Climate change adaptations in humanitarian programming

Number 86 March 2025

Humanitarian Exchange

HPN Humanitarian Practice Network

ODI Global

Humanitarian Exchange

Issue 86 March 2025

HPN
Humanitarian
Practice Network

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Cover photo: A flooded street in Dhaka, Bangladesh.
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Commissioned and published by the **Humanitarian Practice Network (HPN) at ODI Global**

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A climate-resilient cone garden in Turkana County, Kenya. Image: Beth Muigai

Editorial

Over the last few years, humanitarian actors have increasingly engaged with the challenge of climate change. In a world already facing extreme humanitarian need, climate change increases the frequency and violence of disasters, contributes to increases in conflict and displacement, and exacerbates the underlying vulnerability of people affected by disasters and conflict. Climate change is a major driver of humanitarian need, and it changes the context within which humanitarians attempt to respond to this need.

As a result, there has been growing humanitarian interest in climate at the policy level, evidenced in statements by the Inter-Agency Standing Committee (IASC) Principals, Humanitarian Aid Donors, and many humanitarian organisations. But – with the notable exception of a small number of agencies who have worked in this area for some time – there seems to have been less activity at the operational level. Or if there is activity, it is not being recorded; there has been very little written about what agencies are doing 'on the ground'. As a result, it is common for agencies to say to us: 'We know that climate change is an important issue. But what does it actually mean for programming? What should we actually *do*?'

This edition of the *Humanitarian Exchange*, 'Climate change adaptations in humanitarian programming', aims to help answer this question, by providing some examples of the work that humanitarian organisations are doing in response to the threat of climate change. Co-editors Paul Knox Clarke (Principal at the ADAPT Initiative and an expert on humanitarian system reform) and Mihir R. Bhatt (Director of the All India Disaster Mitigation Institute, or AIDMI) present here a range of articles that encapsulate relevant interventions and learning. The choice of activities, organisations and locations is by no means representative, but the articles here do provide a broad overview of some of the ways that humanitarians are adapting their programming to take climate change considerations into account – and, taken together, they point to a number of emerging trends.

The first article by **Jean Mukenga** and **Jean Pierre Diowo Okitakoy** outlines the work undertaken by **International Medical Corps** in Mali, describing the process of moving from a recognition that climate change is having real impacts on health, to the implementation of programmes to strengthen the resilience of the health system to climate threats, and to prepare the health system to respond during and after floods and heatwaves.

These two themes – preparedness and resilience – run through this issue. One of the first climate trends that emerges is that – in the face of the climate crisis, and at the behest of communities affected by climate change – humanitarian organisations are extending their activities beyond 'response' to consider other elements of disaster risk management. Of course, as the articles demonstrate, this does not mean that humanitarian agencies are moving away from response: if anything, the need for response is increasing. Nor are preparedness or resilience new areas for many of the organisations involved. Many are building on previous work, and on the fact that they have been providing services to vulnerable

people in the same places for many years. The reality of climate change, at a time when budgets are already insufficient to meet needs, forces humanitarians to consider how these long-term engagements can better decrease people's vulnerability, rather than just keep people alive. As an example, **Rajeev Jha** writes about the work of **Humanitarian Aid International (HAI)** in the Sundarbans in India, where HAI is combining preparedness and resilience in a programme that brings together preparedness planning, capacity-building and resilience activities around the maintenance of mangrove forests. These activities combine local knowledge and new technologies to address a number of climate-related threats, including increased lightning strikes and sea-level rise – a reminder of the variety of hazards enhanced by climate change.

One particularly interesting evolution of previous work on early warning and preparedness is the anticipatory action approach. Anticipatory action typically combines an early-warning system, a preparedness plan, and pre-agreed financing: the early-warning system 'triggers' the release of financing that pays for the actions in the preparedness plan. As many climate hazards can be fairly accurately predicted in advance, the approach has been an important element of humanitarian thinking about climate change.

This edition of *Humanitarian Exchange* includes two examples of anticipatory action programmes: one – for flooding in Bangladesh – from **Md. Shahjahan** in the **Bangladesh Red Crescent Society**, and one – for heatwaves in Pakistan – from the **Initiative for Development & Empowerment Axis (IDEA)**, as explained by **Muhammad Amad** and **Haris Bin Riaz**. Both cases show how the approach led to practical actions in advance of the event and – importantly for an area that is developing rapidly – outline key lessons for future programmes.

In the article from **Practical Action** in Nepal, **Achyut Luitel** outlines a related approach using index-based insurance. Here again, financing is agreed in advance and linked to a meteorological monitoring system, but in this case the financing is in the form of commercial insurance rather than a fund provided by a donor. When the monitoring system shows that agreed triggers (such as levels of flooding or the rainfall level in a certain period) have been met, the insurance pays out an agreed level of compensation to cover disaster-related losses. The aim here is to transfer some of the financial risk of climate change from humanitarian donors to commercial markets, allowing for a more sustainable funding base.

Improved preparedness and earlier, more effective responses to disasters are important. But the climate crisis is not just about rapid-onset disasters. It is also about slower, crushing immiseration and increases in vulnerability: ever-decreasing crop yields, increased levels of disease, and access to clean water becoming more difficult. These slower-acting impacts of climate change can be as deadly as disasters, and leave people more vulnerable to disasters when they do occur. Addressing these challenges is the job of climate change adaptation, but very little adaptation funding is currently available to the fragile and conflict-affected states where most humanitarian action occurs, and in the absence of this funding, humanitarian agencies are trying to decrease vulnerability through programmes that support the resilience of communities in the face of climate change.

In Niger, the **International Committee of the Red Cross** has been working with local communities on activities that reinforce people's coping strategies to drought and floods. **Catherine-Lune Grayson** explains that, as well as decreasing vulnerability to climate shocks, these programmes are also designed to ease tensions within and between communities by reducing competition for land and water. **Kevin Kairu, Ferguson Olemarampa, Dan Ekal** and **Patrick Kibuku** turn our attention to Turkana county, Kenya, where **SAPCONE** and **DanChurchAid** have also recognised the link between climate change and increases in intercommunal violence, and have trained local government officials, community leaders and security agents on conflict analysis, early warning and alternative dispute resolution, as part of a programme to improve the climate resilience of agriculture and fishing. Both programmes demonstrate the importance of understanding, and working on, the linkages between climate change, disasters and social conflict, particularly in areas where conflict is endemic.

Also in Kenya, **Lynn Chestit** and **Carol Rotich** write on how **Woman Kind Kenya (WOKIKE)** supports activities to improve the climate resilience of rainfed agriculture and animal husbandry. Here, too, we see a humanitarian agency going beyond a narrow view of humanitarian response and resilience programming to address the ways in which climate change exacerbates existing social and political causes of vulnerability. WOKIKE's resilience programming places a strong emphasis on addressing political marginalisation: working to ensure that the voices and demands of people at the sharpest edge of climate change are heard by governments and policymakers.

A distinct thread runs through the articles in this edition, of very strong community engagement, design and ownership of many of the climate-related programmes. The collection includes several examples of humanitarian agencies working to bring together local knowledge of environmental change and adaptation options with a more scientific understanding of climate change. A particularly interesting approach is that of the **All India Disaster Mitigation Institute (AIDMI)**. **Mihir R. Bhatt** and **Vishal Pathak** explain AIDMI's appreciative enquiry method to help communities (in this case, groups of women farmers) identify and augment ways of making agriculture more resilient to climate change. The AIDMI article also highlights some of the organisation's work in urban areas to increase resilience to heatwaves – a reminder that climate change is as much an urban as a rural phenomenon.

While many of the programmes discussed in this issue relate to food security and livelihoods – perhaps a reflection of where much of the humanitarian climate programming has focused to date –the article by **Dabal Kaji Rokaha** and **Mohammad Ali Mamun** of the **International Organization for Migration (IOM)** considers the impact of climate change on another sector: shelter. The lime-stabilised soil construction that the article describes is important both in itself, and as an example of the sort of changes and technical innovations that are required across a wide range of humanitarian activities, including shelter, water, sanitation and hygiene (WASH), and health.

Adapting to the reality of climate change may push humanitarians out of their comfort zone – of 'tried and tested' response approaches that aim to preserve life, livelihoods and dignity until normal life can be resumed. One new area in which humanitarians may find themselves is that of displacement as a coping strategy: the idea that, in certain circumstances, humanitarians may help people relocate away from areas

where climate change has made life too difficult or dangerous. In the penultimate article, **Alexandra Cohen** from **GiveDirectly** describes how large cash grants are helping communities do just this – relocate away from their flood-prone villages to higher ground. At the same time, **Fatima Yamin** reminds us that climate change is also an intensely political issue and that we should be careful not to focus exclusively on consequences on the ground, when we need also to engage with the causes of the crisis.

Taken together, the articles show that many agencies are working on the ground to address the current realities and future threats of climate change. They are doing so not because climate change is a hypothetical future issue, but because it is a priority, now, for many of the communities that humanitarian actors serve. The programmes address a wide range of risks, from lightning strikes to malnutrition, because while climate change is a global phenomenon, its effects are intensely local. Many of the programmes focus on food production and livelihoods, but humanitarians are also considering the impacts of climate change on other sectors, such as health and shelter. And in doing so, their own analyses, and the expertise of the communities with whom they work, are pushing them to move 'upstream' of disasters, and to strengthen their work on early action, preparedness and resilience.

Where possible, agencies are working with a wide variety of actors – government ministries, technology companies and insurance providers – to support this work. But the reality in many places where humanitarian action occurs is that there are few external actors, and limited external resources, beyond those that come from the humanitarian sector. This brings the argument back to the issue of comfort zones. The world is hotter than it has been for 125,000 years, and it is getting hotter. It is no exaggeration to call the climate threat unprecedented and epochal. The impact is being felt first, and worst, in so-called Least-Developed Countries (to use the United Nations categorisation), and particularly those that are fragile and conflict-affected. In the face of these realities, can the humanitarian system, as well as international humanitarian, development and climate financing mechanisms, meet the scale and speed of change that is required? For now, these programmes, while innovative and apparently effective, are scattered and (in most cases) reliant on very limited humanitarian funding. While they might provide proof of concept, the scale of activity is still tiny compared to the needs for climate adaptation. Hopefully, the work being undertaken by the organisations represented in this issue answers the question, 'What do we actually *do* about climate change?'. The next question – an increasingly urgent one – is how to pay for it.

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Building weather resilience in Mali

Jean Mukenga and Jean Pierre Diowo Okitakoy

This article outlines the experience of International Medical Corps in Mali over the past two years, as our team became increasingly aware of the effects of extreme weather on the populations we serve and began to incorporate mitigation activities into our programming.

With an operational history in Mali that stretches back to 2013, International Medical Corps is a global first responder that delivers emergency medical and related services to those affected by conflict, disaster and disease. We also train people in their communities, providing them with the skills they need to recover and build self-reliance.

The health situation in Mali is poor. The under-five mortality rate is 93.8/1,000, and a World Bank Survey from 2019 found that '51% of Malians forego healthcare for financial reasons'. In recent years, the challenges of a poorly developed and underfunded health system have been increased by armed conflict in the north of the country. Faced with this broad range of challenges, International Medical Corps has been focusing on providing services related to nutrition, maternal and newborn health, family health, and violence against women and girls. In early 2023, we began to focus on sustainability and resilience related to the effects of extreme weather.

Becoming aware of the threat

Like other countries in the Sahel, Mali is very exposed to extreme weather, which poses a major threat to the wellbeing and lives of Malians. Mali has a long history of drought, and the frequency and severity of droughts are forecast to get worse. At the same time, communities living along the Niger River say that flooding is becoming more frequent and more intense. The occurrence of extreme heat in 2024 in some regions was unprecedented and is expected to worsen. Malian media has reported that rises in temperatures have led to increased mortality rates among the elderly and children, while a hospital in Bamako recorded more than 100 deaths in four days following a heatwave.

The health system in Mali is not yet prepared for the effects of extreme weather. For example, government institutions and private-sector organisations have not mounted a formal response to the health consequences of high heat. People are unprepared to deal with the impacts of extreme weather, especially in areas prone to heatwaves. Furthermore, at the national, regional and district levels there are no functional disaster risk-management platforms able to provide communities with the necessary knowledge, resources and tools that can help them develop resilience to weather-related threats, such as extreme heat and flooding.

Recognising that there was an important gap, and with support from an internal fund created by International Medical Corps to support such work, we initiated a pilot project in the Timbuktu region of Mali, with the purpose of strengthening the resilience of local communities and health providers by raising awareness on the impacts of extreme weather and preparedness planning.

Local populations are raising awareness of the effectiveness of building dikes, using a mixture of banco earth and stone, to protect their villages from floodwaters. Credit: International Medical Corps Mali

Identifying and designing programmes

To design the pilot programme, International Medical Corps conducted a desk review of secondary data and information on current and projected weather-related impacts in Mali, with a specific focus on the region of Timbuktu. In addition, International Medical Corps implemented a baseline survey in 10 zones of the Timbuktu health district that constitute a useful package of primary data on health trends. Recognising that this was a new topic for many stakeholders, we realised that it would be important to develop an approach involving local authorities, health personnel and their representatives at regional level, as well as local media and grassroots community health and nutrition volunteers who work closely with the health committee in each International Medical Corps-supported health facility. As a result, one of our first steps was to conduct a number of consultations with these key stakeholders.

The combination of desk review, baseline survey data, key informant interviews and consultations helped identify damage caused by extreme weather and visible gaps in terms of health preparedness and response planning at a regional level to tackle and minimise disaster risks. In particular, it became evident that

heatwaves and unpredictable and recurrent flooding situations cause widespread damage for populations in both urban and rural settings, including nomadic people and people in riverine villages on the banks of the Niger River. This damage includes the limitation of access to basic health services, increased risks of disease outbreak and of severe acute malnutrition, loss of livestock, destruction of shelters and increased displacement of people into the Sahara Desert. Some population groups were particularly vulnerable, including children below the age of 5, pregnant and lactating women, and elderly persons.

Although weather-related disasters have been happening for many years, they have recently become more frequent and intense. It was evident that the preparatory, operational and organisational capacity of the Ministry of Health at regional and district levels was not adequate to respond to the potential consequences of such events. In particular, health staff and communities were not aware of the impacts of extreme weather on health, and health facilities were not prepared to respond to the needs caused by such events.

Based on this assessment, International Medical Corps launched a programme based around two pillars. The first was to support health system efforts to become more resilient to climate-related disasters. This focused on preparedness planning for health facilities, training of health managers and health professionals, and training of community health workers. The second pillar aimed to build community understanding of weather-related threats, and focused on the development and dissemination of community health messaging around weather and health issues. The programme built on International Medical Corps' long-standing humanitarian assistance experience in the Timbuktu region as well as our experience in training and capacity development, close relationships with health authorities and communities, and network of community health workers.

This programme marked the first time that the local authorities in the Timbuktu region had considered the topic of extreme weather and its effects on health, and reactions from administrative authorities and the Ministry of Health were very positive. They said that this was a unique programme, and that prevention and response measures related to extreme weather constitute a big gap in the global strategy of the region.

Health and administrative authorities actively participated in the various activities, developing over the course of two workshops a preparedness plan for the health system in the region to respond to heat and flooding. Fifty-two healthcare professionals and 20 community health workers received training in the diagnosis of, and response to, weather-related health conditions, and provided positive feedback and evaluations of the training.

International Medical Corps also organised a series of awareness-raising sessions to sensitise the community to the impact of extreme weather on health. One of the outcomes of this project is the commitment of local leaders to promote environmentally friendly behaviour. However, social and behavioural change is a process that requires ongoing community education, so we are planning to ensure that the messages from this programme are communicated and updated beyond the end of the project period.

Challenges and constraints

Despite the overall success of the pilot, the International Medical Corps team encountered a number of challenges and constraints.

First, given that the topic of extreme weather and its effects on health is new to the Malian Ministry of Health, there are no standard training modules or resources available to the ministry. As a result, a lot of project time was devoted to putting together information deemed important based on the context and training needs. In future, we would hope to initiate a discussion at regional and national levels around this theme and develop modules that will be endorsed by the Ministry of Health and Ministry of Environment, Water and Agriculture.

Second, in developing materials, it became clear that there is a lack of information on the current impacts of extreme weather on health in Mali, and a lack of predictive data on the future prevalence of many weather-related diseases, including malaria, cholera, meningitis and mental health conditions. Where information does exist, it is scattered and can be hard to access. As a result, material development was slow, and some areas were not fully addressed in this first pilot.

Third, the International Medical Corps team is aware that the effects of extreme weather disproportionately affect women and girls, who have a wide variety of household and caring responsibilities. However, as women are under-represented in the healthcare system, it proved difficult to ensure a gender balance in training and planning exercises.

Emerging learning

The Mali project was part of a wider initiative across International Medical Corps to build knowledge and competence in addressing the impacts of extreme weather in the areas where we work. An important part of this is ensuring that lessons from each project are shared across the organisation and the humanitarian system more broadly. Here is a sampling of what we have learned so far.

- Demonstrating to health professionals (as well as talking about) the impact of extreme weather is important. In hindsight, the team would have allowed time for training participants to do more practical sessions (in addition to knowledge-sharing sessions) through visits to areas continuously impacted by the effects of such weather. For instance, trainees and trainers could have visited villages bordering the Niger River, close to Timbuktu, to see climate impacts, as well as previously forested areas that have become completely arid as a result of deforestation and extreme heat.
- Weather-related considerations must be taken into account in programme design. To take advantage of the funding window, many activities were conducted at an extremely hot time of year, which made it harder for participants to engage. As the weather gets progressively hotter in future years, seasonal planning of activities (where this is possible) will be increasingly important.

- Inclusion is critical. Despite efforts to ensure that all key stakeholder groups were included in the design and delivery of the programme, we would make additional efforts to engage women in the future, as the voices of women participants would contribute to widening awareness. Similarly, nomadic people were not involved in this pilot. Medics among these groups have great contributions to make by sharing traditional adaptative measures to the impacts of extreme weather.
- Local knowledge should be brought into community discussions of this topic. The population demonstrated a high degree of knowledge about extreme weather and are aware of its impacts, even if they are not aware of the causes.
- Many of the preparedness activities outlined in the plan would require additional expenditure in the event of a disaster, but it is not clear that government budgets would be available to cover these expenditures. Some form of anticipatory action fund for health might be one way to address this.
- Though preparedness is important, it ideally should be integrated with disaster risk reduction (DRR) in a 'layered' approach to managing weather-related risk. During preparedness planning, participants consistently returned to the importance of activities such as the construction of dikes in high-population, flood-prone areas, and of urban tree planting to increase shade and decrease temperatures in the city. Unfortunately, there is very little funding for this type of DRR in Mali.
- The project showed how important a multi-sectoral approach will be with respect to extreme weather, bringing together health, nutrition, water, sanitation and hygiene, and other sectors to address health impacts. Availability of clean water for drinking is, for example, a key element in responses to heatwaves, while protection of agricultural livelihoods can decrease the impact of floods on nutritional status. Preparing for extreme weather requires high levels of coordination across different levels and ministries of government, and between the humanitarian and development sectors.

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Strategies for climate resilience – drone application, mangrove plantation and community mobilisation in the Sundarbans delta

Rajeev Jha

Introduction and background

The Sundarbans, stretching across 9,630 km^2 at the border of West Bengal in India and Bangladesh, is deemed the largest mangrove forest in the world. Intersected by the Ganges, Brahmaputra and Meghna rivers, this region forms the world's most extensive delta. Recognised as a UNESCO World Heritage site

in 1987, its exceptional biodiversity encompasses endangered species, including the only population of tigers found in a coastal mangrove habitat, Ganges and Irawaddy dolphins, estuarine crocodiles, and a variety of mangrove species. The Sundarbans delta is not only a significant draw for tourists seeking to witness its unique wildlife but also serves as a sustainable source of income for the local populace.

However, the region faces formidable social and economic challenges. Approximately 44% of the population lives below the poverty line. Access to clean drinking water eludes about 60% of households, while approximately 87% of the populace experiences food shortages, indicative of pervasive food insecurity. A significant proportion of households, at 48%, do not own any land, and more than half of the workforce engaged in agriculture and fishing are daily wage labourers. The geographic location of the Sundarbans Delta renders it acutely susceptible to the effects of climate change. The sea levels in the Sundarbans are increasing at a rate between 5.37 and 12 mm/year, which significantly exceeds the global average of 3.27 mm/year recorded between 1993 and 2010. This rise can be attributed to both global sea-level changes due to thermal expansion of water and melting of glaciers, as well as local factors such as land subsidence in the region. The data for this sea-level rise is based on regional studies conducted in the Bay of Bengal and supported by the Intergovernmental Panel on Climate Change's (IPCC's) Fifth Assessment Report on the Physical Science Basis of Climate Change. Additionally, a detailed regional report from the World Bank corroborates this sea-level increase, noting its potential long-term impact on the coastal communities of the Sundarbans.

The project

The Building Climate Resilience in Sundarban Delta project of Humanitarian Aid International (HAI), supported by Sony Pictures India Limited, has commenced in the Gosaba block of the Sundarban region, South 24 Paragana district. Based on the baseline survey and community interactions, the selection of the Gosaba block was predicated on its high population density and ecological vulnerability.

A comprehensive needs assessment, coupled with extensive community engagement, revealed the critical need for a holistic approach to build long-term resilience. The approach targeted key areas such as addressing gender issues, enhancing livelihood opportunities, developing skills, and providing input support for women's self-help groups. In addition, the project focused on agriculture product development and marketing assistance to bolster economic sustainability. To mitigate the impacts of recurrent flooding and cyclones, the project integrated innovative interventions, including the application of technology, monitoring the status of mangrove plantations, raising community awareness of climate change, and addressing disaster risk reduction (DRR) issues. Over a span of three and a half years, these interventions directly benefited five villages and more than 500 households.

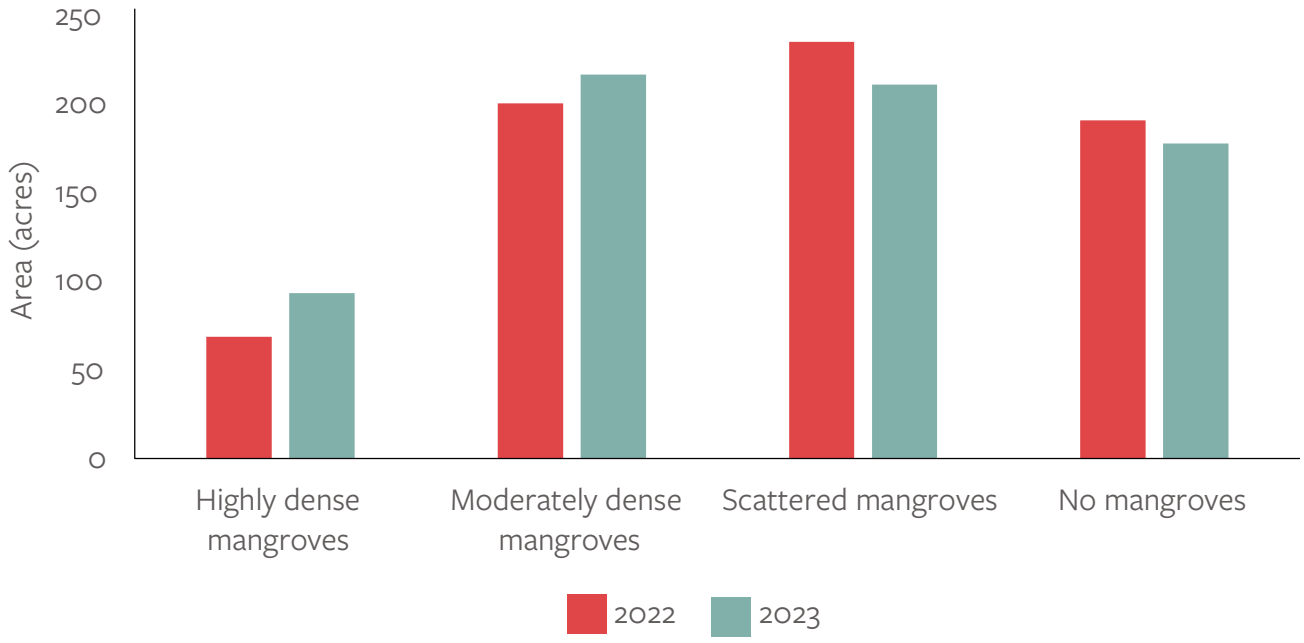
The project also took significant steps to strengthen disaster preparedness by establishing the Village Disaster Management Force (VDMF), providing essential humanitarian response materials, and installing lightning conductors in schools, safeguarding an area spanning over 10 km^2.

This case study offers a reflective overview of key DRR and climate change adaptation interventions implemented in the region, with a focus on the innovative and community-centred approaches that have contributed to resilience-building in these vulnerable areas.

Using drones to understand vulnerability

To gain a deeper understanding of the region's hazards and vulnerabilities, the use of drones was indispensable. Leveraging drone technology enables the capture of high-resolution images revealing significant land erosion and loss, thereby facilitating targeted intervention. Furthermore, it offers the capability to monitor alterations in vegetation and soil salinity, which can be linked to evolving land and water conditions. These aerial surveys also provide valuable insights into the extent of damage, thereby aiding in the prioritisation of recovery efforts. Since the inception of the project in 2021, HAI (with the help of an external agency) has conducted a drone-based study of the region for three consecutive years. The result of the study has amplified the need for the plantation of new mangrove saplings, protection of the coastal area from soil erosion, protection of water bodies from saline water, and overall, the need for an integrated effort at the national, regional and community levels to save the sensitive ecology with ecologically balanced interventions. The drone mapping operations commenced with a reconnaissance survey of the area of interest (see Figure 1).

Figure 1 Comparison of mangrove cover based on drone mapping, 2022–2023



In collaboration with local field team members, site visits facilitated a comprehensive understanding of the terrain, local environmental conditions, and potential obstructions, such as communication towers and high-tension lines.

Photographs were systematically captured at regular intervals utilising the drone, all the while maintaining an optimum flight speed.

Mangroves – nature-based solution to DRR

Mangroves serve as a critical component of the region, not only due to their natural carbon sequestration, but also as a natural fortification against storm surges, and strong winds. Their robust root systems effectively stabilise the coastline, diminish the impact of wave energy, mitigate coastal erosion, and shield inland areas from flooding. Additionally, mangroves play a pivotal role in absorbing and retaining excess rainfall, thereby contributing to the regulation of local water levels and the reduction of flood risk. Their root systems also support enhanced soil permeability, promoting groundwater recharge. Furthermore, these ecosystems serve as habitats for a diverse range of species, including fish, birds and invertebrates, thereby promoting biodiversity which, in turn, sustains local ecosystems and communities, ensuring ecological balance and livelihoods. In support of shoreline protection, HAI has undertaken the planting of mangrove saplings in a specified area following the acquisition of a no-objection certificate from the local village council. The need for mangrove sapling plantations also came out during the social mapping exercise conducted with the community, as well as being highlighted by the drone mapping. More than 70,000 mangrove saplings have been systematically planted. One particularly noteworthy aspect of this activity is the participation of women in the plantation effort, who were paid for their work. To safeguard the saplings from animal grazing, the area was enclosed, and village volunteers were tasked with monitoring the saplings' security.

Community mobilisation – the Village Disaster Management Force

Another element of the programme was the establishment and operation of the VDMF. The community is always the first responder during times of crisis. This is particularly significant given the poor service delivery mechanism present in the Sundarban Delta region at the government level. Additionally, due to the intricate ecology of the Sundarban region and the restricted infrastructure, there is a dependence upon country boats and cycle rickshaws as the primary modes of transportation within the area. The foundation of VDMF's development lies in the routine mock drills conducted on the 14th of each month, aimed at preparing for floods and cyclones. Moreover, the VDMF has been pivotal in fostering community-awareness programmes regarding DRR, climate change and resilience building. The VDMF has made substantial contributions to vulnerability mapping, disaster response planning, and the establishment of communication channels for the dissemination of early-warning information on impending disasters. The year 2023 witnessed the active involvement of VDMF members in flood-response operations in the Sundarbans, where they provided aid in search-and-rescue efforts, facilitated

aid distribution, managed embankments, and offered social and psychological support to the affected community. The timely allocation of search-and-rescue equipment by the HAI Sundarban team significantly bolstered the VDMF's capacity to effectively address these challenges.

A group of community members and disaster management volunteers work to reinforce an embankment in a flood-affected area of the Gosaba block. Credit: Bappi Sarkar, VDMF member

Lightning – an overlooked weather hazard

Another critical aspect of the Building Climate Resilience in Sundarban Delta project pertains to shielding the intervention area from the hazard of lightning. The geographical disposition of the region, its susceptibility to cyclones, propensity for floods, and prevailing high humidity and temperature collectively create a conducive environment for thunderstorms. To tackle the issue, a comprehensive approach was adopted, encompassing the dissemination of information within the community, focusing on educating school children, and the strategic placement of lightning arrestors. Awareness campaigns targeting the mitigation of the lightning hazard were undertaken in 10 government and private schools, accompanied by subsequent training and capacity-building sessions for the VDMF members. The installation of lightning arrestors has greatly improved safety and resilience by reducing the risk of lightning strikes. Furthermore, it enhances visibility and security in vulnerable areas during extreme weather events, while also providing safe zones for children and the local community. This multifaceted approach demonstrates a commitment to safeguarding both people and property. This initiative has received considerable acclaim from school principals, parents, teachers, and the broader local community.

Conclusion and lessons learnt

Our pursuit of innovation and adaptability reflects a deeper understanding of the dynamic and interconnected nature of the challenges we face today. In the Sundarbans, our efforts represent not just a series of interventions but a commitment to a holistic and community-centred model of sustainable development. This approach acknowledges that true progress must arise from within communities themselves, nourished by local knowledge, aspirations, and a shared sense of stewardship for the land and environment.

The diverse initiatives undertaken – ranging from livelihood support to environmental conservation and disaster preparedness – are interconnected threads in the fabric of a more resilient future. Mangrove plantations, income-generation activities, DRR programmes, and the integration of technology to assess hazards and vulnerabilities serve as both practical solutions and symbolic acts of restoration. They are expressions of our belief in the possibility of harmonising human needs with ecological balance, and in the power of communities to be the architects of their own futures.

Central to this work has been the empowerment of local communities, particularly women, whose participation accounted for over 90% of direct project involvement. This is not simply a statistic; it is a testament to the power of inclusion, to the understanding that those most affected by adversity must be at the forefront of creating change. Their engagement is a living example of resilience in action, a quiet yet profound assertion of agency in the face of systemic challenges.

Yet, as we reflect on these accomplishments, we recognise that short-term solutions, while necessary, are insufficient. A long-term vision is essential – one that integrates both development and humanitarian frameworks, acknowledging the deep interdependence of human and environmental systems. Climate justice, in particular, must be central to this vision. The geographical vulnerability of the Sundarbans, coupled with the limited contribution of its communities to global climate problems, calls for a rethinking of how we address these challenges. It is a call for equity, for fairness, for recognising the disproportionate burden placed on the most vulnerable.

Ultimately, our work is rooted in a philosophy of trust and collaboration. By building partnerships, fostering dialogue, and cultivating a shared sense of responsibility, we are not merely responding to crises – we are laying the foundation for a new kind of collective action. In doing so, we are affirming our belief in the capacity of communities to transcend their circumstances, to transform challenges into opportunities, and to build a future defined by resilience, justice, and hope.

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The effectiveness of anticipatory humanitarian action for cyclone response in Bangladesh

Md. Shahjahan

Climate change in the context of Bangladesh

Bangladesh, a country located in a deltaic plain with large areas of land close to sea level and with a high population density, has always been vulnerable to natural hazards. In particular, the country's flat topography, coastal position and the large number of rivers and huge monsoon water catchment areas make it susceptible to cyclones, storm surges and flooding. The risk of natural hazards is increasing with climate change, which increases the possibility of flooding through factors such as sea-level rise and increased rainfall, and the potential damage from tropical cyclones as a result of increased sea surface temperatures. Other climate change impacts include temperature extremes, drought, riverbank erosion, salinisation and landslides, leading to food and water scarcity, biodiversity loss, and migration. These challenges disproportionately affect the poorest and most marginalised, impacting economic prosperity and quality of life.

Cyclones and storm surges

Bangladesh's low-lying coastal regions face frequent tropical cyclones, particularly in April–May and October–November. With much of its land barely above sea level, these areas are highly vulnerable to cyclone-induced storm surges. Rising sea levels and increased water temperatures intensify cyclones, exacerbating their impact. Historically, cyclones have caused very significant loss of life. Recent events like Cyclone Amphan in 2020 have caused widespread damage, affecting millions and resulting in substantial infrastructure and agricultural losses. Climate change appears to be increasing the frequency of cyclonic hazards, with four consecutive cyclones hitting Bangladesh in 2022–2023.

At the same time, Bangladesh has a history of taking proactive measures to reduce the impact of cyclones, through a range of disaster risk reduction and preparedness strategies, including building defensive dikes, establishing cyclone shelters and early warning systems, and supporting community-based preparedness activities. These activities have greatly reduced the death toll associated with cyclones. While the Bhola Cyclone claimed upwards of 300,000 lives in 1970, by 2020, during Cyclone Amphan, 2.4 million people evacuated to 12,078 cyclone shelters, and only 26 people died.

Anticipatory action

The work of the Bangladesh Red Crescent Society (BDRCS) and its partners in the field of anticipatory action (AA) follows this tradition of acting in advance of natural hazards. The BDRCS has been working on the AA approach since 2015. It is an approach that combines: forecasting, to give early warning of a

hazard; a predetermined 'trigger', based on this forecast – a threshold which, when reached, signals that action needs to be taken; a set of predetermined actions that will be taken when the trigger is reached; and pre-agreed financing that can be released as soon as the trigger is reached, so that action can be taken immediately. These four elements are combined in an Early Action Protocol (EAP).

In developing the EAP, the BDRCS initially concentrated on 14 districts of Bangladesh that were particularly vulnerable to cyclones. The choice of these 14 districts was based on an analysis of meteorological data, and data about damage caused in different districts by previous cyclones. In the terminology of AA, the assessment was impact based – it did not look just at whether a district was at risk of being hit by a cyclone, but also (to take into account differences in population and in the resilience of infrastructure from one district to another) at the degree of damage that a cyclone was likely to cause if it did occur. This understanding of the likely impact of a cyclone also allowed the BDRCS to develop triggers that were based not just on wind speed and direction, but on an understanding of what particular wind conditions were likely to do in different areas. It also helped identify the early actions that would be most effective in saving lives and livelihoods.

The early action protocol was developed over a period of two years, in a process that included a number of tests and simulations. These simulations were important in identifying areas that needed to be strengthened in order for the EAP to work successfully.

Two Red Crescent Volunteers disseminating early warning messages in the coastal communities of Naokhali district before the landfall of Cyclone Amphan. Credit: Noakhali Red Crescent Unit

EAP activation for Cyclone Amphan

The genesis of Cyclone Amphan was officially recognised on 15 May 2020 by the Bangladeshi Meteorological Department, which issued initial warnings of the potential threat. At this point, the BDRCS put staff in districts on standby, to be ready for an activation of the EAP. On 18 May, as the meteorological indicators pointed to the cyclone impacting the communities covered by the plan, the Anticipatory Action Activation Committee convened and considered the meteorological and other data, determined that the threshold of danger had been reached, and triggered decentralised funds and early evacuation measures to prepare vulnerable coastal communities for the imminent impact. At the same time, government and other partners were carrying out their own early action plans.

The early release of the funds before the cyclone made landfall on 20 May allowed the distribution of essential supplies to 36,500 individuals in 192 shelters, according to BDRCS data. Early warnings ensured that both people and the livestock essential for their livelihoods (around 4,400 animals) evacuated to the safety of the shelters.

A subsequent evaluation of the response suggested that people in shelters supported by BDRCS actions were more likely to have received water and sanitation supplies than people who did not receive this support, experienced fewer problems at their cyclone shelters, and reported better health status immediately after the cyclone. It was not clear, however, that there was any strong effect on asset preservation or longer-term resilience (although this was not the aim of the intervention).

Lessons learned

The process of developing the EAP, and particularly the simulation activities that were part of this development, were important for lesson learning. Fittingly, these lessons were anticipatory – they were identified before the EAP was used – and helped strengthen the EAP in advance. As such, the first lesson is the importance of testing AA processes through simulations and other exercises.

Key lessons that emerged related to ensuring that BDRCS staff on the ground had the skills required to implement the EAP, and the material resources (such as flashlights) to do so. The simulations identified gaps in both areas, which were filled by capacity-building and procurement.

Just as importantly, the simulations identified the need for decentralised funding to be available at the district level, as transferring funds from the capital would have taken too long and would have compromised the AA process.

Finally, the simulations showed the importance of an ongoing process of monitoring the status of shelters, to ensure that, when they were needed, they could be accessed and were in a good state of repair.

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A journey of anticipatory action – early response to heatwaves in Pakistan

Muhammad Amad and Haris Bin Riaz

Pakistan's context combines a multitude of natural and human-induced hazards with a high level of vulnerability. To this situation is added the threat of climate change. Increasing incidents of all forms of flooding, prevailing water scarcity, persistent drought-like conditions and frequent heatwaves are pointing towards a future scenario with a significant increase in severity and frequency of hydrometeorological hazards. While the threat posed by climate change has been growing for some time, widespread flooding in 2022 – which broke from the previous pattern of flooding in Pakistan – showed how quickly the situation is changing, and how important it is to prepare for new and unexpected hazards.

Much of this preparation will require whole-of-society measures to build resilience to climate hazards. But these measures take time to implement, and even when implemented, they will not always work in all places and circumstances. So, in addition to resilience-building, humanitarian organisations working in Pakistan are required to walk the extra mile by developing anticipatory actions, strengthened preparedness and early response to predictable crises. Such activities allow for a response to be made before a disaster occurs, when there is still time to save lives and livelihoods.

Humanitarian non-governmental organisations (NGOs) in Pakistan – under the umbrella of the READY Pakistan (or Pakistan Hub) initiative in the START Network supported by the German Federal Foreign Office through Welthungerhilfe, and through collaboration with national and local governments – have begun to develop anticipatory action systems for a variety of hazards, including flooding, heatwaves and droughts. This article outlines the first steps in developing a system for early response to heatwaves.

A brief overview of the anticipatory action programme for heatwaves in Pakistan

While there is no escaping from natural hazards, proactive and innovative humanitarian response systems can reduce the intensity of the impacts they will have on vulnerable populations. One way of doing this is to act immediately before a disaster, in a proactive fashion, rather than waiting to respond after the disaster strikes. The number of lives, livelihoods and public services that can be protected in this way will become increasingly important as climate change makes hazards more frequent.

The anticipatory action approach ensures actions are taken to prevent or mitigate potential disaster impacts *before* a shock occurs or before acute impacts are felt. These actions might include evacuation of people and livestock in advance of a flood, or preparation of healthcare systems to respond to increased need in a heatwave. The approach is composed of four pillars: hazard forecasting (of a flood, heatwave or drought); preparedness planning, which outlines what actions will be taken when the hazard is forecast; flexible, pre-agreed financing to pay for the actions; and strong coordination and governance, to ensure that the various 'moving parts' all work together.

Figure 2 The four pillars of the anticipatory action programme in Pakistan

The anticipatory action programme in Pakistan started as a pilot in early 2019 by Welthungerhilfe Pakistan, as the host organisation of READY Pakistan, and was funded by the START Network. The first activation of the heatwave element of the programme occurred in 2022 and was continued by Concern in 2023–2024.

One of the most significant pillars of the anticipatory action approach is the localised hazard prediction model. Hazard prediction models based on historical and live analysis, combined with weather forecasts, can predict heatwaves, droughts and floods with an accuracy of 70–80%. When a hazard is predicted, anticipatory actions are 'triggered' and funding is released. Development of the heatwave forecasting model has gone through several stages, and this process of learning and development is still ongoing. The current model is based on a combination of historical weather data (on temperatures and humidity) and weather forecasts. Actions are 'triggered' when the weather forecast suggests that temperatures in a given location will be 3°C higher than average for that time of year for a period of three consecutive days. Heatwaves can be predicted up to 10 days in advance, giving a good lead time for activities to be launched.

The specific activities that are triggered by the forecast are the distribution of heatwave kits, containing items such as water bottles and umbrellas to provide shade; dissemination of information, education and communication (IEC) materials; and establishment of temporary cooling places where people can gather.

Typically, IEC materials give information about how to avoid and treat heat exhaustion, as well as contact details for hospitals and the locations of cooling places. Messages are distributed in schools

and hospitals, pasted on walls and distributed by radio and social media. Working closely with telecommunications companies has also enabled the messages to be sent as ringtones, and to be read out as automated messages while callers are waiting.

Cooling places are either government buildings or temporary shelters that are set up for the duration of the heatwave. Here, people can find shade and clean drinking water. Community health workers are also present to diagnose and respond to heat-related health conditions and to provide in-person guidance on keeping safe in a heatwave. The cooling places also have ambulances that can transport patients to hospital, if needed.

In 2022, this approach was employed in Sibi, in Balochistan province, where READY Pakistan made an anticipatory action grant of about £48,000 (or $62,777) to help the local community during the hot season. In 2023 and 2024, the approach was expanded with a combination of national and international NGOs providing anticipatory assistance in 10 districts.

A man carries an air cooler on his back during an extreme heatwave in Rawalpindi. Credit: Naveed Ashraf/ Shutterstock

What we have learnt so far

The programme has been a process of learning, and we are still trying to improve as we move forward. Some of the key lessons to date are:

1. **The importance of ensuring that triggers reflect local conditions.** In its first year, the programme relied on triggers that had been developed outside Pakistan. Despite many people suggesting that we should take action, we did not because the trigger temperatures were not met. When we reviewed this, we realised that the trigger was based on temperatures alone, rather than on a combination of temperature and humidity. In humid environments – like Pakistan during the monsoon season – high levels of humidity make it harder for the body to cool down, and so heat exhaustion and heat stroke can occur at lower temperatures. We revised the trigger so that, during the monsoon months, it takes humidity into account. We are also in the process of revising the triggers to take into account differences between urban and rural areas, and are fine-tuning the triggers by comparing historical levels of heat and humidity with information on medical conditions recorded at health facilities. This will show the levels of heat and humidity that are dangerous in the context of Pakistan.
2. **The need to provide funding to help small organisations set up the system.** The aim of the system in Pakistan is that it is implemented by local organisations that are close to their communities, understand the context, and can respond swiftly. However, these organisations have limited funds and need money to prepare themselves to act when the weather forecast triggers a response. This year, we have begun to make small grants to organisations in risk areas that have been selected by the National Steering Committee of READY Pakistan to implement anticipatory action projects, to enable them to prepare.
3. **The importance of a collaborative approach.** The anticipatory action approach is increasingly being adopted by the national government and by international organisations active in Pakistan. These different entities must harmonise their systems by, for example, agreeing on the thresholds/triggers to be used. At the local level, coordination is extremely important. A small organisation cannot do everything by itself, but by working with local government, healthcare providers, mobile phone companies, schools and other stakeholders, it can build a whole-of-system approach.
4. **Act, learn, act better!** This climate crisis is a threat that we haven't encountered before, and we are learning as we go. We believe that it is important to make space to critically consider what is working and what isn't, to be open about what needs to be improved, and to change it. So, we review our anticipatory action work annually, to plan for the coming year and to identify changes that need to be made.

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A decade of innovation in disaster risk reduction and building resilience in Nepal

Achyut Luitel

Context

Nepal is highly vulnerable to climate hazards, and this vulnerability is increasing as a result of climate change. It is a largely mountainous country with a high variation of altitude from north to south. Nepal's mountain ecosystem has been made more fragile by the consequences of climate change: the Himalayas are now seeing more rainfall at elevations where it has mostly snowed in the past. The change has made the mountains more dangerous, as the rainwater loosens the soil, resulting in landslides and floods laden with debris. Similarly, the rise in temperature and changed nature of monsoon rains have altered the glacier landscapes, creating large numbers of lakes. These lakes, coupled with frequent cloudbursts in the Himalayan region, create unprecedented runoff, thus making the entire downstream area vulnerable to landslide and flood disasters.

Currently, Nepal observes destructive floods and landslides every year. In the mountains, the landslides sweep away the houses and communities resulting in huge loss of life, assets and infrastructures. In the lowland plain areas (the Terai), the rivers swell during the monsoon and destroy fertile lands and crops, as well as causing loss of lives, assets and infrastructure.

In August 2014, a rainfall-induced massive landslide hit Jure village in Sindhupalchok district, killing more than 150 people. The landslide blocked the Sunkoshi River, forming a huge lake upstream, 3 kilometres in length and 350 metres wide, threatening the safety of several villages, road and other infrastructures in the downstream side.

In June 2021, Melamchi basin observed heavy rainfall causing disastrous flooding in the downstream area, with 17 deaths and at least 23 missing due to landslides and floods. Due to massive debris flow, several trout fish farms, houses and schools were either swept away or filled with debris. It also damaged the headworks of the Melamchi Water Supply Project that had recently started to supply water in Kathmandu Valley.

In August 2023, a riverine flash flood in Mustang district swept houses and damaged infrastructure like bridges and roads throughout Kagbeni village. The disaster also destroyed crops and apple orchards in the area. Around 1 billion Nepalese rupees' (around $7.4 million) worth of properties was damaged in the flood according to media reports.

The above examples are just a few representative cases. Flash floods after heavy downpour, huge landslides forming temporary dams, and bigger floods when these temporary dams burst, have become common incidents in the past few years in the entire Himalayan region. The extent of damage goes beyond the border and equally affects the neighbouring states of India, Bihar and Uttar Pradesh.

Community members taking shelter until the flood recedes, Karnali river basin in Nepal. Credit: Bikram Rana

Flood early warning saves lives

In Nepal, the early-warning system for flood disaster has worked well. Loss of life has significantly reduced in recent years with a series of preparedness activities and flood alerts. Since 2008, Practical Action has been the pioneer organisation working in flood early warning in Nepal. The approach is not only about the introduction of technology, but also a series of community-level mobilisation and social actions. It is about bringing together technology, human dynamics, collaboration and learning from the ground. It is about preparedness, response and recovery. Communities have their memories refreshed through mock exercises before the monsoon every year.

The Community Disaster Management Committees (CDMCs) are responsible for the annual mock flood exercise. This tests the effectiveness of interrelated flood warning system components, particularly monitoring, communication and response, and the capacity of different actors and community members to take coordinated action to avoid losses by using early-warning information during real flood events.

The mock flood scenarios entail displaying mock flood information online on a government page, which is coordinated and communicated to the National Emergency Operation Centre, District

Emergency Operation Center and security forces. The mobile network service disseminates the mock flood information via SMS to communities and local government representatives. CDMC task force members also blow sirens, use hand speakers and spread warnings and preparation advice to every affected household, particularly those who are most vulnerable. If needed, they can escalate the warning to an evacuation notice. Updates are then relayed to the community via phone calls and SMS. This combination of technology and guided community actions has been instrumental in saving lives during even the worst floods in Nepal.

These preparedness and early-warning activities have been demonstrated to be effective. In 2014, Zurich Insurance Company Limited commissioned a review of post-flood activities in the Karnali and Babai rivers. In August of that year, the basin had observed nearly 500 millimetres of rainfall in 24 hours. The rivers in the basin rose rapidly and exceeded the previous largest flood by nearly a metre. The study revealed that Practical Action's early-warning work on those rivers with local, regional and national stakeholders was instrumental in saving lives and assets during this flood. CDMCs were instrumental in disseminating early-warning messages, organising evacuation and movement to safer areas, responding to community needs, assisting district security personnel with search and rescue, and numerous other activities.

In addition to these preparedness and early-warning technologies, Practical Action has also supported communities to engage effectively in planning processes in order to decrease the risks they face and increase their resilience. This has been done through the Flood Resilience Measurement for Communities (FRMC) process, which allows users to generate evidence about the ways in which a given area or community is already resilient to floods, as well as providing a guide to further develop this resilience. The results from the FRMC process have been used by communities when negotiating in local government planning processes, and putting forward their resilience needs to other government agencies. This tool is owned by the local governments in the Karnali river basin and other donor-assisted projects have also adopted this approach.

Recent activities to prepare for climate change

Practical Action aims for 'resilience that protects'. In the resilience space, it has been collaborating with key partners to reduce the risk of climate hazards faced by communities in Nepal. While continuing to work on flood early warning, the work is being gradually advanced to newer concepts and technologies.

One key approach is index-based insurance for the farming communities in the basin who are affected by recurrent riverine floods (which is when intense rainfall causes the water level in the river to rise, and spill onto the land). Index-based insurance provides an agreed level of compensation when the threshold for pre-agreed parameters, such as levels of flooding or a certain amount of rainfall in a certain period, are surpassed. Payments are therefore made based on the intensity of the event, rather than on an accounting of the specific losses incurred. The claims process is much simpler and more transparent,

meaning communities can move from disaster to recovery at a faster pace. Farmers understand the process and appreciate the limited administration and bureaucracy. They are also able to engage and build their skills in digital finance more generally.

Practical Action received a grant from the InsuResilience Solutions Fund (ISF) to develop index-based flood insurance (IBFI), targeting floods as the peril and standing paddies as the asset to be protected. The major objective of the pilot was to strengthen the resilience of vulnerable populations against floods in Karnali and some of its subsidiary rivers. Selected cooperatives in the flood-prone area hold a group insurance policy on behalf of individual farmers who choose to enrol in the scheme. The success of the pilot scheme launched in Lower Karnali has led to replication in the Kutia River and Kailali areas, and is being scaled up thanks to further donor interest.

The IBFI is the first of its kind in Nepal and the initial lessons have been very encouraging. Many farmers have accepted the product, and insurance companies have proved willing to use this innovative approach.

While there are many positives, there are some challenges too. The IBFI can't be generalised for all the river systems at once. As every river is different, it requires a mechanism to be established for a single river based on flood data and agreement on different flood levels to determine the basis for the payback system – this can be a cost- and time-intensive process, engaging multiple stakeholders. Communities often have a negative perception of indemnity insurance, as their previous experiences have been with more traditional insurance systems that involve long processes calculating losses and late payment. It will take some time – and abundant evidence of payouts once the flood hits the set trigger – to convince people that this system is different. Finally, the government has not yet adapted disaster risk financing policies to allow for the subsidising of premiums for IBFI, in the way that traditional insurance already receives subsidies. As a result, IBFI practice in Nepal remains at the micro level. Practical Action is helping the approach develop by working with cooperatives as the aggregators and group policyholders on behalf of farmers. The challenge that remains is to take this innovative approach to the macro level through new government policies.

Many people living by the river depend on subsistence farming to survive, meaning a flood can have disastrous consequences on them and their livelihood. In addition to this work on insurance, Practical Action has been helping communities become more resilient by diversifying their livelihood options. The introduction of on- and off-farm training enables communities to diversify their livelihood options in case of floods and loss of crops. Focus group discussions and a survey showed that their newly learned skills (alongside the income from the IBFI) also: supported improved food security; improved health access; improved access to education; reduced forced migration; and reduced negative coping mechanisms (forced selling of assets, taking out unaffordable loans, etc.). The strengthening of financial capital has also helped communities adopt and invest in other mechanisms that can transfer their flood risk in relation to extreme climate events.

We cannot change unprecedented precipitation leading to flash floods and landslides. With an understanding of climate change adaptation and disaster risk reduction and management, it is possible

to work towards a common objective of resilience-building. We can reduce the potential risks and scale of damage by understanding ecological and other factors, and applying mitigation measures. Practical Action in Nepal has been working exactly according to these principles. Additionally, it tries to address systemic issues, for more impactful and longer-term risk mitigation. It works closely with the Department of Hydrology and Meteorology as well as the National Disaster Risk Reduction and Management Authority and provides inputs for improving policies. It collaborates with like-minded organisations and partners to change their practices. By addressing systemic lapses, improving policies and changing practices, change for a better world is possible.

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Reducing people's vulnerability to climate risks and environmental degradation in conflict-affected Niger: the ICRC's conflict-climate-resilience programme

Catherine-Lune Grayson

The problem

In Niger, the convergence of growing climate risks and armed conflict impacts all dimensions of people's lives, from their health to their livelihoods, and their access to clean water and food.[1] Insecurity and a blatant deficit in development – which translates into a very high prevalence of multidimensional poverty, a dearth of critical infrastructure and a high reliance on rainfed subsistence agriculture – leave people highly vulnerable to climate change, with drastically limited adaptation pathways.

While the impacts of climate change are further threatening already deficient agricultural productivity, insecurity and restrictions on people's movement have led to an increased pressure on and competition for accessible land, water points and wood. This has resulted in a decline in food production and a significant rise in food prices. At the same time, livestock selling prices have plummeted, as herders can no longer reach distant markets to sell their animals at a better price because of insecurity. Alternative livelihood options are few. Seasonal labour migration to neighbouring countries has become too unsafe to undertake, and jobs in urban centres are not readily available for people with a limited education or none at all.

1 This case study draws from a case study included the 2023 ICRC report, *Weathering the storm: reducing the impact of climate risks and environmental degradation on people enduring armed conflicts*.

Searching for local solutions

As in many other conflict-affected countries, the International Committee of the Red Cross (ICRC) has long implemented a combination of programmes to reduce the impact of armed conflict on people's integrity and safety, and to strengthen their food and economic security and access to water and health care in Niger. Activities include bilateral dialogues with arms carriers, emergency food distributions, livelihood support for farmers and herders, digging wells sustainably, support for the development of urban water infrastructure, and the construction of health facilities. These activities are often undertaken in partnership with the Red Cross Society, civil society organisations, public authorities and service providers.

In recent years, ICRC teams decided to develop a holistic conflict–climate–resilience programme that aimed to achieve sustainable impact by integrating longer-term environmental and climate risks into the design of activities through an area-based, multi-disciplinary and multi-year approach, in line with its commitments under the Climate and Environment Charter for Humanitarian Organisations.

The delegation teamed up with local experts to deepen its understanding of people's reality and how they adapt. A study on the specific situation of herders and ways to support them was led by local experts. Another study by the Groupe URD, carried out by local and international researchers, considered the impacts of climate change and environmental degradation on communities enduring conflict, and assessed how its programmes could be further tailored to integrate these dimensions. At the same time, the delegation explored low-tech solutions that could be designed with and owned by the communities, reinforce people's coping strategies, and help mitigate tensions within and between communities by reducing competition for land and water.

From 2022, building on its long experience in Niger and operational guidance developed jointly with the Red Cross Red Crescent Climate Centre, the ICRC began piloting a set of activities, informed by the knowledge, priorities and perspectives of communities. This helps ensure that local knowledge is built into the response, and that it is owned by the communities and, therefore, more sustainable. Activities aim to strengthen the resilience of the livelihoods of farmers and herders affected by conflict, improve water management, and reduce environmental degradation.

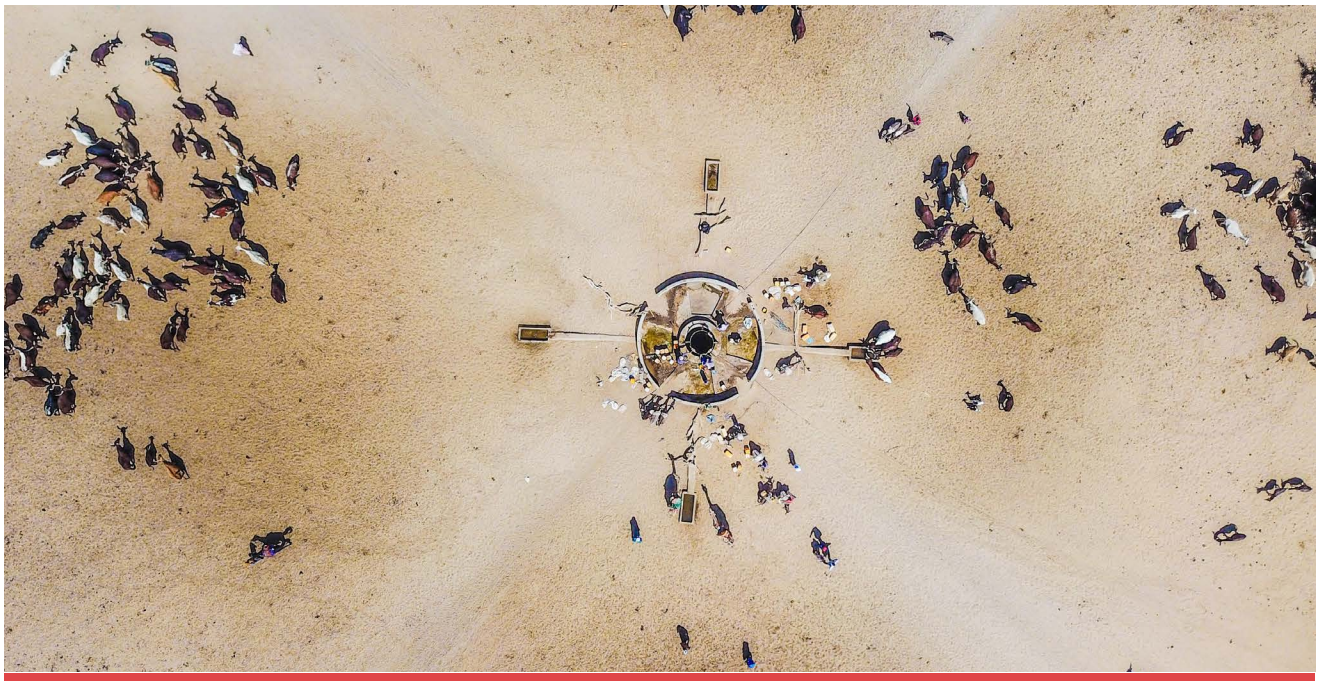
For instance, agropastoral communities in Diffa received support to create 300 kilometres of firewall strips to protect grazing land from bushfires, to rehabilitate vaccination infrastructure that has been covered by sand storms and moving sand dunes, and to provide animal vaccination services. In the community of Chetimari, where ICRC monitoring found that more than two-thirds of households had experienced at least one weather-related shock over the last decade, support was provided to build two kilometres of flood dikes through community work programmes. The aim was to protect households from flooding from the Komadugu river, safeguard fields and enable water retention for post-flood rice cultivation. In addition, the ICRC helped the water resource department resume its monitoring of

river levels by providing new gauges with colour codes. When the water reaches a worrying level, local committees receive a warning by phone and through local radio stations and can strategically position extra sandbags that have been provided by the ICRC.

Actions are also ongoing to help farmers through the rehabilitation of land that has been eroded by rains, flooding and winds, and the provision of locally adapted seeds. Actions aimed at transforming organic waste into marketable products (like fertiliser) are being explored in partnership with local waste management and recycling organisations. Enhancing access to fertiliser is particularly important given that imported conventional fertiliser is banned from local markets, because it could be used to prepare improvised explosive devices.

In Tera, a small town in the Tillaberi region, the ICRC worked with a local organisation, Jeunes Volontaires pour l'Environnement, to provide fuel-efficient stoves to 1,800 families. These reduce greenhouse gas emissions and the need for wood, therefore also reducing deforestation and helping to lessen tensions over resources. Local artisans are being trained so that the stoves could be manufactured locally; 600 vulnerable families from the host community benefit from the outputs of this on-the-job training programme. Similar activities are taking place in Tahoua and Diffa.

These activities are in line with Niger's adaptation priorities. Some of these actions – such as creating and maintaining firewall strips – would typically be carried out by public agencies, but these have long ceased operating owing to a lack of means and capacity, as well as the long-standing conflict-related risks that have limited their access to some regions.



A well in Diffa region provides water to people and their cattle throughout the year.
Credit: M. Birom Seck/ICRC

Successes and areas for improvement

ICRC climate–conflict–resilience activities in Niger provide both immediate humanitarian assistance and contribute to the development of resilient systems and coping capacities, building on a long experience in the country and the region. Early observations confirm that such responses can help reduce future humanitarian needs and strengthen resilience by increasing livelihood security and reducing environmental damage and tensions surrounding the use of resources. This in turn reduces the risk of negative coping mechanisms of communities exposed to armed conflict, and enhances the capacity of the affected population to cope with risks.

It is, however, clear that humanitarian organisations alone cannot ensure adequate and comprehensive climate adaptation. Gaps lie both in the scale of programmes and their longer-term vision when it comes to adapting livelihoods and ensuring sustainable access to water, sanitation, health care and energy.

Successes

Continuing to learn: The importance of adapting programmes based on regular monitoring is at the heart of programmatic efforts in Niger, and so is the ambition to ensure that relevant learning contributes to strengthening programmes in other countries. For instance, the monitoring of activities to create flood dikes has shown that bags that are more resistant to solar radiation should be used to enhance the sustainability of the action (as sand bags otherwise deteriorate fairly rapidly); such activities could be paired with agricultural support to maximise the impact; and the technical capacity of local committees and Red Cross volunteers should be reinforced to ensure that climate risks are integrated across programmes. A holistic impact study focusing on activities in support of herders is now being launched.

Adapting to the local reality and working with local partners: Activities in Niger are similar to those implemented by other organisations at a community level in non-conflict settings – such as strengthening systems and infrastructure, and helping communities rethink their livelihoods – but in ICRC areas of operation they are developed and adjusted with particular attention to how they may affect the dynamics of the conflict and drivers of vulnerability. They also build on the ICRC's long-standing presence and conscious effort to understand conflict-affected communities in their complexity. To ensure these activities meet the needs of communities and are sustainable, they are designed at the local level, in collaboration with local authorities and service providers, and with communities. This is important because in unstable settings, where the government may be weak or may not control large portions of the territory, it is not always possible to work on a large scale through centralised institutions.

Going beyond an emergency response: ICRC activities in Niger are, in part, supported by development funding. This reflects a recognition of ways in which humanitarian programming can help limit development reversals (or development going backwards), and ideally, lay some of the groundwork for further efforts towards sustainable development by development actors and public authorities. It is also an acknowledgement that humanitarian organisations can have a sustainable impact in environments where traditional development approaches encounter limits.

Areas for improvement

Strengthening access to actionable information: Despite investments in forecasting capacity and anticipatory action, farmers report uneven access to both short- and longer-term weather forecasts and a lack of guidance from agricultural authorities and experts in determining what and when to plant in light of forecasts. This can severely impact yields and people's food and economic security (particularly as farmers who lose their harvests often have limited means to plant again), as well as people's physical safety in the face of droughts and floods.

Addressing the time- and spatial-scale gap: Even though humanitarian activities may contribute to preserving development gains through incremental adaptations, they do not reach all communities that are in need of support and tend to be too short in time to adequately and comprehensively help communities adapt to current and future climate impacts. For instance, investment is critically needed to improve the water-management capacities across Niger to ensure that storm water does not destroy fields, homes and infrastructure; that farmers and pastoralists benefit from it; and that people have access to clean water during both dry spells and periods of intense rain. To address these gaps and provide a more comprehensive and long-term climate-resilient response, the authorities must be involved and supported by development organisations and climate experts. Development organisations have recognised the need to invest in conflict and fragile settings, but, despite some progress, their efforts continue to collide with their ways of operating, financing mechanisms, and restrictions on where they can work.

Adapting to changing conflict dynamics: The dynamic nature of conflicts, with variations in the intensity of the violence over time and space, can severely reduce humanitarian access and hinder the implementation of activities in areas previously relatively stable. Similarly, a change in political posture or government can result in a reduced humanitarian space and hamper procurement. In Niger, strong partnerships with local organisations, often established during periods of relative calm, have helped ensure some continuity in programming when circumstances change. In that sense, the development of strong working relationships can provide a lifeline when humanitarian access is reduced or when the humanitarian space shrinks.

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Community resilience, livelihoods diversification and recovery, and mitigating climate change shocks in Turkana County

Kevin Kairu, Ferguson Olemarampa, Dan Ekal and Patrick Kibuku

Background

Climate change is a serious challenge in Kenya. In recent years, the country has increasingly experienced climate change and its impacts, such as intense drought, hotter temperatures and loss of livelihoods, and researchers predict that the country will continue to suffer from climate change in the coming years. Arid and semi-arid regions in the country are most vulnerable to climate change, and as such the lives and economic activities of households are at risk.

In Kenya, the trend of increased and unpredictable drought frequency means that no one is safe from the impacts of climate change. Arid and semi-arid lands (ASALs), such as Turkana County (located in Northwestern Kenya, sharing international borders with Uganda, South Sudan and Ethiopia), tend to suffer the most. The increased temperatures and evapotranspiration rate result in reduced outputs from rain-fed agriculture, worsening food insecurity, increasing malnutrition cases, frequent droughts, and more frequent water shortages.

Turkana County's economy is highly dependent on its natural resource base, and the recent climate change and variability has threatened to wipe out the economic livelihoods of most households. Climate change has negatively affected the agriculture, livestock, fisheries, food security and health sectors.

Building and supporting community resilience

Just like any other global crisis, climate change has demonstrated the need for locally led responses, where global stakeholders provide support to local partners to provide locally led solutions in mitigating the negative effects of climate change within their respective communities.

In Turkana County, Sustainable Approaches for Community Empowerment (SAPCONE), a local civil society organisation, is partnering with DanChurchAid (DCA), an international non-governmental organisation, through the Support Community Resilience, Recovery and Realization of their Basic Rights (SCRRR) project.

In 2023, the SCRRR project focused on specific activities aimed at addressing the pertinent elements of cyclical droughts and climate change, which have affected Turkana County livelihoods, peaceful coexistence and resilience levels. Livelihoods and resilience would be strengthened via practical community engagements, capacity-building, and cross-border community dialogues.

To boost agricultural resilience, six demonstration farms were set up to help farmers learn new approaches to agriculture that are better adapted to climate change. Farmer groups located in the six demonstration farms benefitted from investment support in the areas of farm inputs, equipment and implements. Similarly, four apiculture groups were supplied with three-frame centrifugal honey extractors and digital refractometers. Alongside this extraction equipment, the apiarists were given training on their use and maintenance.

For those living along the Lake Turkana Basin, support came in the form of wooden boats, engines, and fishing gear such as hooks, twines, floaters and nets. This allowed people to rely less on rain-fed agriculture and pastoralist activities, as droughts affected livestock numbers and grazing areas. Attention was paid to the location of markets and other practicalities, with groups being given motorbikes fitted with cooler boxes to ensure the fish delivered to the market is fresh, and hence sold at the highest price.

Material support was complemented by conflict-mitigation initiatives, and trainings targeting the fisherfolk communities – on conflict transformation through dialogue, resource-sharing agreements, and the sustainable use of resources, especially shared resources (for example, via sustainable fishing). Through the training, community leaders and households have strengthened mediation efforts at the community levels, by ensuring that conflicts – typically resource-based, for example, over grazing land and water access – are addressed through dialogues.

The activities chosen for the SCRRR project were based on the following parameters:

1. The ability of the activity to support the project aim of strengthening community drought mitigation and resilience-building through self-reliance and sustainable livelihoods, as well as supporting initiatives geared towards access to basic rights and services, as per the Core Humanitarian Standard.
2. The ability of the activity to address the frequent food and nutrition insecurity rampant within the project areas, caused by persistent drought and exacerbated by resource-based conflicts among neighbouring communities around the Ilemi Triangle region.
3. The ability of the activity to target the project participants, who were mostly vulnerable people in the host communities, including men, women, youth and differently abled persons relying on pastoralism, agropastoralism and fishing as their main livelihoods in Turkana County. The activities were intended to help target groups to ensure their wellbeing both in the short and long term.

The sustainability of the activities undertaken under the SCRRR project were carefully reviewed, with the activities designed in line with DCA Kenya's overall country programme goal. This goal is aligned with the Sustainable Development Goals and founded on a rights-based approach in the humanitarian–development nexus, covering immediate needs assistance, food security, and the resilience, self-reliance and socioeconomic integration of the project participants. Moreover, the project participants such as farmers and fisherfolk groups were linked to relevant government departments to access services and other support beyond the project period.

Project success stories

Since 2017 to date, Turkana County (specifically the Turkana Central, Turkana North and Turkana West sub-counties) has received support from SAPCONE with funding from DCA on projects focusing on addressing the pertinent elements of cyclical droughts and climate change. Through past projects that have continually built on addressing the negative impact of climate change, positive milestones have been recorded through community members' increased production levels, and the linkage of the fisherfolk community to markets that have led to increased income and therefore greater economic empowerment.

The impact of the SCRRR project in ensuring that the livelihoods of the Turkana communities are shielded from climate change calamity cannot be underestimated. By identifying and supporting farmer, fisherfolk and beekeeper groups, the project has helped communities generate food for local consumption and extra income, ensuring that households and communities are food secure.

Improved production for better livelihoods

In total, 185 farmers got the chance to improve their production capacity using modern farm equipment and inputs that could withstand the harsh climatic conditions of the area. As a result, farmers in Naotin can now furnish themselves with some basic farm inputs without external support.

Naotin and Kalobeyei farms managed to break even. For example, Naotin farm had a sales income of Ksh. 1,377, 990 ($10,564), with an initial input cost of around 7% (Ksh. 96,459/$740) of the total sales. However, in both cases the total human labour has not yet been quantified and taken into account. Additionally, other farms in the project are yet to break even.

Increased economic returns among fisherfolk groups

As climatic conditions worsen, the Turkana communities have learnt to diversify their livelihoods through phased migration from the nomadic way of life, and by adopting sedentary or semi-sedentary lifestyles that incorporate fishing and/or agriculture. Through fishing along Lake Turkana, most households now have a constant livelihood and, generally, increased household income.

Community conflict mitigation initiative support

Climate change indirectly affects peaceful coexistence between communities, as both social and economic conditions are impacted.

The disruption of Turkana communities' economic activities caused by climate change has necessitated a shift from pastoralism to fishing as the key economic activity, leading to reignited territorial conflicts in Lake Turkana over the fishing areas. With fisherfolk groups from neighbouring Marsabit County laying claim to territorial waters, venturing into said waters leads to conflict, especially during seasons when the fish catch declines due to reduced water levels.

To address this, SAPCONE, with support from DCA, has trained local government officials, community leaders and security agents on conflict analysis, early warning, and alternative dispute resolution methodologies.

Through these trainings, community leaders and households have strengthened mediation efforts at the community levels, by ensuring that conflicts are addressed through dialogues, understanding, collaborative efforts and avenues to address grievances. Such approaches have led to the formation of peace committees that monitor risks and advise communities on alternative ways of dispute resolution.

Organisations looking to emulate projects like SCRRR should create community dialogue initiatives based on understanding and collaborative efforts, to help communities come to a consensus to resolve resource-based conflicts. Resource-sharing agreements can be incorporated into a project as a way to support the cross-border sustainable management of resources.

Nalemsekon is a collective of four business groups practising open-field farming in Locheredome, Turkana County. With support from DCA in capacity building on farming and provision of seedling, the group has established a thriving farm as a sustainable source of income. Credit: Beth Muigai

Setbacks suffered

The major problem facing ASALs is access to water for sustainable livelihoods and food production, with climate fluctuations aggravating water shortages in places like Turkana County.

Hence, projects with livelihood components face a major issue in trying to map out areas of implementation to ensure project sustainability. Under the project, demonstration farms such as Naipa and Kareedome faced continuous water-supply challenges for agricultural use. This forced farmers to look for alternative methods, one of which was walking over long distances to get water.

To ensure that the efforts made in establishing demonstration farms such as Naipa and Kareedome are not eroded due to water-supply challenges, subsequent projects to be undertaken will be centred on the mobilisation of resources for drilling boreholes and the installation of solar panels to ensure a constant supply of water. Additionally, future projects will adopt Family Drip System kits, as an alternative avenue for effective irrigation and water conservation.

Lessons learned

Despite the steps taken to address climate changes in Turkana County through the adoption of climate-resilient agriculture, Turkana County suffers from limited water resources, which hinders large-scale climate-resilient projects.

One way to help mitigate the negative impacts of climate change is to develop multistakeholder initiatives (governments, non-governmental organisations and so on) and policies to provide continued resource support to affected communities. Similarly, ongoing training should be provided to communities, on climate-smart agriculture techniques, livelihoods diversification, mitigation strategies from climate shocks, and economic empowerment. This will inform them on various aspects of climate change adaptation, disaster risk mitigation strategies, and anticipatory and response actions. Climate-smart agriculture on-site training, with demonstrations and practical lessons, is effective for ASAL communities. The communities acquire knowledge and skills faster than with theoretical training.

However, in other projects, the topic of climate change is discussed directly with community members, resulting in an increase in knowledge. The discussion focuses on the definition of climate change and its context in Turkana County; the causes of climate change; and its effects. The Turkana communities are aware of climate change because they have experienced first-hand the effects on their livelihoods. To ensure the message of climate change is disseminated to the community, local radio stations are brought on board to spread the message (through the local language), and climate mitigation strategies are shared.

Last but not least, we have learned that sustainable climate-resilience initiatives within Turkana County require that projects focus on helping communities in their adaptive choices. Communities must be allowed to lead the way when it comes to building their futures.

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The case of women and climate change in Northern Kenya

Lynn Chestit and Carol Rotich

Introduction

Kenya is particularly susceptible to the effects of global warming. More than 80% of the landmass is made up of arid and semi-arid land. Even though there are regional variations in temperature, Kenya is becoming noticeably warmer. Kenya's average yearly temperature has risen by about 1.0°C since the 1960s. It is predicted that temperatures will rise by 1.7°C by the 2050s and 3.5°C by the end of the century. The health of people and animals, agriculture and ecosystems will all be significantly impacted by increased and extreme heat.

In recent years, Kenya has faced frequent natural disasters, including droughts and floods, as well as health epidemics that result in population displacement and the need for humanitarian aid. Most recently, above-average rainfall during the October, November and December 2023 and 2024 'short rains' season led to thousands of people being displaced, as well as causing road and infrastructure damage, livestock loss and fatalities. As of the end of April 2024, 160 people had died in Kenya because of floods brought on by El Niño and exacerbated by climate change, and around 55,575 households had been forced to flee.

This was preceded by five consecutive seasons of below-average rainfall, between 2020 and 2022, with Northern Kenya the most impacted. This resulted in a severe drought and insufficient access to food and water, which limited agricultural outputs and livelihood opportunities and decreased the population's capacity to withstand future shocks.

Pastoralism is the primary source of subsistence in Northern Kenya. Pastoral groups are accustomed to dealing with drought and unpredictable rainfall and have traditionally used various methods to limit the impact of climate-related shocks on their livelihoods. However, the increased pressures caused by climate change mean that the practice of pastoralism has become more difficult. Climate change, along with other environmental, economic and political issues, has made poor and marginalised households increasingly vulnerable.

'Like most other humanitarian and development challenges, the climate crisis perpetuates and magnifies structural inequalities, such as those between women and men.' It also amplifies challenges caused by factors such as population growth, a declining supply of resources, conflicts centred around those resources, shifts in access to land and water, and the effects of other social and cultural injustices that exist in the communities. In the context of Northern Kenya, 'women bear an unequal burden when it comes to climate change impacts' as they 'rely primarily on extremely climate-sensitive livelihoods', such as rainfed small-scale farming.

Insufficient access to food and water deprives women and girls, particularly expectant and nursing mothers, of essential nutrients. Water scarcity, caused by droughts and high temperatures, means women must go further to get water for cleaning, gardening and cooking, which puts them at risk of dehydration, heat stroke and sexual assault. Lack of access to education for girls and financial strain on families due to climate change raise the probability of child marriage and other forms of violence, causing women and girls to lose their homes, livelihoods and land. Additionally, pregnant women who are displaced are less likely to obtain appropriate pre- and post-natal care, which can negatively impact their health, as well as infant health.

WOKIKE interventions – emergency response, resilience and climate justice

Womankind Kenya (WOKIKE) is a non-governmental women's rights organisation that operates in the northern and coastal regions of Kenya, with the mission of empowering women, children and vulnerable communities through community initiatives enhancing their rights and fostering resilience.

WOKIKE has been at the forefront of promoting and advocating for locally led climate action in Kenya, empowering communities and driving change using gender-responsive and child-centred approaches.

WOKIKE recognises the unique needs and priorities of women; while women are vulnerable to the impacts of climate change, they are also effective actors and agents of change in relation to adaptation and mitigation. Over the years, WOKIKE has worked with women at the grassroots level, rolling out research, development and humanitarian initiatives, effectively addressing gender-specific impacts of climate change in the areas of food security, agriculture, health, water, sanitation and hygiene (WASH), peace and security.

Our approach in addressing climate-change impact is threefold: providing humanitarian aid and services; building the resilience of communities to enable them to better respond to climate impacts in the long term; and supporting climate justice advocacy so that they can effectively engage with the structures and systems that affect them. These approaches are based on robust community engagement, in collaboration with both private and public sectors.

Firstly, in responding to climate shocks like prolonged drought and floods experienced in Kenya, WOKIKE (in collaboration with partners) has been providing humanitarian support to affected communities, through food assistance, nutrition, and WASH interventions. This has led to reduced morbidity and mortality and ensured that households are able to meet their basic needs and reach an acceptable level of food security.

Secondly, to support the longer-term resilience of communities, WOKIKE has supported communities in resilience programming. In particular, this has been through a series of livelihood and agriculture interventions such as provision of drought-resistant seedlings to small farmers, procurement and distribution of animal feed for livestock, and technical sessions on feed management. Moving forward, we would hope to find investment in climate-resilient water infrastructure, and to be able to support work to decrease post-harvest losses and address issues of crop pests and diseases.

Grassroots climate justice advocacy at a Womankind Kenya Engagement Forum in Garissa County, 2024. Credit: Womankind Kenya

A central element of these humanitarian and resilience initiatives is the survivor- and community-led response (SCLR) approach, which gives power to community-owned initiatives during rapid onset or protracted crises. Working with local government and civil society, WOKIKE identifies communities particularly at risk of, or affected by, climate hazards. These communities are then asked to develop plans to address these hazards, with support and training from WOKIKE, before receiving grants to implement plans for activities such as solarisation of water supplies and constructions of pit latrines. In order to receive funding, a community has to show that women and marginalised groups have been involved in the selection and planning of activities.

The third pillar of WOKIKE's work in responding to climate change is climate justice advocacy. We have seen that the magnitude of climate effects depends on how far people are from the centre of power – and so we aim to bring their voices to the people who make decisions. This work has three strands: developing strong grassroots groups, developing narratives, and using these narratives to shift policies. We work with community groups to make them aware of climate change, through trainings, inviting speakers, and building networks between these communities and climate justice groups. We build narratives in the form of position papers, but also in formats such as poetry and dance. And we create forums where people can present these narratives to decision-makers. The approach has been successful at multiple levels. Through this process, community concerns around water access were included in the Garissa County Development Plan. A better understanding of climate change also enables people to take action to adapt their livelihoods: in recent years, participants have begun to diversify livelihoods to encompass beekeeping and agriculture along rivers, to make them less vulnerable to droughts.

Lessons learned

Over the years that WOKIKE has been engaging in these areas, we have constantly tried to learn and to improve the work we are doing.

Communicating climate change with rural communities can be difficult. In many communities, people are aware of increased drought and floods, but think that it is a punishment from God. Building an understanding of what is happening takes time – it requires working with communities for many months, or years, and using a variety of different media: trainings, radio programmes, meetings with local government. It is also important that people get these new ideas from people they already know and are used to working with.

Finally, it is important to anchor the messages in people's own realities – using messages about carbon dioxide or the greenhouse effect doesn't work because people don't understand the technical language, but often, through conversation, you find that they are talking about the same things in their own language. For instance, instead of discussing 'carbon emissions' or the 'greenhouse effect', we usually frame our conversations around issues that resonate with the community's day-to-day life which have severely impacted livelihoods, including unpredictable rains, increased temperatures, and livestock loss. In addition, we link the causes of carbon emissions to communities' daily human-led activities e.g. overgrazing, deforestation and encroachment on riparian areas.

Wherever possible, we try to bring these conversations directly to policymakers – through media such as the arts – but in some cases, and for some audiences, we need to interpret what communities are saying back into technical language and then take it to the policymakers. While we have made progress in bringing traditional knowledge into climate discussions and policy, there is still work to be done.

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Locally led actions to combat the impacts of heatwaves

Mihir R. Bhatt and Vishal Pathak

In the past 10 years, '83% of all disasters worldwide triggered by natural hazards were caused by extreme weather- and climate-related events, such as floods, storms and heatwaves'. Heatwaves have been one of the biggest killers. Agriculture has been one of the key sectors that has faced the negative impact of these extreme climate events. All India Disaster Mitigation Institute (AIDMI) is a community-based action

planning, research, and policy support organisation which exists to minimise the impacts of potential and predicted extreme events on vulnerable populations. AIDMI is committed to bridging the gap between policy, practice and research related to disaster mitigation and climate change adaptation, which has been identified in a number of reviews, including the Indian government's 2019 National Disaster Management Plan. AIDMI has worked over the years to cover 14 types of disasters in 18 areas in India and 9 other Asian countries. AIDMI links local communities to national and international levels of risk reduction, relief, and long-term recovery programmes and policies to build resilience as envisioned in the Sendai Framework for Disaster Risk Reduction. Based on this experience, AIDMI believes that disaster management programmes and operations need to increasingly take climate into account and involve women, youth and indigenous communities. This article outlines two programmes in which we are trying to work towards inclusive disaster risk management that addresses the climate threat.

Humanitarian actions with small farmers

Agriculture contributes to the Indian economy's overall growth and reduces poverty by providing employment and food security for most of the country's population; thus, it is the most inclusive growth sector of the economy. 'Agriculture is the main livelihood for 43% of India's population, and accounted for 18.8% of the country's GDP in 2020–21.' The majority, around 85% of farm households, are small or marginal farmers, with under two hectares of land each. However, this vital sector is extremely vulnerable to climate impacts. Over 80% of Indian citizens are at risk of climate-related disasters. Floods, heatwaves, changing rainfall patterns, declining groundwater levels, retreating glaciers, intense cyclones, and sea-level rise create challenging situations for livelihoods, food security, and the economy. Small farmers and women farmers are particularly vulnerable to extreme climate events.

AIDMI supports family farmers, promoting and strengthening adaptation measures that are sustainable and cost-effective. Here, family farmers install a vermi bed in Anand district, Gujarat. Credit: AIDMI.

AIDMI provides relief support to small farmers affected by climate hazards. In response to floods in Punjab and Gujarat, for example, the organisation supported 2,150 farmers, using a rapid consultative process to determine assistance needs.

Interventions that help crisis-affected populations meet their basic needs after a disaster are crucial – but they are not enough. AIDMI also works to strengthen local disaster response capacity and increase community resilience to shocks. Promoting adaptation to climate change, which is suitable for small farmers, is essential. This is highly important for farmers who live with the threat of overlapping climate hazards. For example, in 2021, farmers in Gujarat faced loss and damage due to Cyclone Tauktae, a heatwave, and unseasonal rain in some rural areas.

Women farmers comprise a substantial proportion of farmers globally, making them crucial to any locally led adaptation. Yet, they are often excluded from adaptation planning. AIDMI, with small landholder women farmers in Gujarat, Maharashtra, and Madhya Pradesh, is working to put women's voices at the centre of climate adaptation.

> We have adopted several practices to protect our farms from climate change and extreme events. I, along with other women farmers, am promoting such practices. For instance, we have started using solar panels and biogas for our energy needs. Similarly, we have planted trees around our farms, applied water-saving techniques, and improved cooler roofs for our cattle. – *Ms Kalpana Dudule, farmer and local trainer*

AIDMI applies an appreciative inquiry approach to facilitate the engagement of women farmers and stakeholders (e.g. agricultural cooperatives, self-help groups, local leaders). It is a reflective process in which groups of farmers consider what is working in the adaptation practices that they are already putting in place, and what is required to promote and strengthen them. Because the discussions focus on what is already working, we have seen that they can be very effective and energetic, facilitating learning across different geographical sites and how it translates into action. These processes have resulted in promoting and strengthening practices such as the use of suitable seeds, innovative water-management techniques, an improved crop selection process to deal with climate uncertainty, and the utilisation of data and better negotiation with market stakeholders. As a result of the inclusion of women farmers, we have observed a stronger connection between farming and animal husbandry, which many women engage in. For example, the high usage of chemical fertilisers was common in the targeted areas, which, through the engagement of women farmers and appreciative inquiry processes, gave way to more balanced usage with natural fertilisers prepared at home.

The appreciative inquiry process also creates opportunities to engage in capacity-building and climate change education. This capacity-building occurs through direct training sessions, focus group discussions, and the production of awareness materials with high visual elements and in local languages. AIDMI found a consultative process very valuable during the creation of capacity-building materials. It provides useful input and feedback in pictorials, connects with local words and culture, and increases

their chances of usage. Discussions on climate change relate to the local context and are linked with the agriculture sector. They generally cover three areas: why climate change is happening and the personal experience of climate change; the impacts on family, work and society; and what we are doing and can do. This education is very much a lateral learning process where the facilitator learns about local context, perspectives and cases, and the targeted audience learns about climate change and develops ideas on how to adapt to climate change.

Heatwave risk management and small informal businesses

The Sixth Assessment Report by the Intergovernmental Panel on Climate Change highlights that global climate change has made heatwaves more likely. Heatwaves amplify the impact of drought, increase the likelihood of forest fires, create water insecurity, power shortages and agricultural losses, and cause significant damage to communities. Temperatures have previously hit nearly 50°C across India and Pakistan, while Bangladesh and Sri Lanka also sweltered under unusually high heat in 2024. Due to rapid climate change, heatwaves across India and Pakistan were 30 times more likely.

In India, government and non-government actors have increased the response to heatwaves. More than 37 cities now have a Heat Action Plan. To fully implement these plans, and prepare for higher heat, we need to go beyond the health system and engage other groups in society – in education, agriculture and the private sector, among others. While early-warning systems have been developed, it is still important to ensure that different sectors of society engage with and respond to these early warnings.

The impact of heat waves on small and informal businesses is very high in terms of lost incomes and risk to health. AIDMI, with community-based organisations, is designing and implementing adaptation measures to support at-risk informal businesses, including family businesses, women-headed businesses, and businesses that are more exposed to heatwaves. Targeting business makes sense, not only because of the risks to people working in them and depending on them for livelihoods, but also because, in crowded urban areas, they can be a vital and rapid source of assistance to people affected by extreme heat.

> Small-scale disasters and extreme climate events, such as cyclones, hailstorms, heatwaves, and erratic rainfall, cause extensive damage in our area. Preparing farmers against these risks is essential. I found the community-to-community learning approach very useful – farmer to farmer and women to women. – *Ms Gokarna Kamble, farmer and community mobiliser*

Observations and discussions – individually, in groups, separately with women and men with informal businesses – provide useful guidance for the needs and design of the interventions. Small business owners identified a number of important actions to decrease the risk of heatwaves to themselves and their customers. These included cooling interventions such as the establishment of cool surfaces, creation of shadows, cool storage for goods such as fruits and vegetables and also water, shifting from mains electricity to solar energy (to reduce the electricity expense as the consumption is high in summer months), whitewashing terrace roofs, and creation of air ventilation. Sometimes, it is challenging

to convince informal businesses to focus on heatwave protection measures because of their poor economic status. Low business in the summer season also creates financial pressure on the family. In such cases, the aforementioned actions also provided livelihoods material support.

Heatwave deaths are avoidable. And they *must* be avoided. By taking a whole-of-society approach, and working with a range of different stakeholders to introduce small but meaningful changes and simple coping mechanisms, we can save lives. This is AIDMI's conclusion from its decade-long work on planning and implementing heatwave mitigation measures in India, and South Asia more broadly.

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Designing climate-resilient shelters: lime-stabilised soil shelters for Rohingya refugees

Dabal Kaji Rokaha and Mohammad Ali Mamun

The challenge – climate-resilient shelter for refugees

The Rohingya refugee crisis in Cox's Bazar, Bangladesh, has posed significant challenges for the shelter sector. Since 2017, the area around Cox's Bazar has hosted almost a million Rohingya refugees in what was previously a wildlife sanctuary. Given the number of refugees, space is extremely limited. Additionally, as the camp is situated within a protected forest, the government has imposed restrictions on the materials used to construct shelters. Only temporary shelter materials that have minimal environmental impact are permitted by the authorities.

Bangladesh is one of the world's most vulnerable countries to climate change, experiencing increased frequency and intensity of floods, cyclones and heatwaves. The refugees in Cox's Bazar are particularly vulnerable. Since 2017, these communities have faced several tragic incidents resulting in extensive damage to their shelters and belongings and the loss of many lives. This vulnerability is amplified by the current shelter materials, which are unable to withstand extreme weather conditions such as cyclones, floods and landslides, and are also not fire-resistant.

To address these challenges, shelter partners and the Shelter–Camp Coordination and Camp Management Sector are working jointly to find innovative solutions that promote the sustainable use of resources in shelter construction and work within the government's restrictions. The International Organization for Migration (IOM) has initiated a pilot project that focuses on enhancing resilient shelter

solutions using lime-stabilised soil (LSS) construction. The project aimed to address these challenges by providing shelters that withstand extreme weather conditions and fire hazards, offering a sustainable solution for displaced populations.

The solution – lime-stabilised soil shelters

This pilot project leverages existing materials in combination with lime, soil, rice straw, rice husk ash, and brick dust. These materials are readily available in the local market. IOM has undertaken a series of extensive experiments and studies with the aim of discovering the most effective combinations of materials suitable for application to the various components of a shelter constructed from bamboo, which can be applied to the roof, wall and floor. These efforts aim to determine the optimal solutions for enhancing the robustness and strength of such structures, while improving their overall safety and comfort levels. These local materials not only offer technical advantages but also bring enormous economic benefits and create a pleasant living environment for the users, making it a practical and effective solution.

Mixing lime, soil, and other natural materials to create a fire-resistant and durable plaster for shelter construction in refugee camps. Credit: Abdu Sukkur Bappy

Limestone, a naturally occurring sedimentary rock rich in calcium carbonate, plays a foundational role in creating materials for LSS shelters. When limestone is heated, it undergoes calcination, which removes carbon dioxide, resulting in quicklime. Quicklime, an essential ingredient in lime stabilisation, is highly reactive when mixed with water, producing slaked lime. This slaked lime acts as a binder that can be combined with soil to enhance its durability, moisture resistance and cohesion, which are essential qualities for LSS shelter construction. A lime-based plaster provides a fire-resistant, breathable and crack-resistant finish, protecting the shelter from external weather conditions and reducing the risk of mould and dampness inside. This application of quicklime in LSS construction thus contributes to creating more resilient and sustainable shelter solutions for refugee camps.

The lime-stabilised soil and its application in the bamboo shelter proposed here have, among other things, two significant advantages: the ingredients (clay, sand and lime) are locally available at a reasonable cost in most areas, and the implementation requires neither modern equipment nor the use of fuel for plastering the wall, structural bamboo, roof or floor; a simple manual press is sufficient. In this pilot project, lime-stabilised soil plaster is used to protect the bamboo structure, including walls and roof, from fire, and to provide stability underwater during periods of flooding.

In refugee camps, lime-stabilised shelters provide significantly enhanced protection from weather-related hazards. In particular, they provide:

- **Comfort from extreme heat:** People living in Rohingya camps endure intense summer heat, which is increasing because of climate change, primarily due to the nonexistence of roof insulation. LSS shelters offer good thermal insulation properties, helping to maintain comfortable indoor temperatures. The lime-stabilisation process creates air voids within the soil, which function as natural insulators, and a drop of 5–7°C compared to the outside temperature is observed during summer.
- **Flood resilience:** Bangladesh, situated in a funnel-shaped bay, faces the brunt of cyclonic storms each year. Its susceptibility to disasters is a pressing concern. In response, LSS shelters have been ingeniously designed to withstand a range of calamities, including monsoons and flooding. The lime-stabilisation process fortifies the soil, granting these shelters remarkable strength and stability. This resilience is pivotal in safeguarding communities vulnerable to frequent natural hazards.
- **Fire resilience:** The commonly practised shelter modality consists of bamboo, ropes and tarpaulins that are at risk of fire. LSS-plastered bamboo shelters form a protective barrier that can help prevent the rapid spread of fires between densely populated shelters and reduce casualties.
- **Energy efficiency:** LSS has thermal insulation characteristics that help reduce the need for artificial heating and cooling, leading to lower energy consumption. This is particularly valuable in humanitarian settings where access to energy resources may be limited or unpredictable.
- **Low-cost maintenance:** LSS shelters require minimal maintenance over time. The lime-stabilisation process improves the durability of the soil, reducing the need for frequent repairs. This is beneficial in resource-constrained humanitarian settings where ongoing maintenance can be challenging.

- **Enough adaptability to allow local and cultural architectural identity:** The construction technique of LSS shelters allows for the integration of traditional architectural elements and design features, ensuring that the shelters reflect the cultural identity of the Rohingya community. This promotes a sense of cultural continuity and pride among the residents.
- **Environmental benefits:** Lime is an environmentally friendly construction material with a lower carbon footprint. LSS shelters support climate change adaptation and preserve natural resources by utilising locally available soil and minimising non-renewable resources.
- **Sustainability:** Using locally sourced materials, LSS shelters minimise environmental impact and promote sustainability. Using lime reduces construction's carbon footprint, as lime production emits limited greenhouse gases compared to traditional cement production. It requires minimal processing of materials, reducing the environmental impact of construction and transportation. Additionally, LSS shelters can be designed to incorporate eco-friendly features like natural ventilation and rainwater harvesting.
- **Scalability and replicability:** The technology and construction techniques are relatively simple, allowing for easy transferability to other humanitarian settings. This scalability makes LSS shelters viable for addressing the rapidly growing global demand for affordable and climate-resilient shelters. The time it takes for people to learn how to apply lime-stabilised soil to bamboo shelters depends on factors such as prior experience, construction knowledge, familiarity with bamboo, lime and soil as building materials, and the individual's learning ability. Practical training for a full day can improve the skills of the workers, but it may take a few days to a week for individuals to become proficient in applying lime-stabilised soil on bamboo shelters. Practising and gaining hands-on experience are essential for mastering these techniques.
- **Local economic development:** The construction process creates employment opportunities and stimulates the local economy. Additionally, using locally sourced materials reduces the reliance on imported construction materials, saving costs and supporting local businesses.
- **Community involvement:** Implementing LSS shelter projects often involves community participation, empowering residents to contribute to the construction process. This approach promotes community engagement, ownership and skill development. It also creates knowledge transfer and capacity-building opportunities, enabling communities to take charge of their own shelter.

Lessons learned

After introducing the LSS shelter technique to the community, it became evident that certain key points from the introduction held significant importance. The four crucial aspects were:

1. **Community engagement.** It is crucial to promote community engagement for the successful implementation of the LSS shelter technique. We have found that involving the community from the early stages of the project fosters a sense of ownership and empowers individuals to actively participate. Hosting community consultation meetings, workshops and training sessions helped to build trust, gather feedback, and address any concerns or misconceptions.

2. **Leveraging local knowledge and expertise.** Recognising and leveraging local knowledge and expertise is essential. Engaging with local engineers, architects, craftsmen and labourers allowed us to tap into their experience and skills. This collaboration not only enriched the project but also ensured the sustainability and long-term success of the LSS shelter technique.
3. **Training and capacity-building.** Providing comprehensive training and capacity-building opportunities is vital. We learned that offering hands-on training sessions, practical demonstrations and continuous support helped individuals grasp the technical aspects of implementing LSS shelters. Regular follow-up sessions and mentoring played a significant role in reinforcing the learning process.
4. **Communication and information dissemination.** Effective communication is key to creating awareness and promoting adoption. We found that using various communication channels, such as community radio, posters and local language materials, helped disseminate information about LSS shelters. Engaging local influencers and community leaders as advocates also proved to be effective in spreading the word and generating interest.

These elements proved essential in ensuring the success and sustainability of the project. Looking ahead, while maintaining a strong focus on community engagement, local expertise, comprehensive training and diverse communication channels will remain unchanged, it would be beneficial to conduct a thorough baseline assessment to better understand the specific needs and challenges of the community; establish partnerships with local organisations and institutions to enhance project sustainability and expand reach; and implement a monitoring and evaluation framework to track progress and gather data for future improvements.

In the face of climate change, innovative solutions emerge from the most unexpected places. The LSS shelter project demonstrates that practical action can combat the challenges posed by our changing world. These pilot shelters, nestled within refugee camps, have proven their mettle. Their fire resistance, disaster resilience and durability make communities less vulnerable. Lime, an ancient construction material, weaves itself into the fabric of Bangladesh's vernacular architecture. Centuries of wisdom now find a new purpose. Locally sourced materials minimise transportation, nurturing the very communities they shelter. Lime is crucial for reducing the project's carbon emissions, substantially lowering its overall carbon footprint. Additionally, it enhances the durability of the structures, providing robust protection against environmental degradation and weather-related challenges. As these structures rise, they harmonise with nature – a testament to eco-friendly coexistence and an inspiration to those everywhere hoping to replicate them.

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Cash and climate justice: empowering communities in Malawi and beyond

Alexandra Cohen

Context and project overview

Malawi is one of the most impoverished countries in the world, characterised by high population growth, declining agricultural productivity, and low resilience to climate change. In the last 36 years alone, Malawi has experienced 21 major floods. Around 90% of the population relies on rain-fed agriculture, and smallholder farmers (who make up 80% of the population) require consistent temperatures and weather patterns to survive. The poorest households are trapped in a recurrent cycle of food insecurity and weather-related climate shocks (e.g. drought and cyclone-induced floods), which are exacerbated by persistent macro-economic challenges.

In Malawi, GiveDirectly has established itself as a trusted cash actor among national government and key development institutions. We have delivered over $76 million in cash, via mobile money, to more than 166,000 of the poorest and most vulnerable households living in remote rural and urban areas across 10 districts and 4 cities. Our programmes have contributed to the national development priorities outlined in the Malawi Vision 2063, including attaining food security, improving education outcomes, increasing agricultural output and facilitating inclusive wealth creation.

After the devastation of Tropical Cyclone Freddy in March 2023, which displaced 564,239 people, the Government of Malawi (GoM) launched a voluntary household relocation scheme for the affected populations. To further support the GoM priorities and the displaced communities, GiveDirectly partnered with the Scottish Government Climate Justice Fund to provide unconditional large lump-sum cash transfers to help community members in Nsanje District to relocate — if they chose to — from low-lying, flood-prone lands to higher ground within the same district, and reconstruct their lives and livelihoods. Communities had experienced loss and damage across a broad spectrum of categories, including assets, capacities, status, and security.[2] This programme aimed to acknowledge the nuanced nature of loss and damage, understanding that community values and dependencies play a significant role in determining needs and preferences.

Evidence from multiple studies suggests that the positive outcomes of large lump-sum cash transfers endure over time, lifting households sustainably out of vulnerability in a way that reduces food insecurity and increases their resilience to shocks. Through this collaboration, 2,700 households displaced by

2 Economic loss and damage included housing, food stocks, livestock, farmland, employment, access to markets, and schooltime for children. Non-economic loss and damage included agency (previously independent people were now relying on other people to feed them), dignity (people did not have decent clothes or shelter), disrupted social networks (people were disconnected from friends and neighbours due to relocating) and death (family members lost to the floods).

Cyclone Freddy in Nsanje District received three unconditional large lump-sum cash transfers over two months amounting to roughly $766, empowering them to rebuild their lives. By examining data on household needs, local cost of living, the value of the Malawian Kwacha, and the potential impact of cash transfers, GiveDirectly determined that $766 was an optimal amount to create transformative change in recipients' lives. This sum is sufficient to enable meaningful investments in health, education, business ventures, and housing improvements, thereby fostering long-term economic stability and improved quality of life.

Key takeaways

The conventional approach of providing humanitarian assistance each time climate shocks hit has raised concerns about sustainability and long-term effectiveness of this model, which relies on donors being called upon to provide relief assistance to the same populations month after month, season after season, without addressing the root causes. Experiences from this project support this concern. Initial assessments show that communities were clearly ready for long-term solutions, including relocation, provided certain guarantees and means were in place to outweigh perceived costs. Key incentives – such as guarantees of land ownership, preservation of chief structures, accessibility to essential services, and availability of economic opportunities – proved critical in fostering community engagement and commitment to the relocation process. Overall, the programme showed that a successful relocation initiative as distributive climate justice relies on a holistic approach that addresses social, cultural, economic and governance considerations.

Firstly, **government and local authorities play a crucial role in facilitating community-driven relocation programmes through the creation of transparent, decentralised and inclusive systems**. The GoM demonstrated the power of effective leadership by requiring households to express their desire for relocation through written expressions of interest, collated by the community's chief, thereby granting the community autonomy. These expressions served as a conduit for affirming consent from the community seeking to relocate, and the GoM furthered this by also obtaining consent from potential host communities. Importantly, relocation decisions were made at the household level — while the majority of communities moved together, not every household had to, or chose to, move. The GoM not only initiated the programme but also executed it in a way that put decision-making power in the hands of the communities, with cash transfers providing the necessary resources to participate in the process.

However, relocation is not just mere logistics: **norms, values and traditions are integral parts to individual and community livelihood and wellbeing**. The cash transfers targeted communities displaced in their entirety, most of whom chose to relocate as a group to maintain community cohesion and leadership structures. There were not drastic variations in culture, as relocations occurred within the same district, sharing similar farming patterns, languages and existing structures, facilitating integration and allowing the communities to cohabitate, intermarry and share resources. However, participants previously resisted moving due to concerns about losing their chief; host communities addressed this by maintaining and respecting traditional village demarcations. Collaboration between traditional chiefs of both communities proved instrumental in mitigating potential conflicts, underscoring the importance of considering traditional cultural norms and structures for long-term success. This is also evident from

another programme that GiveDirectly has supported in the Mount Elgon region of Uganda, where the government had previously attempted to relocate households from communities in flood-prone regions. Participants returned to their original homes, reporting that 'the new plots were 230 miles east, in a part of the country with a different language, different traditions – where people lacked the connections that help them survive'.

By preserving the dignity and agency of recipients and fostering community-driven solutions to reconstruction and recovery, large lump-sum cash transfers can be central to the success of humanitarian programming in climate-induced crises. Recipients choose what to spend on based on their own priorities, and do so locally, contributing to their own recovery as well as local economies. Target communities wanted to build something more sustainable and have a sense of security: the large lump-sum cash transfers enabled them to make tangible improvements in key areas, including household income, food security, and asset ownership. Almost all recipients (96%) reported spending their transfer on productive assets, including purchasing livestock and starting a new business, as well as building a new home and pursuing education.[3] In the Mount Elgon region as well, following the receipt of the cash transfer, many assisted households have been able to identify safer land in adjacent communities (almost half of the recipients have already used at least part of the cash transfer to buy new land) while others are investing in the safety of their houses and fields and/or livestock, with no plan to move.

The use of unconditional large lump-sum cash transfers delivered directly to people affected and displaced by climate change demonstrates a locally led solution where individuals have a choice of how best to address the loss and damage they have suffered in alignment with their values.

Esnart constructs her new home in Chataika Village after climate-induced displacement, using unconditional cash transfers from GiveDirectly to purchase the building materials. Credit: GiveDirectly

3 Building a new house was the most commonly reported transfer spending category (89% of recipients) and the largest proportion of total reported transfer spending (72.4%).

Lessons learned

Navigating the complexities of a community relocation programme in a climate-induced crisis revealed unforeseen challenges and nuanced dynamics. A comprehensive analysis of the initiative highlights the intricacies of community readiness, governmental collaboration and cultural sensitivities.

At the outset, there was an expectation that communities would have largely moved by the time cash assistance was to be provided by GiveDirectly. However, while the cash transfers were being delivered there was still fluidity in the community, with some individuals in the process of moving or yet to relocate, as previously mentioned. This complicated the enrolment and verification of individuals, as well as the implementation of monitoring and evaluation activities. **Future programming should adapt to the timeline of movement for communities and consider the best time to transfer cash or assets to drive the desired outcomes.**

It's important to note that the goal of relocation is a long-term solution, and therefore our outcomes should also be measured over a longer period of time. **Relocation and adaptation results take time to show up in the data** as it takes time for households to plan, organise, make a move, and rebuild a life. For example, programme monitoring data shows that some households are investing in solutions to increase their incomes to be able to make bigger investments after moving, and others are moving house but maintaining fields until the next harvest. The best outcome is integration of communities with increased livelihood opportunities and resilience, but more crucially, improved wellbeing for all regardless of relocation plans.

Reflecting on the programme, there was also a recognition of the necessity to strengthen **case-management systems at the community level**. Despite efforts to mitigate risks, including thorough risk assessment and safeguarding measures, in some key areas there was a desire for more purposeful intervention from established community-protection structures. Meetings were held with communities to address potential issues and to establish clear communication channels for reporting and contact. While these mechanisms were used, GiveDirectly identified instances that could have been avoided or managed more comprehensively if the case-management community structures had been more robust. Although the support of chiefs was instrumental in negotiating on behalf of their communities, there were still resettlement issues with host communities that warranted more capacity for remedial action.

Conclusions

The relocation programme in Nsanje District, Malawi, offers valuable insights into the complexities and challenges of addressing climate-induced vulnerabilities and fostering sustainable solutions for affected communities. Through an analysis of both successes and challenges, it becomes clear that successful initiatives require a multifaceted approach that integrates community autonomy, governmental leadership or collaboration, cultural sensitivity, and effective aid-delivery mechanisms. Moving forward, it

is imperative for stakeholders to leverage lessons from past experiences to inform future interventions, ensuring that efforts are not only impactful but also sensitive to the nuanced realities of the communities they seek to support.

Central to this process is the recognition of the importance of giving people freedom and dignity of choice, and the power of large lump-sum cash transfers to do so effectively. Empowering communities by enabling them to spend aid on whatever they value most as they move forward on a path to recovery and reconstruction, involving them in decision-making processes and respecting their preferences and traditions, fosters a sense of ownership and strengthens resilience.

By embracing a holistic and iterative approach, grounded in empathy, collaboration, and a commitment to long-term resilience, we can navigate the complexities of climate-induced displacement with greater efficacy. Ultimately, this approach paves the way for a more just and sustainable future, where every individual has the opportunity to thrive with dignity and empowerment.

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Adaptation and resilience: a Sisyphean task?

Fatima Yamin

In the ongoing efforts to mitigate and combat climate change impacts, adaptation and resilience are like a life sentence with no end in sight. Pakistan is no exception. The term 'resilience' is currently being used to praise the strength that communities and individuals display when overcoming their own vulnerability, while 'adaptation' is additional unpaid work they must undertake, such as securing homes, changing the cropping calendar, etc., mostly without assistance or protection from economic and political state systems. Vulnerable individuals, groups and communities have been mobilised for decades to work towards their own salvation to tame the climate carnage caused by the macroeconomic system and the powers that work around the clock to uphold it. I will argue that adaptation and resilience constitute a meaningless Sisyphean task in the global climate change governance system that exists today.

At the heart of understanding about how to tackle climate change is how it is communicated. Climate communication has been used as a tool to spread the notion that the most vulnerable need to work towards their own adaptation and resilience, alongside their regular painstaking livelihoods that are dependent on the natural forces of weather patterns, surface water temperatures and functions of biodiversity. Climate communication uses scientific information to generate awareness on risks,

associated hazards and implications associated with climate change. Adaptation communication, however, is based on the adaptation needs of households and communities, in order to help people adapt to risks from climate change. In Pakistan over the last decade, since the destructive floods of 2010, the vulnerable have been expected to learn about dealing with current and upcoming climate change impacts on climate and adaptation communication while also being burdened with everyday survival, without direly needed social protections from the impacts as they keep happening. Some of these initiatives include the Climate Leadership for Effective Adaptation and Resilience (CLEAR) project that worked on the ground to create Local Adaptation Plans for Action in southern Sindh and Punjab. Others include the United Nations Development Programme's Glacial Lake Outburst Floods Risk Reduction project in Northern Pakistan, the pilot phase for which was completed in 2016 and has since been scaled up between 2017 and 2024. While successes in these initiatives have shown some impeccable results (even the remotest of communities can now converse on climate change and its impacts), the situation is still just the tip of the iceberg.

How climate communication currently works

The usual communication steps in climate change projects begin with initiating organisations, usually non-governmental organisations (NGOs) and community-based organisations (CBOs), communities and district administrations. In the provinces of Khyber Pakhtunkhwa and Sindh, over the last decade or more, climate change impacts are a widely accepted reality and adaptation is the desirable default status for countless communities. Development interventions in the sectors of agriculture, water management, water, sanitation and hygiene (WASH), education, livelihoods and humanitarian response have included integral focus on adaptation communication through varying tools – but the most vulnerable don't have access to tools such as social media, smart phones or television. In the northern and central areas in Sindh, communication strategies since the 2010 floods have targeted small farmers, women farm labourers, fishing communities, students, market and farming associations, along with provincial and district administrative departments.

There are five problems with this communication model:

- It misses a key audience: local government representatives. Local government elections have suffered delays in the last three electoral regimes. A lack of local representatives in elected leadership leaves a large gap in the translation of community needs to the provincial and federal planning and development departments.
- Actual communication paths suffer from power plays. The path between local district administration and communities is broken as administration staff suffer from the delusion of knowing more about community needs. While these officers do consult communities when planning new projects and budgetary allocations, the process is not transparent. Regular consultations during project activities show breaks in the communication. In this case, CBOs and NGOs form an integral bridge but they are not a replacement for true direct communication.
- Project resources are not enough for a continued bridging between communities and officers thus the default broken connection remains.

- Adaptation communication in Pakistan mainly targets only the most vulnerable: small landholder farmers, livestock farmers, populations living below the poverty line, women, people with disability and, in some cases, ethnic and religious minorities. (A notable omission is that of transgender people, who are typically overlooked in disaster response and climate change communication.)
- There is a problem with misinformation. The spreading of misinformation has become rampant in these areas, most commonly from sources that intend to use it to manipulate people en masse on political and religious grounds. For example, some villages believed that the rain-fed floods of 2022 were caused by artificial rain being used as a weapon. There is no mainstream and consistent effort to counter the spread of such 'fake news'.

In the past, small farmers with no more than five acres of land have been trained to change harvesting patterns, rely minimally on pesticides and plan sustainably for future harvests with a peripheral vision on the changing climate. CBOs made a remarkable impact by holding community awareness gatherings that also celebrated their achievements in the projects. New legislation led to the inclusion of women small landholder farmers in Sindh in decision-making bodies for water management in the province. In Khyber Pakhtunkhwa, natural resource management has also been the core of climate change adaptation, focusing on changing farming techniques, sustainable forest management, and risk communication and awareness through sessions on community-based disaster risk management. Similar approaches have been applied in Gilgit Baltistan.

Community workshop conducted to assess the level of knowledge and awareness of the impact of climate change and the difference in impact before and after the 2022 floods, in Jacobabad. Credit: Fatima Yamin

However, the monsoons in 2024 showed that while people and communities have been actively involved in adaptation, in the absence of state-run adaptation initiatives, they are left to fend for themselves when climate anomalies strike. Pakistan's first National Adaptation Plan was released in 2023, a seven-year course of action that is yet to find its footing. It is guided by the country's climate change policy, updated in 2017, which still awaits mainstreaming.

Shifting adaptation strategy

The movement for adaptation slightly shifted after the superfloods of 2022. There is now enlarged focus on the conservation of natural resources, protection of biodiversity and ecosystems with projects such as Water Resource Accountability in Pakistan (WRAP), Recharge Pakistan and Biosaline Agriculture Programme by World Wide Fund for Nature (WWF) Pakistan, and the International Union for Conservation of Nature Pakistan. WRAP conducts one of Pakistan's first Nature-based Solutions (NbS) activities, with hybrid (green and grey) solutions based on community needs through active consultation processes. Recharge Pakistan was launched in 2024 to reduce floods and replenish water through ecosystem-based watershed management and green infrastructure.

Adaptation communication is the key to success in all these projects, which also shows a shift in the conversation as direct stakeholders to these natural systems – the communities and district administrations – work together, but the agency for decision-making on what initiatives should be taken lies with the communities themselves. In the case of WRAP, participating communities have control over decisions on what can be translated as NbS activities based on their need and sustainability. Because NbS systems in WRAP are hybrid (containing both green and grey structures), the entirety of the responsibility for the green adaptation of ecosystems is shifted from small farmers, and focuses not on what is desirable but what is workable. Communities have amply communicated their limitations, shared their grievances and have shown the need for grey infrastructure to be built into green initiatives – not only is it more sustainable, but it also requires less maintenance, is less of a burden on an already deprived and burned-out population, and has the capacity to remain intact for longer periods. Communities have also taught us that when it comes to adaptation, scale matters more than size. It is easier to scale small changes in farming traditions rather than adopting larger, high-tech agricultural practices that may take more time to learn, time that can be better spent at adaptation planning and execution.

Limitations to progress

The communication strategy has seen a change in language whereby it has shifted its focus from 'this is what we think can work for you to make you less vulnerable', to 'this is what can help you adapt but we want to know if this works for you – if not, how do we improve it?'. This shift gives true agency to the farmer to make decisions and does not pre-suppose that the farmer knows nothing about climate change and adaptation, allowing them to communicate other needs corresponding to social wellbeing (health, education, etc.) within the limitations they themselves have placed on the process.

Sadly, national and global conversations are still at a standstill today, as they have been for the last decade. While nations at COP28 recognised the phasing out of fossil fuels as integral to reversing global warming, they offered no concrete strategy to enforce this phase-out, not even those countries whose economies benefit so heavily from fossil fuels and which 'coincidently' include global powers in both the west and the east. Similarly, the establishment of a loss and damage fund was agreed to, but it may not be ready until 2025 'at the earliest' to dispense funds to countries most vulnerable to climate change-induced extreme weather events, and as a result are constantly experiencing compound disasters.

Initiatives to mitigate the effects of climate change and adaptation communications will not be effective on their own until significant changes happen at the national and global level. What we see in Pakistan is a disconnect as people continue to embrace adaptation, striving for resilience, while the systems of political economy still struggle to streamline it into a structured overarching resilience as part of the global system. COP provides hope for the possibility of systematic resilience. Until this disconnect is addressed and adaptation is mainstreamed through the labyrinth of multifaceted vulnerabilities, it will be impossible to keep this hope alive.

It is no longer solely the job of a small farmer to learn the risks attached with climate change. They have for a decade and more been working to adapt despite diminished resources and lack of social welfare, through severe conflicts, wars and damning disasters. No matter how many individuals, communities and resources we continue to mobilise for climate action, the global powers in the climate negotiations and conversations continue to 'COP out' of claiming responsibility for their role in the continuing climate carnage. The argument is not that individual action by masses cannot bring sustainability or build resilience, rather, it is important to set the stage to place the onus on the perpetrators not the victims, and hold responsible the world leaders who hesitate to do their part to effect change.

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