



## FEED THE FUTURE ALL-IN PROJECT IN BRIEF

# ADAPTING TO CLIMATE RISK WITH MUTUAL WEATHER-INDEX CROP INSURANCE IN NIGERIA

### Lead Principal Investigator

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### Project Partners

International Food Policy Research Institute (IFPRI), Nigeria Agricultural Insurance Corporation (NAIC), Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL), Nigerian Meteorological Agency (NiMet)

### Development Innovation

Sharia-compliant mutual (takaful) weather-index crop insurance with photo confirmation

### Commodity

Sorghum and millet

### Targeted Population

Small-scale farmers

### Country/Location

Sudano-Sahelian Zone of Nigeria

### Timeline

2021-2024

### Funding

\$199,055.72 (USAID)

While northern Nigeria is a critical agricultural region, rural families there face high risks related to climate change. Agricultural index insurance products tailored for the region's predominantly Muslim farmers may promote resilience to weather shocks like drought or flood. A Feed the Future ALL-IN research team is developing and testing a Sharia-compliant takaful mutual insurance contract that triggers payments in the event that there is a weather anomaly. The results of this project could unlock the financing needed to drive the development of inclusive agricultural value chains in the region.

### The Challenge

Nigeria's northern region contributes significantly to the nation's food and nutrition security with its agrarian economy of rain-fed crops, livestock farming and fishing. While the critical staples millet and sorghum are two of the most widely grown crops in the region, yields in the Sudano-Sahelian zone have begun to stagnate due to extreme weather caused by climate change.<sup>1</sup>

Agricultural index insurance is designed to manage just this kind of risk. Agricultural index insurance bases payouts on an easy-to-measure index of factors, such as rainfall or average yields, that predict individual losses. The result is low-cost protection for farmers who face a predictable, recurring risk like drought or flood.

One limitation for index insurance in the Sudano-Sahelian zone of Nigeria, where Muslims are majority and the Islamic socio-cultural beliefs predominate, is that conventional insurance is not in compliance with Islamic law.<sup>2</sup> A market survey undertaken by the Nigerian Agricultural Insurance Commission (NAIC)<sup>3</sup> revealed a significant objection to conventional insurance, which, according to Islamic law, involves uncertainty, gambling and interest.

Another challenge for agricultural index insurance is that policies might not pay accurately for losses. In 2011, NAIC and the World Bank developed two pilot index

### RESEARCH INNOVATION

While climate change is undeniably real, an individual's perception of their own climate risk is informed by their social interactions and their fundamental beliefs about society and nature.<sup>1</sup> These perceptions have an impact on community- and even country-wide climate adaptation planning, policymaking and implementation. These ideas, based on a synthesis of community-based climate adaptation research<sup>2</sup> and the Cultural Theory of Risk Conceptual Framework,<sup>3</sup> can play a role in promoting climate adaptation and rural resilience.

This project uses the Cultural Theory of Risk for Climate Change Adaptation as a framework for its analysis. The project's household survey collects demographic, socio-economic conditions and agricultural data as well information on beliefs and perceptions related to natural hazard risks, self-reported adaptation measures and sociocultural/religious beliefs. Each of these factors play a role in a family's decisions related to climate adaptation.

<sup>1</sup> McNeeley, S. M., et al. 2014. "The cultural theory of risk for climate change adaptation." *Weather, Climate, and Society*.

<sup>2</sup> McNamara, K. E., et al. 2017. "Community-based climate change adaptation: a review of academic literature." *Local Environment*.

<sup>3</sup> Douglas, M., et al. 1982. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers*. UC Press.



insurance contracts for rice and maize in northern Nigeria based on measures of rainfall. An analysis showed that these contracts would not pay reliably for farmers' losses in part because of the nature of rainfall conditions in the region.

## Research Design

An ALL-IN research team led from Ahmadu Bello University is testing whether a takaful weather index insurance and a picture-based insurance audit can increase rural families' resilience to extreme weather events in the Sudano-Sahelian zones of Nigeria. Weather stations in the region create a ready source for rainfall and temperature data to build and test randomized variations of the team's new weather index insurance contracts.

The project is being implemented as a randomized controlled trial (RCT) in 50 rural communities that are divided into three groups:

- Weather index-based insurance: Farmers receive standard weather index insurance that triggers payments for losses in the case of abnormal temperature or unseasonal rains during flowering and harvest time in the area.
- Mutual (Takaful) insurance plus financial literacy training: The Sharia-compliant takaful index-based insurance product is complemented with training on the benefits of insurance as well as the concept of takaful insurance. Farmers regularly upload smartphone pictures that extension experts inspect for crop damage due to risks beyond farmers' control before payouts are issued.
- Control: Farmers receive no insurance or training

The project includes farmers who own smartphones and plan to grow at least two hectares of maize during the upcoming rainy season in eight states across Northern Nigeria. Farmers are selected according to a variety of stratifications to ensure different types of typical farmers

are included. Farmers who receive either conventional or takaful insurance are provided coverage for up to one hectare of sorghum or millet. The cost of the insurance is paid entirely by the project's NAIC and Nigerian Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) research partners.

The study is measuring outcomes in a number of areas. One is an estimate of how a mutual weather index insurance scheme that is compliant with the Islamic principle of Takaful affects the demand and use of weather index-based insurance. The study is also evaluating the impact of uptake and use of mutual (takaful) weather index insurance on farmers' investments in enhancing productivity and yields as well as whether this type of scheme paired with information on weather risk reduces the likelihood the insurance product fails to pay accurately for losses.

## Development Impact

Key USAID priorities in Nigeria are in agriculture and food security. This research project will complement and strengthen activities related to agriculture and food security which, since 2012, have helped to increase agricultural productivity, expand market participation, increase the resilience of vulnerable households, improve the business enabling environment and increase access to finance.

Results from this project will also enable NAIC and NIRSAL to meet their goal of expanding insurance to Nigeria's roughly 15 million smallholder farmers. These efforts could ultimately unlock the needed financing to drive the development of inclusive agricultural value chains in the region.

<sup>1</sup> Rhodes, E. R., et al. 2019. "Climate change impact chain factors in ECOWAS." *Journal of Agriculture and Environment for International Development*.

<sup>2</sup> Swartz, P., et al. 2010. "Takaful: An Islamic insurance instrument." *Journal of Development and Agricultural Economics*.

<sup>3</sup> NAIC, 2013.

## FEED THE FUTURE ADVANCING LOCAL LEADERSHIP & INNOVATION NETWORKS (ALL-IN)

This research is funded by the Feed the Future Advancing Local Leadership & Innovation Networks (ALL-IN) initiative, an innovative collaboration between the Kenya-based think tank International Centre for Evaluation and Development (ICED) and the U.S.-based Feed the Future Innovation Lab for Markets, Risk & Resilience at the University of California at Davis.

Launched in 2020, ALL-IN advances host-country leadership in defining and implementing research projects and to deepen host-country networks. The initiative funds research to develop and test financial and market innovations that take the most promising agricultural tools for rural families in developing economies from the lab to the field.

Historically, Feed the Future Innovation Labs have built their research programs on partnerships between researchers at U.S. universities and researchers at host-country universities and institutions. Historically, these partnerships have been led, in both program administration and the ideas that drive the research, from the U.S. ALL-IN shifts this leadership role to researchers and institutions in Africa.

ALL-IN builds on research capacity in African countries by inverting the traditional model of research collaborations led from U.S. universities. With funding through ALL-IN, researchers at African institutions lead these collaborations, defining research priorities and leveraging their local knowledge, skills and ideas to build actionable evidence for effective policy with U.S. university research partners to supplement their own skills, talents and ideas. ALL IN also addresses capacity gaps among many research institutions in managing large and complex awards.

[Learn more at www.iced-eval.org/all-in/](http://www.iced-eval.org/all-in/)

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## ABOUT FEED THE FUTURE

As the U.S. Government's global hunger and food security initiative, Feed the Future works to give families and communities in some of the world's poorest countries the freedom and opportunity to lift themselves out of food

insecurity and malnutrition. By equipping people with the knowledge and tools they need to feed themselves, Feed the Future addresses the root causes of poverty and hunger, helping people end their reliance on aid and creating important opportunities for a new generation of young people—all while building a more stable world.