



# Index-based weather insurance

Project briefing note

## ABOUT FSD KENYA

Established in early 2005, FSD Kenya aims to support the development of inclusive financial markets in Kenya as a means to stimulate wealth creation and reduce poverty. Working in partnership with the financial services industry our goal is to significantly expand access to services among lower income households and smaller scale enterprises. FSD operates as an independent Trust under the supervision of professional trustees, with policy guidance from its programme investment committee. Finance is provided by a number of development partners including the UK's Department for International Development (DFID), the World Bank, the Swedish International Development Agency (SIDA), Agence Française de Développement (AFD) and the Bill and Melinda Gates Foundation together with the Government of Kenya.

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The Rockefeller Foundation fosters innovative solutions to many of the world's most pressing challenges, affirming its mission, since 1913, to "promote the well-being" of humanity. Its many efforts around the world are built on its legacy of accomplishment in agricultural development, public health, and social reform. Today, the work of the Foundation includes strengthening the resilience of African smallholder farmers to climate variability and helping to make investments in improving African agriculture more effective and sustainable.

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## INTRODUCTION

Global efforts to reduce the impact of climate change on livelihoods and food security are increasing. As in many developing countries, in Kenya the majority of households depend on agriculture, whether directly or indirectly, for their livelihoods. In 2008, the country's agricultural sector contributed an estimated 23.4% of the total GDP.<sup>1</sup> Adverse weather conditions from drought to excessive rainfall pose a major threat to the incomes of farmers. Weather perils lead to reduced agricultural productivity and, occasionally, serious famines. The secondary effect is decreased investment in the agricultural sector, further threatening food security and livelihoods.

Furthermore, the impact of adverse weather goes far beyond the livelihoods of farmers. The level of public investment necessary to ensure national food security can increase significantly if the unpredictability of weather leads to reduced participation by the private sector. In Kenya, financial sector investment in the agricultural sector stood at only 3.7% of the total lending as of June 2009.<sup>2</sup> In addition to production risks, the agricultural sector is faced with a host of other threats, most notably fluctuating prices in increasingly volatile markets. This price risk is strongly linked to the unpredictability of supply, which again relates to the production risks.

## WHY A NEW APPROACH?

FinAccess data shows that in 2009 only 7% of Kenyan adults used any insurance product, up only modestly from 6% in 2006. The use of conventional agricultural insurance products, like other types of insurance, has been very limited in Kenya. Index-based weather insurance (IBWI), however, offers a powerful new way to tackle the risks associated with rain-fed agriculture, on which the livelihoods of so many African smallholder farmers depend.



Most conventional agricultural insurance products have not been able to satisfactorily address the risks associated with weather. Many focus on diseases and the less common weather perils such as hailstorm, floods and frost, neglecting the most severe: drought. Little has been achieved in adapting conventional agricultural insurance products to address weather-related risks more effectively and aligning products with market demand. Effective management of the moral hazard associated with conventional weather insurance requires individualised farm visits for valuation and loss adjustments when a claim occurs. The result is a significant increase in transaction costs, which renders them unviable for the low-value policies required by smallholder farmers. IBWI, directly addresses these and other constraints that conventional insurance products face.

**A farmer could be paid, for instance, whenever rainfall or temperature is so high or so low that it is likely to cause decreased crop yields, or whenever droughts, frost, or high humidity cross specific thresholds.**

## HOW INDEX-BASED WEATHER INSURANCE WORKS

The impact of weather perils on a particular crop or livestock in a specific region is modelled in order to determine the threshold values at which production losses are expected to arise. IBWI is provided against the defined adverse climatic conditions in a given area rather than assessing the actual production losses of each and every farmer. A farmer could be paid, for instance, whenever rainfall or temperature is so high or so low that it is likely to cause decreased crop yields, or whenever droughts, frost, or high humidity cross specific thresholds.

Claim payments to policyholders are determined by weather-index parameters set out in the insurance contract. The recorded data on actual weather from a monitoring station determines whether or not a payment trigger has been attained - eliminating the need for farm visits (with their high administrative costs for insurers).

IBWI requires modelling of the performance of various crop types in different agronomical zones to produce appropriate contracts. It is important to cater to different water requirements for the various crops in different zones. The success



of the product is highly dependent on the availability of accurate historical weather data and crop yield data for the particular area. A major challenge can be the variation of weather patterns across relatively small geographical areas. To keep this insurance affordable, it is also critical to determine with sufficient accuracy the rainfall or other factors experienced by a farmer without having to put in place extensive new weather station infrastructure.

## THE KENYA INDEX BASED WEATHER INSURANCE PROJECT

To address weather-related risks, a consortium of development partners working with private and public sector players is piloting IBWI products in Kenya. The consortium is made up of Financial Sector Deepening (FSD) Kenya, the Rockefeller Foundation and the World Bank.

The project's primary objective is to develop and test the market viability of IBWI products to reduce the impact of weather risk on smallholder farmers and pastoralists in Kenya. To achieve this objective, IBWI products will be piloted across a range of agricultural activities. The emerging lessons from the Kenyan and other international IBWI pilots will be shared with the sector. The project also seeks to contribute to the creation of an enabling environment for the development of IBWI products in Kenya.



Photo credit: FARM-AFRICA

The key private sector partners include financial institutions (banks, micro-finance institutions, insurers, reinsurers); agricultural input suppliers; output market players, such as exporters and processors; and other business development service providers along the various agricultural value chains. While the aim is to achieve a sustainable private sector-led approach, success also depends strongly on support from the government's Kenya Meteorological Department (KMD), which has an invaluable historical record of climate data in Kenya and operates an extensive system of weather monitoring.

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## WHO IS TARGETED?

Although the project's objective is to ensure that smallholder farmers will be able to access appropriate new risk management tools, the products are likely to be appropriate to a wider range of farmers, from small- to large-scale, across the country. Various agricultural sub-sectors are being assessed for suitability, including livestock, cereals (notably maize and wheat), and industrial crops including tea, coffee and sugar cane.

Appropriate mitigation of production risks through IBWI can help increase the ability of financial service providers to finance agriculture, especially at the small-scale level. Given the relatively low utilisation of insurance products in Kenya, however, and the relative complexity of the product, IBWI may prove a difficult concept to sell as a standalone entity. Therefore, among the most promising applications is the bundling of an appropriate IBWI contract with credit. Many farmers see the benefits of investing in increasing production through input credit but are constrained by the potential threat to repayment ability from adverse weather. Index-based weather insurance offers a potential solution.

<sup>1</sup> Kenya National Bureau of Statistics, Economy Survey 2009

<sup>2</sup> Central Bank of Kenya, Kenya Monthly Economic Review, June 2009