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Extreme and erratic weather

Climate adaptation in urban displacement

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About this report

HPG's work is directed by our Integrated Programme, a multi-year body of research spanning a range of issues, countries and emergencies, allowing us to examine critical issues facing humanitarian policy and practice and influence key debates in the sector. This paper is part of HPG's 'Collective action in crises: rights, resilience and reform' Integrated Programme. The authors would like to thank HPG's Integrated Programme donors whose funding enables us to pursue the research agenda.

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1 Introduction

Everything becomes harder during droughts, floods and heatwaves if there's no source of income. – Focus group discussion participant in Baidoa, Somalia

Extreme and erratic weather events,[1] many of which are increasing in frequency and intensity due to climate change, have long been seen as both a current and future driver of displacement – displacement that is more likely to be internal than across borders (Gleditsch et al., 2007; Sturridge and Holloway, 2022). Internally displaced people (IDPs) – whether displaced by conflict, disaster or climate hazards – are increasingly likely to reside in towns and cities,[2] and particularly parts of cities, such as densely populated areas and the peripheries, that are most vulnerable to climatic risks like flooding, increasing temperatures and drought (Grayson and Cotroneo, 2018; ICRC and Norwegian Red Cross, 2023). Extreme and erratic weather continues to disrupt lives and livelihoods in displacement, even in urban areas.

Few cities are ready for the compounding pressures of climate risks and growing populations of displaced people (Slaughter et al., 2024). Weak institutions, fragile social structures and active or potential violent conflict further limit the ability of households and communities to cope with and adapt to a changing climate (Opitz-Stapleton et al., 2023). In this way, sustainable livelihoods can be undermined by climate change, but livelihoods are also a lifeline in situations of extreme weather, as they help displaced people build resilience to future shocks through savings, income and assets.

Climate change is also increasingly affecting humanitarian action, including approaches to displacement. Those who support IDPs in displacement – government officials, municipal authorities and a group that is broadly referred to in this paper as aid actors[3] – are modifying their programmes to account for the risks and threats posed by a changing climate, but the extent to which these modifications are successfully building climate resilience is still unclear. To date, most climate- and livelihoods-related research has been undertaken in rural areas. Yet urban areas are not immune to the effects of extreme or erratic weather. People in urban areas experience the same intensifying of natural hazard-related disasters as rural areas, just in different – though connected – ways.

This paper begins by identifying reasons why IDPs are more vulnerable than others to climate hazards. It then looks at three such hazards and how they are affecting the lives and livelihoods of urban IDPs: (1) **flooding**, the likelihood and severity of which is increased by hard surfaces and the loss of green space,

1 See Box 1 for a note on the terminology used in this paper.

2 Roughly 60% of refugees and IDPs globally live in urban areas, compared to less than 25% of refugees and less than 15% of IDPs who live in camps or camp-like settlements (Park, 2016; Earle, 2023; UNHCR, 2023).

3 The term 'aid actor' is used throughout the report to refer to any person providing assistance, including but not limited to humanitarian and development actors; donors; United Nations (UN) representatives; local, national and international non-governmental organisation (NGO) workers; and civil society and local actors.

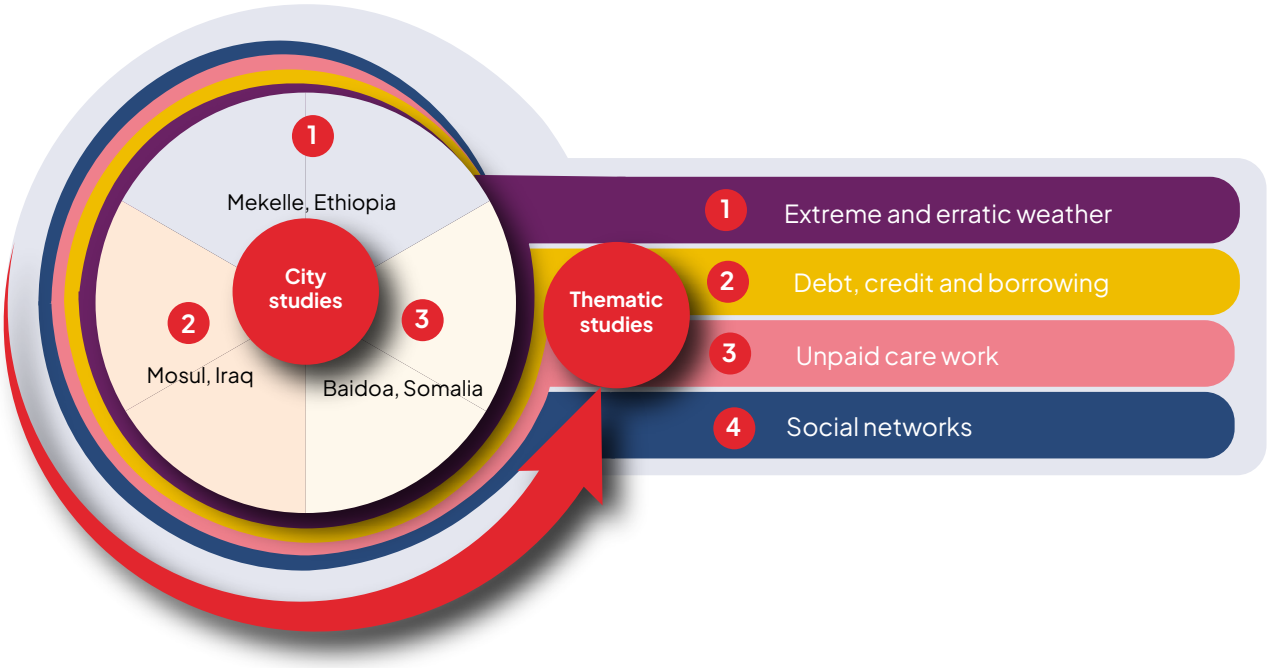
particularly in informal settlements; (2) **extreme heat**, often magnified in cities because of the urban heat island effect and buildings and infrastructure that are not designed for high temperatures; and (3) **droughts** in surrounding regions, which can affect urban water and electricity supplies as well as the growth and production of raw materials, negatively impacting manufacturing and industrial sectors. Poor agricultural yields also result in higher prices in local markets, which can culminate in food insecurity for the most vulnerable as well as lower profits for small business owners such as shopkeepers.

Finding ways to help people build resilience to a worsening climate is critical – to reduce both the number of people who need aid now and the number of people who need aid following shocks in the future. The urgency is emphasised by reduced humanitarian funding, as any actions now must lead to future dividends of less humanitarian need, but also because good climate adaptation programming can deliver immediate and long-term benefits across sectors, allowing for a bigger impact with fewer inputs. The paper concludes with policy implications that address these realities.

1.1 Methodology

This thematic study is part of a wider three-year research programme (2024–2027) centred on the lives and livelihoods of urban IDPs. The programme comprises a series of city studies (in Mekelle, Ethiopia; Mosul, Iraq; and Baidoa, Somalia) and a series of thematic studies (on extreme and erratic weather; debt, credit and borrowing practices; unpaid care work; and social networks). The data collected in each location underpins its individual city study as well as each of the more global thematic studies (see Figure 1).

Figure 1 Overlapping city and thematic studies



The data for this report is derived from a desk review of available literature. It builds on existing HPG research that was conducted with urban IDPs in Herat, Afghanistan and Pemba, Mozambique (Holloway et al., 2022; Sturridge et al., 2022). Further primary data was collected through key informant interviews at the global level, as well as semi-structured interviews and focus group discussions with IDPs and non-displaced residents in Mekelle, Mosul and Baidoa. Information about how these studies were conducted can be found in each respective report (Sturridge and Tufa, 2024; Holloway et al., 2025; Sturridge et al., 2025).

This paper seeks to answer the following questions:

1. What are the short-, medium- and long-term vulnerabilities, exposures and capacities regarding climate hazards in the region?
    a. Based on these vulnerabilities, exposures and capacities, in what innovative ways do urban IDPs adapt their livelihoods to extreme weather events in a changing climate?
    b. How effective are these adaptations at insulating IDPs from the impacts of extreme weather events?
2. What kinds of support do IDPs say they want and need in order to adapt their livelihoods to extreme weather events?
3. How do aid actors adapt their programming in light of the vulnerabilities, exposures and capacities of urban IDPs?
    a. What should aid actors do differently or better to put IDPs, their needs and priorities at the centre of the response?
4. What could a nexus approach to extreme weather look like?

Although the first two questions centre on how IDPs adapt their livelihoods to extreme and erratic weather events, most of the changes that were observed and explained would more accurately be described as coping mechanisms rather than adaptations. Coping and adapting are interlinked but they are also distinct, and adaptive strategies often build on existing coping practices (Eriksen et al., 2005). Coping often results in short-term survival, rather than – and often at the expense of – the longer-term, more sustainable change that adaptation could bring (Holloway et al., 2022).

Box 1 A note on terminology

This paper uses several different climate- and weather-related terms, as defined below and amalgamated from various sources (IPCC, 2019; IFRC and Red Cross Red Crescent Climate Centre, 2023):

- *Climate*: average, long-term (30+ years) weather conditions in a particular area.
- *Climate change*: any change in climate over a long period of time, which can be attributed to either natural climate variability or human activity.
- *Weather*: the daily observed meteorological conditions in a specific place.
- *Extreme weather*: the rare occurrence of a weather event above or below a threshold value – such as below the 10th percentile or above the 90th percentile – of observed instances.
- *Erratic weather*: weather that lies outside of its typical pattern, which can occur suddenly and unpredictably.

The paper rests on the understanding that a changing climate will increase the frequency and severity of extreme and erratic weather – a phenomenon that has been evidenced in depth in climate change literature. During the interviews, the term 'climate change' was not used; rather, people were asked about extreme and erratic weather, as this is the lived experienced that they observe in their daily life. A full comprehension of how climate change is occurring is not necessary to understand and explain how lives are being shaped by extreme and erratic weather that has been worsening over time.

2 Displaced people are more vulnerable to climate hazards

> Our situation is different from the host community... Their house is made of walls and corrugated iron, so it can withstand the heat and the heavy rain. This year, the rain is so heavy that our plastic house cannot handle it. – IDP in Mekelle, Ethiopia

The *Independent review of the humanitarian response to internal displacement* and multiple other case studies and research papers conclude that IDPs have specific vulnerabilities because they have been displaced (Holloway et al., 2022; Sturridge et al., 2022; Sida et al., 2024; Sturridge and Tufa, 2024; Holloway et al., 2025; Sturridge et al., 2025). Research has also shown that climate hazards and change affect everyone, but not equally, and those with the fewest resources are least able to withstand any negative impacts (Grayson, 2020; Dodman et al., 2022; Holloway, 2025).

More than 75% of IDPs displaced by conflict live in countries that are either highly or very highly vulnerable and exposed to weather and climate shocks and stressors (IDMC, 2025). In fact, four of the top 10 countries hosting the highest number of IDPs are also among the top 10 climate-exposed countries: Afghanistan, the Democratic Republic of Congo, Somalia and Sudan (Crawford and Holloway, 2024). Compounding events – two or more events that happen simultaneously, such as displacement coupled with weather or climate hazards – restrict people's access to resources and disrupt their livelihoods, thereby reducing their ability to adapt. Compounding threats can also limit the availability and effectiveness of services, such as healthcare and social protection systems that can become overwhelmed by climate-related disasters when already weakened through poor governance or conflict, thereby hindering the adaptive capacity of communities (ICRC and Norwegian Red Cross, 2023).

In a mapping of IDPs' exposure to climate-related hazards, Easton-Calabria et al. (2025) found that all IDPs mapped were exposed to at least one hazard, 93% (49.8 million IDPs) were exposed to at least two hazards, and 71% (38.7 million IDPs) were exposed to three or more hazards.[4] This mapping brings together climate science, geographic information system (GIS) methodology and a new dataset on the locations of over 60 million forcibly displaced people in the top 20 countries hosting refugees and IDPs. This mapping is used throughout this report to highlight how IDPs globally experience each hazard discussed.

This chapter outlines four reasons why IDPs are likely to be more vulnerable to weather and climate extremes and stressors than people who have not been displaced.

4 The hazards analysed included flooding, cyclones, wildfires, drought, extreme heat, extreme precipitation and declining rainfall patterns.

2.1 Less financial and social capital

Displaced people tend to have less financial and social capital, as they often exhaust their financial resources and sell or lose any assets prior to or during displacement, including their home, livelihoods and social networks (Grayson, 2020; Bueno and Hovil, 2025). In Pemba, Mozambique, for example, IDPs described 'a gradual depletion of resources': they had assets destroyed by Cyclone Kenneth in 2019, they rebuilt their houses and then their homes were destroyed by insurgents, 'leaving them with nothing at all' (Sturridge et al., 2022: 17). In Herat, Afghanistan, IDPs' lack of resources left them unable to employ the same coping and adaptive strategies for heat waves and hotter temperatures as their neighbours who had not been displaced – strategies such as switching to clay or earthenware jars to keep their water cool or adding insulation to their houses (Holloway et al., 2022).

Similar results have also been observed elsewhere. In Baidoa and Kismayo, Somalia, for example, about twice as many non-displaced households were able to undertake adaptations to weather or climate extremes and stressors or climate change because they had more resources at their disposal (see Box 2 on individual adaptations). By contrast, displaced households had gradually depleted their resources before and during displacement (Nicolle, 2021). Even the simplest solutions were out of reach for some displaced people. As an IDP in Mekelle, Ethiopia remarked, 'We can sit in shaded areas when it's hot, but we struggle when it's cold because we don't have enough clothing to protect ourselves'.

Once they have arrived at their destination, displaced people often lack social networks that could help them identify risks and adapt to them. In Mosul, Iraq, non-displaced residents spoke of avoiding areas known to be prone to flooding – local knowledge that those moving into the town might lack. Similarly, a non-displaced resident of Baidoa noted that flooding causes secondary displacement for IDPs and 'forces them to move from familiar places to unfamiliar areas, increasing their vulnerability'.

Once social networks were re-established, IDPs in both Baidoa and Mekelle spoke of neighbours helping each other to prevent flooding and recover from it in similar language to non-displaced respondents. While this suggests that newly displaced people may be most vulnerable due to lack of knowledge, it should not be assumed that time displaced correlates with stronger social networks.

Box 2 Limits to individual adaptation

The four characteristics outlined in this section make IDPs less able to adapt to increasingly extreme and erratic weather, particularly if they have been displaced multiple times (ICRC and Norwegian Red Cross, 2023). Yet even if displaced people were on equal footing with non-displaced residents, there are still limits to individual adaptation when it comes to increasingly extreme and erratic weather and climate hazards. As Opitz-Stapleton et al. (2023: 1) argue, 'individuals themselves cannot meaningfully adapt to climate change'. Several IDPs also recognised this overwhelming challenge, with one IDP in Mekelle explaining, 'The problem of camps and weather is too big to be covered by the community'.

While this study acknowledges the limits of individual adaptation, it also acknowledges the current limits of the aid system, such as a decline in funding for both humanitarian and development objectives, including – and perhaps particularly – for those relating to climate change. Structural change is needed on a level almost unimaginable even before recent funding cuts to ensure the world's population can cope with the effects of increasingly extreme and erratic weather.

Climate-resilience building, which includes adaptation, should be viewed as an iterative process, required at multiple levels and delivered via multiple actors. People already cope with and adapt to climate change however they can. These endeavours should be encouraged, supported and scaled up at the individual and community levels, while larger projects (building adequate and multi-hazard-resilient infrastructure, systems and services alongside retrofitting legacy ones) should be undertaken at the government level, with support from international financial institutions where possible (ICRC and Norwegian Red Cross, 2023; Tholstrup and Vazquez, 2024).

2.2 Living in informal settlements

When people are displaced into cities, they often settle on whatever land is available, regardless of its suitability or exposure to weather and climate hazards. According to UN-Habitat (2015: 1):

> Informal settlements are residential areas where 1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing, 2) the neighbourhoods usually lack, or are cut off from, basic services and city infrastructure and 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas.

Informal settlements are growing in number and population throughout the world, but particularly in Africa, where they are now home to more than 60% of urban populations (Githira et al., 2020). They are often set up in the city's most hazard-prone areas, leaving them at risk of compounding hazards and lacking risk-reducing infrastructure, such as storm drains, green spaces or piped water (Satterthwaite et al., 2020; Dodman et al., 2022).

Shelters in informal settlements are typically constructed with inadequate materials and a disregard for structural safety and building codes, leaving residents further exposed to storms, temperature fluctuations and other weather and climate shocks and stressors (Dodman et al., 2022; Slaughter et al., 2024; Bueno and Hovil, 2025). As an internally displaced man living in an informal camp in Baidoa described:

> The type of shelter we live in is mostly makeshift from sticks and old clothes. Sometimes, people don't even have plastic sheets to cover their shelters. When flooding occurs, these shelters often collapse. For someone who is already vulnerable, it's difficult, if not impossible, to afford the materials needed to repair or rebuild the shelter.

Rebuilding takes money and energy, but also time that could be spent on more productive activities, such as starting or expanding a small business (Sturridge et al., 2025).

In Mosul, IDPs moved into unfinished or damaged houses that were left unoccupied during the conflict, many of which were on destroyed and unpaved roads that are prone to flooding during heavy rains (Holloway et al., 2025). In Mocoa, Colombia, IDPs fleeing civil war settled in a part of the city prone to landslides as it was cheap and available. When a landslide occurred in 2017 following rapid development, more than 300 people died after several neighbourhoods – populated almost entirely by displaced people – were destroyed (Siddiqi et al., 2019).

2.3 Highly dependent on informal work

Studies have consistently shown that displaced people – particularly in urban areas – exhibit an overreliance on informal work, which consists of irregular working hours and inconsistent wages (Aysa-Lastra, 2011; Arnold-Fernández et al., 2021; Brown et al., 2024). In Mosul, for example, only 30% of IDPs have livelihood conditions at the same level as non-displaced households, and two-thirds of the IDP respondents work informally (Holloway et al., 2025). Most of these jobs consist of manual labour, such as construction, laundry or cleaning services and small-scale vendors (Bueno and Hovil, 2025). Similarly in Somalia, 72% of IDPs work in casual labour, compared to 42% of non-displaced residents (GTS, 2025). In Baidoa, IDPs are more likely than non-IDPs to assume casual day work as farm and construction labourers, stone crushers, shepherds or petty traders selling milk, vegetables or second-hand clothes in the streets.

Informal labour – undertaken by both men and women – increases vulnerability to weather and climate extremes and stressors, such as extreme temperatures, because it often takes place outside and wages are rarely covered if weather conditions prohibit work (Puley, 2022; ADB, 2026). As an IDP in Baidoa explained:

> It was nearly impossible to move around, and casual labourers who relied on going to the market to earn a living were forced to stop due to the scorching sun.

Other IDPs in Baidoa spoke similarly about floods, which also forced people to remain home and therefore rendered them unable to earn money. Even drought in the surrounding region can affect informal work in urban areas, as an internally displaced man in Baidoa explained:

> The drought also had a serious impact on me. For example, I am a cobbler, I repair shoes in the market. I mostly rely on customers who come from rural areas, as they usually bring shoes that need to be fixed. However, the droughts severely affected the rural areas, and as a result, people from those areas stopped coming to town.

2.4 Ignored in disaster management strategies and adaptation plans

Finally, IDPs – and displaced and marginalised people more broadly, particularly those living in informal settlements – are often ignored in city planning and policies that seek to make the city safer and more climate resilient. This includes planning and policies around disaster risk reduction (DRR), disaster risk management, disaster preparedness and emergency response (Dodman et al., 2022; Cantor and Sánchez-Mojica, 2023).

Countries dealing with conflict and crisis also receive less financial and technical support for DRR and climate adaptation, instead receiving most assistance through humanitarian and recovery pathways focused on response rather than prevention or adaptation (UNHCR, 2024; Gogerty and Levine, 2025). Many countries hosting large populations of displaced people have only nascent early-warning systems, if any at all. According to one key informant, these systems require improving coordination between national disaster management agencies and different ministries, getting the buy-in and understanding at those levels and then prioritising it among various competing priorities, and finally, accessing external funding – especially climate financing – alongside allocating sufficient domestic funding. Further coordination is required in countries where aid actors have started implementing their own community-based early-warning systems, which may otherwise result in competing systems, and confusion among the community as to which system to follow.

Where early-warning systems are available, they are often 'one-size-fits-all' rather than tailored to different situations, needs and vulnerabilities (Tholstrup and Vazquez, 2024; CREWS, 2025; IFRC, 2025). According to another key informant, existing early-warning systems are often based on science such as meteorology, but ignore religion and indigenous knowledge, leading some community members to ignore or disregard the systems entirely. For displaced communities, traditional forecasting indicators may not be present or may behave differently in their new location whereas low levels of literacy or speaking different native languages, both of which are more common in marginalised communities, can reduce understanding of science-based systems. Yet when early-warning systems consider the specific vulnerabilities of displaced people, they may be more effective. Though evidence is scarce, the inclusion of Rohingya refugees in Bangladesh's national early-warning system allowed them to strengthen their shelters and stockpile food before the arrival of a cyclone (Easton-Calabria et al., 2022).

3 Floods

When it rains, instead of focusing on anything else, we spend all our energy trying to protect our children and keep them safe from the flooding. – IDP in Baidoa

Climate change is intensifying the water cycle – increasing both river and coastal flooding in many areas globally (IPCC, 2022; Knox Clarke et al., 2023). Warmer air holds more moisture and can lead to heavier rainfall in humid areas, while also contributing to more drought in semi-arid and arid areas. In cities, roads, buildings and other hard surfaces prevent rainfall from soaking into the ground, and intense rainfall can cause flash flooding, particularly in areas that lack green spaces and good drainage systems (IFRC, 2022).

For urban displaced communities, flooding is often part of daily life, particularly for those living in informal settlements built in flood-prone areas with few or no systems for stormwater, sewage and solid waste management (or, even, with inadequate systems that increase the risk of floods through blockages and poor water-routing patterns). In the mapping of IDPs' exposure to weather and climate hazards in 20 countries, flooding affected more than half of those mapped, or 31.3 million people (Easton-Calabria et al., 2025).

3.1 Informal settlements increase vulnerability to flooding

The impact of flooding on residents of informal settlements is well documented, such as in Nairobi, Kenya; Durban and Mamelodi, South Africa; Beira, Mozambique and Dar es Salaam, Tanzania (Douglas et al., 2008; Williams et al., 2019; Nyam et al., 2024; ICLEI Africa, 2025; Mbwana et al., 2025). In these settlements, flooding destroys private houses and public infrastructure and disrupts livelihoods and economies – further eroding people's ability to rebuild their houses and communities. Flooding also presents mortality and health risks, such as the spread of water- and vector-borne disease and the risk of drowning (Williams et al., 2019; Ahmed et al., 2021; Dodman et al., 2022).

In Mosul, the location of informal settlements on unpaved roads with no drainage systems increased their vulnerability to flooding. As one UN worker explained, poor waste-management systems and drainage canals that 'aren't fit for purpose' means that informal settlements in Mosul 'flood with very little rain'. Similarly, many IDPs in Yemen live in informal settlements located on public land near wadis, or water channels, where they cannot be forced to move but often lose their homes when the wadis flood (ICRC and Norwegian Red Cross, 2023).

Makeshift shelters in informal settlements are poorly equipped to deal with flooding. In all three of the city studies undertaken for this project, IDPs explained how flooding affected their lives, particularly through inadequate housing. For example, an IDP living in Mekelle noted:

> The plastic makeshift we live in was built as a temporary solution and was meant for six months, but now we have been living there for four years, well beyond the lifespan of the tent. As a result, it leaks rain and we suffer from floods, making life particularly difficult in the summer.

Flooding in informal settlements disrupts urban IDP livelihoods by reducing movement, closing markets, pausing work and destroying productive assets. An IDP in Mosul described the impact of heavy rains on his livelihood:

> When it rains, I can't go to work because my employer totally refuses to work on rainy days. It causes money loss as cement is highly susceptible to rain. – IDP working in plastering in Mosul

3.2 Coping with and adapting to floods at the informal settlement level

IDPs in Mosul have adapted to heavy rains by building drainage channels and concrete walls next to their homes to stop flooding as well as layering nylon over their houses to prevent water leaks. However, one IDP described these changes as 'short-term fixes' that 'will wear down overtime, but they are the best possible options given the available resources'.

IDPs in Baidoa and Mekelle have used similar methods but emphasised mutual assistance. After losing belongings to the rising water and even witnessing neighbours losing their lives, communities in Baidoa banded together to help one another build fences and dig drainage systems to protect their properties from future flooding. According to one IDP living in an integrated settlement, an aid organisation was able to assist by providing them with soil for filling bags to divert floodwaters, though this mention of assistance to help cope with flooding was exceptional amongst those interviewed.

Indeed, some aid actors struggle to help with flooding in informal settlements due to restrictions placed on them in terms of the types of shelter materials they can provide or 'because the settlements are located on privately owned land or land where ownership is contested' (ICRC and Norwegian Red Cross, 2023: 48). Most coping measures, then, are reliant on informal responses, such as those outlined by IDPs in Mosul and Baidoa, and which are also documented in Nairobi and Accra (Dodman et al., 2022).

One exception to these informal responses is Monrovia, Liberia, which averages above 4,600 millimetres of rain annually. It has experienced significant flooding in its informal settlements, but ongoing attempts by the Liberia Urban Resilience Project seek to change this. Supported by the World Bank and the Global Center on Adaptation, the project is improving flood management and drainage systems and strengthening community preparedness in informal settlements prone to flooding (IDMC, 2024).

Where formal responses exist, they are welcomed by those living in informal settlements. In a planned area in Baidoa, the government helped reinforce roads to keep floodwaters away from the shelters. An IDP living in the same area noted the importance of upgraded infrastructure for everyone:

> I've seen how important access becomes during emergencies, so we supported the construction of better roads, especially ones that allow small vehicles like the bajaj to reach us quickly. That's made it easier for help to arrive when we need it.

4 Extreme heat

High summer temperatures significantly impact my work, as the intense heat makes the job exhausting. – IDP in Mosul

The world is getting hotter, with 2015–2025 confirmed as the 11 warmest years on record by the World Meteorological Organization (WMO, 2026). In fact, in the year leading up to June 2025, four billion people – roughly half of the world's population – experienced at least one additional month's worth of days hotter than the area-specific 90th percentile daily maximum temperature observed between 1991 and 2020 (IFRC, 2025). Extreme heat events are now four times more likely than they were in the pre-industrial period (Knox Clarke et al., 2023: 4). The director-general of the WMO has called extreme heat 'the deadliest of all climate-related hazards', as well as 'the least recognised and least managed' (Field, 2025).

In the mapping of IDPs' exposure to weather hazards in 20 countries, extreme heat was the most common hazard experienced by displaced populations, with more than 54 million people – or 86% of the total mapped – affected (Easton-Calabria et al., 2025). As described below, cities are more prone to increased temperatures and a decreased ability to mitigate them than rural areas, and thus, urban displaced populations are particularly affected by extreme heat.

4.1 Cities increase heat and vulnerability to it

In towns and cities, the urban heat island effect results in higher temperatures than surrounding rural areas, as buildings and infrastructure trap and reflect heat (IPCC, 2022). People living in informal settlements are often the worst affected, as they live in more densely populated areas, with less access to green spaces or basic water and energy provision, coupled with inadequate housing (de Geoffroy et al., 2021; Dodman et al., 2022; IPCC, 2022). According to an NGO worker:

> The temperature difference between camps with trees, where a donor had funded a tree-planting programme 12 years ago, and the new camps without trees is noticeable.

IDPs and non-displaced residents in all three cities detailed the effect of heat. In Baidoa, setting up informal settlements for IDPs often entails clearing all trees. For IDPs living in shelters made of plastic sheeting, temperatures within the shelters are 'unbearably hot', according to an IDP in Baidoa. Similarly, in Mosul, temporary shelters often have iron roofs, which increase temperatures inside.

Because IDPs are highly dependent on informal work, they struggle with extreme heat. Informal labourers who work outside face high heat-stress risk, but they are often unable to stop working as they would likely go unpaid (IFRC, 2025). Many IDPs and non-displaced residents spoke about the disruption heat has on their livelihoods, preventing them from going to open-air markets or stopping work altogether. As a business owner who employs IDPs in Mosul explained:

> Since the tile-production process relies heavily on cement, which needs to be sprayed with water to maintain the required moisture for curing and hardening, the rapid evaporation of water due to high heat prevents the tiles from achieving the required hardness. This negatively impacts on the quality of the tiles produced, leading to financial losses for the factory.

4.2 Coping with and adapting to extreme heat at the city level

IDPs in the cities included in this study cope with heat in different ways, but most commonly by seeking shade – a coping mechanism mentioned in all three cities. In Baidoa, IDPs also relied on showering regularly, drinking cold water and building makeshift structures for shade. In Mosul, many shopkeepers relied on generators to keep goods cool so they would not spoil, and factories used water trucks to provide water for manufacturing when the large storage tanks are empty. Others mentioned drinking more water to avoid dehydration and wearing lightweight, light-coloured clothing to help fight the heat. Those with fewer resources spoke only of shifting their working hours to 'early in the morning or in evenings to avoid the extreme sunlight' or looking for shade under which to take cover while outside. These interviews highlight how affordability is one of the key determinants of coping and adaptation (IFRC, 2025).

Shade in cities, however, is not always easy to find. While IDPs spoke about taking advantage of shade where they could, heat is a city-wide problem that should be simultaneously tackled on a city-wide level as well as across sectors. Building nature-based solutions into urban planning and programming where possible – such as adding trees, parks and permeable surfaces into settlements and neighbourhoods or including green roofs or walls in new construction – can help reduce heat in public spaces (Dodman et al., 2022; IPCC, 2022; IFRC, 2025). Where infrastructure already exists, painting roofs white to decrease heat absorption, improving ventilation and ensuring sufficient and equitable access to water can reduce health risks during extreme heat events (de Geoffroy et al., 2021).

Another way to reduce the impacts of extreme heat is through city-led heat action plans that take into consideration all the city's vulnerable populations, including IDPs. In Ahmedabad, India, the heat action plan helped prevent more than 1,000 deaths every year, as well as reducing the impacts on productivity and creating employment opportunities (Dicker et al., 2021). It focused its awareness campaigns on informal labourers and others working outdoors, required construction sites to provide shelter and water onsite, and established stations for drinking water throughout the city (de Geoffroy et al., 2021). Unfortunately, Ahmedabad is an exception, and many cites lack similar heat action plans. Those that do exist are 'often underfunded, fragmented or disconnected from broader development and climate agendas' and they tend to overlook socioeconomic factors that play a vital role in determining heat risk' – for example, providing cooling shelters but not providing transportation to reach them (IFRC, 2025: 45).

5 Drought

We used to farm when the weather was favourable, even during the war. However, last year, due to a lack of rain, no crops grew, and we were severely impacted economically. This year, we lack the motivation to farm properly because the challenges from last year left us discouraged. – IDP in Mekelle

While some places experience increased flooding, other places are getting drier, especially those that historically are semi-arid to arid and experience drought (IPCC, 2022; Knox Clarke et al., 2023). Droughts are also lasting longer in many areas: multi-year droughts have become more frequent over the past four decades, with dramatic impacts on vegetation and water supplies (Hoover and Smith, 2025). Extreme water shortages are set to hit up to 25% of the world's drought-prone regions before 2030, affecting rural and urban inhabitants alike (Simms, 2025).

In the mapping of displaced people's exposure to climate hazards in 20 countries, drought affected more than 16 million IDPs and refugees (Easton-Calabria et al., 2025). For urban displaced communities, drought is felt more through its impact on surrounding areas, which can affect raw materials for manufacturing, increase prices and decrease trade economies as less money circulates through the city, though several cities have been threatened by an impending 'day zero' – the point at which the city runs out of potable water (Simms, 2025).

5.1 Regional drought affects urban inhabitants

Drought is typically understood and discussed as a rural phenomenon that destroys rural livelihoods, such as farming and pastoralism, or as a driver of forced displacement and urbanisation. However, drought also affects urban areas by reducing supply, increasing reliance on imports, and raising prices of food and water as well as raw materials required for manufacturing (Nicolle, 2021; Dodman et al., 2022; Easton-Calabria, 2025). According to a UN representative in Mosul:

> Looking at climate change as a whole for Iraq, it's going to be a very big problem. When you look from an economic perspective, it will affect rural areas first, then urban areas [...] It's difficult to fully grasp the consequence and the effects that climate change will have [on raw materials coming into urban areas].

In turn, drought-related inflation results in fewer sales and lower profits for shopkeepers. For IDPs who already have less financial capital and are highly dependent on inconsistent informal labour, regional drought can significantly disrupt their lives and livelihoods.

IDPs and key informants in all three city studies detailed how regional drought affected their urban lives and livelihoods. In Baidoa, the price of drinking water skyrocketed during the recent drought. In Mosul, an IDP who manufactures dairy products explained they needed more fodder for their sheep due to limited grass during the drought.

5.2 Coping with and adapting to drought at the regional level

Drought in rural areas can force urban IDPs to diversify their livelihoods. IDPs in Baidoa, for example, switched from small-scale agriculture to small businesses selling a variety of goods (e.g. pastries, ice cream, clothing, cosmetics, etc.) or to casual labour (e.g. laundry, cleaning, cutting firewood or construction) to support their families. Others depended on debt and borrowing to get them through difficult times or relied more heavily on women working outside of the home than in non-drought times.

For some IDPs in Baidoa, however, coping with drought seemed too big a challenge to tackle alone. As a man who has been internally displaced in Baidoa since childhood explained:

> When it comes to drought, honestly, we still feel helpless. We just wait for the aid workers. We don't have the resources to protect ourselves from it yet.

Aid workers, however, also agreed, particularly considering recent funding cuts: 'If a severe drought occurs, we won't have the capacity to respond, and that is when we will really see the crunch' (UN representative).

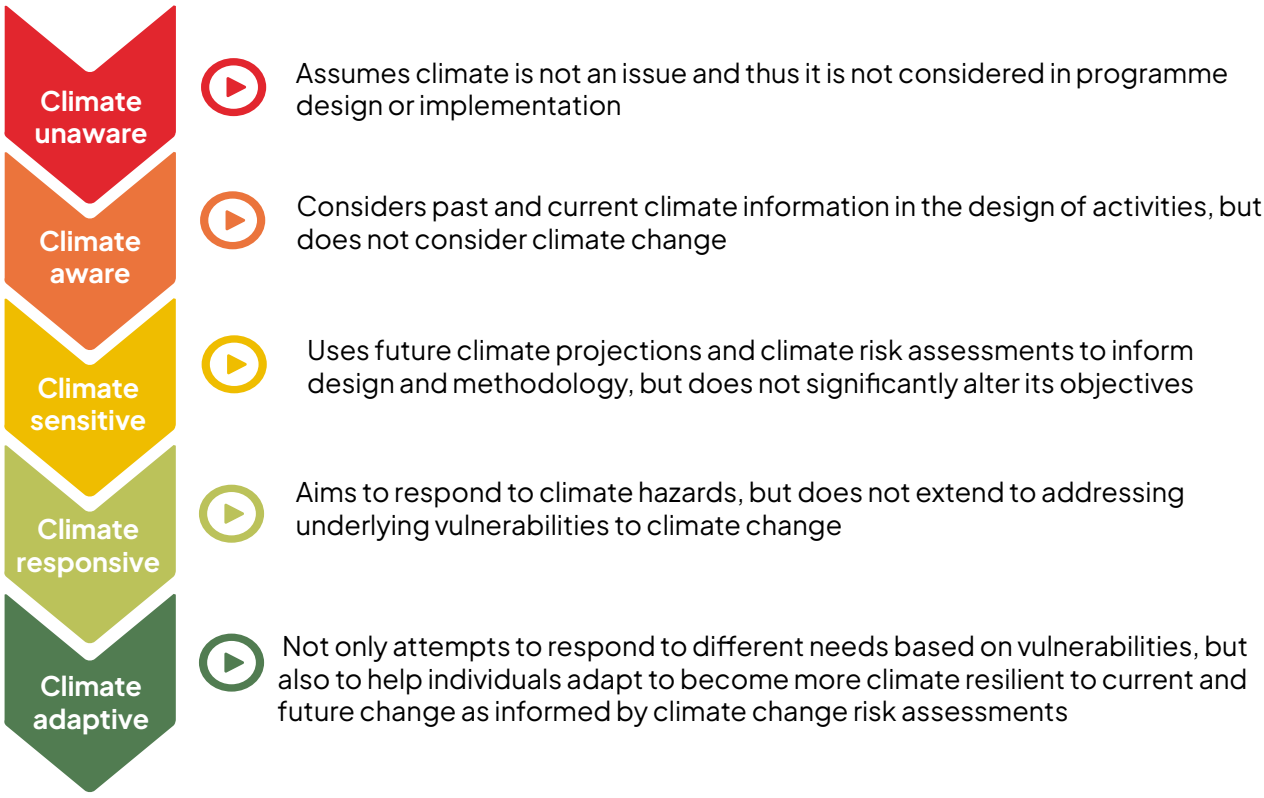
Indeed, regional drought requires regional drought management and adaptation planning that goes beyond what IDPs and aid workers can typically achieve, but there are still things that IDPs and those trying to support them can do to mitigate the effects. For example, IDPs who are still farming or who sell agricultural products can switch to more drought-tolerant crops and water conservation techniques with support, and more robust lending systems and financial institutions could be developed to ensure that people can bridge the gap between lean seasons more easily.

6 Incorporating climate considerations into aid programming for urban IDPs

As evidenced by the quotes in this report, the widespread impacts of a changing climate, and the tangible effects of extreme and erratic weather and climate events, are not only driving displacement, but they act as a continual disruptor to displaced people, especially those residing in urban areas. Weather and climate hazards are unlikely to decrease over the next decades, as the world continues to miss its targets on lowering greenhouse gas emissions. This makes it vital that aid actors consider seriously the effects of a changing climate in their programming for urban IDP communities.

For aid actors, projects aimed at improving resilience to climate impacts do not have to be standalone projects, nor should 'climate projects' be restricted to anticipatory action or prevention. As one donor noted, 'climate change is front and centre on the prevention side', but climate considerations were 'maybe less so on the response side'. All activities will either contribute to or inhibit resilience to climate impacts, and good programming carefully considers how to incorporate climate risks into each component. Indeed, as has been done with gender years ago (see Daigle, 2024), understanding how climate considerations have (or have not) been incorporated into aid programming would benefit from a standardised spectrum – from climate unaware to climate adaptive (see Figure 2).

Figure 2 A spectrum of approaches to climate



Source: modified from Daigle, 2024; definition of climate aware modified from IFRC, 2022

As outlined earlier, one of the main areas in which climate vulnerabilities appeared in the interviews undertaken in Baidoa, Mekelle and Mosul was in shelter. For several reasons, shelters are often made of temporary materials, even when displacement will likely be protracted. Although permanent materials are not always allowed to be given to displaced communities due to government or municipal restrictions, more consideration should be paid to the types of materials that are provided, based on the region's climate projections. In Afghanistan, for example, IDPs were given shelters made of iron, 'which are impossible to stay inside during the summer season in Jalalabad because of the hot weather' (Kandiwal, 2019: 7). This is an example of a climate-unaware shelter programme. Similarly, a key informant interview mentioned purposeful environmental damage – clearing all trees to establish IDP camps in Somalia, only to have to undertake tree-planting interventions several years later to reduce the impacts of extreme heat – a climate-unaware approach that had to be rectified by a climate-responsive intervention.

Projects such as providing soil for flood-prevention bags, as were provided in Baidoa, might be considered climate aware, as they often must be replaced and thus do nothing against future climate hazards. To push this type of programming towards climate responsive or climate adaptive, flood-prevention kits could be incorporated into shelter kits in low-lying areas or areas with insufficient drainage, while working to improve drainage and raising shelter heights. By helping people become more climate resilient, climate-adaptive programmes also prevent onward displacement, where displaced people are forced to move a second or third time to seek safety and adequate shelter.

The International Federation of Red Cross and Red Crescent Societies (IFRC) and the Red Cross Red Cresence Climate Centre (2023) encourage organisations to implement 'climate-smart' programmes, which use current climate information and future projections as well as climate risk and vulnerability assessments in programme design or subsequent adjustments. Their document – *A guide to climate-smart programmes and humanitarian operations* – contains useful practical material for organisations working to make their programmes more climate sensitive, responsive or adaptive. Humanitarian organisations can also find more information on key commitments they should be making in the 'Climate and environment charter for humanitarian organizations' (see Box 3).[5]

5 See www.climate-charter.org/.

Box 3 The 'Climate and environment charter for humanitarian organizations'

In May 2021, the International Committee of the Red Cross (ICRC) and the IFRC launched the 'Climate and environment charter for humanitarian organizations'. A secretariat was announced at COP28 in Dubai in 2023 and launched in 2024. As of February 2026, there are more than 500 signatories to the charter.

The charter sets out six commitments to guide aid actors in addressing climate and environmental crises:

1. Step up our response to growing humanitarian needs and help people adapt to the impacts of the climate and environmental crises;
2. Maximise the environmental sustainability of our work and rapidly reduce our greenhouse gas emissions;
3. Embrace the leadership of local actors and communities;
4. Increase our capacity to understand climate and environmental risks and develop evidence-based solutions;
5. Work collaboratively across the humanitarian sector and beyond to strengthen climate and environmental action;
6. Use our influence to mobilise urgent and more ambition climate action and environmental protection.[i]

i See www.climate-charter.org/understanding-the-commitments/.

7 Policy and programme implications

When it comes to extreme and erratic weather and climate hazards and stressors, better coping mechanisms and adaptations can – and should – take place at multiple levels, from individuals, households and local communities to cities, nations and regions. At these levels, government officials, municipal authorities and aid actors play different roles – from the meaningful engagement and inclusion of displaced communities in national policies and city planning, to making aid programming as climate-adaptive as possible. This chapter provides recommendations for different actors at each of these levels.

7.1 Individual- and household-level coping mechanisms and adaptations

As mentioned in Chapter 2, climate coping mechanisms at the individual or household levels can be limited compared to the scale of the problem, but they are usually the most prevalent and significant, given the absence of other support.

- For **aid actors**, individual- and household-level adaptations are the most common form of programming in humanitarian responses.
  - Climate adaptation should be mainstreamed into all programmes. Aid organisations should routinely include past and current climate data and future climate projections alongside assessments that include vulnerability to possible climate hazards and the extent of ecosystem degradation. By doing so, programming is more likely to help individuals and households adapt to climate realities as far as possible.
  - Based on the spectrum of approaches to climate, organisations should aim to have their projects not only be climate sensitive, but also climate responsive or climate adaptive, and avoid implementing projects that are climate unaware or only climate aware.[6] Such projects risk being maladaptive and can create climate and/or environmental risks.
  - There is a wide range in how climate affects people and the adaptations that people can make, but in general, climate shocks increase need. Cash can be a mechanism that assists in responding efficiently and effectively to the diversity of need. Cash for adaptation instead of cash just to meet immediate needs can be effective, for example by allowing people to purchase white paint to reduce heat within their homes or build retaining walls to prevent flooding. Cash also reinforces individual agency, though consideration must be given to the risk of maladaptive practices.
  - Aid projects should build on the existing strategies, skills and capacities of displaced communities by identifying and understanding what people are already doing and supporting them in doing it. In many areas, aid actors can learn from the most impactful coping strategies made by non-displaced communities and then help IDPs who have less financial and social capital do the same. Where possible, aid actors should improve upon what has been done by working with municipal authorities.

6 A similar commitment to incorporating climate-sensitive approaches across the project cycle was made in the COP28 Declaration on Climate, Relief, Recovery and Peace (see www.cop28.com/en/cop28-declaration-on-climate-relief-recovery-and-peace).

7.2 Community-level coping mechanisms and adaptations

As seen with flooding in Baidoa, communities often come together in crises and help one another. Other research has found similar examples, such as in Nigeria where community members who received anticipatory cash transfers prior to flooding shared with others who had not received any (GTS, 2024).

- For **aid actors**, these types of coping mechanisms can be difficult to account for, due to the emphasis on individual- and household-level targeting, but there are things that aid actors can do, particularly considering that all aid interventions influence social relations, for better or for worse.
  - Incorporating the ways people are helping one another into aid programming can enable and equip communities to continue their systems of mutual support. At the very least, projects should not disrupt existing social networks that communities rely on during extreme and erratic weather events.
  - Group cash transfers are an innovative way to get resources into the hands of local actors, who are then able to respond quickly to community needs in advance of weather-related disasters.
  - Area-based approaches are particularly useful in urban areas, where the focus on a community can ensure that different actors working in the same region collaborate to improve the basic services, infrastructure and institutions that build community resilience.
  - Implementing community-based early-warning systems can fill gaps in coverage of national early-warning systems and extend information about upcoming weather-related events to those who may not understand or trust national systems.

7.3 Municipal-level adaptations

As evidenced in this paper, many adaptations to flooding, heat and drought are good climate-resilient urban planning decisions by another name – whether it be investing in adequate drainage and paved roads or increasing the amount of green space available within an urban area.

- **Municipal authorities** are key to ensuring that displaced communities are considered in climate-resilient urban planning.
  - Informal settlements exist outside of urban planning because they are in unplanned or unregulated areas. If no other land is available for newly displaced communities, or if communities do not wish to move, these settlements should be incorporated into official urban plans, so they are no longer ignored.
  - Towns and cities should build on the good practice examples given in this paper of the Liberia Urban Resilience Project and Ahmedabad's city-led heat action plan, which focus attention on the specific hazards and risks of those living in informal settlements and informal labourers respectively.
  - Cities should join and participate in the various climate-related initiatives that are available, and review the guidance and lessons produced from such initiatives, such as the Rockefeller Foundation's 100 Resilient Cities and the ICLEI – Local Governments for Sustainability, among others.

- For **aid actors**, particularly those focused on development, investing in climate-resilient and climate-adaptive infrastructure projects can help improve the ability of all urban residents to cope with extreme and erratic weather and climate hazards. For displaced communities who are particularly vulnerable and exposed to these hazards, these investments can be critical to their adaptive capacity, as they likely have fewer resources at their disposal to improve their individual situations.

7.4 National-level adaptations

As mentioned in Chapter 2, IDPs can become more vulnerable and exposed to climate hazards than non-displaced residents because they are often ignored in disaster management strategies and DRR, even though Priority 3 of the Sendai Framework and the 2018 Global Compact for Safe, Orderly and Regular Migration both require their specific inclusion in national plans and strategies (Cantor and Sánchez-Mojica, 2023; UNHCR, 2024). In most countries hosting displaced people, however, DRR policies are either non-existent, or do not include displaced people who 'are often among those most exposed and vulnerable to multiple hazards, and for whom disaster risk reduction (DRR) measures are urgent' (UNHCR, 2024: 40). Furthermore, national climate strategies and plans also tend to ignore such populations. As of 2024, almost 96% of Nationally Determined Contributions and 80% of National Adaptation Plans do not mention pre-existing refugees and IDPs (ibid.).

- **National governments** lead on national-level policies and adaptations, which are typically set out in climate adaptation plans and disaster management strategies.
  - To mitigate the specific vulnerabilities and exposures to weather and climate hazards faced by displaced communities, they should be purposefully and mindfully included in DRR and climate adaptation efforts systematically, rather than on an ad hoc basis. This should include communities at risk of being displaced by climate events, as well as communities that have already been displaced, regardless of the reason.
  - Sufficient domestic funding should be allocated to finance climate adaptation and DRR measures for displaced and non-displaced communities alike. Both immediate financial support and investment in longer-term climate adaptation measures should be budgeted at the national level.
  - National policies, laws and plans of climate-vulnerable countries should be strengthened to address climate change-related displacement, to develop protection strategies, and to ensure that people affected by climate impacts have agency to move in a safe and dignified manner.
  - To improve the buy-in of national adaptation measures, displaced communities (and those at risk of displacement) should be consulted and representatives included at the table when decisions on climate migration and adaptation are being made. They should remain meaningfully engaged in the design and implementation of programmes and policies at the national level.

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