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Managing multiple hazards: lessons from anticipatory humanitarian action for climate disasters during COVID-19

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ABSTRACT

In the face of climate change, development and humanitarian practitioners increasingly recognize the need to anticipate and manage multiple, concurrent risks. One prominent example of this increasing focus on anticipation is the rapid growth of Forecast-based Financing (FbF), in particular within Red Cross and Red Crescent (RCRC). To evaluate how anticipatory efforts managed multiple compounding risks during the COVID-19 pandemic, we examine how 14 RCRC Societies adapted their Early Action Protocols to COVID-19. Though many National Societies successfully adapted to the onset of the additional hazard of COVID-19, we find that multi-hazard risk management can be improved by: proactively developing guidelines that enable rapid adaptation of existing plans; more flexible funding mechanisms; surge capacity to provide additional human resources; and increasing local capacity and ownership for implementation to ensure supplies, skills, and decision-making authority are available when communication or travel is restricted. These findings align with wider recommendations for improving development, humanitarian, and climate adaptation practice towards local capacity and agency. They also add urgency to broader calls for more flexible disaster financing and more practitioner-oriented investment in climate risk and multi-hazard management.

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Introduction

Disaster Risk Reduction (DRR) is a key component of global efforts to manage the rising risk of extreme weather events in a changing climate. Commonly defined as the systematic assessment, identification, and mitigation of the effects of hazards, DRR interventions generally focus on long-term assistance to reduce vulnerability and exposure and increase preparedness to better manage disasters after they occur. However, a nascent but impactful form of humanitarian assistance, positioned between DRR and traditional response, is anticipatory humanitarian action: assistance provided in the often-limited time period between evidence-based early warnings and the occurrence of an extreme event (Costella et al., 2017; Kellett & Caravani, 2013). Developed partly in response to rising climate risks, the aim of anticipatory action is to improve capacity for action in the face of an impending hazard to prevent or reduce its negative impacts on vulnerable people and their livelihoods (Bahadur et al., 2016; Costella et al., 2017). In more than 60 countries, various anticipatory action approaches are being implemented by the Red Cross Red Crescent (RCRC), Start Network, World Food Programme (WFP), Food and Agriculture Organisation (FAO), and other organizations (ODI, 2018, p. 19) (Figure 1).

Many climate-related disasters are projected to increase in frequency and intensity as climate change progresses, leading

to a heightened likelihood of simultaneous disasters and compound events. In light of this, a growing body of literature calls for multi-hazard research (Raymond et al., 2020; Zscheischler et al., 2018, 2020), recognizing that analysis and prediction of compound events are still emergent. However, to date, both anticipatory action and the wider risk management literature still focus primarily on one hazard at a time, rarely engaging with the reality of multiple risks and hazards that interact with each other and other societal forces (Raymond et al., 2020; Seneviratne et al., 2012, p. 118).

The COVID-19 pandemic, a biological hazard (also addressed in the Sendai Framework on Disaster Risk Reduction, [UNISDR, 2020]), has brought the challenge of multi-hazard planning and management to the fore: research shows that, as of 15 September 2020, 92 of 132 extreme weather-related disasters in 2020 occurred during COVID-19, directly affecting an estimated 51.6 million people globally (IFRC/RCRC Climate Centre, 2020). These figures illustrate the reality of compounding hazards and the crucial need for humanitarians and other actors to plan for and respond to multiple hazards simultaneously. It also reveals a need to better understand how risk managers can quickly pivot between multiple hazards and the successes and challenges that lie therein. While an emerging body of academic and practitioner

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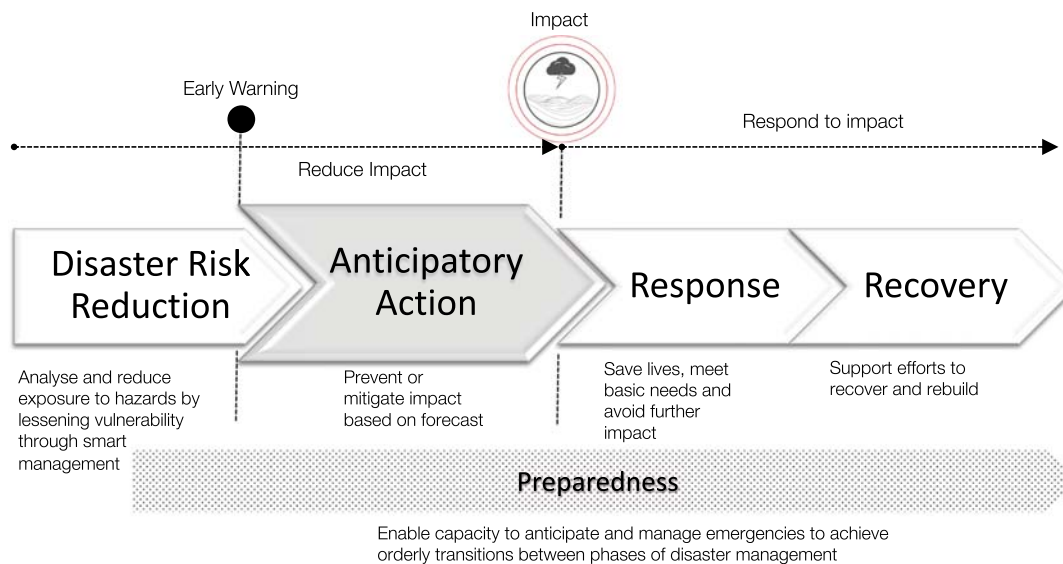


Figure 1. Anticipation in the disaster risk management continuum.

literature has called for immediate and long-term plans to address compound climate risks and COVID-19 (Belesova et al., 2020; Janzwood, 2020; Phillips et al., 2020; RCRC Climate Centre, 2020), little research has examined how humanitarian practitioners have adapted their work during the pandemic and thus implemented multi-hazard planning at short notice.

This study looks at how Forecast-based Financing (FbF) practitioners planned to address immediate, climate-related hazards given the additional risks posed by the pandemic. As a ‘natural experiment’, the pandemic offers a unique case study for comparing approaches to multi-hazard planning and risk management around the world. We examine how 14 RCRC Societies around the world adapted their Early Action Protocols (EAPs) to the realities of COVID-19 between January and September 2020. EAPs are the formal documentation of RCRC anticipatory humanitarian action plans and as such offer a useful framework for understanding (in)action around managing multiple hazards more broadly. Studying how actors within the large, international network of the RCRC adapted to this emerging hazard contributes to knowledge on humanitarian adaptation to COVID-19 in particular and on humanitarian adaptation and planning in the face of compounding hazards more generally. Our research explores the following questions:

- How has anticipatory humanitarian action and planning changed due to COVID-19?
- How can the anticipation system be built to better support organizations to deal with multi-hazards?
- What lessons for wider multi-hazard risk management can be drawn from experiences adapting anticipation to COVID-19 (emerging hazard)?

We begin by situating our research within literature on hazards, COVID-19 and FbF. We then present results on early-action adaptation by National Societies. Our discussion highlights the importance of clear guidelines for how to

manage specific hazards and modify activities and funding, the need to increase flexibility and local authority to make necessary changes, and the priority of local capacity-building to enable effective multi-hazard planning and adaptation. These findings echo themes in how to improve humanitarian operations more generally, suggesting that finding effective ways to address these enduring challenges may significantly increase effective multi-hazard planning and response.

Background

DRR, multiple hazards, and COVID-19

Within the humanitarian sector, recognition of the need to strengthen Early Warning Systems on multiple hazards has increased in recent years, including through the adoption of global Target (g) of the Sendai Framework for Disaster Risk Reduction to: ‘substantially increase the availability of and access to multi-hazard Early Warning Systems and disaster risk information and assessments’. The International Network for Multi-Hazard Early Warning Systems¹ (IN-MHEWS), established by the United Nations Office for Disaster Risk Reduction (UNISDR) and the World Meteorological Organization (WMO) Secretariat in 2015 plays a key role in sharing good practice and continuing efforts to achieve the global target. Nevertheless, limited research and challenges in analyzing the outcomes of compound events means that effective multi-hazard planning remains difficult in practice.

Yet multi-hazard considerations are critical for interventions. For example, evacuation to shelters in anticipation of a cyclone could increase transmission of infectious diseases like COVID-19 through crowded close quarters (Janzwood, 2020). Similarly, fears of COVID-19 may change people’s behaviour during implementation of early actions in ways not considered in normal protocols, such as refusal to evacuate due to shelter in place guidelines (Shultz et al., 2020). Simultaneously occurring hazards and emergencies also have cumulative effects on vulnerabilities (Shultz et al., 2020), meaning

that response plans may need to adjust expectations of feasibility and the type or amount of assistance provided.

A growing body of research and practitioner literature focuses on multi-hazard risk management and early action during COVID-19 (e.g. Ishiwatari et al., 2020; Lux, 2020; Shultz et al., 2020). Research has covered a breadth of natural hazards from flooding to hurricanes to wildfires, offering lessons from modelling and recent experience. For example, Pei et al. (2020) model the effect of a hypothetical hurricane evacuation in Florida on COVID-19 case levels, identifying the need to comprehensively meet the needs of evacuees and to issue clear public health directives to minimize virus exposure. Ishiwatari et al. (2020) review disaster management protocols for responding to COVID-19 and propose a new policy for addressing the pandemic and flood disasters simultaneously, emphasizing the role of local organizations and communities. Meanwhile, Janzwood (2020) examines the compound risks of natural hazards and the pandemic through analyzing the interactions between wildfire evacuations and future waves of COVID-19. These include virus outbreaks in firefighter base-camps, healthcare resource strain due to acute respiratory illness from smoke inhalation, and co-morbidities from smoke inhalation (Janzwood, 2020, p. 4). Such situations illustrate the need for comprehensive responses, planning, and early action to mitigate these potential outcomes.

Anticipation and forecast-based financing

In the last decade, WFP, FAO, Start Network and other humanitarian organizations have expanded beyond traditional response to anticipatory action. All anticipatory approaches share a commitment to using anticipation to prevent or reduce the impacts of crises before they occur, but each organization has developed their own systems for forecasting extreme events and designing, funding, and implementing anticipatory actions (Wilkinson et al., 2018). Since 2014, the RCRC has developed an anticipatory action approach known as FbF or Forecast-based Early Action (FbA). FbF facilitates early action in advance of an impending hazard by (1) using robust evidence-gathering and forecasts to develop thresholds for action (triggers for activation), (2) developing clear roles, responsibilities, and plans for action, (known as Early Action Protocols – EAPs), and (3) using the trigger and early action plans developed in steps 1 and 2 to release ex-ante funding. Step-3 funding comes from IFRC’s Forecast-based Action by the Disaster Relief Emergency Fund (hereinafter the Fund), which was established in 2018 and guarantees RCRC National Societies an automatic, predetermined amount of money when prediction thresholds are reached.

Methods

This study examines RCRC National Societies’ experience adapting existing EAPs to an emerging hazard, COVID-19. We do so through a qualitative analysis of project documents and semi-structured interviews with key informants responsible for managing EAPs around the world. We examine EAPs that were approved or in the late stages of development to understand how and why National Societies did or did not modify plans to address COVID-19.

As of September 2020, a total of 21 RCRC EAPs from 15 countries and covering seven hazards fit these criteria (See [Table 1](#) for a complete list of the EAPs, EAP status, hazards covered, activities, and COVID-19 modifications).² EAPs and supplementary COVID-19 protocols were reviewed, and early actions and any formal modifications to them were documented and analyzed. Tozier de la Poterie and Clatworthy then conducted 23 interviews with 26 informants from 14 countries to gather primary, in-depth data on EAP development, coordination, and implementation processes, as well as lessons and best practices for addressing compound hazards.³ To triangulate and contextualize these responses, we also interviewed an informant involved in Fund operations. All interviews were recorded, and notes were coded using qualitative coding software. Combined with data from the larger literature on climate-related disaster management, multi-hazard management, and different approaches to FbF, this data reveals lessons for the RCRC and other practitioners of anticipation or multi-hazard planning.

Limitations

As several of the study’s authors are employees and affiliates of the RCRC, informants may have been reticent to share information about EAP adjustments for fear of circulating potentially compromising information. However, the interviewees were not RCRC employees at the time of this research and had already established strong rapport and trust with many informants. Informants were also assured of confidentiality.

Results

As COVID-19 emerged as a global issue it became a concurrent and additional hazard for each National Society to address. However, on the ground adaptations to COVID-19 were not uniform. Demographics, capacity, priorities, transmission rates, and other variables shaped appetite, impetus, and capacity for adaptation. Below we outline modifications to nine elements of the EAP process identified by our research. [Table 1](#) summarizes modifications for the areas in which the most salient changes were made.

Design and implementation of anticipatory actions

As summarized in [Table 1](#), ten of the 14 National Societies studied made changes to their actions based on COVID-19 guidelines. These adjustments related to the safe execution of existing plans rather than reallocating resources from one hazard to another.⁴ The changes largely mirror global health guidelines (WHO, 2020a, 2020b), and include maintaining physical distancing during transport and distributions, wearing face masks and appropriate personal protective equipment (PPE), and providing hand-washing stations and hand sanitizer. Most changes to activation plans were made by National Society disaster management personnel in response to government directives and general COVID-19 guidance and remained largely internal to each National Society rather than seeking formal reapproval from the Fund.

Table 1. Early actions, COVID-19 modifications, funding and capacity per EAP.

Country & EAP hazard	Early action	Modifications beyond essential COVID-19 precautions*	Funding for COVID-19 modifications	Impact on internal response capacity
Approved EAPs				
Bangladesh – Cyclone (Activated May 2020)	Assist people with evacuation – Help people move livestock/animals and assets to safety Provision of first aid at evacuation sites and shelters Distribution of food at evacuation sites/shelters Provision of artificial light at evacuation sites/shelters	Delayed evacuation to last minute to minimize crowding; Extra shelters to allow for distancing; Disinfect shelters prior to evacuees' arrival; COVID-19 precautions as outlined by government and National Society	Submitted revised cyclone budget to Validation Committee three days before Amphan activation. Due to this tight turnaround, they received supplemental funding from IFRC country office instead of FbA by the DREF	Increased capacity of local branches because HQ could not travel; Increased system capacity through identification of additional shelters
Bangladesh – Floods (Activated June 2020)	Cash transfer Activate and send volunteers to communities to reinforce early warnings and advise residents on activities	Disinfected cash points; Provided beneficiaries with PPE and sanitization facilities; Doubled number of cash points Modified volunteer transportation to allow for social distancing;	IFRC country office	
Ecuador – Volcanic Ash (Activated September 2020)	Distribution of health-protection kits Unconditional Cash Transfer Distribution of livelihood protection kit	Staggered distribution for cash transfer; Reduced number of people allowed in one place at a time; Enforced social distancing using chalk marks to demarcate spacing;	IFRC funding. Justifications were submitted afterward with the help of someone from IFRC finance who had accompanied the activation.	Fewer volunteers available, but more volunteers needed to ensure COVID-19 precautions
Mongolia – Dzud (Activated January 2020 – M&E impacted by COVID-19)	Unconditional Cash Transfer Provision of animal care kits (veterinary kits)	–	Covered by the National Society as administrative costs. May write COVID-19 expenses into the EAP in the future.	Overall movements now dictated by Mongolian National State Emergency Commission but due to low community transmission did not perceive impact on their capacity
Mozambique – Cyclone (Activated December 2020)	Reinforce/protect housing, schools, or other infrastructure (Cyclone/Typhoon) Distribution of individual water purification supplies (chlorine, tablets, drops, filters)	–	FbF project budget; External partners	Increased capacity of volunteers on the ground because of COVID-19 related trainings and recruiting
Niger – Floods	Filling sandbags to build dykes and protect critical infrastructure Identify evacuation sites Assist people with evacuation Distribution of individual water purification supplies (chlorine, tablets, drops, filters)	Only implemented sandbag early action because funding had not yet been approved for the EAP. Major changes were necessary, as building dykes occur outdoors and can easily be done at a distance, therefore the risk of transmission was low	Partner National Societies supporting FbF paid for partial implementation	Reduced fundraising capacity because partners were engaged in other activities
Peru – Flood	Unconditional Cash Transfer Sensitize communities in WaSH, First Aid, & other public health practices	–	Peruvian Red Cross	No impact noted to date
Peru – Cold wave	Provision of animal care kits (veterinary kits) Distribution of herder protection kits Distribution of warm clothing Assist people with evacuation Distribution of shelter insulation kits Distribution of tarps and tools kits to shelter livestock Sensitize communities in WaSH, First Aid, & other public health practices	–	Peruvian Red Cross	No impact noted to date
Philippines – Typhoon	Reinforce housing Cash for Work Help people evacuate their animals Help people to harvest key crops early	No hand-to-hand transfer of documents or materials; Wooden stick to transfer docs; Fixed work groups if workers are unable to wear masks;	Official change to the EAP budget	Increased capacity of local branches because HQ could not travel
Submitted EAPs				

(Continued)

Table 1. Continued.

Country & EAP hazard	Early action	Modifications beyond essential COVID-19 precautions*	Funding for COVID-19 modifications	Impact on internal response capacity
Mali – Floods	Assist people with evacuation Distribution of individual water purification supplies (chlorine, tablets, drops, filters) Filling sandbags to build dykes and protect critical infrastructure	–	Remaining FbF Project budget, as the project was ending	Increased capacity of volunteers on the ground
Mozambique – Flood	Distribution of individual water purification supplies (chlorine, tablets, drops, filters) Activate and send volunteers to communities to reinforce early warnings and advise residents on activities Protect documents Disseminate early warning messages Distribute Insecticide-treated bed nets	–	FbF project budget; External partners	Increased capacity of volunteers on the ground because of COVID-19 related trainings and recruiting
Zambia – Floods	Reinforce/protect housing, schools, or other infrastructure (Floods) Sensitize communities in WaSH, First Aid, & other public health practices Clearing/digging drainage (from crop land and around homes) Assist people with evacuation Disseminate early warning messages Distribution of individual water purification supplies (chlorine, tablets, drops, filters) Install community water points Provide or reinforce latrines Distribute Insecticide-treated bed nets Construction of kraals outside floodplain Identification of alternative pastureland Protection of livelihoods through assisting with or encouraging early harvesting of crops (Flood)	–	FbF project budget	Was able to scale up through partnerships
Uganda – Floods	Community awareness Cash transfer Distribution of shelter kit Distribution of water purification supplies	Switched to all mobile money distributions; distributions to take place outdoors with ample space for distancing and no lines; Staggered beneficiary registration;	Included in the EAP	None observed to date
EAPs Nearing Submission				
Ecuador – El Nino	Sensitize communities in WaSH, First Aid, & other public health practices Support assessments and facilitate cooperation to secure additional funds and scale up as necessary Unconditional Cash Transfer Distribution of individual water purification supplies (chlorine, tablets, drops, filters)	–	IFRC	Fewer volunteers available

(Continued)

Table 1. Continued.

Country & EAP hazard	Early action	Modifications beyond essential COVID-19 precautions*	Funding for COVID-19 modifications	Impact on internal response capacity
Ethiopia – Floods	<p>Activate and send volunteers to communities to reinforce early warnings and advise residents on activities</p> <p>Disseminate early warning messages</p> <p>Distribution of individual water purification supplies (chlorine, tablets, drops, filters)</p> <p>Assist people with evacuation</p> <p>Assist people with evacuation – Help people move livestock/animals and assets to safety</p> <p>Clearing/digging drainage (from crop land and around homes)</p> <p>Reinforce/protect housing, schools, or other infrastructure</p>	No modifications to date because they were not sure how long the outbreak would last and because they believe the necessary precautions can be organized during the pre-activation period weeks before an activation.	No modifications planned yet, but money would likely come from external partners	No impact noted to date
Kyrgyzstan – Heatwave	<p>Distribution of hygiene kits</p> <p>Distribution of essential food commodities</p> <p>Conducting heatwaves information campaigns including first aid training, distribution of IEC materials, publication of animations and SMS EWS</p> <p>Installation of air conditioners in personal dwellings and care homes</p>	<p>Face masks and bottles of hand sanitizer to be added to hygiene kits;</p> <p>Distribution to be done in shaded open air locations whenever possible;</p> <p>Increased quantity of hand sanitizer to be distributed to beneficiaries;</p> <p>Distribute water bottles and provide during outdoor distributions to prevent people from overheating;</p> <p>Distribution of education materials in public places will be cancelled, and more emphasis on the SMS EWS distribution;</p> <p>The IEC materials will be only distributed along with food parcels and hygiene kits;</p> <p>Everyone involved in installation of air conditioners to wear masks, gloves and observe strict hygiene practices before, during, and after entering the care homes, which are home to the populations most vulnerable to COVID;</p> <p>Seek advice from public health authorities and staff before entering any care home;</p> <p>If possible, have staff install the units themselves to reduce exposure</p>	National Society; Will write costs into EAP in the future	No impact; Volunteers already trained in COVID-19 prevention
Peru – El Niño	<p>Install community water points</p> <p>Sensitize communities in WaSH, First Aid, & other public health practices</p> <p>Unconditional Cash Transfer</p> <p>Support assessments and facilitate cooperation to secure additional funds and scale up as necessary</p> <p>Support and reinforce health services</p> <p>Distribution of individual water purification supplies (chlorine, tablets, drops, filters)</p>	–	Peruvian Red Cross	No impact noted to date

(Continued)

Table 1. Continued.

Country & EAP hazard	Early action	Modifications beyond essential COVID-19 precautions*	Funding for COVID-19 modifications	Impact on internal response capacity
Philippines – Floods	Help people evacuate their animals Cash for Work Temporary relocation of vulnerable businesses Help people to harvest key crops early	No hand-to-hand transfer of documents or materials; Wooden stick to transfer docs; Fixed work groups if workers are unable to wear masks;	EAP budget	Increased capacity of local branches because headquarters could not travel
Tajikistan – Heatwave	Conducting heatwaves information campaigns including first aid training, distribution of IEC materials, publication of animations and SMS EWS Assistance in referring severe heat-related illnesses to the nearest hospitals Sensitize communities in WaSH, First Aid, & other public health practices Distribution of drinking water, cooling fans, sun hats, sun umbrellas, and water purification tablets	COVID-19 contingency protocols outlined in EAP must be followed (including safe transportation, social distancing, providing and wearing PPE, holding events/distributions outdoors, providing hand washing facilities or sanitizer, monitoring health of FbF personnel); Educational materials now include info on recognizing and mitigating risk of COVID-19; Social distancing to be enforced for volunteers and beneficiaries; Face masks and bottles of hand sanitizer to be added to hygiene kits; Hand sanitizer to be available at all distribution points; Distribution to be done in shaded open air locations whenever possible; Increased quantity of hand sanitizer to be distributed to beneficiaries;	National Society	Minor capacity reduction observed due to increased requirements and COVID-19-related health concerns within the National Society
Vietnam – Heatwave	Sensitize communities in WaSH, First Aid, & other public health practices Unconditional Cash Transfer Cooling buses Community Cooling Shelters	Use posters to increase awareness of multi-hazards; Mobile money in lieu of paper-based cash transfer; Buses travelling around city cancelled because it would not be possible to maintain safe distance; Improve ventilation in tents to decrease transmission risk; Enforced social distancing within the tents; Distribute bottled water instead of water in cups	–	No impact; but volunteers received COVID-19 specific training

*We define essential COVID-19 precautions as an appropriate combination of the following, given the context and nature of the actions: enforcing social distancing, requiring the use of masks, hand washing stations, distribution and/or use of PPE, providing hand sanitizer, taking temperatures or other symptom screenings.

Countries with EAP actions that became unsafe due to COVID-19 took the initiative to, often informally, modify their EAPs (see Table 1). For example, in its heatwave plan, the Vietnam Red Cross Society (VRCS) cancelled plans to provide cooling buses because they could not be implemented safely with physical distancing. VRCS also modified other actions to reduce transmission risks by improving ventilation in cooling tents and distributing cash via electronic platforms rather than in-person.

Many early actions could be safely implemented with minor modifications without increasing transmission risk (in Table 1 countries with no listed modifications had made only minor COVID-19 modifications). Early harvesting of rice, reinforcing shelters, and filling sandbags to build dykes around important infrastructure, for example, take place outdoors. Work parties can be fixed, wear PPE, or maintain distance relatively easily. Because distributions require greater interaction, thereby increasing the potential for viral transmission,

National Societies adapted distribution procedures by reducing group or gathering sizes, staggering distributions, conducting distributions outside, and ensuring that all involved wore masks and washed or sanitized their hands. Elsewhere, early actions could be safely conducted without substantive revision because COVID-19 transmission rates were low (i.e. as of late 2020, Mongolia had no community transmission).

Initiative for changes largely originated within individual National Societies and used non-FbF funding sources. The FbF Fund supported dual-risk management by sending National Societies a seasonal calendar and requesting they prioritize COVID-19 updates to EAPs based on seasonal risks. It also prompted National Societies who were in the late-stages of EAP development to include COVID-19 adaptations in their plans. However, as all communication from the IFRC Secretariat must go through regional offices, requests for COVID modifications were not consistently conveyed to all

regions. Therefore, many National Societies only received detailed guidance on COVID-19 revisions to the EAPs if they approached the Fund because they wished to cover changes with anticipation funding. Instead, many National Societies funded modifications to the EAPs through general COVID-19 emergency appeals or existing FbF projects.

Risk & vulnerability assessments and trigger design

Few National Societies mentioned changes, real or potential, to risk assessments, selection of target populations, or trigger design. Bangladesh Red Crescent Society (BDRCS) added COVID-19 as an additional vulnerability indicator. Several National Societies modified procedures for selecting target populations to be more COVID-19 appropriate, including eliminating face-to-face or door-to-door processes, allowing community leaders to identify qualifying households, and dissuading headquarter staff from travelling to rural areas to reduce transmission risks. Because of heightened socio-economic vulnerability from COVID-19, stakeholders from Mozambique Red Cross, Partner National Societies, and the Fund approved implementation of early actions in Mozambique despite forecasts indicating windspeeds 10 kilometres per hour below the pre-established threshold (120 km/hour). Uganda was also considering increasing trigger lead-time to accommodate COVID-19 protocols based on the outcomes of a forthcoming simulation of early actions using COVID-19 protocols.

Budgets

As many changes to EAPs require funds – ranging from purchasing PPE and supplementary training to increasing transportation support for volunteers – budgets were a main area of EAP modification. Almost every FbF project team consulted for this study modified their budgets and sought funding beyond the Fund, including redirecting funds from project partners, sourcing funds from other multi-stakeholder collaborations, or relying on their National Society for funds and PPE procurement.

Because of real and perceived challenges to making formal modifications, only two National Societies (Bangladesh and the Philippines) attempted to revise their EAP budgets, and only the latter formally modified their EAP budget. While there is a willingness within the RCRC to streamline revision and approval processes, Fund managers are still exploring options for increasing flexibility while maintaining accountability to donors and target populations. One informant summarized: ‘The entire EAP process is very linear and time-consuming. We want to make the EAP a live document, yet it is a very heavy process’. In the Philippines, the Fund’s review committee approved modifications in six days, but obtaining signatures necessary for the legal contracts between all parties delayed the final approval by several months. BDRCS attempted to submit revisions shortly before Cyclone Amphan but was unable to complete the process prior to implementation. Instead, BDRCS used the Fund to activate but relied on other in-country IFRC funds to cover extra costs associated with COVID-19, a set-up they replicated when activating for

floods a month later. National Societies in Ecuador and Mozambique decided not to formally submit revisions because of their perception, based on their initial experience with drafting and approving the EAP, that the process would be too ‘strict’. When Ecuador Red Cross Society activated for volcanic ashfall, it received additional funding needed for COVID-19 protocols through other IFRC sources.

Coordination with stakeholders

COVID-19 temporarily disrupted or slowed coordination with stakeholders in many countries, but in some countries, relationships established through FbF actually enabled collaboration. No country experienced coordination issues that disrupted their ability to implement early actions. FbF planning and preparation in most National Societies slowed while national staff and key partners concentrated on COVID-19 preparation; potential disasters were de-prioritized in the face of existing emergencies. Interruptions to planning and stakeholder collaboration were sometimes temporary, and in many instances coordination capacity normalized as COVID-19 became the norm. However, had an activation occurred during the first months of the pandemic, before National Societies and their partners had a chance to adapt to and adopt COVID-19 protocols, it may have interrupted activities and preparedness for anticipation more significantly.

Shifts to virtual meetings or hybrid models limiting the number of people in a physical space contributed to delays in Tajikistan, Kyrgyzstan, and Mozambique, among others. To overcome this challenge, multiple National Societies shifted to conducting training and meetings outdoors when possible. All National Societies made the shift to virtual or socially-distanced coordination mechanisms to continue their planning.

In other instances, strengthened relationships between the National Society and government partners as a result of FbF programs facilitated a joint pivot to COVID-19 response. The National Society in Mali, for example, developed a close relationship with government technicians and was able to support them in collecting COVID-19 data using their network of volunteers.

Internal capacity

Many National Societies experienced capacity challenges in addressing multiple hazards because human and financial resources were re-directed. For example, the Niger Red Cross Society was unable to get additional funds to simulate their flood EAP because donors and partners were preoccupied with COVID-19. Most National Societies adjusted their operations to increasing demands, but several could only do so because of existing partnerships or flexible funding from Partner National Societies. These National Societies expressed concern they would not have been able to adapt effectively if FbF projects or flexible funding mechanisms had not already been in place.

Despite these constraints, the emergence of a concurrent hazard served to reinforce or strengthen existing capacity in many countries, particularly with regard to training, volunteers, and localization. COVID-19 activities in the Mali,

Niger, Bangladesh, and Mozambique National Societies increased funding for volunteer training and provided the resources and impetus to expand or update volunteer rosters. Travel restrictions also spurred National Societies to delegate activities to branch offices. National Societies in the Philippines and Bangladesh conducted early action training and capacity-building online. While the team in the Philippines conceded that training people to reinforce houses ‘would have been better face-to-face’, they were able to prepare local units for an activation with support from local expertise. The intensification of advance training and the localization of decision-making and implementing powers increased local engagement and capacity, as demonstrated when BDRCS volunteers largely autonomously – and successfully – took early actions to mitigate the impacts of Cyclone Amphan despite COVID-19-related complications and a lead time of just thirty hours. Overall, necessary decentralization meant that local-branch staff assumed a much greater responsibility for planning and simulating FbF activities.

In other instances, capacities built while establishing FbF contributed positively to COVID-19 response writ-large. In East Africa, FbF-driven capacity-building around data preparedness, GIS skills, Community Engagement, and communication enabled National Societies to quickly pivot to pandemic anticipation and response: National Societies mapped COVID-19 hotspots, supported health ministries with monitoring and visualizing COVID-19 data, and developed tailored messaging, thereby enhancing response efforts.

Monitoring & evaluation (M&E)

Few National Societies seriously considered modifying M&E plans for COVID-19. Most invoked standard COVID-19 protocols such as reducing in-person assessments and shifting to virtual formats where possible. Two National Societies that activated earlier in the pandemic, Mongolia and Bangladesh, had to delay their M&E plans, but COVID-19 did not disrupt M&E in Mozambique, nearly one year after the pandemic had begun. There were also several instances where M&E procedures for future activations were changed to rely on second-hand accounts due to COVID-19 restrictions. This commonly took the form of relying on community leaders or RCRC volunteers to communicate community-level feedback to headquarters.

Willingness to act

Findings show that the willingness of populations to take action in advance of disasters was complicated by the concurrent threat of COVID-19. National Societies in Ecuador and Bangladesh found it difficult to mobilize volunteers during their activations because volunteers feared contracting COVID-19. Populations exposed to cyclones in Bangladesh were reluctant to evacuate to shelters, as gathering directly contradicted government ‘physical distancing’ guidelines in place up to the onset of the cyclone. During the EAP activation in Ecuador and simulations in Tajikistan and Kyrgyzstan, target populations were often reluctant to follow PPE and physical distancing protocols at evacuation sites for a number of

reasons, including low transmission rates in rural areas and an ensuing lack of familiarity with COVID-19 protocols, disbelief in the severity of the virus, and the desire not to be left out of distributions.

In two instances, the politicization of the pandemic, coupled with competing (mis)information, complicated not just willingness to act, but also the capacity and mandate to do so: one National Society explicitly mentioned that they felt caught between their government and international organizations, with the former (initially) saying COVID-19 was not present in-country, and the latter emphasizing that humanitarian organizations should be taking action to combat it. As the pandemic progresses, addressing information flow and the prevalence of misinformation continues to grow in importance for National Societies, and holds warnings for future multi-hazard management and communication.

Discussion

The above results reveal four factors that facilitate planning and implementation of early action in the face of concurrent crises: clear hazard and procedural information, flexible funding mechanisms, capacity-building, and increased localization. Given climate-related increases in the frequency and severity of disasters, these findings carry significant implications for practitioners who can expect to tackle a growing number of overlapping hazards. The sections below discuss these themes and their implications for multi-hazard management more broadly.

Clear hazard and procedural guidelines

The results above reveal the value of clear, easily-accessible hazard information, well-defined communication channels, and procedural guidelines that clarify existing knowledge and structures without imposing additional burdens on organizations. Conversely, unclear donor procedures or hazard information – whether because the information does not exist, communication is muddled, or there is no central repository to host relevant lessons – hinder multi-hazard modifications.

Given appropriate information and adequate time and structures, practitioners are willing and able to adjust single-hazard plans in response to emerging hazards. As of January 2021, three National Societies (Bangladesh, Ecuador, and Mozambique – see [Table 1](#)) implemented their EAPs during the pandemic (Bangladesh twice), and each completed the actions as intended while also modifying practices for COVID-19 and addressing the additional capacity and logistical challenges of working in a multi-hazard context. Mongolia National Society activated as planned in January 2020, on the cusp of the unfolding pandemic. While COVID-19 had no impact on activation in Mongolia, it affected their M&E.

That National Societies were able to take anticipatory action in the face of another major crisis affirms the value of advanced planning and dedicated funding mechanisms and protocols, without which mobilization for these hazards may have been even more difficult given competing priorities. These and other rapid adjustments to existing plans were also made

possible by readily available international and national guidelines on how to reduce the risk of COVID-19 transmission – including from the IFRC, WHO, and national governments. This hazard information enabled National Societies to examine their actions and leverage their localized expertise to determine which actions required substantive revisions and which could be implemented with hygiene and distancing protocols.

In contrast to the benefits of existing plans and accessible hazard information, a lack of clarity regarding how to modify existing EAPs discouraged National Societies from formally changing their budgets and plans. Because of communication gaps, some did not receive clear guidance or expectations of how to use the Fund to facilitate their adaptations. As a result, most made informal modifications and were hesitant to make formal amendments as they perceived the process to be too cumbersome. This suggests that funders who are willing to accommodate modifications for emergent hazards should proactively issue transparent, streamlined guidelines so that practitioners know what to do and what to expect from donors before a crisis arises – including establishing lines of communication and deadlines for donor feedback and so that practitioners know their modifications will be reviewed in timely fashion.

Furthermore, as referenced above (see Willingness to Act), clear guidelines and hazard information from reputable sources coupled with a commitment to community engagement may address dangerous misinformation challenges. This potential for the politicization of hazard information reinforces the imperative that practitioners produce and disseminate clear information, engage communities meaningfully, commit to reciprocal channels of communication, and build trust and transparency with impacted populations.

Multi-hazard risk anticipation and management is a difficult area of practice that requires more investment overall. Despite increasing research on the subject (Girgin et al., 2019; Ming et al., 2015; Pourghasemi, Gayen, et al., 2020; Pourghasemi, Kariminejad, et al., 2020; Sahoo & Bhaskaran, 2018), no uniform approach exists for analyzing, anticipating, or responding to multiple hazards, due in large part to their diverse characteristics and methods needed to examine them (Carpignano et al., 2009). As COVID-19 was a high-profile event that unfolded in countries at different times and rates, National Societies usually had the time to consider information about COVID-19 transmission and make necessary adjustments before overlap with another hazard. In other scenarios, a clear understanding of how hazards might interact and appropriate responses may be more difficult to find, especially on short notice.

As it would be impossible to run every scenario of possible hazard interactions, further developing clear, flexible guidelines on best practices for managing specific hazards would enable humanitarian practitioners to quickly assess and adjust to compound risks based upon their own context. Gaining familiarity with the most probable impacts of interactions between particular hazards, and if possible, how to prevent them, can help practitioners devise strategies to address multiple problems simultaneously, and – crucially – draw on pre-planning when making adaptations *ad hoc*. Furthermore, a centralized database or resource for both hazard and

procedural information would ensure that practitioners know where to go to source this information. A promising example of this is the Anticipation Hub, launched by the IFRC, Red Cross Red Crescent Climate Centre, and German Red Cross in late 2020 to serve as a gathering place for lessons learned and best practice sharing between all stakeholders involved in anticipatory humanitarian action (<https://www.anticipation-hub.org>). In the meantime, given data limitations and scarcity, the most appropriate method for addressing unexpected compound hazards in early action may be the provision of flexible contingency funding and an ability for these funds to be released on short notice, as outlined below.

Flexible funding mechanisms

These findings highlight how rigid funding structures limit the flexibility needed to adapt to emerging or multiple hazards. In the face of multi-hazard scenarios, implementation protocols and community needs are likely to deviate from plans for single hazards, pointing to the need for funding mechanisms that allow humanitarians to re-orient in response to emergent or multi-hazard events. For example, the Ecuador Red Cross Society (ERCS) faced difficulties translating COVID-19 concepts into Indigenous languages during their ash fall activation. At the time of activation, rural communities in Ecuador had not been as affected by COVID-19 and were therefore less accustomed to wearing masks and physical distancing. Rather than calling an entire community together to explain processes and distribute materials, the community was broken into smaller groups to ensure physical distancing, which in turn increased the time and labour necessary to complete the activation. Because their EAP as written did not allow such flexibility, ERCS only accomplished this feat by enlisting additional funds from IFRC. In contrast, allowing stakeholders the discretion to modify triggers in consideration of new conditions, as was done when the cyclone protocol in Mozambique was activated before the formal trigger was met, is an example of how greater flexibility could be achieved. No matter how it is done, building flexibility into the anticipatory funding mechanisms themselves will ensure that changes can be accommodated even in the absence of additional external funding.

The value of increased flexibility in the EAPs is in keeping with existing research on flexible funding mechanisms more broadly, which finds that such mechanisms, if triggered early enough, can have important impacts (Rohwerder, 2017). Those mechanisms that themselves are adaptable to quickly evolving situations are often the most successful (OPM, 2016; R uth et al., 2017). A growing literature on crisis modifiers in humanitarian response, which allow practitioners to quickly shift portions of budgets to crisis mitigation that is aligned with overarching programme objectives, illustrate how flexible funding is already being used in crises (Lung, 2020; Maxwell & Majid, 2014) and even in early warning programming (Feeny, 2017). Proponents of localization have also pointed to the possible efficiency gains of more localized action, including direct funding and larger budgets to local organizations or branches (Grand Bargain, 2016; ODI, 2016; Parker, 2016).

The widespread lack of flexible funding within international aid organizations suggests that increasing flexibility will improve multi-hazard management in other areas of aid as well. A lack of flexibility is recognized throughout the humanitarian sector (Grand Bargain, 2016). Bureaucratic, cumbersome funding processes are not unique to the RCRC, as funding throughout the humanitarian sector can take a long time to approve (Levine et al., 2020; NAO, 2016). Furthermore, the flexibility or rigidity of funding mechanisms is inextricably linked to accountability (Grand Bargain, 2016; ICRC, 2019; Tozier de la Poterie, 2017). Although anticipatory humanitarian action raises new challenges for accountability to beneficiaries (downward accountability) and to donors (upward accountability) (Van den Homberg et al., 2020), most organizations working in humanitarian aid, development, and climate change adaptation grapple with questions of accountability linked to tensions between donor and local control and the rigidity and flexibility of funding mechanisms (De Renzio, 2016; ICRC, 2019; Tozier de la Poterie, 2017; Winters, 2010).

Resources & capacity-building

Our findings reaffirm that having adequate resources and capacity at all levels – and strong lines of communication throughout – are essential for effective multi-hazard risk management. As explained by one informant, ‘The key element is to invest in National Society capacity because if you invest in their capacity, they have the skills and know what is expected of them’. COVID-19 often exacerbated pre-existing challenges in ways that demanded more time and resources than were initially at hand. For example, the challenges with translation and enforcing physical distancing, experienced in Ecuador, Tajikistan, and Kyrgyzstan, required National Societies to do more with fewer resources at their disposal. Elsewhere, National Societies had their FbF staff re-assigned to other departments to address response to COVID-19 or more immediate hazards and faced challenges engaging stakeholders in a proactive revision process for hazards that had not yet occurred. An informant attempting to engage stakeholders in EAP revisions was asked: ‘Is this related to locusts? If not, come back next week’. This finding is consistent with conditions in the humanitarian system writ-large, which is underfunded and over-strained on resources. Organizations whose capacities are already stretched are unlikely to have the means to carry out additional planning for multiple hazards. Conversely, as described in the results (Internal Capacity), training and investments implemented as part of FbF projects built important capacity for readiness and preparation, enabling more effective and integrated responses to COVID-19.

Building from and expanding existing FbF-driven investments in capacity-building should be considered a best practice for multi-hazard risk management. Donors must recognize the high resource and time investment that goes into multi-hazard response and develop mechanisms to increase capacity accordingly for times of increased need. Hazard planning guidance and mechanisms for increasing flexibility are steps toward increasing capacity, but as resources are always limited, there will inevitably be events that

overwhelm existing capacities. Given this, anticipatory mechanisms could therefore explore options for surge capacity. A common practice in other realms of humanitarian action, surge capacity could help organizations rapidly increase human-power in times when systems are overwhelmed (CHS Alliance, 2018). Surge mechanisms for anticipation would need to be appropriate for shortened timelines and would depend on the context and actions in question. Such mechanisms might include contracts that enable rapid procurement of additional materials or logistical support, national or international anticipation-specific rosters for paid staff, and the ability to rapidly train and deploy additional volunteers – or recruit them from other areas of the country – when local volunteers are insufficient, unable, or unwilling to act.

Increasing localization

The RCRC is a network of National Societies made up of local branches and volunteers, often supported financially and technically by the IFRC and partner National Societies. While this structure strives to prioritize localization, it is not immune to challenges regarding limited local ownership over decision-making and influence, which is instead often held by donors beyond and within the RCRC system (Tozier de la Poterie, 2017). Indeed, some of the bureaucratic challenges experienced by National Societies in formally adapting EAPs illustrate wider, systemic power imbalances within the humanitarian system.

To overcome international ‘top-down’ humanitarian aid and service delivery, localization – commonly defined as the transferring of both funding and responsibility to implement interventions at local and national levels⁵ – is increasingly seen as critical (ICVA/ODI, 2016; WHS 2016). Alongside countering ethical challenges such as power asymmetries between ‘global’ and ‘local’ offices of organizations, it is perceived as a means to counter practical challenges such as slow funding approval (Harris & Tuladhar, 2019; Roepstorff, 2020). Examples from our research, outlined below, illustrate how localization can increase the effectiveness and nimbleness of aid, and may therefore be critical for multi-hazard planning. Examples also demonstrate that in certain multi-hazard cases, support from actors with more resources or global influence may be beneficial.

Best practice outlined in FbF guidelines for practitioners emphasizes that EAPs should be grounded in the context of that particular country (RCRC Climate Centre/IFRC/German Red Cross, n.d.). This means they should be developed by National Societies in close collaboration with other national stakeholders, fully integrated into National Society Programming, and align with local Early Warning Systems where possible. The aim of these collaborative processes is to foster national ownership over EAPs, including that National Societies will initiate revisions in response to emergent hazards and seek funding for those changes. However, given the high degree of external technical support that is required to develop FbF systems, such ownership is not assured. Our research found that past efforts to embed FbF within National Societies contributed to their ability to successfully develop and fund COVID-19 modifications to EAPs. That most National

Societies took the initiative to adapt their protocols and to seek funding for these modifications outside of the Fund can be considered a victory for localization; just as it demonstrates important bureaucratic constraints to address, it also illustrates the capacity of National Societies to make needed changes even without funding from the FbF Fund.

Our results highlight that localization extends beyond local ownership to include engaging local supply chains wherever possible (Frennesson et al., 2020). Overall, the humanitarian sector has experienced interruptions and slowed response times during the pandemic (UN, 2020, p. 15); local procurement and prepositioning – two fundamental underpinnings of FbF – can help to alleviate supply chain issues. Informants not already purchasing goods locally reported re-evaluating where they source materials for early actions. Pre-agreements with suppliers and funding for advance procurement and prepositioning outlined in the EAPs enabled Mongolia Red Cross Society, among others, to purchase local goods and to maintain confidence in their uninterrupted access to vital humanitarian goods. However, the benefit of purchasing local goods and advance procurement is contingent upon internal geography and having sufficient funding and mobility to allow for adequate pre-positioning. National Societies in the Philippines and Peru, for example, did not have the funds to procure and preposition enough goods to be able to activate anywhere in the country given geography and travel restrictions. As with other challenges, this could be overcome with flexible or contingency funding for additional, local procurement as necessary. Overall, ex-ante funding and a focus on prepositioning goods as locally as possible offer strategies for navigating multi-hazard scenarios where stable, global, or national supply chains cannot be assured.

Although localization is emphasized in the RCRC structure, our results indicate that further focusing capacity-building and decision-making at the most localized levels of the organization could strengthen the ability to respond to multiple hazards. As with most international organizations, COVID-19 lockdowns and travel restrictions drove National Societies to increase localization by considering how they could modify their practices to permit implementation without the physical involvement of national headquarters staff at a local level. One informant noted that a positive outcome of COVID-19 was that ‘all activities now go through the branches of the Red Cross’ rather than depending upon the physical presence and support of staff from National Society Headquarters. As a result of this ‘different way of capacitating the chapters on early action’ local staff were able to conduct local-level simulations on their own, receiving only instructions from national and international staff. This success story demonstrates both the value and the feasibility of increasing capacity and responsibility for anticipatory action at the most local level possible, suggesting that such practice could become the norm, rather than an exception driven by an emergency.

Localization can also be supported through advanced planning. Actors can, for example, make plans to maintain contact with and continue to involve local actors and target populations in the event of travel restrictions that may disrupt normal headquarters-field interactions. For example, the Vietnam

Red Cross planned M&E with due diligence during COVID-19 by gathering beneficiary contact information (i.e. phone numbers) ahead of time so that they could consult with them remotely, and the Mongolia Red Cross may use a pre-existing Community Engagement and Accountability hotline to provide populations a direct line to humanitarian actors.

Despite these benefits, there are ways in which aspects of localization may decrease flexibility and responsiveness in the face of multiple hazards. Increasing multi-stakeholder coordination for FbF has implications for the speed at which plans can be revised. As outlined by informants in Uganda, if modifications are required, adapting to an emergent hazard involves re-engaging key stakeholders, adding an additional layer of work requiring resources, time, and energy. While bringing many actors to the table is challenging under the best of circumstances, asking stakeholders to revisit proactive programming during a pandemic is, at best, complicated. Because there are many reasons that stakeholder engagement is essential to effective programs, these challenges will likely need to be addressed through transparent guidance on how to facilitate modifications and increased flexibility, as outlined above.

Conclusion

Understanding the adaptations that take place when a single hazard scenario becomes multi-hazard, and the mechanisms that foster flexibility in addressing these, are important areas for learning in FbF, DRR, and broader humanitarian action as practitioners increasingly confront compounding and cascading crises such as COVID-19 and climate-related hazards. Despite widespread recognition of the importance of shifting to multi-hazard risk management, our findings illustrate some of the challenges that confront humanitarian actors in doing so, ranging from funding and capacity constraints to supply chain interruptions and target populations’ varying willingness to act. They also reveal some surprising and tangible secondary benefits of anticipation, such as the transfer of skills and capacity to local actors so that they can respond to multiple hazards and a willingness to anticipate emergent hazards and modify plans accordingly. The diverse findings regarding localization above also connect back to a central theme and finding of this research: that flexible funding mechanisms and capacity-building are needed to enable local actors to quickly adapt their programs to emerging crises.

As was demonstrated throughout the paper, FbF and other anticipatory methodologies are premised on tenets that contribute to successful adaptations: pre-secured financing, the ability to preposition goods, heavy investment in capacity-building and training, clear plans of action and stakeholder responsibilities, and promoting a shift to a proactive mindset. Nevertheless, more can be done to make these strategies more effective. Based on our findings, we recommend the following to enable good practice in climate- and multi-hazard risk management more broadly:

- Establish and disseminate clear information for specific hazards;

- Compile this information in centralized databases that are easy for practitioners to access and understand;
- Streamline protocols for modifying funding arrangements in anticipation of emerging hazards;
- Develop surge capacity specific to anticipatory mechanisms;
- Increase flexibility in funding mechanisms;
- Strengthen capacity at local and national levels, and
- Shift power, decision-making, and resources to a more local level.

By making progress toward these recommendations, practitioners can begin to overcome longstanding challenges in humanitarian aid and be better prepared to address future pandemics and other compounding hazards.

Notes

1. IN-MHEWS defines the term ‘multi-hazard’ as ‘(1) the selection of multiple major hazards that the country faces, and (2) the specific contexts where hazardous events may occur simultaneously, cascading or cumulatively over time, and taking into account the potential interrelated effects. Hazards include (as mentioned in the Sendai Framework for Disaster Risk Reduction 2015–2030, and listed in alphabetical order) biological, environmental, geological, hydrometeorological and technological processes and phenomena’.
2. One country that is still developing its EAP was unable to respond to our request for an interview or provide us with their draft EAP within the timeframe of this research. They were therefore excluded from this analysis.
3. Mozambique activated in December 2020 while this article was under review. The team therefore conducted follow-up interviews with stakeholders in Mozambique in January 2021 to capture any additional lessons.
4. Completely reallocating resources from one hazard to another would not be possible for anticipatory mechanisms based on pre-determined analysis. More flexible mechanisms would therefore be better suited to such adjustments.
5. Definitions of localization vary by organization. The International Federation of the Red Cross defines localization as ‘a process of recognising, respecting and strengthening the independence, of leadership and decision making by national actors in humanitarian action, in order to better address the needs of affected populations’ (IFRC, 2019).

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