The Use of Climate-related Indigenous Knowledge Systems to Support Anticipatory Action in Zimbabwe

Key findings from a study conducted in Mbire, Mudzi, Binga and Matobo districts

The United Nations World Food Programme (WFP) is supporting the Government of Zimbabwe to strengthen the resilience of vulnerable communities to climate shocks. WFP does this through a twin approach: enhancing the capacity of the Meteorological Services Department (MSD) in weather and seasonal climate forecasting, while delivering climate information to the local population through Anticipatory Action (AA). Anticipatory Action is defined as acting ahead of predicted hazards to prevent or reduce acute humanitarian impacts before they fully unfold. This requires pre-agreed plans that identify partners and activities, reliable early warning information, and pre-agreed financing, released predictably and rapidly when an agreed trigger-point is reached.

In order to strengthen the AA programme in Zimbabwe, it was found necessary to consider the integration of Indigenous Knowledge Systems in the AA decision-making processes. A fuller understanding of the current state of Indigenous Climate Services (ICS) in weather and seasonal climate forecasting amongst some of the targeted communities would thus be necessary before such an integration could be done. To address this need, this study was conducted in four districts where FbF was to be implemented during phase 1 of the project, namely: Mbire, Mudzi, Binga and Matobo in Zimbabwe.

Indigenous Knowledge System (IKS) refers to a set of knowledge that is orally passed down from generation to generation and is learned by observing the environment surrounding communities. This knowledge results from cumulative, repetitive observation and experience regarding climate and the environment.

Many people in Zimbabwe still rely on indigenous knowledge for weather and climate forecasts as the only form of forecast available to them. The scientific forecasts issued by the MSD to the communities sometimes do not reach all areas in Zimbabwe and are not downscaled to reflect the specificities of a place. Even in the districts with access to scientific forecasts issued by the MSD, IKS is key in predicting seasonal forecasts, particularly in providing local climate and weather information, which are critical in planning, designing cropping calendars, offering early warnings, and informing preparedness against disasters. Hence, it is necessary to integrate IKS in the decision-making processes within the AA approach in Zimbabwe. Understanding the current state of Indigenous Knowledge Systems in weather and seasonal climate forecasting amongst targeted communities is essential for this integration.

November 2022

To understand IKS better and to investigate possible pathways for the integration of IKS in the decision-making processes within the AA approach., WFP conducted a study in four districts where AAs were to be implemented in Zimbabwe, namely: Mbire, Mudzi, Binga and Matobo. The study objectives were to: I) assess knowledge of climate-related IKS in Zimbabwe; ii) investigate the extent that climate-related IKS is used in the study population and its possible integration into AA and; iii) Provide initial guidance on how to integrate and use IKS in AA projects.

METHODOLOGY

This study used mixed methods, combining qualitative and quantitative approaches. It included a desk review, key informant interviews, and a mobile phone-based survey. Due to COVID-19, interviews were conducted virtually with 32 key informants, and the survey was conducted through mobile phones with 200 households from the four districts. The study also took gender representation into consideration in the selection of respondents.

FINDINGS

The following are the findings of the study:

- **The most used IKS indicators;** the most used indicator in IKS seasonal climate forecasting was plants. Over 72% of the respondents indicated that they use at least one plant indicator for forecasting. This was followed by atmospheric and astrological signs (16%) and animal behaviour (14%). Only 4% of the respondents indicated that they use spiritual forecasting, which consists of messages given by spirit mediums and prophets.
- There are five broad types of IKS indicators used in climate forecasting: (1) plants; (2) animals, birds and insects; (3) astrological signs; (4) atmospheric concepts; and (5) Spiritual premonitions.
- **Understanding of IKS and meteorological forecasts;** respondents generally understood both the scientific and the IKS-based forecasting methods well, and their scores were very similar when it comes to ease of interpretation. While both methods scored high with regards to trustworthiness, the scientific method of forecasting scored marginally higher (8.12) than IKS (7.86).
- **Comparison of the characteristics of Scientific Forecasting and IKS**; calibration is one among the key factors that differentiate the two systems. The scientific method is better calibrated and can estimate rainfall volumes, while the IKS works with broad estimates of 'drought' or 'good rains'. The scientific method is based on probabilistic forecasts while IKS-based forecasts tend to be interpreted more definitively with authority, generally not allowing room for error.
- **Weakness of the IKS;** time dimension, benchmarking and poor information coordination were some of the weaknesses that have been identified in using IKS for weather forecasting.
- **Strength of the IKS**; some of the key strength is that farmers have worked with IKS for a very long time, and they have developed trust in their use and the results they produce. Findings show, farmers trust IKS more than scientific forecasts.

CONCLUSION OF THE STUDY

1. **The extent and provision of indigenous knowledge services.** The study established that IKS are widely utilized in all communities in the study districts. At least 82 percent of the surveyed households used IKS for climate forecasting. In most cases, IKS was used together with scientific forecasts. The communities actively seek climate forecasting information in order to take anticipatory actions against the effects of extreme weather events at the household farm level.
2. **Assessment of awareness of indigenous knowledge systems in Zimbabwe.** The study observed that although IKS is widely known in most communities, 'expert' knowledge of IKS resided with elderly members of the community. Due to apparent differences in knowledge levels, some districts seemed to use IKS more than others. This appears to be driven by average age differences of the respondents.
3. **Guidance on how to integrate and use IKS in AA projects.** The AA project needs to incorporate IKS into its processes. Where IKS and scientific forecasts tend to be in conflict some farmers preferred to trust IKS forecasts rather than scientific forecasts. Therefore, incorporation of IKS into the AA project would lead to greater buy-in from farmers. It is proposed that the AA project should further develop the current informal and unstructured technique being used by farmers drawing from both scientific forecasts and IKS to produce a hybrid forecast.

RECOMMENDATIONS

The study recommends to:

1. Consider formally adopting indigenous knowledge services in weather and seasonal climate forecasting.
2. Develop a policy framework to guide the use of indigenous knowledge services.
3. Develop manuals and standard operating procedures for use of indigenous knowledge services in financing and similar projects.
4. Develop an expanded and evolving national electronic database of the indigenous knowledge systems indicators used in weather and climate forecasting, building on available open-source data collection platforms like Open Data Kit (ODK) and Kobo toolbox.
5. Institute a longitudinal study (for example, over five years) to track the results of the IKS and the SCFs in weather and climate forecasting. Current cross-sectional studies do not shed adequate light on the comparative effectiveness of each method.
6. Develop a scientific method based on GIS and remote sensing to calibrate IKS indicators and the results. Notions such as plant leaf density and greening, and the presence of certain birds can be tracked using GIS and remote sensing once sites have been mapped.
7. Demonstrate return on investment by tracking the hits and misses of indigenous knowledge systems forecasting outcomes over a period of time, such as three to five years.
8. Establish annual platforms at district and ward levels to: (1) discuss IKS forecasts, (2) receive and assess MSD seasonal climate forecasts, (3) Develop a consensus participatory hybrid forecast from the two forecasts. The platform can consist of local leaders, AGRTIEX Officers, MSD officers, farmers, the media and academics. This platform will also determine and agree on the relevant anticipatory actions.
9. Agree timelines for the interpretation of IKS indicators. The period between July and August is proposed as some early IKS indicators are believed to start showing at this time. It is also proposed that IKS presentations should be scheduled at the NARCOF and SARCOF sessions. The bulk of IKS indicators are clearer by end of September when most trees would have flowered. A revised IKS forecast could be done at this point.
10. Conduct participatory training events with communities and DRR committee members. These meetings should train and sensitize members of the community about using IKS.
11. Use scientific SCFs and IKS with a view to minimizing the risk of missed hits. For example, if the probabilistic forecast and the participatory IKS system give the impression that there is a 60 percent likelihood that the rainfall season will be a normal one, planting could be distributed in a way that 60 percent of the seed is planted with the assumption of targeting a normal rainfall season. The risk could then be spread in such a way that 20 percent of the seed planted will assume a below-normal rainfall season, while 20 percent would be planted assuming an above normal rainfall-season. This spreads the risk so that the farmer can harvest something irrespective of the volume of rain falling.

Scan the QR code with your phone to read the full report or follow this link:
wfp.org/publications/study-use-climate-related-indigenous-knowledge-systems-support-anticipatory-action

To know more about WFP's work on climate services, follow this link: **wfp.org/climate-services**

World Food Programme

Climate and Disaster Risk Reduction Service (PRO - C)

Via Cesare Giulio Viola 68/70,
00148 Rome, Italy - T +39 06 65131 **wfp.org**

Photo page1: WFP/Tatenda Macheka
Photo page 3: WFP/Samantha Reinders
Photo page 4: WFP/Samantha Reinders