



## **Data Preparedness for Forecast-based Financing: a pilot study on vulnerability and impact data for Malawi**

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Forecast-based financing is a methodology to trigger early actions when a forecast exceeds a danger level in a vulnerable intervention area. The first three implementation steps aim at impact-based forecasting: (1) Understanding risk scenarios, (2) Identifying available hazard forecasts and (3) Identifying danger levels. Impact-based forecasting requires timely, complete, reliable and accurate data at a subnational level, which is however -especially in developing countries with a high data poverty- challenging. The Malawian, Belgian, Netherlands and Danish Red Cross Societies will pilot forecast-based financing early 2018 in two districts in the Lower Shire River basin in Malawi for floods. The Netherlands Red Cross data team has developed a Community Risk Assessment dashboard, that visualizes data on the INFORM risk index with three dimensions Hazard & Exposure, Vulnerability and Lack of Coping Capacity. However, the number of available indicators decreases sharply when one goes from national down to district or even the community –or Group Village Head- level. The objective of this study is to improve the vulnerability composite index. To reach this objective, the gap in vulnerability data is characterized both vertically, in terms of data missing at lower administrative levels on indicators already used, as well as horizontally by adding new indicators. Subsequently, we scout for open data via - among others - geospatial data sharing platforms, governmental information systems that are publicly accessible and through in-country dialogues with a wide diversity of stakeholders. To get data on vulnerability at the level of the pilot areas, we digitally supported Vulnerability and Capacity Assessments, whereby especially community mapping and household surveys yielded relevant data on vulnerability. The open data that was collated, is curated and a Factor Analysis is used to filter out indicators that are possibly duplicate because of correlation. In addition, we compared the values of the vulnerability composite index before and after adding indicators to test the sensitivity of the index with respect to the added indicators. The data from the digitally supported Vulnerability and Capacity Assessments is made accessible as an overlay layer in the Community Risk Assessment dashboard (such as with heatmaps and pie charts), so that more granular data can be compared visually with the data that is aggregated at a higher administrative level. Future research will focus on getting impact data and subsequently understanding better the correlations between vulnerabilities and impact. We have collated historical impact data from both disaster forensics, which gathers data on the experienced loss and damage through Damage and Needs Assessments right after a disaster hits, and from Loss Accounting, which consolidates data from Damage and Needs Assessments. However, our initial results show that the spatial resolution of this data is too low. Other avenues will be pursued, including collecting data on the experienced impact during the upcoming pilot and mining data from digital news repositories, whereby we will use historical satellite imagery to delineate the exposed areas. All in all, data preparedness on vulnerability and impact is challenging, but an essential step for impact-based forecasts and its applications.