

# Offering Index-based Agricultural Microinsurance

## HIGHLIGHTS

- Linking agricultural insurance to an index rather than to actual incurred losses is more cost-effective and, if communicated effectively, can foster trust between insurers and the insured.
- Mobile banking can make agricultural insurance more affordable and simultaneously increase its availability and quick payouts.
- This type of insurance allows farmers to invest more confidently and manage losses better, which helps smallholders to improve their productivity and grow their business.



## Development Challenge

Smallholders in many developing countries lack access to insurance products that protect their livelihoods against weather-related risks that cannot be otherwise addressed. In the face of climate change, rural smallholders in many developing countries are becoming increasingly vulnerable to the risks posed by extreme weather and climatic events. The adverse effects of climate change affect agricultural smallholders disproportionately, because their capacity to manage risk is limited. Smallholders often lack irrigation systems and are unable to access or afford high-quality agricultural inputs, such as seeds and fertilizer. Their increased risk exposure curbs agricultural investment and thus productivity, locking them into a vicious cycle of poverty. For example, severe droughts regularly hit the region of Tigray in northern Ethiopia, which often force smallholders to sell their assets and decrease their investments, reducing rural livelihoods and jeopardizing food security. In the absence of insurance, many small farmers engage in costly mitigation strategies to prevent loss, such as using savings or selling assets.

## Business Model

Index-based agricultural microinsurance offers payouts connected to publicly observable indexes, such as temperature or rainfall, rather than actual incurred losses, and targets smallholders as a group. Compared to traditional agricultural microinsurance, the index mechanism substantially reduces transaction costs and spares low-income farmers from dealing with the often bureaucratic processing of claims.


With agricultural index-based microinsurance, farmers obtain coverage for risks related to their crops or livestock. Premium payment occurs in a specific time frame frequently related to harvest season and is made through cash payments or mobile banking.


The premium payment is proportional to the cost and likelihood of the risk involved. Smallholders can insure either their crops or livestock against a number of perils, the most common of which are drought, excessive rainfall, storms, and pest infestation.


In index-based microinsurance, payouts are determined by trigger points on an index, not by actual incurred losses. Excessive rainfall indexes, for instance, are based on rainfall data from weather stations, satellite rainfall measurements, or other sources. Based on this data, a threshold is determined, which, when exceeded, immediately triggers a payout. Thus, losses are not


## Features of Index-Based Microinsurance Business Model


 **Lack of agricultural insurance**  
Smallholders lack access to insurance that protects against weather-related risks for crops or livestock


 **Index-based microinsurance**  
Type of insurance that offers payouts connected to indexes, not through case-by-case assessments


 **Publicly observable indexes**  
Indexes such as temperature or rainfall determine a threshold, which, when exceeded, triggers a payout

 **Initial costs for indexes**  
Indexes often entail high investment costs in research and development, borne by governments or donors

 **Cost-effective and easier**  
Indexes offer lower administration costs and premium payments and spare farmers complicated claims

 **Effective marketing**  
Communication strategies and diverse distribution channels increase farmers' willingness to pay and uptake

 **Convenient and customized**  
Cash payments or mobile banking offer more availability, affordability, and quick payouts in remote areas

 **Increased productivity**  
Insurance allows smallholders to invest confidently and manage losses, to achieve long-term goals

## Implementation: Delivering Value to the Poor

### Awareness

Implementing organizations usually disseminate information via their existing networks of local NGOs or member-based organizations, such as cooperatives or other farmers' associations. In addition, government extension services can promote a product. Potential clients usually trust these organizations, which makes them invaluable in creating awareness. Besides traditional training sessions in which the functioning of the product is explained, many schemes produced brochures and launched advertisements via television or radio.

### Acceptance

The risk of low correlation between incurred losses and insurance payouts (or "basis risk") potentially harms both the demand and effectiveness of index-based microinsurance. Strategies to overcome this are twofold. On the one hand, constant technological advancements in data collection, such as satellite data, have lowered basis risk by providing data that is spatially continuous as compared to merely ground-measured indexes. On the other hand, effective communication strategies that explain how the product works are considered essential.

### Accessibility

Microinsurance providers use diverse distribution channels, such as cooperatives or networks of microfinance institutions that either market insurance products separately or in combination with other products such as credit. Also, information and communications technology (ICT) solutions, such as mobile banking, can help make the product available in even the most remote regions in a cost-efficient manner.

### Affordability

Index-based agricultural microinsurance relies on robust indexes rather than a case-by-case assessment. This substantially lowers administrative costs and consequently premium payments as compared to traditional agricultural insurance. Furthermore, governments frequently subsidize microinsurance schemes to ensure affordability for the target group. Still, low willingness to pay and high price sensitivity substantially hinder the uptake of microinsurance products. Innovative schemes acknowledge that even in index-based insurance, affordability remains a challenge.

assessed on a case-by-case basis, which substantially cuts down on administrative costs and is ultimately reflected in lower premiums for the target group. Also, smallholders do not need to undergo complicated and time-consuming claims processes that have caused farmers in developing countries to distrust the concept of insurance. However, this also means that farmers run the risk of incurring a loss without receiving a payout and insurers run the risk of having to distribute a payout without actual incurred losses.

The design of robust indexes that adequately reflect smallholders' as well as insurers' risk is vital to the impact and financial viability of the business model. The design of such indexes often entails high initial investment costs in research and development. For example, robust indexes heavily depend on the density of the weather station network that in developing countries frequently lacks adequate coverage. Also, the development of tools that model agricultural risk, such as catastrophe risk simulation techniques, is often too complex and costly for private insurance companies. Therefore, these costs are commonly borne by governments or international donors. In addition, insurers frequently seek reinsurance for their products. Reinsurance is particularly crucial in the agricultural sector to manage covariant risk, and even more so in developing countries where insurers often operate in comparatively small areas with a limited product portfolio.

## Results and Effectiveness

A systematic review of evidence generated from microinsurance schemes demonstrated that Index-based agricultural microinsurance can increase farmers' income and productivity since they are more willing to invest and adopt riskier farm practices. The increase in income comes from a variety of sources: planting of higher yield but higher risk, crops, increased investment in fertilizers, and other production enhancing methods. Evidence also shows that insurance uptake is more common in areas that experienced years of less than average rainfall or crop yields. Uptake is also more common when the insurance package is presented by a trusted third party, such as an NGO. In Africa, ACRE has so far covered over 185,000 farmers in Kenya, Tanzania, and Rwanda. Guy Carpenter and Co. covered 43,000 cotton farmers in their first year of operation and paid out approximately USD 230,000 to beneficiaries after the drought that year.

In addition, microinsurance has increased efficiency and production for many small farmers. For instance, farmers protected against the risk of losing their crop are more likely to invest in the crop by increasing fertilizer usage, planting more expensive high-yield crops, or planting higher-risk but more profitable crops. Index insurance also lowers administrative costs by eliminating the need for specific claim inspections and verifications.