

Drought Insurance - A Pilot Project in Malawi



Malawi women draped in traditional “Chitenges” in song and dance performance with messages on challenges climate change poses on Malawi’s development progress during the Human Development Report launch ceremony. NewsPix Agency/UN Malawi

This case:

Highlights the key role of Malawi’s Department of Climate Change and Meteorological Services in providing the required infrastructure and capacity for farmers to participate in the pilot Drought Insurance scheme for climate risk management against drought.

- Shows Importance of rainfall gauge data from the Department of Climate Change and Meteorological Services observatories for the success of the scheme

Shows the need for improved density of rainfall stations and capacity development of rural farmers to take rainfall measurements.

- Highlights the central role of Malawi’s Department of Climate Change and Meteorological Services in a multi-disciplinary team in the national and regional context and exhibits the DRR aspect of climate risk transfer.

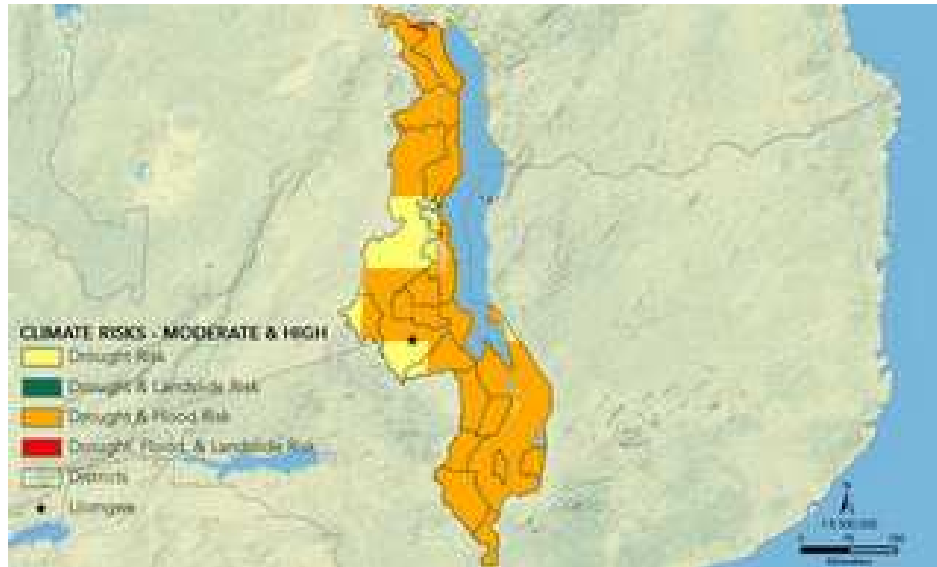
Background

Malawi is a least developed country with a population of 12 million people of which over 80% survive on smallholder subsistence farming. The vast majority of farmers are smallholders, cultivating areas of 1 ha or less. The main food crop is maize, while tobacco and groundnut are the two principal cash crops. Over 90% of crop production is rainfed, taking place during a single rainy season lasting from December to April when the Inter-Tropical Convergence Zone (ITCZ) is northward-bound as the high pressure cells intensify over South Africa and the Mozambique Channel. Rainfall during this period tends to be highly erratic and drought is a recurrent problem, often causing widespread crop failure. In addition, the risk of drought is a major factor keeping productivity low, since even in good years farmers are wary of using inputs such as improved seeds and fertilizers for fear of losing their investment.

Climate has become an urgent issue on the development agenda of countries particularly developing countries as well as least developed countries whose economies are heavily reliant on rainfed agriculture including the livelihoods of the majority of populations in these countries. Malawi is no exception and a variable, unpredictable climate presents a risk that hinders development.

This pilot project initiated by the World Bank with the Malawi Department of Climate Change and Meteorological Services as a participating partner was testing a new way of dealing with drought risk by the provision of index-based weather insurance directly to smallholder farmers. The project, was primarily driven by the private sector and goes to the heart of food insecurity in Malawi by tackling the major cause of low levels of farmer investment in new technology.

This case study examines how well the World Bank’s Index-based Insurance Scheme pilot project worked in Malawi and the degree of its sustainability and upscaling and maps activities to the WMO 8-Step Capacity Development model.



Composite climate vulnerability index, Malawi (Population Action International) Malawi Climate Risks Zones

The map above identifies climate risk zones in Malawi with most of Malawi prone to both drought and flood risks. Index insurance is a relatively new tool in climate risk management and ensures for a specific risk event such as rainfall deficits. Much of the success of the Index-based insurance was due to the provision of long-term historical rainfall data and infrastructure of a network of rainfall gauge stations by the Malawi Department of Climate Change and Meteorological Services. A 20-km proximity to a rainfall station by a participating farmer was key to the pilot programme. Rainfall gauge data is the basis for determining insurance payouts.

Partners

The World Bank's Commodity Risk Management Group was instrumental in developing the concept of drought insurance, raising awareness of it, and stimulating the interest of potential partners in trying it out. The International Research Institute for Climate and Society (IRI) was requested to provide technical support to the Group in its work with private-sector partners to design and evaluate the insurance product. Another important partner was the National Smallholder Farmers Association of Malawi (NASFAM), an umbrella association embracing 40 or more local farmers' associations. NASFAM's role was to provide access to seed inputs and to buy members' harvests. When paying for the harvest it also performed the important role of ensuring loan recovery by deducting the loan adjusted for any insurance payout from the cash payment. NASFAM was keen to participate because it saw the project as a means of lifting the burden of indebtedness amongst farmers, who were obliged to repay loans in full when crops failed.

Two micro-finance institutions participated as loan providers: the Malawi Rural Finance Company (MRFC), which was already lending to the smallholder sector, and the Opportunity International Banking Malawi (OIBM), a newcomer to the sector. Both expressed interest in drought insurance as a way of safeguarding repayment of their loans. In fact, for OIBM the insurance was the key component that secured its willingness to lend to smallholders. Malawi's leading insurance companies participated as a consortium, the Insurance Association of Malawi. Once the insurance scheme and the mechanisms for administering it were developed and tested, it was envisioned the companies will operate individually in competition with one another. For the companies, the project offered an entry point into the smallholder sector where they have had virtually no presence in the past.

In summary, project partners included the World Bank Commodity Risk Management Group, [Malawi Meteorological Service](#), [Opportunity International Bank of Malawi](#), Malawi Rural Finance Company, the Insurance Association of Malawi, [National Smallholder Farmers' Association of Malawi](#), the [International Crop Research Institute for the Semi-arid Tropics](#) and the Chitedze Agricultural Research Station.

Rationale

Malawi's Drought Insurance Scheme was not developed in a vacuum. Rather, it was able to build on an existing tradition in the provision of micro-credit to smallholder farmers. Insurance has long been an important tool in risk management, but the concept of weather-related insurance was new. It is currently being tested in a number of African countries for up-scaling purposes. This is a key element for the sustainability of the Scheme as it builds upon existing national capacities and systems.

STEP 1 – Requirements for an effective drought insurance index scheme were defined,

Traditional insurance contracts insure against crop failure, but these lead to perverse incentives for farmers to allow crops to fail. There is also an incentive for less productive farmers to buy insurance and for more productive farmers not to do so. These problems imply more and higher payouts, which would in turn lead to higher premiums, ultimately making this type of insurance too expensive to be feasible. The new contracts are written against an index that describes an established relationship between, for example, lack of rainfall and crop failure, ideally verified by long historical records of both rainfall and yields. If rainfall turns out to be low, falling below an agreed trigger point, the farmers receive payouts. But whether the insurance pays out or not, farmers still have the incentive to make productive management decisions.

The main advantage over crop insurance being that, when rainfall is low enough to cause crops to fail, insurers will pay out to farmers quickly, so that farmers do not need to sell off their assets to survive. The money will sustain them through the drought period, and enable them to continue farming when the rains resume.

Activities Designing the pilot project

Activity 1: Malawi's drought insurance project began with a stakeholders' meeting organized by the World Bank in July 2005. Stakeholders realized the potential of the new concept and expressed their interest in participating in a pilot phase to test it. On the strength of their enthusiasm, the project was launched without further delay.

STEP 2 – Capabilities/suitability of the existing local systems and ability for farmers to qualify for participation in the scheme were evaluated against the requirements and a baseline for an index based drought insurance scheme established,

Activity 2: The first task was to select the commodity on which to test the concept. The initial list was made on the basis of the portfolio of crops handled by NASFAM. The choice was then narrowed using a prescribed selection criteria. Obviously, the main criterion had to be drought sensitivity, but other criteria were also important. These included the level and cost of inputs needed, which justified the provision of financing; the existence of an organized marketing system, which would ensure efficient loan recovery; the value of the crop, which needed to be profitable enough to allow farmers to pay off the loan while retaining a decent income; and the crop's suitability for smallholder farmers, in other words, not involving intensive management, complicated processing, or rapid perishability. Groundnut, which scored well against most of these criteria, was chosen for the pilot phase.

The only doubt surrounded the crop's marketing system, since farmers could in theory decide to sell their harvests to outside traders instead of through NASFAM, thereby jeopardizing loan repayment. To get round this problem, NASFAM undertook to offer higher prices than other traders. The variety chosen was Chalimbana 2000, a new hybrid that combines high yields with drought resistance and other desirable traits.



Women farmers working in the field



Groundnut was chosen as a test crop for the pilot phase

Selection criteria for crops covered by Malawi's index-based insurance project

Crop	Selection criteria (1=not suitable 5=highly suitable)				
	Sensitivity to drought	Input usage	Marketing system	High value	Suitability for smallholders
Chillies	1	1	4	5	5
Cotton	2	5	3	2	5
Groundnut	5	3	4	4	5
Maize (grain)	5	4	1	1	5
Maize (seed)	5	4	5	5	1
Paprika	3	5	4	4	3
Rainfed rice	Not applicable	3	3	3	4
Irrigated rice	Not applicable	4	4	3	4
Soya	4	2	1	2	4
Tobacco	4	5	5	5	4

Activity 3: The next step was to identify the sites for the pilot phase and the Malawi Department of Climate Change and Meteorological Services played a key role for this activity. Four sites were selected, based on NASFAM presence, groundnut production, and proximity to a meteorological observatory station of the Department of Climate Change and Meteorological Services. Consultations were made with the Department of Climate Change and Meteorological Services, the Agriculture extension service, and farmers suggested that farmers within 20 km of a rainfall station would experience roughly the same rainfall patterns as the station itself. Thus, during the pilot phase, only farmers who were within this radius of a meteorological observatory station were eligible and were insured.

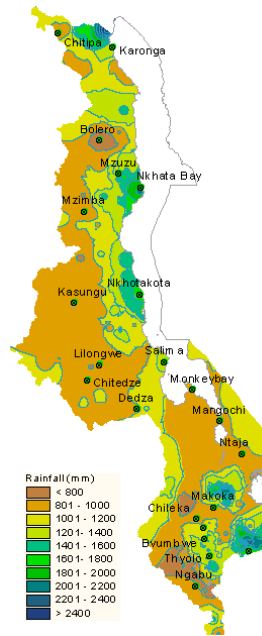
STEP 3 – Gaps were analyzed in terms of identified deficiencies that would prevent the successful implementation of the index-based drought insurance scheme.

Activity 4: Meetings to select participating farmers were held in August 2005. Farmers had to be members of NASFAM, to be growing groundnuts, to have adequate land to sow 0.5 ha to the new variety while maintaining some land in other crops, and to have not previously defaulted on a loan. A total of 882 farmers in the four project sites were selected, grouped in clubs of 10 to 20 members each.

The insurance contracts were designed to pay out if the rainfall data from the nearest meteorological station showed a deficit at one or more critical stages of the growing season. Each contract had a 'no-sow' clause that would pay out if insufficient rain fell during the early part of the season, from mid-November to early January. This was followed by clauses specifying the different levels of rainfall that would trigger payments during the three major phenological stages of establishment, flowering, and maturation.



Project site locations: Kasungu, Lilongwe, Chitedze and Nkhonkhotakota



Malawi long-term rainfall totals. Source: Malawi Dept of Climate Change & Meteorological Services

Before the beginning of the rainy season, each participating farmer club entered into a formal loan agreement that incorporated the weather insurance premium. The fact that the farmer received no cash in advance reduced the risk of non-repayment to the bank. Instead, each club transferred the loan, partly to NASFAM for the purchase of seeds, and partly to the Insurance Association of Malawi, for the weather insurance premium. The farmers agreed to sell their harvest to NASFAM at a guaranteed price. After the season, NASFAM would use the proceeds of the harvest to repay the bank loan and pay the surplus income to the farmers.



Farmers reviewing insurance contracts. Photo: D. Osgood, IRI. <http://portal.iri.columbia.edu>

The insurance purchased was bundled with a loan for groundnut production inputs. The table below shows the components and overall loan package.

Components of the loan package for the pilot phase in Malawi	
Components	US\$
Loan processing fee (applicable to MRFC clients only)	0.32
32 kg seed at US\$ 0.90/kg	29.20
Interest at 33% per annum, for 9 months	7.23
Insurance premium at 7.5% of loan package	2.79
Surtax on insurance premium at 7.5 %	0.21
Total	39.75

Initial experiences: the 2005–2006 season Outcomes

The season unfolded with rainfall recorded at the meteorological observatory stations close to normal levels for the various production areas. In three of the four pilot locations adequate rainfall was received to avoid payouts, but farmers in the Kasungu area received a small payout of \$0.68 each.

STEP 4 – A strategic plan was developed later on in coordination with the Malawi Department of Climate Change and Meteorological Services authorities and partners to address Gap 1 as a national priority for climate change adaptation.

GAP 1: One concern expressed by the farmers was that the rainfall data used to determine payouts were from a single rainfall station that could be up to 20 km away. As a result some farmers were winners and others losers, as rainfall on their farms differed from that at the station. This was a major challenge facing the design and implementation of index insurance in heterogeneous rainfed environments.

There is need for a denser network of rainfall stations as well as the need to rehabilitate silent stations with reliable long-term records. The rapid decline of rainfall stations has plagued NMHSs of developing countries, least developed countries and small island developing states due to lack of national budget funds to inspect and maintain them.¹ Malawi has made efforts to address the problem of its deteriorating national observatory network and such efforts are contained in national development plans as priority areas funded by UNFCCC/GEF. National meteorological observatories were proposed to be rehabilitated to improve the density and functionality of the network.



A WMO standard national meteorological observatory

¹ *Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas) Project*, www.theGEF.org

STEP 5 – National Ownership was secured, STEP 6 – Both national (Malawi NMHS observatory data) and external support (World Bank/IRI) was provided for the project,

The Malawi government welcomed the project and facilitated its pilot phase. The government was actively involved through the participation of the Department of Climate Change and Meteorological Services in the Ministry of Environment, which is the source of the climate- and weather- related data and expertise essential for the design and implementation of the insurance scheme. The data needed for design include historical rainfall and evapotranspiration, together with soil characteristics and agronomic information. Also needed for implementation were the reliable monitoring and timely reporting of rainfall since these were the basis for determining insurance payouts.

STEP 7 - The pilot project was implemented, STEP 8 – A M&E plan seems to be in place and identified gaps in the implementation process. However, there is no clear evidence of metrics established to measure success against the baseline. The process was used for continuous improvement of the index-based insurance scheme and possibility for upscaling.

GAP 2: Another complication that arose during the season was poor seed quality. A middle-man working for a commercial seed company sold expired seeds that did not germinate. This provided an interesting test of the project's acceptability to the farming community, since this is exactly the kind of thing the insurance scheme does not cover. Farmers showed that they understood the scheme, since they did not demand payouts from it but instead put pressure on the seed company.

GAP 3: A further issue was that of so-called 'side-selling' – farmers marketing to opportunistic traders who offered a higher price than NASFAM. Groundnut seed prices rose sharply as the season progressed, eroding the premium offered by NASFAM at the start of the season and thus tempting farmers to break contract. Only a few did so – but the incident revealed that the combined insurance and loan package may be vulnerable to this kind of behavior, even within an organized market. NASFAM responded to this challenge by offering to reimburse anyone who had sold early to the association with the difference between the price paid and the higher price obtaining at the end of the season.

GAP 4: Experience in the formation of clubs showed that these performed best when they are self-selecting, evolving 'naturally' into a group that is socially cohesive. Under these conditions, the principle of collective liability works well. Because project planning had to be rushed, a small number of farmers were compelled to form clubs. These clubs tended not to function well and look unlikely to last through the second season.

Pending completion of an assessment study that was still under way, it was impossible to quantify the impact of the project during its first season. However, there is anecdotal evidence to suggest the potential for substantial positive impact. In interviews, farmers indicated that they greatly appreciated the scheme and that they would like it to be expanded to cover a larger area per farmer and to include other crops, particularly maize. The main attraction was that the scheme facilitated access to production loans.

Practically all the farmers involved were keen to participate again in the second year, and demand from new farmers greatly outstrips the capacity of the project to enroll, educate, and manage them. Farmers said that signing up for the insurance scheme is their preferred way of adapting to climate variability and change.



Tobacco cash crop auction market in Malawi

²Up-scaling

The 2006 – 2007 Season

During this season, the pilot project expanded with the addition of maize and a fifth site increasing the numbers of participating farmers from 882 to 1,710. The marketability of groundnuts was used to secure insurance and loans for maize which is the main food crop in Malawi. Maize suffers from significant price volatility and fragmented marketing such that farmer loans are generally not available for maize inputs alone without some other collateral for the lender. The combination of a loan with weather insurance for maize with a loan for a cash crop covered by insurance provided confidence to the lenders that profits from the cash crop could be used to repay the loan for maize if it became necessary.

The 2007 – 2008 Season

During this season, the programme moved to the tobacco sector and ceased operations in groundnuts. Malawi's tobacco sector represented the largest pool of recipients of credit in the country and demand for credit was high due to the input needs associated with tobacco production. Since all tobacco in Malawi is sold through auction, an opportunity arose that allowed banks to recover loans directly before the farmers received their sales proceeds. This created certainty for lenders with a trusted mechanisms for loan recovery. Traditional maize loans were now bundled with tobacco loan packages. The value of tobacco enabled the Insurance Association of Malawi (IAM) to establish contracts with the international reinsurance for the first time.

The 2008 – 2009 Season

The programme expanded significantly with new players covering 2,500 farmers and a total transaction value exceeding US \$2 million. Plans were in progress to expand the programme further in the 2009 - 2010 season.

Lessons and the way forward

The groundnut pilot phase revealed that problems related to production, marketing and sales can undermine credit repayment and hence the effectiveness of the insurance policy. To make insurance

² Source: Climate and Society No. 2 – Index Insurance and Climate Risk: Prospects for Development and Disaster Management. IRI Publication, 2009.

viable for this sector, complimentary investments are necessary to strengthen contractual relationships. This move will feature additional flows of resources, improved farmer advise and oversight and better links between input provision and commodity sale. Efforts to reduce side-marketing will greatly facilitate the programme and the development of capacity in insurance will be critical for continued growth.

For Malawi, insurance should be closely linked to more formal and better coordinated supply chains and aim to scale up index insurance with such chains. Expansion into new areas and crops should occur only when these meet this criterion.

However, the low density of automated rainfall stations in Malawi remains a limiting factor to up-scaling. For example, an estimated 110,000 smallholder tobacco growers are currently located close to a reliable meteorological weather station. If 53 new rain gauges were installed, an additional 200,000 farmers could be included in the programme. ³A government programme supported by the World Bank and Norway, the Agriculture Sector Wide Approach (ASWAp) is ongoing and investing in new weather stations and infrastructure in Malawi which will enhance the capacity of the Department of Climate Change and Meteorological Services. The ASWAp is a prioritized results-oriented framework under the Ministry of Agriculture and Food Security's leadership that calls for a gradual harmonization and alignment of Government and donor financial support. It has strong linkages to national, regional and international policy frameworks particularly the MGDS, CAADP and MDGs. The programme builds on successes of the past and supports capacity building initiatives and strengthening of institutions for effective delivery of services.

Adapted from IRI report): Climate Risk Management in Africa : Learning From Practice , International Research Institute for Climate & Society (IRI) Publication, 2007.

³ The Agriculture Sector Wide Approach (ASWAp): *Government of Malawi's prioritized and harmonized Agricultural Development Agenda, September 3, 2010.*