RESEARCH ROAD MAP Forecast-based Financing

Why a road map?

Rationale

The objective of forecast-based financing (FbF) is to enhance humanitarian action to protect the lives and livelihoods of the most vulnerable from the effects of weather and climate related disasters. Within the Red Cross Red Crescent, there are more than 20 countries implementing this approach, and related systems are also being implemented in FAO, WFP, the START Network, and other organizations. The International Federation of Red Cross and Red Crescent Societies has created an anticipatory funding mechanism that allows any Red Cross Red Crescent National Society in the world to have access to anticipatory funding if there is a FbF system in place. With growing interest from across humanitarian and development partners, it is expected that FbF systems will continue to learn and grow.

Existing research foundations

Significant investments in research have enabled the development of the first pilot FbF systems and enabled the growth towards national level Forecast-based Action (FbA) systems. The German Red Cross is building a library of related research progress and outputs, the first version of which is available here. This includes research results in forecast science, decision-making processes, and learning on anticipatory funding, among others. Please submit research outputs here to be posted in the library.

Research road map

To move forward with this ambitious agenda, there are a number of critical research questions remaining. Addressing these policy, strategic and operational gaps can support practitioners and scientists to develop sustainable, effective, and people-centred FbF systems at scale.

The following roadmap identifies five goals for the success of FbF at the top and lists critical research questions that need to be addressed to help achieve these goals. The bottom row identifies several priority research questions related to incentives of different actors, the answers to which should inform the investment and design of FbF systems in the future.

However, WHAT we research is only as important as HOW we research it. Interdisciplinary research that involves practitioners in the design and analysis is critical for uptake.

In partnership with:

UKaid from the British people
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	Goals of FbF	Forecasts skilfully predict extreme events	Using these forecasts, actors can identify who is at greatest risk of impact	Resources are made available based on forecasts	Early actions reduce the impact of disaster	Anticipatory action is implemented at scale
Research Needs	**Urgent**	**How well do existing local and global forecasts predict extreme events?** • What is the skill of existing forecasts? Probability of false alarms/misses? • What methods can calculate the frequency of forecasts being issued (triggers happening)? • What methods can evaluate the skill of impact-based forecasts?	**How can vulnerability/exposure data and tools identify people at greatest risk (impact-based forecasting)?** • How can forecasts be interoperable with existing V&E data/tools (e.g. risk assessments, OSM) • Who has authority to disseminate forecasts/triggers? What are likely future scenarios for mandates?	**How can financing mechanisms manage disbursements at short lead-times?**	**How can success be measured?** • What methods can be used to assess success of individual actions? • Which methods can be used to assess the success of FbF systems and pooled funding mechanisms? • What are the least resource-intensive methods to gauge success after an FbF intervention?	**How can actors coordinate effectively on FbF to avoid duplication and best support the most vulnerable?** • What methods of sharing lessons learned avoid repeating mistakes? • How can actors ensure the independence of the scientific inputs to an EAP?
	Invest now	**How can forecast systems improve their ability to predict extreme events?** • Post-processing • Data assimilation • River flow to inundation forecasting • Statistical/dynamical downscaling • Extended lead-times, S2S • Improved skill for GLOFs, disease outbreaks, flash floods, volcanic ash	**What is the relationship between hazard magnitude and impact in different places (impact curves)?** • Which socio-economic indicators best determine impact curves for different groups and contexts? • What methods incorporate uncertainties in impact modeling when calculating trigger uncertainty?	**How can FbF leverage and/or complement other financing tools to best serve the most vulnerable?** • Disaster Risk Financing instruments (e.g. catastrophe bonds, insurance) • Local funds (e.g. community revolving funds, credit unions) • Islamic finance instruments	**Which actions reduce disaster impacts in which contexts?** • Vulnerable infrastructure • Disease outbreaks • Urban areas • National/community/household/individual scale • Conflict settings	**What legal, policy, and strategy decisions enable governments to establish FbF systems at scale?** • How can social protection systems be adapted to support FbF at scale? • How can FbF scale in conflict or IDP contexts?
	Invest later	**How can data improvements improve forecast evaluation and forecast skill?** • What is the value of investing in station data, based on data denial experiments? • What methods can be used to incorporate alternative data sources such as social media and community sources?	**What FbF targeting strategies ensure accountability and transparency, especially to the population at risk?** • What are the potential challenges and pitfalls when targeting people based on a forecast? • How can actors minimize and address challenges in different contexts?	**What is the most effective mixture of investment in long-term DRR/CCA, FbF systems, DRF, and disaster response funding for different situations?** • In which contexts does FbF support adaptation to Climate Change?	**How can nesting/sequencing triggers at different timescales improve outcomes?** • How does "readiness" investment enable quick action in different contexts?	**What are the long-term benefits of FbF in terms of organizational development and strengthening institutions?** • How can investment in FbF support or jeopardize attention and investment in long-term disaster risk reduction or resilience-building? • In which contexts can FbF create perverse incentives for resilience?
	Back burner	**What are the roles of different forecasting groups?** • What are existing mandates for giving warnings and how is this evolving? • How can FbF make use of traditional forecasts? • What collaboration opportunities can involve private sector forecasts?	**How can the use of data and risk-based targeting ensure a focus on the most vulnerable, not only the areas with greatest data?**	**How can resources at local level to global level complement each other in funding different scales/magnitudes/frequencies of early action?**	**What are the implications of acting "in vain"?** • How do different actors approach the revision process of FbF plans?	**What does scale mean for different actors?** • What intermediaries are needed to support actors to achieve FbF at scale? • What vulnerable groups are not covered by existing definitions/aspirations of FbF at scale?
	Incentives	What capacity-building strategies and incentives enable national hydromet to improve and assess their forecasts?	What are incentives for national hydromet or disaster management institutions to produce impact-based forecasts?	What are incentives to invest in FbF funds? What are incentives for existing funding mechanisms to incorporate FbF?	What are the enablers/incentives for an FbF system where actors do complementary and coordinated actions?	What are the incentives for integrating FbF into humanitarian/development work? What are reasons for existing buy-in?