

Change with Innovations

Rural Finance Knowledge Management Partnership (KMP)



Stimulating rural production through index-based insurance

Risk is not an alien concept in African communities, and rural farmers knew this well. Their risk-mitigating strategies included storing produce in various forms for a rainy day, diversifying crop cultivation, planting drought-tolerant crops and performing off-farm activities to provide income. But under the present conditions these strategies are insufficient to cushion farmers. Insurance can provide a safety net to smallholders and increase their income security.





Introduction

Traditionally, African smallholders used several strategies to manage risks. As presented in the KMP Conference Paper 2012,¹ many farmers use a variety of drought-resistant species. These species offer more reliable yields, but yields are also often lower. Diversifying household income-generating activities beyond the farm is also a common strategy. In addition, many households make use of informal risk-sharing arrangements² where members of a group or community support each other in case of hardship.³ However, these traditional risk-mitigating strategies are increasingly insufficient due to a variety of social and economic developments.⁴ Moreover, climate change is increasing the frequency and impact of weather-induced crop failure and cattle mortality, affecting whole regions.

Insurance can provide a safety net to smallholders and increase their income security. Insurance provides them with the security needed to invest in their companies, especially as it improves access to other financial products by reducing financial risks to financial service providers. In practice, conventional insurance services are inaccessible to most rural smallholders as insurance companies charge high insurance premiums or do not provide appropriate products. This is caused by, among others:

- unfamiliarity with and a reluctance to serve farmers by insurance companies
- a (perceived) high-risk profile of farmers
- the physical distance between clients and insurance companies
- the small size of individual insurance policies, resulting in high administrative and transaction costs.

At the same time, farmers are unfamiliar with the possible merits of insurance or have limited trust in the financial sector.

Index-Based Microinsurances

Microinsurance products have been developed in different countries to counter some of these issues (Box 1). At the same time, microinsurance also poses several challenges to service providers. Microinsurance products covering individual losses bring a moral hazard that is difficult to manage considering the large distance between institution and smallholder and the large number of clients. Distance increases the incidence of fraud and selection bias. Also, the large number of small policy holders causes higher administrative and transaction costs resulting in high prices.⁶

Box 1: Index-based insurance in eight simple steps

1. An index-based insurance agent does not visit farms
2. Index-based insurance uses agronomic models to measure the relation between rainfall and crop growth
3. It covers defined weather risks: drought, excess rain, frost, weather-related disease
4. If the weather station shows a loss, all insured farmers are paid irrespective of on-farm loss
5. Measures payouts with the weather station
6. Encourages farmers to take care of their farms
7. Provides quick disbursement of payouts
8. Has low administration costs.

By Rose Goslinga, Syngenta Foundation - KMP Workshop in 2009⁵

Microinsurance covering individual losses of farmers has been introduced successfully by microfinance institutes (MFIs) and through community-based approaches. MFIs usually provide microinsurance as an add-on to other financial products, often in cooperation with insurance companies, either on voluntary or non-voluntary basis. However, microinsurance can only be profitable when substantial volumes are sold through uniform processes. Also, risk assessment remains an issue to be improved through a better understanding of markets and farmer needs (Box 2).

Box 2: KMP workshop outcomes of remote-sensing technologies for microinsurance

Remote satellite imaging greatly improves our capacity to measure and monitor crop losses and to improve the accuracy of indexes and proxies used. During the KMP Workshop 2012, the Normalized Difference Vegetation Index (NDVI) was presented. NDVI uses satellite imaging to show 'greenness' as a proxy for crop loss or cattle mortality. Under the PRF-VI Pilot Program, financed by the United States Department of Agriculture to improve insurance provision to American farmers, payments are based on a greenness index examined in grids of 4.8 square miles. However, considering much smaller plot sizes of African smallholders, farm-level accurateness will be more limited in this case.^{10,11}

Another example of remote-sensing systems presented at the same workshop is the Food Early Solutions for Africa (FESA) microinsurance project. This system uses evapotranspiration, temperature, radiation and precipitation to determine the extent of crop failure.¹²

However, as presented in the KMP Workshop 2009, it becomes clear that huge investments in infrastructure are needed in the eastern and southern African region if the system is to function properly, such as an increase in the number of automated weather stations.¹³

Identified from Kigali, Rwanda - KMP Workshop 2009 and Maputo, Mozambique - KMP Workshop





In community-based examples, usually farmer cooperatives or other community groups are involved to offer local checks and balances to control the system.⁷ Such approaches require effective premium-sharing systems to be put in place; there are usually significant capacity-building and coordination needs, which can be both time-consuming and expensive. This proves to be a great challenge to scaling-up operations for individualized crop insurance.⁸ An important prerequisite for such systems is reducing risk through product diversification and measures that reduce the impact of events for which farmers are insured.

Due to on-going technological innovations, index-based microinsurance is an increasingly feasible option to mitigate risks to insurance providers⁹ and reduce premium costs (Box 3). In this case, insurance is linked to indices that are strongly correlated to yields, such as rain or temperature. Pay-outs are triggered by pre-specified deviations of the index. Compared with traditional agricultural insurance, index-based insurance can stimulate the productivity of rural smallholders because it has:

- clear risk-reduction potential
- fast pay-outs and improved transparency to build client trust
- possibility of reinsurance.

Strengths and Weaknesses of Index-based Microinsurance

Strengths

- Index-based insurance **reduces moral hazard** and adverse selection risks.
- Field visits by insurance companies are minimal, **speeding up claim settlement and payout**. Client trust in the system is increased through fewer claims rejection (as eligibility for claim is pre-determined and transparent).

Box 3: Experience of Cooperative Insurance Company of Kenya

The Cooperative Insurance Company of Kenya (CIC) has worked closely with the cooperative movement in Kenya to develop suitable insurance products and marketing structures for cooperatives. CIC insures over 370,000 clients from informal sector institutions, with total loan balances of over USD 32.3 million in 2009. Together with Kenyan cooperatives and MFIs, CIC is developing low-cost insurance products and helping to correct the perception that the poor are too risky to insure by including specific services in their products along the value chain, for example: (i) a risk-management option by transferring risk, (ii) loan collateral, (iii) stability for long-term business plans, (iv) mitigation of farm level non-recovery risk, (v) at the macro level, support towards national disaster plans.

CIC highlights the following potential risks: (i) fluctuations in market prices due to oversupply, (ii) lack of market access due to weak structures and cartels, hence no cash inflows to repay the loans, (iii) fluctuations in market demand for the produce, (iv) failure by the buyer to pay for the delivered produce, sometimes even the collapse of the buyer, (v) forging of delivery documents, e.g. crop advances, by borrowers, (vi) diversion of the loan for other purposes than those applied for.

CIC's innovative activities with cooperatives and MFIs has: (i) pioneered the development of low-ticket insurance package for medical, life and property insurance for Cooperative Bank and MFIs in Kenya; (ii) initiated the development of weather index-based crop insurance; (iii) initiated the development of low-ticket insurance products to help informal traders in Kenya access financial services.

By Mr. David Ronoh, Corporate Insurance Company of Kenya, CIC - KMP Workshop in 2009¹⁶

- Insurance companies can more easily **transfer part of their risks** to reinsurance companies as index-based insurances are based on independently verifiable indices.¹⁴





- The **administration and transaction costs** of index-based insurance products are substantially **lower** than for individual crop insurance products, resulting in a lower price per policy holder.¹⁵

Weaknesses

The potential **mismatch between contract pay-outs and actual losses** experienced by individual farmers is a serious limitation to index-based insurance. This is commonly known as *basis risk* (Box 4). Consequently, clients who were compensated when they should not have been will be more eager to renew, while those that did not get sufficient benefit may opt to drop the product.¹⁸ Advancements in (mobile) information technology have proven vital in mitigating these risks, thus allowing increased outreach to rural smallholders, improved process efficiency, and building trust between clients and insurer.¹⁹

Box 4: Types of basis risk

Spatial basis risk: Sufficient rainfall at the pre-agreed measurement point, but insufficient rain on a specific farm.

Temporal basis risk: Sufficient rainfall within a growing season according to the index formula, but the rain comes at the wrong time and thus results in damaged crops.

Loss-specific basis risk: Possibility of inappropriate use of index or bad correlation to actual losses. For example, if an identical index formula is used for all smallholders, the formula will be more suitable for some crops than for others.¹⁷

Success Factors for Index-based Microinsurance

It is important that microinsurance products **cater for smallholders' specific needs**. Providers of microinsurance need to understand the risks farmers face and take into account their irregular cashflows when designing insurance schemes, coverage of the schemes and thus their premiums (Box 5).²⁰ For index-based insurance specifically, the index should provide a proxy that recognizes the variety of production taking place at the farm level.

It is important to have an effective mix of risk coverage between local cooperatives or communities, MFIs, local insurance companies and re-insurance companies. Establishing **effective partnerships with local and global actors** is important as is combining expertise and capacities in finance, product design, distribution, agricultural risk and impact assessment, risk-mitigation strategies and re-insurance. Partnerships, especially with community-based or civil society actors, can identify risks and prioritize those that allow risk-mitigating strategies and those that require insurance coverage. Technical and financial partners are needed to assist in product development, in the development and refinement of the right proxies and indices, and in setting up tools and systems for measurement and monitoring, for example, by remote sensing.²²

Using the right technology, such as remote sensing or mobile communication technology, opened up opportunities for index-based microinsurance and increased trust between client and insurer. These new technologies ensure efficient claim processing as the information required can be collected at a distance or with minimal time with new (mobile) information technologies, remote satellite imaging of affected crop or radio frequency identification systems for cattle.²³ As insurance providers can assess claims and communicate with clients at a distance, claim settlement can be carried out more efficiently. Well-designed systems can cope with many small policy holders at the same time and lower transaction and administrative costs, which in turn allow offering lower premiums to clients (Box 5).

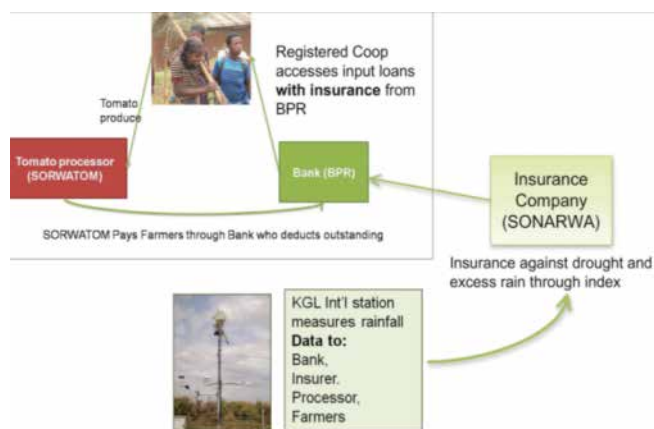




Box 5: Experience of Sygenta Foundation

Syngenta Foundation for Sustainable Agriculture is spearheading microinsurance with MFIs. Syngenta offers agricultural microinsurance to mitigate weather risks for smallholder farmers, increasing their ability to invest in the productivity of the farm. Its projects to support the development of sound and affordable products, distribution channels and training (farmer field days and radio).

Syngenta has developed an index-based insurance product, covering risks such as drought, excess rain and weather-related diseases. The cost of premiums ranges between 7–10% per season and requires a well-functioning value chain, as is shown in the case of the tomato value chain in Rwanda (see figure).



The insurer conducts 2–3 field visits to the farm fields during the season. The company uses index-based insurance agents as it does not visit the farms. Index insurance requires farm sizes of at least 150 acres to make it cost effective. The risks covered include floods, fire, drought, hail and diseases. Agronomic models are used to measure the relationship between rainfall and crop growth. In case the weather station shows a loss, then all insured farmers are paid irrespective of on-farm loss and any pay-outs are measured with the weather station. In Kenya, Syngenta introduced index-based insurance to farmers through seed and other farm inputs, and has slowly graduated to providing more complex products such as covering fertilizers and harvests.

Key lessons learned: (i) training is key to uptake and satisfaction, (ii) affordability is important: create value chain linkages to ensure sustainability, (iii) the input retailer is a suitable distributor of insurance, (iv) making premiums affordable without relying on subsidies from Syngenta is the next challenge, (v) mobile phone money transfer allows the insurer to manage expectations of farmers through SMS updates of pay-outs, gives the insurer real time tracking of transactions and there is the possibility for future opportunity to communicate extension messages; 6) the insurer has to build supporting infrastructure through training in agronomic modelling and index construction for sustainability, as well as renovate and support maintenance of automated weather stations.

Ms. Rose Goslinga, Syngenta Foundation for Sustainable Agriculture, - KMP Workshop in 2009²¹

Critical Failure Factors for Index-based Insurances

A **disconnect with other financial products** can increase transaction costs and time, making the purchase of insurance less appealing to smallholders and providers alike. Moreover, when insurance is linked to credit, it can act as insurance on the loan which in turn improves credit provision. This was clearly shown during the KMP workshop 2010, where the incorporation of index-based insurance improved access to credit in the tomato value chain in Rwanda.²⁴ However, smallholders need to be educated on these kinds of tied finance packages. For example, farmers may need to learn that the loan is not provided as pay-out to help them cover their consumption requirements in time of need.²⁵

Further **technological innovations** are needed in Sub-Saharan Africa **to reduce basis risk** in order to gain the trust of smallholders. Reducing basis risk requires substantial investments in automated weather station infrastructure (which are few in eastern and southern Africa), data collection and analysis and resulting development of new proxies for crop loss or cattle mortality. Experience shows how careful data collection and analysis can help design a product with low basis risk. When designing new index-based products, one should keep in mind the trade-off

between designing complex contracts for stylized farmers (farmers that plant at the usual time using standard inputs) and creating simple and understandable contracts for smallholders to suit their specific circumstances in terms of a variety of crops and livestock.²⁶

Index-based microinsurance can suffer a **lack of attention to customer education** (Box 6). Improving understanding of and trust in index-based microinsurance is key to sensitizing and increasing demand from smallholders. When smallholders do not understand why the proxy used is relevant to their personal situation, they might be less willing to participate. Moreover, if basis risk is not clearly understood individuals may be unnecessarily disappointed in case of no or limited pay-out, which in turn might reduce insurance purchases over time.²⁸

Insurers cover only risks that are insurable. However, there is a trade-off between making risks insurable by providing the necessary infrastructure and the cost of the premium. Insurance premiums of between 7–10% per season are too high for many subsistence farmers, making the service inaccessible to many small-scale farmers.

Practitioners often have limited knowledge of the **value chains function** of the products they insure. For example, fluctuations in market prices and demand, lack of market access, failure by buyers to pay for products can make it difficult for farmers to pay for premiums.





Conclusion

Many index-based microinsurance projects continue to suffer a weak demand. This guide gives multiple reasons for the slow demand such as inability to understand the contract or a lack of confidence in index-based microinsurance. During the KMP workshops, solutions were proposed to increase demand for index-based microinsurance:

- Better-designed systems and contracts that focus on lowering basis risk
- Clear communication materials and well-trained support staff to educate farmers
- Combining index insurance with other agricultural services to create a value-added proposition
- Bundle financial products through agro-dealers to make insurance affordable and accessible
- Train smallholders on weather index-based methods so that they understand the mechanics better and build trust.
- Use mobile technology, e.g. the use of M-Pesa mobile money transfer in Kenya, to facilitate premium pay-outs in rural areas.

- Develop different insurance products to cater for different needs of smallholder farmers.^{29,30,31}

Specific recommendations that government and financial institutions in the region could consider are:

- Initially subsidizing index-based insurance to kick-start service provision by private insurers
- Combining rollout of insurance products with agricultural extension programs and financial literacy training to increase uptake and impact
- Using group insurance could increase take up of insurance and reduce individual basis risk associated with index-based insurance
- Using disaster relief funding to set up insurance schemes and risk management mechanisms before disasters occur.³²

More information

For more information, please refer to KMPs website at <http://www.ruralfinancenetwork.org/>, or contact KMP staff at info@ruralfinancenetwork.org.

Endnotes

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About The Rural Finance Knowledge Management Partnership (KMP)

The Rural Finance Knowledge Management Partnership (KMP), now in its third phase, is an initiative of the International Fund for Agricultural Development (IFAD). The partners are the Alliance for a Green Revolution in Africa (AGRA), the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the African Rural and Agricultural Credit Association (AFRACA).

KMP aims to strengthen rural finance delivery in Eastern and Southern Africa-ESA through knowledge management and experience sharing, capacity building and providing technical and implementation support. It does this by developing new, innovative ways to provide financial services to the rural poor.

An important focus of KMP is to share and disseminate best practices. The KMP experiences are intended to do just that, by bringing together all information collected by KMP and its partners on specific rural finance subjects, most notably during its rural finance thematic workshops.

This Guide highlights experiences in index-based insurance, combining the results of Rural Finance Thematic Workshops which were held in Kigali-Rwanda, Lusaka-Zambia and Maputo-Mozambique, with other KMP activities and recent information on this topic.

After detailing the benefits and difficulties of microinsurance, the experiences provide a comprehensive analysis of strengths and weaknesses of index-based insurance.

The experiences and lessons learned offers practitioners in Africa critical success and failure factors they need to consider to improve the affectivity and efficiency in their interventions

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