Village development committee discussing MIRA project community level data. Photo - CRS

Measuring Indicators for Resilience Analysis (MIRA)

BACKGROUND

The Measuring Indicators for Resilience Analysis (MIRA) protocol is a comprehensive guide to measuring resilience to improve food security and resilience programming. MIRA was developed in response to a keen interest within the Southern Africa Regional Office (SARO) to monitor resilience at the household level and to address multiple needs at the community, project, and donor levels. These needs included:

1. Empowering communities with real-time data

2. Monitoring the experience and persistence of shocks

3. Understanding how household characteristics affect resilience

4. Refining food security indicators for early warning systems

MIRA was then jointly designed by the Monitoring, Evaluation, Accountability, and Learning (MEAL) unit within the Southern Africa Regional Office of Catholic Relief Services (CRS), and the Charles H. Dyson School of Applied Economics and Management at Cornell University.

The MIRA protocol was initially piloted in 2016 to monitor and analyze resilience trajectories for households affected by flooding in Chikwawa district in Southern Malawi. Following this successful proof of concept, the MIRA protocol was expanded to 2,100 households across the three districts under the USAID-funded UBALE program. In 2018, CRS Madagascar piloted MIRA in a protracted emergency context with 600 households in the *Grand Sud*, with the intent to expand to more households within current and future programming.

MIRA has proven useful in rapid-onset emergency contexts as well. It accurately predicted the onset

MIRA AT A GLANCE
Baseline + monthly resilience data
Community enumerators
Real-time data
Development & Emergency
ICT4D

of fall armyworm, an invasive pest affecting corn harvests. During Cyclone Idai in March 2019, community enumerators continued to collect and upload data. Real-time updates allowed CRS-Malawi to ascertain the impact of the flood.

PROTOCOL SUMMARY

MIRA is a combination of two surveys: a baseline/end line survey of the target population to collect demographic characteristics, combined with monthly data collection to track household food security and shock dynamics. Enumerators hired from within each community are trained on a smart-phone enabled survey application. Because MIRA uses Information and Communications Technology for Development (ICT4D), it is proving to be an alluring employment opportunity for youth. Each month, enumerators spend approximately 10 minutes per interview talking to households. Enumerators ask questions about covariate shocks such as drought, flood or epidemics, and also idiosyncratic shocks affecting a specific household such as an injury or death of a family member.

MIRA indicators are used to construct common measures for short-term food security outcomes and resilience capacities. This includes significant expenditures, changes

Community enumerator collecting monthly data. Photo - CRS

in assets, migration, and assistance received. From these, CRS can construct the *Household Hunger Scale*, *Food Consumption Score*, *Household Dietary Diversity Score*, as well as the *Reduced Coping Strategies Index* to better understand different dimensions of food security and resilience.

Because MIRA can be conducted within existing projects and relies on embedded enumerators, it is low cost compared to other resilience measurement tools. Additionally, it can function as an early warning system in places where there are none, such as Madagascar. This particular function of MIRA is attracting interest among donors, government, and partners.

MIRA STRENGTHS
Case management
Community ownership of data
Prompt for action
Low cost
Youth employment opportunity

BENEFITS OF MIRA

Enumerators sync data to the cloud in near real-time, allowing for a quick turnaround for analysis. Insights are then shared in an accessible format with village development committees (VDC) who disseminate the information. This gives communities ownership of their data and allows them to make informed decisions for collective action. For example, when a community in Malawi saw data showing high livestock diseases, they pooled their resources and hired a para-vet to vaccinate their goats and chickens. The VDC is also empowered to share the information with government officials.

Modules can be added to the monthly survey to gather more information about specific shocks. To date, modules exist for fall armyworm, illness, and flooding. Once developed, these modules can be rapidly deployed to the enumerator's phone. The survey tool also facilitates case management by prompting the enumerators to follow-up on previous responses.

CRS also conducts analysis of the data collected using machine learning to predict future shocks and food insecurity within MIRA communities and to identify key household characteristics that may influence food insecurity. In Madagascar, for example, data showed that ownership of small animals, particularly chickens, is a good predictor of increased food security. This analysis helps improve targeting as well as inform project activities.

NEXT STEPS

With MIRA now established in CRS Malawi and Madagascar, there is an opportunity to expand further. A training module for implementing MIRA is currently being prepared to assist with training project staff. This would entail building MEAL staff capacity on the MIRA protocol and analysis. Triangulating MIRA data with other sources, such as Growth Monitoring and Promotion (GMP) would improve our understanding of resilience and nutritional outcomes. CRS is also working with partners, Cornell University and Cooper/Smith, to further develop the predictive capability of MIRA through machine learning.