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CASE STUDY: CLIMATE INFORMATION SERVICES FOR HEALTH SYSTEMS STRENGTHENING

Anticipatory Action to Reduce the Impact of Extreme Weather Events on Health

USAID Climate Adaptation Support Activity

CASE OVERVIEW

The frequency, complexity, and severity of extreme weather events (e.g., cyclones, floods, heat and cold waves, tropical storms) are increasing as the climate continues to change. Disruptions caused by extreme weather events have severe adverse health implications and can result in significant direct and indirect threats to health systems. This is particularly problematic for countries and communities with weak health infrastructure and can increase the need for humanitarian aid.

This case study profiles the unique and pioneering approach of the International Federation of Red Cross and Red Crescent Societies (IFRC) in preparing for and mitigating the health threats of climate change through anticipatory action. The IFRC links locally led humanitarian action with regional- and global-scale responses and surge support through forecast-based financing from the Disaster Response Emergency Fund (DREF).

The Red Cross and Red Crescent Climate Centre (RCCC) and National Societies, along with local stakeholders, design and agree on pre-approved action plans, called “Early Action Protocols” (EAPs), that include predefined triggers and financing mechanisms that respond to the triggers. Through the EAPs, resources are automatically disbursed from the centralized DREF to National Societies for readiness activities ahead of triggers. When triggers are reached, a set of pre-determined actions are taken, and funding is disbursed before a shock hits.

Case Study by the Numbers

International Federation of Red Cross and Red Crescent Societies¹

192 National Member Societies operating globally with **80** National Member Societies engaged in Early Action Protocols, covering 7.6 million people.

\$138 million pre-agreed financing available as of 2023.

47 Early Action Protocol activations in 2023: 24 in Africa, 15 in Asia, 6 in Central America.

4000+ National Society staff and volunteers trained in anticipatory action through a “training of trainers” approach.

Extreme Weather Impacts²

4.5 billion people: More than half the global population is at high risk of experiencing an extreme weather event, such as a flood, drought, cyclone, or heatwave.

200 million people are estimated by IFRC to require humanitarian assistance annually by 2050, due to extreme weather events and climate impacts.

15 times higher death rate from extreme weather events in vulnerable regions than in more resilient areas.

Globally, extreme weather- and/or climate-related disasters occur every **one to two days**.

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Through this anticipatory action approach, the IFRC seeks to encourage a shift away from a reactive stance toward more proactive response mechanisms. This is supported by dedicated Climate Information Services (CIS), which can be used to enable resource optimization and strategic investment in addressing the challenges posed by extreme weather events to health systems.

The approach represents a significant pivot in disaster risk management and health systems strengthening (HSS) by emphasizing preparedness while also strengthening response and relief systems. By implementing EAPs, governance mechanisms are clearly defined. This reduces structural and administrative barriers that often prevent local partners from accessing anticipatory financing while also ensuring funds for cross-sectoral shock responsiveness. Unlike specialized disaster risk management programs, anticipatory action looks across multiple hazards that may occur simultaneously or consecutively. Anticipatory action can significantly improve health outcomes for vulnerable communities through better access to information, health resourcing, and lifeline provisions, all of which is made possible through dedicated funding for HSS.

The successful implementation of the anticipatory action approach requires that triggers be contextual and take local factors into account and that they are embedded in a country's existing disaster risk management system. The approach relies on sufficient local capacity to produce impact-based forecasts and act on risk information. Additionally, the national systems lean on regional support to anticipate and mitigate impacts from cross-border and regionally shared hazards. National coordination of disaster risk management mechanisms should be mirrored at the regional and global levels.

Anticipatory action as spearheaded by the IFRC is an exemplary approach of CIS-informed and cross-sectoral decision-making in and ahead of acute crises. It fosters collaborations between humanitarian aid, scientific research, and governmental institutions. While the health sector has

BACKGROUND

The impact of extreme weather events is on the rise, with significant implications (see Box). According to the World Meteorological Organization (WMO), there has been a sevenfold increase in reported disaster losses from extreme weather since the 1970s.⁴ Of the disasters triggered by natural hazards between 2010 and 2020, 91% were caused

“To achieve stability, we need to start building capacity at the local level in the consistent deployment of EAPs. Even when thinking from a national-level perspective, you need to really start at the community level.”

Oscar Lino, Anticipatory Action Specialist, International Centre for Humanitarian Affairs, Kenya Red Cross Society

Feeling the impacts of extreme weather events in 2023 in Africa

In 2023, then the warmest year to date, an unprecedented number of extreme weather events were experienced globally, disproportionately affecting populations in low- and middle-income countries. In Africa, the regional impacts of extreme weather and climate events were devastating. The Horn of Africa faced a three-year drought, the longest drought in 50 years, leading to severe food insecurity. In East African countries, devastating floods led to the displacement of nearly 1.5 million people, caused extensive crop and livestock losses, disrupted livelihood and trade activities and damaged infrastructure. Cyclone Freddy, the most intense tropical cyclone in terms of accumulated cyclone energy, severely impacted coastal and inland East and Southern African countries. The event led to the destruction of 300 health facilities and increased public health risks, including a surge in the spread of cholera, malaria and malnutrition in Madagascar, Mozambique, and Malawi.³

already seen significant benefits from anticipatory action, including increased funding and improved health outcomes, there is more that can be done.

by extreme weather- and climate-related events.⁵ The lives and livelihoods of vulnerable groups are disproportionately affected by extreme weather events and their impact is further exacerbated by socio-economic and political inequalities.⁶ These crises pose an unprecedented need for efficient and timely funding mechanisms and humanitarian

Primary Partners Engaged

International Federation of Red Cross and Red Crescent Societies (IFRC) plays a global strategic role and supports the preparation of the EAP activation via coordination and capacity building. During the implementation of an EAP, the IFRC provides support and guidance for the procurement, financial and Planning, Monitoring, Evaluation and Reporting processes.

Red Cross Red Crescent Climate Centre provides technical assistance during the development of the EAP by conducting scientific assessments necessary for the development of trigger mechanisms and the activation process.

National Red Cross and Red Crescent Societies implement the activities set out in the EAPs and enable linkages across national stakeholders.

Ministries and Departments of Disaster Management and Relief are mandated to manage and coordinate national responses to emergencies.

Netherlands Red Cross' 510 Initiative collects and integrates extreme weather risk-indicators at provincial and municipal level and visualizes these through an online dashboard.

Meteorological services provide and monitor extreme weather forecasts and issues warnings that trigger government response. They are actively involved in the trigger consultation.

Additional global, regional and national partners that provide technical, operational, humanitarian support provided by, for example, the World Food Program, the Food Security Cluster, research institutes, civil societies and ministries.

assistance. IFRC estimates 200 million people will require humanitarian assistance annually by 2050 due to the combined effects of climate-related disasters and the socio-economic impacts of climate change.⁷

Anticipatory action has gained increasing traction with international agencies that want to act more efficiently and effectively, leveraging scientific advances in climate modeling to forecast extreme weather events and pre-position resources to protect health and development gains while reducing direct impacts. Anticipatory governance mechanisms have been endorsed by various international organizations across the humanitarian and development sectors.^{8,9,10}

The IFRC has stressed that anticipatory action needs to be conceptualized, discussed, and agreed upon with primary implementing partners in advance, so that decision-making

and financing can come together quickly and efficiently. For the program to be effective in response to the global threat of climate impacts, the implementation of the anticipatory action approach also needs to be initiated at the local level and funding must be accessed by vulnerable communities that are subjected to the highest socio-economic impacts. The approach exemplifies how locally led humanitarian action can be linked with regional and global surge responses.

The approach relies on an orchestrated, interdisciplinary, integrated effort, which capitalizes on the strengths of a variety of global, national, and community-level actors (see Box). Such multi-stakeholder engagement ensures clarity in communicating alerts and coherence across protocols and responses and complementary roles.

APPROACH

In anticipation of extreme weather events, IFRC supports National Member Societies in the development of pre-approved EAPs which designate triggers for action (see the Table below). An example of EAPs includes readiness activities for extreme rainfall related to the El Niño phenomenon in Ecuador. These protocols supported the development and implementation of tools aimed at changing hygiene-related behavior and improving water and sanitation services in communities.

“In developing anticipatory action plans and triggers, we need to not let the best be the enemy of the good. Stakeholders need to be empowered to use what is available to them, both national data and global products, to design feasible EAPs at the country level.”

Irene Amuron, Head of Anticipatory Action, Red Cross Red Crescent Climate Centre

Protocols are based on feasibility studies, risk analyses, and an inventory of forecasts, resulting in the identification of a series of triggers and early actions linked to prearranged financing. The national EAP is then reviewed by an independent committee within IFRC. Based on the agreed triggers, pre-arranged financing from the Anticipatory Pillar of the Disaster Response Emergency Fund can be automatically disbursed to National Societies and pre-determined anticipatory actions are rolled out before the disaster occurs. To support increased integration of health interventions and HSS in the EAPs, IFRC has set up an Anticipatory Action and Health Working Group.¹¹

EAPs also outline how the IFRC’s protection, gender, and inclusion criteria (PGI) are embedded across the funding streams through specific activities and trainings on standards.

Communities involved in anticipatory action activities must be identified by applying the PGI standards. For example,

the EAP for cyclones in Bangladesh, activated in 2020, included PGI criteria that limited the distribution of dry food, safe drinking water, health materials, and hygiene materials to daylight hours or mandated provisions were distributed in the presence of artificial lighting to ensure security and safeguarding. Further, a complaint mechanism, including a hotline and complaint box, were put in place to register intended beneficiary concerns such as fraud and safety issues.

To ensure emergency alerts and warnings reach everyone at risk, especially vulnerable populations, IFRC has developed a concept of Community Engagement and Accountability (CEA) for when triggers are issued. CEA is intended to complement governmental action to protect lives and livelihoods in disseminating information at the community level ahead of shocks, leveraging the grassroots engagements and coverage of National Member Societies.

Example triggers and activations for various hazards taken from existing EAPs

Hazard	Country	Trigger used	Example threshold/activation rationale	Health outcomes anticipated
Drought	Ecuador	Seasonal forecast: 3 months	More than 50% of the geographical area is predicted to be drier than normal conditions and at least 40% probability of below normal for Jun-Aug season and 45% probability of below normal Oct-Dec and Mar-May	Malnutrition and food-borne diseases, mental, and psychosocial health impacted
Floods	Kenya	Medium-term forecast: 7 days	When the flood forecasts indicate an extreme flood (one in 5-year flood threshold) over 3 major river basins	Water-borne diseases and other water-related health impacts
Heat wave	Kyrgyzstan	Medium-term forecast: 7 days	Temperatures exceed the 80th percentile for 3 or more consecutive days during June-August	Heat-related illness, respiratory and cardiovascular illness, malnutrition, food-borne diseases
Cyclone	Bangladesh	Short-term forecast: 30 hours	Category 3 cyclone with a speed of 125 km/h or more making landfall	Injury and mortality from extreme weather events, water-borne disease, other water-related health impacts, malnutrition, food-borne diseases

IMPACT

The IFRC has demonstrated the global transferability of anticipatory action as a scalable approach to strengthening health systems. In particular, EAPs earmark resources to:

Strengthen health system resilience. Through anticipatory action, demand for health resources is reduced by warning at-risk communities as well as pre-positioning and safeguarding critical supplies. Healthcare providers can also better prepare for a surge in demand. For example, the EAP for heat waves in Bangladesh provides surge support so that ambulance services are available to transport those in need to the nearest health facility.

Promote and improve collaboration. Anticipatory action fosters collaborations between humanitarian aid, scientific and governmental institutions, and at-risk communities. The approach enables timely, evidence-informed, and cross-sectoral decision-making in and ahead of acute crises. Trusted working relationships can accelerate data and information sharing during disasters, thus improving stakeholder readiness to take action and jointly identify those most at risk. To strengthen knowledge exchange, foster improved collaboration and build the evidence base and practice on effective anticipatory action for HSS, IFRC

has set up an Anticipatory Action and Health Working Group.¹⁰

Improve health outcomes. Anticipatory action addresses a variety of adverse health implications and threats from extreme weather events, including water-borne diseases due to cyclones and floods, malnutrition and food insecurity from drought, as well as heat exhaustion, heatstroke and hyperthermia from heat waves. Cash payments to at-risk populations have also led to reducing psychological distress.

“Anticipatory action provides a window of opportunity to protect lives and livelihoods and to support the communities most impacted by extreme weather and climate change, but it is not a silver bullet either. We need to celebrate failures, learn by doing, and embed these approaches in bigger processes of disaster risk reduction in order to improve health and systems overall.”

Meghan Bailey, Head of Social Protection and Health, Red Cross Red Crescent Climate Centre

LESSONS LEARNED

Anticipatory actions as implemented by IFRC have highlighted several crucial aspects for its success and areas for continued investment:

Effective collaboration and partnerships with clear governance mechanisms. Partnerships between technical and humanitarian partners, as well as governments, need to be cultivated and supported before a crisis hits, enabling EAPs to be developed together so that ownership and trust in the process and actions agreed is built. Trigger and response governance must be jointly negotiated and clearly detailed.

The need for localized triggers and the best available information. EAPs require triggers that access both national and global products and information, while being embedded in a country’s existing disaster risk management and social protection systems, to work alongside and improve existing early warning infrastructure.

Capacity strengthening. IFRC’s approach relies on sufficient capacity to produce and interpret global and

national forecasts and trusted channels for their uptake at the national and community level.

Anticipatory action frameworks need to take compound and cascading risks into account. This is an area of ongoing investment for IFRC, to move national EAPs increasingly beyond single hazard triggers (addressing heat and air pollution in Thailand for instance) and to nimbly adapting to multiple, unfolding threats (managing the 2023 flooding and cyclone events in Mozambique for instance). Local actors still face challenges accessing funding and forecasts: IFRC can help broker partnerships and pathways for relevant data and information sharing, as well as financing mechanisms, but there are still systemic challenges to accessing relevant information and funding at the community and global level.

Short and discrete windows of opportunity. Anticipatory activities are constrained by short timelines and address only acute crises. This requires the establishment of a system that can act quickly and the disbursement of funding at very short lead times.

KEY RESOURCES

- 1 [IFRC \(2022\) OPERATIONAL FRAMEWORK FOR ANTICIPATORY ACTION 2021-2025](#)
 - 2 [ANTICIPATION HUB](#)
 - 3 [Mudierman, K. et al \(2020\) FOUR APPROACHES TO ANTICIPATORY CLIMATE GOVERNANCE: DIFFERENT CONCEPTIONS OF THE FUTURE AND IMPLICATIONS FOR THE PRESENT. WIRES Climate Change. 11\(6\).](#)
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ENDNOTES

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