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Drought Forecasting, Thresholds and Triggers: Implementing Forecast-based Financing in Mozambique

Rogério Bonifacio¹, Gabriela Guimaraes Nobre², and Daniela Cuellar³

¹World Food Programme, Rome, Italy (rogerio.bonifacio@wfp.org)

²World Food Programme, Rome, Italy

³World Food Programme, Rome, Italy

To support livelihoods who rely on agricultural activities against increasing climate and food insecurity risks, the World Food Programme is implementing Forecast-based Financing (FbF) for drought management in Mozambique. FbF is an approach in which humanitarian financing and anticipatory action are automatically made available based on a certain likelihood of a drought event.

To enable the implementation of FbF projects, the World Food Programme has developed and implemented probabilistic seasonal forecasts of Standardized Precipitation Index (SPI) covering Mozambique's rainfall season (October-April). The system produces forecast of the probability of the SPI to be less than -1, a threshold that identifies significant drought events at time scales of 2 and 3 months. These are derived from ECMWF ensemble seasonal daily precipitation forecasts, available monthly and processed from August to February to forecast drought occurrence one to six months ahead of time in four Mozambican districts.

Operational usage of probabilistic SPI forecasts requires both the derivation of a trigger (a probability value above which drought is assumed to take place) and an assessment of forecast skill. The trigger is a probability value above which drought is assumed to take place and its exceedance leads to the implementation of anticipatory actions. Forecast skill determines if the forecast system for a specific SPI time frame is usable. Both forecast skill and triggers are derived jointly through a forecast verification analysis based on a comparison between historical time series of SPI forecasts (1993-2019) and SPI values derived from CHIRPS satellite rainfall estimates used as a reference precipitation data set.

The outcomes of this analysis are compiled into manageable tables of forecast analysis that were readily applied for decision-making process in four districts in Mozambique. In addition, a preliminary cost loss analysis for some of the Forecast-based Financing interventions against droughts and food insecurity demonstrated a potential to generate large socio-economic gains for both WFP and the beneficiaries of the anticipatory actions.

The goal of this abstract is to present WFP's on-going and previous technical activities linked to the development of Forecast-based Financing projects for drought risk management to the broader

scientific community. Whereas this system is being consolidated and still under review, next technical developments will comprise the better integration of hazard indicators with “impact levels” and risk metrics, adequate bias correction and benchmarking with other existing forecasting systems. Finally, WFP is committed in producing evidences that can protect livelihoods and save lives through the great window of opportunity generated by actionable forecasts.