The role of anticipatory humanitarian action to reduce disaster displacement

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Abstract

Displacement due to weather and climate-related events (disaster displacement), including the adverse effects of climate change, is one of the greatest humanitarian challenges of the 21st century. Even though the forecasting of extreme events and early warning systems has improved globally, less attention has been given to translating anticipatory humanitarian action into the disaster displacement context with the aim to minimize forced displacement from extreme weather events through pre-allocated funds for the readiness, pre-positioning and activation costs. In this analysis, we assess the opportunities and challenges associated with utilising forecast-based financing (FbF) to expand anticipatory and early humanitarian action, based on the structured judgements of experts. These multi-disciplinary experts agree that FbF can reduce displacement risks and address the humanitarian impacts of disaster displacement early, or before a hazard materializes. We propose four action steps along the stages of disaster displacement to provide practical intervention points for researchers and practitioners. Finally, we discuss the implications of our findings and outline next steps. By integrating cross-disciplinary expert judgement, this paper provides a much-needed pathway to transform humanitarian action to be more anticipatory and adaptable to change, and help minimize disaster displacement in climate change vulnerable regions.

1. Introduction

The latest estimates on migration and displacement under climate change show a grim picture (Clement et al. 2021). Weather and climate-related events account for two thirds of new displacements, almost 30 million in 2020, a trend which is expected to be further exacerbated under a +1.5 °C warming and is likely to hit the world’s poorest most (Harrington et al. 2016, Harrington and Otto 2018, Internal Displacement Monitoring Centre 2021). The convergence of conflict and extreme weather events continue to compound and exacerbate vulnerabilities of populations globally. Humanitarian action usually occurring ex-post, in the aftermath of disasters must perpetually adapt itself to help address compounding vulnerabilities. Interventions can be made to strengthen the resilience of people and communities at risk to withstand extreme weather and conflict shocks and reduce exposure to climate change impacts before hazards materialize. Yet, anticipatory humanitarian action has not been applied to disaster displacement. Under the umbrella of anticipatory humanitarian actions forecast-based financing (FbF) offers an opportunity for ex-ante interventions. The importance of addressing disaster displacement has been increasingly recognized in the humanitarian aid and climate science community, highlighting the need for an integrated and cross-sectoral approach, spanning disaster risk reduction (DRR), climate adaptation, humanitarian assistance, human rights and refugee protection, and sustainable development initiatives (IPCC 2018, 2019, Hoegh-Guldberg et al. 2019). The United
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ies. The results provide urgently-needed insight into risk to durable solutions for displaced communities along four phases of displacement, from displacement to humanitarian action to address disaster displacement, and at the regional level. Our results from an expert elicitation showcase the current state of knowledge within anticipatory humanitarian action approaches have been developed or are under development for sudden-onset disasters and at the local level, in the context of Red Cross/Red Crescent projects (Coughlan de Perez et al 2019, Bischiniotis et al 2020). It works by releasing pre-approved funds for humanitarian actions agreed in advance, based on scientific forecasts and risk analysis (German Red Cross et al 2016). For early actions to be performed quickly and efficiently before disasters hit, FbF automatically allocates funds when a specific forecast threshold is reached. The key to this is the early action protocol (EAP), a mitigation measure which defines the location-specific tasks and responsibilities—including the forecast-based, pre-defined triggers, the types of humanitarian early actions and the amounts and timeframe of the funding allocation. EAPs are developed and approved for cyclones, floods, cold waves, extreme winter conditions, and volcanic ashfall; others are under development for drought and heatwaves. At present, the majority of EAPs are developed for sudden-onset disasters and at the national level. However, a smaller number of anticipatory humanitarian action approaches have been developed or are under development for slow-onset and geophysical hazards, and at the regional level (IFRC 2019, 2020d, Dupar et al 2020), pointing to a window of opportunity in addressing the research and policy priorities of climate mobilities (Boas et al 2019).

This analysis, for the first time, explores the existing and potential links between anticipatory humanitarian action, illustrated by FbF as applied by the Red Cross/Red Crescent, and disaster displacement. Our results from an expert elicitation showcase the current state of knowledge within anticipatory humanitarian action to address disaster displacement along four phases of displacement, from displacement risk to durable solutions for displaced communities. The results provide urgently-needed insight into challenges and opportunities to better contextualize how FbF can be applied in the disaster displacement context. We present and discuss a set of recommendations for going forward and conclude with next steps.

2. Background and relevance of disaster displacement

Disaster displacement refers to ‘situations where people are forced to leave their homes or places of habitual residence as a result of a disaster or in order to avoid the impact of an immediate and foreseeable natural hazard’ (The Nansen Initiative 2016, p 16). Displacement impacts in the context of weather and climate-related events vary across countries, communities and regions. It also depends on the type of the natural hazard involved—sudden or slow-onset, weather-related or geophysical. Disaster displacement can take the form of short-term evacuation (hours or days) or be much more protracted. People displaced by disasters may move within their countries, to evacuation centres, temporary or makeshift settlements, the houses of relatives and host communities, or elsewhere. Yet, associated humanitarian impacts vary widely. Humanitarian and priority needs range from emergency shelter, food, clean water, health care, psychosocial support and protection to longer-term support to recover and rebuild lives and livelihoods (Kalin 2015).

Disaster displacement exists across urban and rural settings, and within and across borders (Wiederkehr et al 2018). Although there is a clear diversity of contexts and impacts connected to disaster displacement, it is also important to recognize that the vast majority of recorded displacement is within national borders (internal displacement) and in the context of disaster events (Internal Displacement Monitoring Centre 2021). In 2020, 30.7 million people were displaced due to geophysical and weather-related disasters such as floods, wildfires and drought (figure 1). On average, 22 million people per year are newly displaced by disasters, with more than 70% by extreme weather (IDMC 2018). The majority of internal disaster displacement is short-term with many recorded displacements in the context of pre-emptive evacuations. However, there are at least 5 million people in situations of protracted disaster displacement (Internal Displacement Monitoring Centre 2020). In dryland areas like Somalia, recent conflict, extreme weather and displacement events compound having led to famine-like situations. A shift to anticipatory humanitarian action, action before the impacts of disasters materialize, can help vulnerable populations and those exposed to climate change impacts (Heslin and Thalheimer 2020).

Nations Framework Convention on Climate Change (UNFCCC) Task Force on Displacement calls on states to: ‘Strengthen preparedness, including early warning systems, contingency planning, evacuation planning and resilience-building strategies and plans, and develop innovative approaches, such as FbF, to avert, minimize and address displacement related to the adverse impacts of climate change’ (United Nations Framework Convention on Climate Change 2019, p 16). As part of this cross-sectoral approach, there has been increasing interest in the role of anticipatory humanitarian action for the most vulnerable populations (Coughlan de Perez et al 2015, Gros et al 2019, Kruczkiewicz et al 2021).

Mechanisms to implement anticipatory humanitarian actions are established or under development in 60 countries (German Red Cross 2021). FbF is a specific mechanism to support anticipatory humanitarian action and is mainly applied in the context of Red Cross/Red Crescent projects (Coughlan de Perez et al 2019, Bischiniotis et al 2020). It works by releasing pre-approved funds for humanitarian actions agreed in advance, based on scientific forecasts and risk analysis (German Red Cross et al 2016). For early actions to be performed quickly and efficiently before disasters hit, FbF automatically allocates funds when a specific forecast threshold is reached. The key to this is the early action protocol (EAP), a mitigation measure which defines the location-specific tasks and responsibilities—including the forecast-based, pre-defined triggers, the types of humanitarian early actions and the amounts and timeframe of the funding allocation. EAPs are developed and approved for cyclones, floods, cold waves, extreme winter conditions, and volcanic ashfall; others are under development for drought and heatwaves. At present, the majority of EAPs are developed for sudden-onset disasters and at the national level. However, a smaller number of anticipatory humanitarian action approaches have been developed or are under development for slow-onset and geophysical hazards, and at the regional level (IFRC 2019, 2020d, Dupar et al 2020), pointing to a window of opportunity in addressing the research and policy priorities of climate mobilities (Boas et al 2019).

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3. Methodology and approach

The methodology uses an expert group elicitation and deliberation. We use an iterative approach, which can be described as a type of Delphi approach (Dalkey and Helmer 1963). This section is structured as follows: First, we provide an overview of the format. Next, we introduce the steering committee which forms the basis of the expert elicitation. We then describe the procedure of the three-stage expert assessment.

3.2. Composition of the steering committee

The recommendations were compiled by a steering committee of global experts in humanitarian aid, disaster displacement and applied research, under the auspices of the Red Cross and Red Crescent Climate Centre (RCCC) and the International Federation of Red Cross and Red Crescent Societies (IFRC) FbF program (Coughlan de Perez et al 2015). The compilation also drew on a larger group of experts (a total of 20 additional experts) to supplement the knowledge of those within the FbF program, humanitarian and non-governmental organisations. Of the identified experts, 16 accepted the invitation to participate in the project, forming the steering committee.

3.3. Stage 1: individual expert elicitation

Semi-structured individual interviews were conducted in April 2020 by Author A and facilitated by Authors B and C. Prior to the interview, participants were sent a set of 13 guiding questions (see supplementary information A). The interviews consisted of an in-depth discussion around three issue areas FbF, disaster displacement and climate adaptation pathways. The interview results and findings were compiled into three categories: barriers and opportunities for implementation and policy recommendations. A summary of key opportunities, challenges and barriers, and policy recommendations was anonymized by the authors. The anonymized transcript sections are provided in supplementary information B–E, however the raw transcripts are not included.
3.4. Stage 2: expert group deliberation
A first draft including the feedback from 3.1 was sent to experts to comment and provide additional feedback. This included an issue brief on key opportunities, challenges and barriers, and policy recommendations. After the expert group deliberation, each expert revisited their input and judgements from the individual expert elicitation. Experts expanded or updated their input in some cases. The findings of the expert group deliberation were compiled in an issue brief which was presented during a global dialogue on displacement (GP20) in September 2020 and a global expert panel discussion in November 2020. These presentations took place in a virtual format.

3.5. Stage 3: synthesis manuscript
The summarized transcripts from 3.1 and 3.2 were analysed by Author A. through qualitative content analysis with validation by Author B and Author C. This analysis resulted in a synthesis of 12 pages of interview and expert group deliberation transcripts, compiled into a first draft of this manuscript. A second, shorter manuscript was developed with a focus on policy and issue areas. The steering committee then commented on the drafts in various rounds of revision.

4. Results
In supporting anticipatory humanitarian action, the experts agree that FbF is an important approach to reducing the risks and humanitarian impacts associated with disaster displacement across the phases of disaster displacement (figure 2), including:

(a) Analysis of disaster displacement risks
(b) Protection against arbitrary displacement
(c) Preparedness and response to disaster displacement
(d) Durable solutions for displaced communities.

We begin by outlining experts’ reflections on the contexts where FbF is already incorporating disaster displacement considerations. The results from the expert elicitation are supported by a review of literature and policy documents on anticipatory humanitarian action.

4.1. Analysis of disaster displacement risks
An important starting point in reducing the humanitarian impacts of disaster displacement is an assessment of the context-specific factors that prompt displacement in the first place, along with the identification of who or what would be particularly at risk of displacement (International Committee of the Red Cross 2009). The experts indicate that communities at high risk from displacement include those who are already marginalized or face discrimination and exclusion, and those in informal settlements and with insecure tenure, as well as migrants, refugees and those displaced within and across borders by conflict and disaster.

The process of developing EAPs is designed to identify context-specific impacts of hazards, as well as the most at-risk people among communities likely to be impacted. As early as the feasibility assessment for an EAP, the FbF manual recommends that an analysis is undertaken of displacement risk and migration fragilities as a negative impact of historical hazards. It also recommends assessing risk variations across different geographic areas and demographics, assessing existing historical data, and assessing the capacities of relevant national institutions (Red Cross Red Crescent Climate Centre 2020).

The expert highlight that in the process of developing EAPs, contextual factors relevant to disaster displacement have already been identified. Experts agree that EAPs are a suitable starting point for the risk assessment. In the context of cyclones in Bangladesh, for example, the EAP was based on an exposure and vulnerability map that estimated the percentage of houses that could be at risk of destruction in a particular area. Areas with more than 25% of all houses forecasted to be at risk of being destroyed were placed on a priority list, and then ranked further according to a vulnerability index (IFRC 2020a).

4.2. Protection against arbitrary displacement
A central principle in the approach to displacement is supporting people to stay in their homes, as long as their safety, physical integrity and dignity are not jeopardized and staying is in accordance with their wishes (International Committee of the Red Cross 2009). This is often referred to as protection against arbitrary displacement. The UN Guiding Principles on Internal Displacement specifically recognizes this in the context of disasters (OCHA 1998). Initiatives to protect people from arbitrary displacement may take the form of longer-term investment in DRR, resilience-building initiatives and climate change adaptation. This may also take the form of ‘building back better’ initiatives in the aftermath and recovery phase of disaster response. However, it is important to recognize that the risk of arbitrary displacement exists within a context of not only vulnerability and exposure, but also urbanization, population growth, development, governance and in many cases politics, discrimination and marginalization.

Across experts, there is agreement that disaster displacement can be a secondary impact from primary impacts such as damaged or destroyed housing, loss of land or livelihoods, food insecurity and/or disruption to essential services and infrastructure. Although FbF focuses on the preparedness and response phase rather than on longer term DRR and resilience-building measures, a number of FbF
initiatives address some of these primary impacts, which can intentionally or inadvertently also protect against arbitrary displacement.

In the Philippines, in the context of typhoons, early humanitarian actions supported by FbF include strengthening and protecting shelters and housing. The EAP also identifies the need to strengthen livelihoods and minimize the loss of income in advance of typhoons. Identified early actions include the early harvesting of matured crops and the evacuation of livestock. These actions are designed to minimize the loss of livelihoods for pastoralists as well as to motivate the community to leave areas at risk of flooding or landslide. Cash for work is also considered in the Philippine EAP to mobilize local workers to implement these early actions, and to provide temporary employment for vulnerable farmers and fisherfolk (IFRC 2021).

In the context of severe winter (dzud) in Mongolia, early humanitarian actions are designed to protect livelihoods through reducing livestock mortality. The early actions include distribution of livestock nutrition kits as well as unconditional cash transfer, which could be used for hay and fodder or medicine (Gros et al 2020). In Mozambique, in the context of cyclones, anticipatory humanitarian actions include strengthening houses and shelters as well as reinforcing education infrastructure. This includes supplying essential tools and basic materials for communities to strengthen the most at risk houses and schools (IFRC 2020c).

4.3. Preparedness and response to disaster displacement

Where the risk of arbitrary disaster displacement cannot be further mitigated—or indeed where displacement in the form of evacuation is required to protect health and safety of communities—then disaster preparedness and response is critical to reducing humanitarian impacts.

The Sendai Framework, emphasizes the importance of long-term, regulated disaster preparedness, response and adaptation measures (United Nations Office for Disaster Risk Reduction 2015). Disaster preparedness initiatives in the context of disaster displacement may include identification of adequate, accessible, and safe evacuation sites to promote risk knowledge and timely early warnings (Bischiniotis et al 2019). These initiatives can be complemented with practical advice to reduce displacement-related risks, such as the need to carry legal documents, secure productive assets left behind, and bring essential medication (United Nations Office for Disaster Risk Reduction 2019).

In certain contexts, disaster preparedness initiatives should also consider potential cross-border displacement, including cooperation with neighbouring countries based on relevant legal and policy frameworks, including humanitarian protection, human rights, refugee and other frameworks. The Sendai Framework names cross-agency and interdisciplinary collaboration as key factor towards effective climate action and disaster risk policies to address risks of
displacement (United Nations Office for Disaster Risk Reduction 2015).

During the response phase, it is essential that all displaced communities are able to access assistance, protection, and basic services, including those at risk of discrimination, marginalization or exclusion (The Brookings—Bern Project on Internal Displacement 2011). This includes displaced communities outside of formal evacuation and camp settings, for example, people in informal settings, people staying with host communities and people who leave the geographic region of the disaster. It should be noted that host communities and informal settings are not only located in the region affected by the disaster. The location of displacement can prompt specific considerations, including, for example, urban areas that experience overcrowding or overwhelmed services, facilities and infrastructure that affect displaced and host communities alike (supplementary information B and D). This can negatively affect social cohesion and create tensions. In both rural and urban areas, especially in informal settlements, a pre-existing lack of services and facilities also needs to be considered in anticipation, preparedness and humanitarian response to displacement.

Displaced people without identification and other relevant documents should not be excluded from assistance and should be supported to recover lost documents (United Nations Office for Disaster Risk Reduction 2019). Assistance and protection should take specific needs for displaced communities into account, including resolving housing, land and property issues.

Already, FbF supports a number of anticipatory humanitarian actions relevant to preparedness and response to disaster displacement (supplementary information C). In Mozambique, in the context of cyclones, anticipatory humanitarian actions include mapping and training volunteers in first aid and shelter and settlements, the creation of community working groups, and memorandums of understanding with community radio (IFRC 2020c).

In Bangladesh, in the context of cyclones, early humanitarian actions include the evacuation and transportation of people with their moveable assets and livestock to shelters. Early actions also include the distribution of food and drinking water, the installation of artificial light, and first aid in evacuation centres. The early actions are aimed at providing support to people who are evacuated, protecting livelihoods, and incentivizing evacuation. This approach is based on a survey of impacts and community consultations in which community members stated that a lack of transportation to, and food and water in, cyclone shelters would deter them from evacuating. In the context of floods, early humanitarian actions include the dissemination of awareness-raising messages on evacuation (IFRC 2020b).

### 4.4. Durable solutions for displaced communities

Durable solutions, whether return, local integration or settlement elsewhere, are achieved when displaced communities do not require humanitarian assistance and protection directly linked to displacement. However, durable solutions refer to a broader framework which includes rights-based approaches to the end of displacement, which goes well beyond humanitarian assistance. National authorities hold a responsible role to ensure durable solutions for displaced people with complementary roles from humanitarian agencies (The Brookings—Bern Project on Internal Displacement 2011). For all communities who are displaced, it is essential that steps should be taken to move towards a durable solution as quickly as circumstances allow. The experts agree that understanding and action to support durable solutions can be taken even prior to displacement occurring, as part of preparedness activities.

Barriers to durable solutions (see supplementary information D), and the potential for protracted displacement should be identified early in the process of risk analysis. Experts estimate that situations of protracted displacement can have critical impacts on displaced and host communities, including when related to services, shelter, livelihoods, protection, education and mental health.

There are limited examples of FbF supporting displaced communities to achieve durable solutions. However, early humanitarian actions in the Philippines and Mozambique to strengthen shelter and schools prior to cyclones could have an impact not only in protecting against arbitrary displacement, but where displacement does occur they could minimize damage and facilitate faster return and recovery. In the Philippines EAP, such initiatives are specifically designed to facilitate a faster return to normality.

### 5. Facilitating anticipatory approaches

In supporting anticipatory humanitarian action, FbF is an important approach to reducing the risks and humanitarian impacts associated with disaster displacement. We show that FbF is already supporting a number of anticipatory humanitarian actions in the context of disaster displacement. However, more can be done towards linking anticipatory humanitarian action to climate governance that aim to reduce disaster displacement risks. The following action steps are designed to inspire practical action to enhance FbF in addressing humanitarian risks amid such displacement. In line with our results, these recommendations are framed across the phases of disaster displacement. FbF can facilitate (a) an integration of disaster displacement risk in risk analysis, (b) the strengthening of shelters and protection of livelihoods, (c) preparedness and response to disaster displacement, and (d) the creation of durable solutions.
For all recommendations, it is essential at the outset to recognize that FbF needs to be part of a broader integrated and holistic approach to addressing disaster displacement. FbF is not a stand-alone solution and should complement broader resilience-building measures, and address the complexities of climate mobilities of which disaster displacement is one phenomenon.

5.1. Action 1: Integration of disaster displacement risks
FbF has a strong emphasis on risk and impact analysis with specific guidance on assessing disaster displacement and migration insecurity as a negative impact of historical hazards. However, it is recommended that such risk analysis could go further to integrate displacement by acknowledging that an absence of information and data on displacement does not mean there are no risks. Such an absence can be influenced by the more general lack of recognition of displacement considerations, including assessments and data, in disaster risk management. For example, while displacement is taken as a given in conflict situations, many actors engaged in disaster risk management and response may not recognize disaster displacement as a phenomenon. Displacement, protection and human rights considerations are not yet comprehensively mainstreamed in DRR laws and policies due to a lack of considering the specific needs and risks people may face due to displacement (Costello 2019).

A challenge may be the absence of information or data on cross-border displacement. Such movements can take place outside of formal channels—for example, people moving as undocumented or irregular migrants, rather than indicating that such movements are not occurring. Communities may not feel comfortable discussing cross-border displacement, and in many cases there would be no official records. Risk analysis can however, integrate displacement by assessing the risks associated with displacement, the perspectives of people who have previously been displaced should inform the development of early humanitarian actions. The risk and impact analysis for FbF should also seek out and include the perspectives and needs of those communities at higher risk of arbitrary displacement in future disasters—for example those with insecure tenure, including those in informal and marginal settlements, as well as migrants, including undocumented migrants, refugees and people already displaced by conflict or disasters.

5.2. Action 2: Strengthen shelters and protect livelihoods
Supporting people to remain in their homes in safety and dignity is the primary aim in any approach to displacement. Many initiatives to protect against arbitrary displacement will fall outside of the scope of FbF—including longer-term resilience building, DRR and climate change adaptation. However, FbF is addressing risks that have not been managed as part of these longer-term processes and specifically during the window between a forecast and a potential disaster. Examples include early actions to strengthen shelters and protect livelihoods. Ahead of Typhoon Kammuri (Tisoy), an impact-based forecasting model helped to identify vulnerable households in the northern part of the Philippines. FbF was used to improve housing roofs and wall material, and evacuate livestock and thus had a clear angle of minimising the displacement risks from materialising (IFRC 2021). There is also a need to prepare contingency shelters in the event that the preferred places are unavailable or overwhelmed. Knowledge dissemination through partnerships with national authorities and development organisations involved, for example through in-community visits, workshops and webinars that may forestall displacement is another important action toward protecting and strengthening community resilience. It is recommended that these initiatives continue, and where possible are enhanced using risk and impact analysis.

5.3. Action 3: Preparedness and response to disaster displacement
In many ways, the core of FbF is disaster preparedness. In the following, we list recommendations for expanding the FbF framework to reduce humanitarian impacts for displaced communities during the preparedness and response phases. The existing examples of promoting risk knowledge and awareness of early warning mechanisms should be promoted across more FbF initiatives. Initiatives to enhance the knowledge of risk can also include practical advice for communities in the context of displacement, including carrying relevant documents, securing productive assets, and bringing essential medicines. This is especially relevant to regions experiencing recurring weather and climate-related events with already vulnerable populations. The recent drought in southern Madagascar illustrates how existing vulnerabilities such as poverty and food insecurity can compound during an extreme event and effectively hinder disaster preparedness and response (Harrington et al 2021). FbF could help vulnerable populations with food and cash programmes to prepare for ongoing drought impacts.

In the case of evacuations, evacuation centres need to be safe, dignified places, accessible to all—including communities who may face marginalization and discrimination, including migrants and refugees. When such conditions exist, this can facilitate safe evacuation, and in turn the protection of lives and livelihoods. Although there are some early humanitarian actions that address conditions in
evacuation centres, including the provision of water, food, lighting and first aid, they could be further strengthened with a focus on safety, dignity, protection and inclusion for the most at risk.

Beyond evacuation centres and other formal displacement sites, FbF initiatives could increasingly support actions for people who are displaced to other locations, for example, host communities and informal displacement sites both in and outside the region affected.

5.4. Action 4: Towards durable solutions
Many initiatives to support durable solutions for communities displaced by disasters will be outside of the scope of FbF. However, a strong analysis of the factors that influence prolonged displacement, including specific barriers to durable solutions (see supplementary information D), should form an important part of the risk and impact analysis phase. These can include, permanent loss of land as a result of specific hazards such as erosion of river banks, or post-disaster land grabs. Where it is not possible for FbF to address these factors, cooperation, partnerships and dialogue with actors who could contribute to durable solutions should be encouraged. This can be done by inviting these specialists at the beginning of DRR discussions and planning.

6. Conclusions and outlook
Our findings suggest direct implications for future research and policy-making. First, deliberation over FbF in migration policy could make an important contribution to global climate policy discussions, as part of the larger efforts to meet the 2030 Agenda for Sustainable Development. Such efforts have been encouraged individually by the United Nations through the Global Compact for Safe, Orderly and Regular Migration consistent with target 10.7 of the Agenda, the UNFCCC Task Force on Displacement, the Global Protection Cluster and the IPCC 1.5 Special Report. Second, considerations to reducing silo-thinking between disciplines, practitioners and policymakers are crucial to address disaster displacement with anticipatory humanitarian action.

Our findings demonstrate four recommendations on research priorities driving the development in the fields of humanitarian aid and climate science. We contend that these are crucial elements for supporting the policy on mitigation and adaptation of climate change for building a society more resilient to climate-related risks. The recommendations were devised by a range of experts through analysis, wider engagement and consultation. Crucially, the findings emphasize how applied research and anticipatory humanitarian action can contribute to improving climate risk knowledge and information to stakeholders. Such knowledge, in turn, can enhance the capacity before natural hazards compound, prompting disaster displacement situations and thus, transition to a sustainable and resilient society. The findings are relevant globally but were originally commissioned to inform the GP20, a multi-stakeholder three year initiative to advance prevention, protection and solutions for internally displaced people (Global Protection Cluster 2021).

In order for FbF to be operationalized to situations of disaster displacement, the next step is a decision tool for practitioners to be able to decide in a timely manner, when and where to act. Decisions on the time and location of FbF measures are based on the anticipated risk and impact of disaster displacement. In the context of impact-based forecasts, there is a need for adequate exposure data and in order to plan the interventions reliable and ad-hoc finance mechanisms that recognize disaster displacement. Research can support FbF practitioners through unpacking weather and climate-related drivers of displacement and thus help to form a basis for improved research methods and policy action. A practical step will be the support in the development of impact-based forecast data and models that take FbF triggers and lessons learnt on disaster displacement into account.

Data availability statement
The data that support the findings of this study are available upon reasonable request from the authors.

All data that support the findings of this study are included within the article (and any supplementary files).

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Author contributions
All authors were involved in the conceptualisation of this paper and in drafting the original manuscript.
L T designed the research and performed the analysis with support from E J and E Z.

Conflict of interest

The authors declare no conflicts of interest.

Ethical statement

The IFRC and RCCC approved involvement of human subjects in this research. Per that approval and associated information consent, anonymized transcript summaries only are provided in the supplementary information.

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