Criteria for identification and design of Forecast-based Financing interventions

Forecast-based Financing (FbF) is a mechanism that uses climate and weather forecasts to trigger timely humanitarian action, before a hazard hits the exposed population. These actions are automatically funded when the triggering forecast is released.

This mechanism has been progressively developed since 2008. Several pilot projects are ongoing, which are contributing to build evidence about the potential to transform the current humanitarian system. Lessons, best practices and recommendations from these projects are the base for the development of a solid Forecast-based Financing knowledge management strategy.

A successful Forecast-based Financing implementation will depend on several aspects, ranging from availability of risk information to engagement of potential stakeholders.

Learning from ongoing pilot experiences, this guide sets out a set of new considerations that can be used to select intervention areas that are most "ripe" for the introduction of Forecast-based Financing, encouraging the establishment of interventions that further consolidate knowledge and practice in this area. Based on the results of discussing each of the questions in this document, practitioners can focus their priorities in the design of a specific Forecast-based Financing intervention, focusing on the areas that need greatest support.

The guideline is divided in four parts: Risk Assessment, Forecasts Capabilities, Government Level and Organization Level analysis. After exploring each of these considerations, practitioners can select countries and/or regions for Forecast-based Financing interventions, and gain an understanding of which hazards would be ideal for each project. The qualitative responses can also indicate where more work should be directed in a particular intervention; for example, if one region has excellent forecasts but not enough information about risk factors, extra effort in the project should be focused on identifying and analysing those risk factors rather than focusing in forecast capacity, in the same direction if the feasibility study identify that the DRM capacity of the implementing organization needs improvement, the project/intervention could include a component of capacity building . At the end of this guide, there is a set of suggested question that could be used by the researcher to guide the study towards a deep understanding of the best strategy to implement a Forecast-based Financing intervention.

Target Audience for this guide:

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Scoping studies can be done directly by technical staff of the implementing organization/government, or could be conducted by external consultants. The process could take from one week to one month, depending on the level of details and geographical extension that is targeted.

Risk Assessment

A sound understanding of risks is necessary to identify the hazards, vulnerability, exposure and capacities of the at risk population. This process could be conducted during the feasibility study for Forecast-based Financing intervention or directly at the beginning of the project/programme implementation.

The risk assessment will provide information that is necessary for decision makers to define areas of intervention (country, regional or village level interventions), it will also will inform what is the hazard(s) that will be tackled through the forecast-based financing intervention and will give initial ideas of the possible disaster impacts that put at risk lives, livelihoods and assets.

Much progress has been done since the implementation of the Hyogo Framework for Action, there is information at different levels that can provide good understanding of risks, from community level risk assessments to global assessment reports. It is essential that diverse sources of information are consulted in this process.

There are several sources of information depending on the region and country where the study is conducted. The UNISDR Global Assessment Report 2015 offers a broad range of information that could be use as a general based on analysis. Other relevant documents should be consulted; for example, in the Pacific, there are documents such as World Bank report: Acting Today For Tomorrow: A Policy and Practice Note for Climate and Disaster Resilient Development in the Pacific Islands Region as well as other available documentation from PCRAFI and SPREP. Other tools such as INFORM index, VAM WFP, Inasafe or 510 Global could be used in this analysis.

These are some of the recommended indicators that could be gathered and analyzed. Depending on the context new indicators could be added. At the end of this analysis the main outcome is the identification of the priority hazard(s), what is the most critical exposure and what are the main vulnerabilities faced in the studied areas. At the end the decision makers should be informed about the most critical risks that vulnerable populations face in the respective studied areas. All these information will contribute to the design a Menu of Triggers and the Prioritization of Forecast-based Actions.

Use these indicators as reference, others should be included depending on the context that is been studied.

Indicators	Data	Sources

Exposed Population - Population growth (annual %)		
Projected Exposed Population considering climate change scenarios		
GINI index (0-100)		
Hazard mean return period/period of occurrence for Cyclones (100 years) – consider climate change scenarios		
Hazard mean return period/period of occurrence for Storm Surge (100 years) consider climate change scenarios		
Hazard mean return period/period of occurrence for Floods (100 years) consider climate change scenarios		
Hazard mean return period/period of occurrence for Droughts (100 years) consider climate change scenarios		
Average Annual Loss (AAL) - for Cyclonic Wind in €		
Average Annual Loss (AAL) - for Storm Surge in €		
Average Annual Loss (AAL) - for floods in €		
Average Annual Loss (AAL) - for droughts in €		
Combined Economic Losses - 10-year moving average 2005 – 2013 in €		
% of Combined Economic Losses for drought – 10 year moving average 2005 - 2013		
% of Combined Economic Losses for Flood – 10 year moving average 2005 - 2013		
% of Combined Economic Losses for Cyclones – 10 year moving average 2005 - 2013		
% of population in disaster-prone regions that live below US $1.25 per day or are classified as multi dimensionally poor (or another poverty index)		
Availability of governmental risk assessments at national level (Risks related to Hydro-meteorological Hazards in sectors as health, livelihoods, education, housing, infrastructure and water)		
Availability of institutional risks assessments		
Availability of disaster impacts information for high prone risk zones. (UN, NGO, RCRC movement, Insurance companies other private section etc.)		
Availability of NAPAs and/or NAPs		
Average annual rates of waterborne diseases, malnutrition and other health indicators associated with disasters		

Feasibility

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The criteria presented here will facilitate the feasibility analysis of Forecast-based Financing possible interventions. For each of the presented criteria (Section 1, 2 and 3), stakeholders should arrive to a consensus that will be described in three levels "High FbF feasibility", "Medium FbF feasibility", "Low FbF feasibility".

High FbF feasibility: There is sufficient progress in this area. If a project is implemented, there is a high chance of effective results and it will be possible to build robust evidence about Forecast-based Financing impacts.

Medium FbF feasibility: Some work exists in this area. Although not all the conditions are ideal for the implementation of Forecast-based Financing, it would be possible to implement as long as key weak points are managed strategically. For example, the lack of contingency plans at organization/government level could pose some challenges for the implementation. This could be overcome if information or progress in this area is improved alongside the intervention.

Low FbF feasibility: No work exists in this area. The total lack of information and/or capacities is a major challenge for a Forecast-based Financing intervention. The low feasibility indicates that it could be more difficult to implement any intervention in the respective context that is being studied but also indicates that the implementing organization should design a strategy that manage the risks posed by the lack or weak performance of the specific criteria that has been analyzed.

Section 1 - Forecast Capabilities

Use these indicators as reference, others should be included depending on the context that is been studied. The designation of the different levels of feasibility is a way to promote discussion among the different stakeholders that are involved in the study process. The below table is indicative; more background information should be reflected in the final report of the feasibility study.

Scientific Criteria	High FbF Feasibility	Medium FbF Feasibility	Low FbF Feasibility
10-day probabilistic rainfall and temperature forecasts available by National Meteorological Service	X - E.g. Forecast is validated since 3 years ago		
Probabilistic 3-month seasonal rainfall and temperature forecasts available by national institutions			
20-day probabilistic hydrologic forecasts available by national institutions		X - E.g. there are few data collection stations, however there are approved plans to improve the system	

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Historical forecast data or hind casts available for more than 10 years, and forecast verification analyses published		X - E.g Historical forecast is available since 5 years ago, due to conflict in some areas of the country during 10 years, there was not data collection in place. Since 5 years ago data is being collected.	
Historical forecast data or hind casts available for more than 20 years, and forecast verification analyses published			X - E.g Historical forecast is available since 5 years ago
Historical forecast data for ENSO			X. E.g no systematic information has been collected
Climate change models		X. E.g some progress has been made since the elaboration of NAPAs, still the scenarios are models are low resolution.	

After interviews with hydro-meteorological departments and research institutions and review of technical documentation about forecast skills in the study area it will be possible to determine the level of quality of the available forecasts in a given time, for example:

	Skill of forecast for each Hazard				
Type of hydro-meteorological Forecast	Flood	Cyclone	Drought	Cyclonic wind	Heat wave
Seasonal (3 months) – country/region x	poor	unknown	good	unknown	poor
Short term (3 to 5 days) – country/ region x	good	good	good	good	good
Short term (6 to 10 days) – country/ region x	good	poor	good	poor	good

Section 2 - Government Level

This section aims at exploring the current status of the Disaster Risk Reduction and Climate Change Adaptation strategies in the respective study area/country. A sustainable Forecast-based Financing mechanism aims at strengthening the local/national Disaster Risk Management

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capacities to enable better decision making under uncertainty. The more committed the government, the more feasible will be to implement an FbF intervention.

Governmental Criteria	High FbF Feasibility	Medium FbF Feasibility	Low FbF Feasibility
Does a DRR law exist?	X - the country has adopted a DRR law since 2010		
Do the mandated actors implement the law with priority?		X - there are still gaps in the implementation. Most of the normative has not been implemented at municipal/local level	
Is there a DRR fund at National level?	X – By law there is a DRR fund that could be used for prevention/mitigation/preparedness and response at all levels of the government		
Is the DRR fund utilized appropriately at National level?		X - government agencies, and districts have access to the fund, however they have not been utilized according to DRR plans. There have been some cases of corruption.	
Are DRR funds available District-municipal level?			X – no yet, district and municipal level do not have access to funds yet.
Is there Potential to engage Government DRR department in FbF?	X - yes the DRR department value the concept of FbF and consider that it could integral part of the EWS strategy of the government.		
Does the government developed a NAP?		X- work in progress, the government aim to finish the plan in the coming year. There is positive progress on the scientific analysis of climate change models.	
Have contingency plans been		X - the government developed a CP for	

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activated in a satisfactory way at National level?		cyclones and floods which has been tested through simulation exercises, however during real scenarios the performance of the relevant actor was not satisfactory according to the impact evaluation.	
Have contingency plans been activated in a satisfactory way at District-municipal level?			X – there are no up to date CP at district and municipal level.
Are there existing and functional national level EWS?		X – The capacity to monitor collects and analyses hazard data has improved in recent years, dissemination of information at all levels is still weak, therefore actions are not taken timely (Hazard: cyclone) no other EWS	
Are there existing and functional district-municipal level EWS ?			X - information from national level does not reach effectively district and municipal level
Collaboration between national hydro-met offices and DRR department		X – There is progress in the communication flow between agencies, however post disaster impact report shows lack of coordination and communication among those agencies.	
Existing benefit delivery mechanisms such as social protection or safety nets programs (cash transfers, public works, social insurance, etc.)	X –Social safety nets is the main priority of the social welfare department, supported by different organizations. There are CTP and insurance in place for the most vulnerable families.		

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National registry of individuals (either for social programs or general)	X - yes, the social welfare department has a detailed database of the population		
Existence of Contingency Funds in social programs to address disaster impacts			X - There are not available contingency funds to be used in case of disaster.
Existence of functioning social protection	X – yes the social welfare department has developed a social protection system since 15 years ago that is well recognized and value by the population.		
Is the government open to conduct contingency planning jointly with external actors (NGOs, Civil Society, private sector, research institutions etc.)	X – The DRR department is seeking active engagement of external partners for the development of contingency plans, which includes improvement of coordination and designation of roles and responsibilities.		

Section 3 - Organizational Level (for this case National Red Cross / Red Crescent Society)

This section explore the capacities of the implementing organization (in this case a Red Cross / Red Crescent National Society). The suggested areas of discussion focus on the experience on designing DRR/CCA interventions, including key elements for Forecast-based Financing such as contingency planning and early warning systems, as well as proximity to the most risk prone areas of the country (or study area) and the ability to deploy human resources. More criteria could be added according to the context of the implementing organization. The feasibility category (high, medium and low) offers a possibility to arrive to a consensus once the researcher has gathered information from different sources. It is a guide than can be utilized at the discretion of the researcher.

Organizational Criteria	High FbF Feasibility	Some work exists in this area that could facilitate FbF	Low FbF Feasibility
Is the organization experienced in the design and implementation of DRR strategies?		X - the national society has been implementing DRR	

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		projects at community level since 10 year ago, most of the interventions are focused on CBDRR and community first aid. However, the NS is still very response oriented and needs to adopt an stronger DRR policy at national level.	
Is the organization experienced in the design and implementation of CCA strategies?			X – little progress has been made in this area. In the framework of DRR projects, climate change impacts have been included in the risk assessment, however it needs further development.
Is staff experienced in DRR?	X - at least 10 staff from the national office have received the complete package of DRR trainings, each local office have a qualified DRR instructor		
Is staff experienced in EWS?			X – there is no relevant expertise in early warning systems. Current DRR interventions do not include EWS.
Is there a volunteer network able to support the implementation of FbF project at community level in the most vulnerable regions (in terms of numbers)?	X - each local office has a minimum 20 active volunteers that could be trained and deployed to		

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	support community level interventions		
Is there a volunteer network able to support the implementation of FbF project at community level in the most vulnerable regions (in terms of DRR knowledge)?		X - volunteers linked to the most at risk communities have been engaged in CBDRR interventions in the past. They are familiar with assessment tools and prevention, mitigation and preparedness actions.	
Has the National Society a national presence with Branches/Chapters in proximity of high risk prone areas (easy access)?		X - local offices are based in municipalities nearby the most risk prone areas, access is feasibility within 20 to 50 minutes in normal conditions, 60 to 120 minutes in bad conditions.	
Strong collaboration with DRR-CCA Governmental Department	X - the NS sits at the DRR council of the government, all the interventions are done in collaboration with the government		
Strong collaboration with Hydro-Meteorological Department			X - there are no official links between the Hydro-met department and the National Society
How is the collaboration between the Red Cross and other relevant Government Departments/ministries (Health, Social Protection, agriculture etc.)?		X - strong cooperation with health and social protection departments (join programs), however there is no relevant cooperation with	

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		other government departments	
Have the National Society Contingency plans been tested?			X - the national society doesn't have up to date contingency plans.
Has the NS the capacity to mobilize volunteers to take action within 24 hours?	X - at chapter level volunteers have been deployed to affected areas within 4 hours of the emergency		
Does the national society collaborate with partners engaged in climate change adaptation?		X – the NS has started recently to collaborate with the climate change department of the Government, there are plans to develop climate smart DRR tools within the organization.	
Does the national society collaborate with development partners engaged in social protection?		X - the NS works in coordination with the development network of the country and has implemented DRR long term projects in partnership with UNDP and other development organizations (including social protection strategies)	

Meta-questions for FbF scope study

Drawing from experiences from previous and ongoing Forecast-based Financing projects these are suggested meta question that should be considered during the FbF scoping study.

1. Which countries/regions have high FbF viability?
2. How should FbF be adapted to meet the unique needs of the countries/regions identified as having high FbF viability?
3. What are the (several) possible designs of a financial mechanism that could meet the unique needs of the countries/regions identified as having high FbF viability?

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4. What are the FbF scenarios (country + implementing institution + supporting institution + scale of operation + risk profile + hazard + forecast timescale) that have high potential for success and impact?
5. Does this potential FbF project/intervention have a return on investment?

The following is a list of crucial sub-questions, listed in order of priority, which will need to be answered by the end of the scoping study fieldwork to inform the meta-questions. Stakeholder meetings should be prioritized accordingly.

1. Who are the FbF champions[1] (at all levels) and where are we missing champions? FbF champions are present in the given country or region at programmatic level, which varying levels of capacity.
2. Which national and regional level institutions have 'buy-in' for the FbF concept and are willing to implement FbF and operationalize a financial mechanism?
3. Which national and regional level institutions have the functional capacity to implement FbF and operationalize a financial mechanism? This involves knowing:
    a. Their institutional experience (DRR, CCA, EW, social protection)
    b. Staff competencies
    c. The country-specific challenges to implementation they would need to be able to overcome
    d. Ability/willingness to partner with other (technical) institutions effectively
    e. Whether missing competencies can be developed through support
4. What hazards can be forecasted with skill, at what time scale, in each country/region?
5. What are the risk profiles for each hazard for each country? This also involves knowing regional differences in vulnerability within each country.
6. What are the potential forecast-based actions that could be implemented for each hazard at each forecast timescale (lead time)? This involves knowing:
    a. What disaster response actions are usually taken in each country/region. How late do they arrive, and what are their effects?
    b. How timely are the relief actions in each country/region
    c. The impact of these previously implemented actions as well as new actions not previously tried, including calculating costs and benefits, and the real or hypothesized consequences of taking early action vs late action
7. In which countries is community buy-in for FbF and developing local level FbF champions, a reasonable expectation? This involves knowing:
    a. Community-level perceptions of, and working relationship with, potential implementing institutions and various communities (as much as possible)
    b. Whether there is programmatic fatigue at the community level, especially related to early warnings
    c. Cultural considerations, especially as it pertains to conceptualizations of risk and willingness to act in vain

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[1] A Forecast-based Financing champion is a someone within the implementing organization who understand and advocates for the integration of the FbF mechanism in the organizational DRM strategies. Someone who leads/supports implementation of projects/programmes.

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    d.   Whether there are pre-existing local actions (traditional or introduced) that could be triggered based on a forecast

8. What are the options for future funding, including adaptation funds broadly and specific donors? Do these options vary by country/region?

9. Can the network of Red Cross volunteers meet, or be built up to meet, the needs of an FbF programme?

10. What are the challenges and benefits of operating at regional, sub-regional and/or national level?

11. What are the challenges and benefits of operating in cities/capitals, accessible islands and/or remote islands, accessible rural areas and/or remote rural areas?

12. What are the challenges and benefits of implementing FbF in areas with highly decentralized governance?

13. Are there pre-existing programs (DRR, social protection) on which FbF could be an additional layer?

14. What communication infrastructure (radio, cell phone networks, transport) exists that could be used in FbF implementation? Where it is missing, what challenges to implementation does this pose?

15. Which countries have experience with cash transfers and what financial infrastructure exists to support transferring cash electronically?

By the end of the research/scoping study the implementing organization and/or government will have the necessary knowledge to decide the best approach and strategy to implement a Forecast-based Financing intervention.