members of the Rohingya community in Cox's Bazar conducted by Oxfam also revealed that both male and female members acknowledged that women face greater thermal discomfort in camps due to their lack of movement outside of shelters. While one of our interviewees mentioned that in many regions men will sleep outside of their homes during periods of extreme heat as a cooling measure, they also noted that women are more reluctant to do so due to cultural norms and anxieties around their safety. Thus, humanitarians should consider the impacts of extreme heat within shelters as disproportionately gendered. Encouraging women to complete domestic work outside where possible may be a first step, followed by further measures, such as creating women-only spaces outside of shelters, making heat alerts more accessible to women, offering mental health support tailored to care-giving roles, involving women as community heat response leaders and ensuring gender-sensitive data collection to better understand women's needs.

Lack of funding

Many interviewees cited funding constraints as the most significant barrier to addressing extreme heat. Interviewees often reiterated that in an emergency context, the provision of basic needs takes precedence, and adapting shelter design for extreme heat becomes de-prioritized. To address this, humanitarian actors should use cost-effective measures, such as using reflective colours in shelter design, to address extreme heat.

4.7. Gathering Feedback

When addressing extreme heat, the importance of gathering feedback from local communities cannot be understated.

One interviewee remarked that although the humanitarian system is increasingly responding to extreme heat, there is little recognition of whether these measures are what local people actually want or need. This is exemplified by a common recommendation made throughout the literature on extreme heat, which urges individuals to remain indoors during a heatwave. However, living in tents and make-shift shelters can drastically exacerbate extreme heat conditions, and lead to greater thermal discomfort (Tower, 2024). Such misguided recommendations highlight the extent to which much of the research on extreme heat is conducted from the perspective of 'temperate, high-income countries', with little regard for local and regional contexts (McGregor et al., 2015). This error can be mitigated by more meaningful participation in recommendations from local communities.

Context-Aware Adaptation Checklist

- Avoid assuming tents will always be cooler indoors, by acknowledging the conditions under which temperatures may increase in shelters (either by having heat-absorbent walls and roofs, limited space inside shelters, or by cooking occurring indoors).
- Respect and learn from local cooling methods (e.g. using bamboo as opposed to tarpaulin in Cox's Bazar to reduce heat absorption.)
- Work with community groups and faith leaders to ensure on-the-ground heat adaptation measures are appropriate and foreground vulnerability.
- Organise community meetings to allow local people to review and provide feedback on heat adaptation measures before they are implemented.
- Onboard this feedback for future responses, to ensure that community participation is meaningful and not tokenistic.

SECTION 5: Conclusion & Recommendations

Photo: Ali Haj Suleiman/DEC/Fairpicture

5.1. General Recommendations

This report has examined current measures adopted by DEC members and beyond to address extreme heat, while highlighting the barriers that can inhibit adequate responses. Additionally, this report has provided recommendations for addressing these barriers while also ensuring that future measures to address extreme heat are contextualised, appropriate, cost-effective and always foreground vulnerability.

Recommendations for the DEC

Research and Advocacy:

- Engage with research and utilise open-source data to build a strong evidence base.
- Advocate for extreme heat to be recognised as a serious humanitarian issue.

Coordination:

- Mainstream local and indigenous knowledge on cooling measures into humanitarian responses.
- Start at a community level to support and strengthen existing approaches to extreme heat.
- Improve discussions on extreme heat within and between organisations.

Preparedness:

- Support government agencies in the development and implementation of heat action plans.
- Expand anticipatory actions, using forecasting technologies to trigger early action.
- Advocate for more flexible funding and explore early action financing models such as financed based forecasting and 'follow the forecast' approaches.
- Ensure early warning systems messaging is holistic, community-led and reaches vulnerable populations.

Actionable Measures for Addressing Heat:

- Mainstream gender and vulnerability into every heat adaptation measure.
- Provide mental health support for those in care-giving roles.
- Reject a one-size-fits-all approach to dealing with extreme heat by actively involving a local community in evaluating heat adaptation measures.
- Use cost-effective measures to address extreme heat and factor these measures into DEC response budgets.
- Ensure shelters conform to the Sphere standards.
- Gather feedback from the local community post-heatwave and meaningfully onboard this for future responses.

While extreme heat is an issue humanitarians will increasingly have to navigate, humanitarian organisations cannot address extreme heat on their own. Instead, it requires collaboration with a diverse set of actors, ranging from communities experiencing extreme heat, other NGOs and governments. Almost all of our interviewees remarked that collaborating with and learning from communities experiencing extreme heat is imperative to an effective response. Additionally, many interviewees remarked on the importance of heat action plans in countries like India and Pakistan to address extreme heat. Humanitarians have a lot to offer communities experiencing extreme heat and national governments, both in their expertise and from their experiences on the ground. Therefore, while extreme heat is a humanitarian issue, the most effective humanitarian responses will be those that draw on the expertise of a diverse range of actors.

Coordination within the humanitarian sector and beyond is also imperative for the implementation of effective anticipatory action. Countries that are becoming increasingly vulnerable to extreme heat should devise heat action plans, aided by the knowledge provided by humanitarians and communities experiencing heat. This will provide a range of actors with a clearly defined plan of action to address extreme heat. Taking proactive measures to address heat is an important first step to responding to rising temperatures.

Additionally, responding to extreme heat is most effective when humanitarians examine the origins of extreme heat threat and develop contextualised, workable solutions. Listening to communities and learning from indigenous adaptation strategies is also paramount, instead of applying a Western, generic perspective of what cooling should look like. That said, extreme heat temperatures threaten to reach beyond what most communities have had to deal with in the past (Copernicus, 2024).

Our research highlights that despite much of the contemporary literature remarking on differing vulnerabilities to extreme heat, very little is being done in practice to mainstream vulnerability into extreme heat responses. While some DEC member organisations are implementing strategies to address extreme heat, either by community awareness-raising, or providing shade and water, very few of these measures consider individual vulnerability to heat. Therefore, we urge the DEC membership to mainstream vulnerability, gender and regional contexts into all heat adaptation strategies.

In sum, the humanitarian sector has become increasingly aware of the importance of addressing climate risk and adapting to climate change. This is signified by the DEC's commitments to the Climate Charter, and their involvement in addressing

climate-related flood, drought and extreme weather events. The humanitarian sector is rightly taking steps to decarbonise their responses where possible to mitigate climate change. However, 2024 marked the first year on record to breach the global 1.5°C warming limit (Poynting, 2024). Consequently, we can only expect the frequency and intensity of extreme heat events to increase. It is imperative that the DEC and the wider humanitarian sector turn their attention towards addressing extreme heat. Not only will this enable humanitarian organisations to stay true to their climate commitments, but it will work towards addressing the widening gap of economic, gendered and social inequality in the future. As such, addressing extreme heat is not just a matter of urgency today, it is an insurance policy for the future of global development.

5.2. Recommendations for Humanitarians in Myanmar

Temperatures have been steadily increasing across Myanmar for the last six decades, making extreme heat a critical concern (IFRC, 2024b). In 2010, a heatwave in the city of Mandalay resulted in 1,482 cases of heat related disorders and 230 deaths. More recent heat waves have had similarly devastating effects (ibid).

In March 2025, Myanmar experienced its most intense earthquake since 1912. The earthquake has resulted in a very high death toll, as well as large-scale displacement. Now, as temperatures in Myanmar are reaching 40°C, extreme heat is becoming a major concern (Save the Children, 2025). The combination of extreme heat and heavy rainfall could cause disease outbreaks (such as cholera) among survivors, particularly those who are living in make-shift shelters (Aljazeera, 2025). It is clear that the impact of rising temperatures in Myanmar will need to be considered when responding to the humanitarian crisis that is currently occurring.

Many of the general recommendations highlighted throughout this report will be applicable in reducing the impact of extreme heat on local communities and individuals in Myanmar. Outlined below are additional recommendations that humanitarians should take into consideration while responding to the earthquake around the country.

Recommendations for Humanitarians in Myanmar

- Distribute simple cooling kits, similar to the ones used to address heat in Karachi, Pakistan. These kits can include materials for shade and water, as well as some basic information on the health impacts of extreme heat. Providing safe drinking water will also be imperative in preventing cholera outbreaks among affected populations.
- Providing umbrellas within heatwave kits will be beneficial in sheltering individuals from heavy rainfalls, while also providing a source of shade as a cooling measure.
- Transmit information on extreme heat quickly and effectively by collaborating with community leaders or by using loudspeakers in streets.
- Ensure humanitarians working on the ground in Myanmar are adhering to Sphere standards where possible, in order to improve ventilation within shelters for survivors.

Heat-Aware Shelter Checklist

- Ventilation: ensure the shelter has adequate ventilation by positioning shelters taking into account wind speed and direction and the position of the sun.
- Making sure shelters have windows ideally on opposite walls for through flow of air.
- Use reflective materials for shelters; this can also be done by using light coloured paint or spray on the roofs.

Ultimately, it is imperative that DEC members and other humanitarian actors consider the impacts of extreme heat as they respond to the earthquake in Myanmar. This can be done by a few simple and cost-effective measures, and by simply increasing awareness around extreme heat in affected communities.

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Appendix

Appendix 1
Table of Interviewee Organisations

Organisations	
DEC Members	Age International
	British Red Cross
	CARE International
	2 x Christian Aid
	DEC Management Personnel
	International Rescue Committee
	2 x Oxfam
	Save the Children (Afghanistan)
	Tearfund
Other Organisations	3 x Academics
	Glow Consultants
	HelpAge International (a global network which DEC member Age International is a part of)
	International Committee of the Red Cross (Directorate)
	2 x Sphere