

Use of Weather Index as a tool to reduce food insecurity and vulnerability: – a case for Ethiopia

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Introduction and Background

- In Ethiopia, 84 percent of the rural population are engaged in farming and pastoral activities. The small holder farmers produce 90 percent of crops.
- Droughts can highly reduce agricultural production compared to normal for affected areas; therefore food insecurity remains an issue. At least about 8 million people are considered to be chronically food insecure (World Bank, 2008) and covered by the Productive Safety Net Programme (PSNP).

Introduction and Background ...Contd

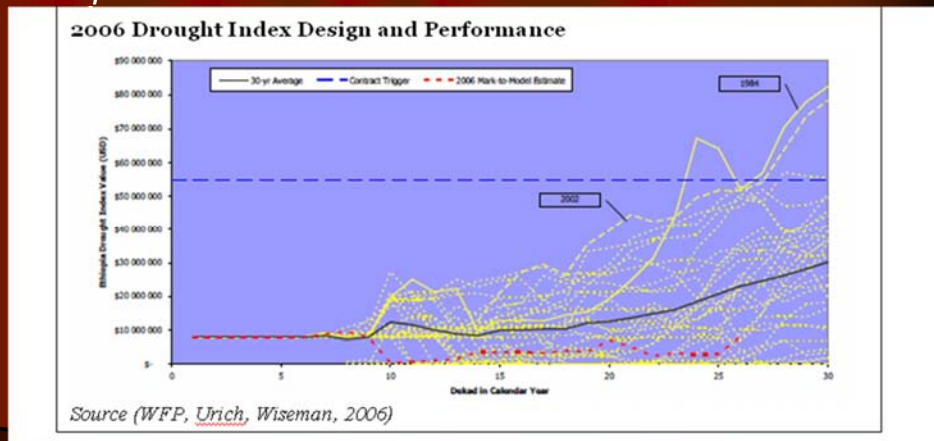
- In addition, on average 4 million people face acute food insecurity in the last five years (2005 to 2009), and have been covered by the emergency relief food.
- It is through this realization that the Government of Ethiopia (GoE), World Bank and WFP have introduced innovative ways to tackle food insecurity in a more predictable manner through weather based index in support of the Government food security programmes and the **recently GoE adopted Disaster Risk Management framework.**

Thus GOE policies emphasize risk management

- The Government and its partners have been developing a user friendly risk index and insurance scheme tailored for the agro-pastoralists and the poor small holder farmers.
- Risk insurance and in particular "index insurance" could be applied across a diverse range of weather-related risk problems, and **has been applied at macro level covering the PSNP and micro level covering individual farmers/groups.**

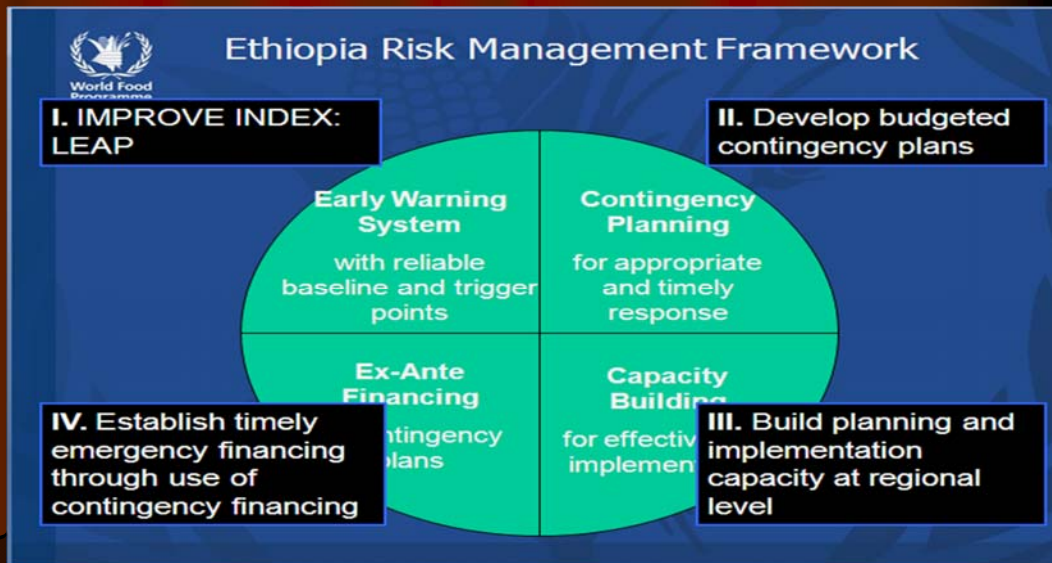
GoE Risk management

- The first weather based index insurance was piloted in 2006. However no extreme events occurred in 2006, hence no payout was made. However, valuable lessons were learnt from the pilot.



A Risk Management Framework

- Following the pilot, WFP, the World Bank, DFID and the Government converted the drought insurance to a risk financing framework in 2007.



Database for LEAP

The DRM approach relies heavily on the data generated by sectors and departments such as

- The MoARD
- The National Meteorological Agency (NMA);
- The Ministry of Water Resources (MoWR) and other agencies.

From framework to action at various levels

⊕ **The Framework – index insurance for disaster, relief and development**

Level of Purchase/ Operation	Participating Agencies	Index Insurance for Disaster Relief ²	Index Insurance for Development ³
Macro	Government	Government protects itself against shocks: early liquidity/ first relief outlays	Government reinsures insurers
	Relief Agencies	Funds its operations through an index-based risk-transfer contract or provides coverage through an index trigger contingent voucher	
Meso	Financial Service provider (FSP)	Government could use banks, FSPs, input suppliers, farmers' associations and NGOs to distribute vouchers for catastrophe insurance	FSP buys portfolio insurance or group insurance to retail to farmers, linked to credit
	Farmer Association		Farmer's association buys group insurance to retail to farmers, linked to credit
	Input Supplier		Input supplier buys group insurance to retail to farmers, linked to input purchases
	NGO		NGO buys group insurance to retail to farmers
Micro	Farmer	Farmer receives explicit, redeemable, predictable coverage against a well-defined shock, and the premium is paid for mostly by government	Farmer buys insurance as part of a package (e.g. credit and other financial services, technology, agricultural information)

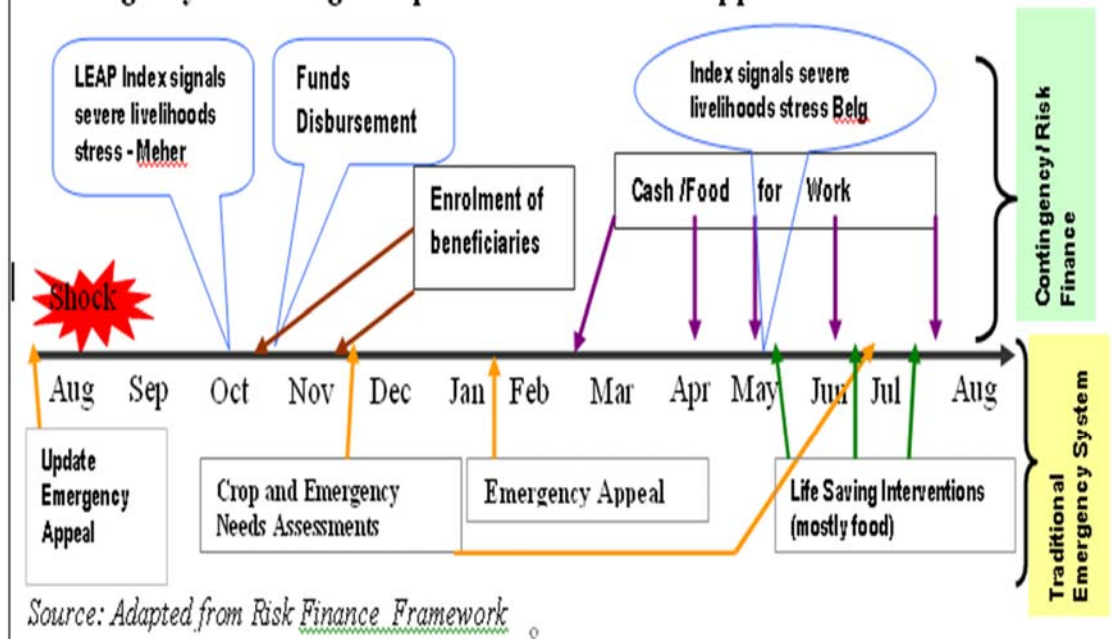
Source: WFP, IFAD, 2010

From Weather Insurance to Risk Financing

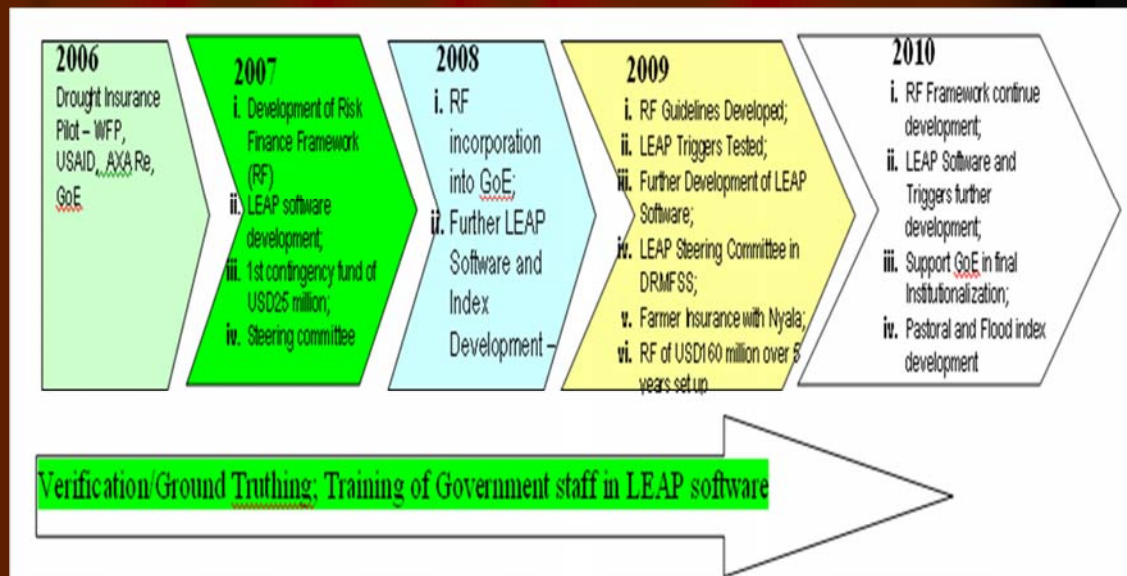
Description of the Risk Finance Components

Early Warning	Contingency Finance
<ul style="list-style-type: none"> With reliable baseline and trigger points Continue the development of the Livelihoods Early Assessment and Protection (LEAP) software and Index at regional level for a) cropping areas; b) pastoral areas; and c) floods Development of other early warning triggers and monitor their performance 	<ul style="list-style-type: none"> of budgeted contingency plans Establish timely emergency financing through use of contingency financing for safety net and non safety net woredas WFP participates in contingency finance packages and manages the index with other stakeholders
Contingency Planning	Capacity Development
<ul style="list-style-type: none"> for appropriate and timely response Support contingency planning process Develop budgeted contingency plans at woreda level Link the contingency plans to the DRM 	<ul style="list-style-type: none"> for effective plan implementation Help to build planning and implementation capacity at regional and woreda level Develop capacity in Ethiopia to trigger contingency funds at regional level Capacity of woredas to develop contingency plans to scale up safety nets

Contingency Financing Compared to Traditional Appeal Process



LEAP Weather based Index Development Chronology in Ethiopia



Source: Elliot Vhurumuku

The overall situation about Risk Financing Mechanism (RFM) in Ethiopia

Guideline for the Productive Safety Net Program (PSNP) RFM has already finalized and used as a reference as of April 2009
RFM activities going in DRMFS at all level

There is RFM task force at Federal level and has performed so many activities by designing action plan as follows:-

- RFM familiarization workshop at Federal level held on 8-9 April, 2010
- RFM familiarization workshop at regional level held from May 31, 2010 to June 7, 2010 at different regions.
- RFM familiarization workshop at Woreda level as June 20, 2010 (still on going process in some Woredas)
- About 190 Woredas (75% of the total PSNP Woredas) prepared contingency plan which is one of the pillars of RFM (still on going for the rest).

Source: DRMFS

The Statistical Method to estimate needs

The statistical Method to estimate needs

The basis of the analysis is based on the fact that WRSI and yield reduction is closely correlated to the population in need over time. "The model formulation is based on the log-model employed to relate drought condition to the number of beneficiaries to be targeted with livelihood protection actions is

$$N = N_0 + K \cdot [\log(W_M - F) - \log(RWRSI - F)] \quad l,$$

where

$$K = \frac{N_R - N_0}{\log(W_M - F) - \log(W_0 - F)}$$

and the parameters are

N_0 : Needs in case of optimal rainfall (chronic food insecure)

N_R : Population at risk

W_0 : Lowest observed value of RWRSI

W_M : Optimal RWRSI (e.g. $W_M=100$)

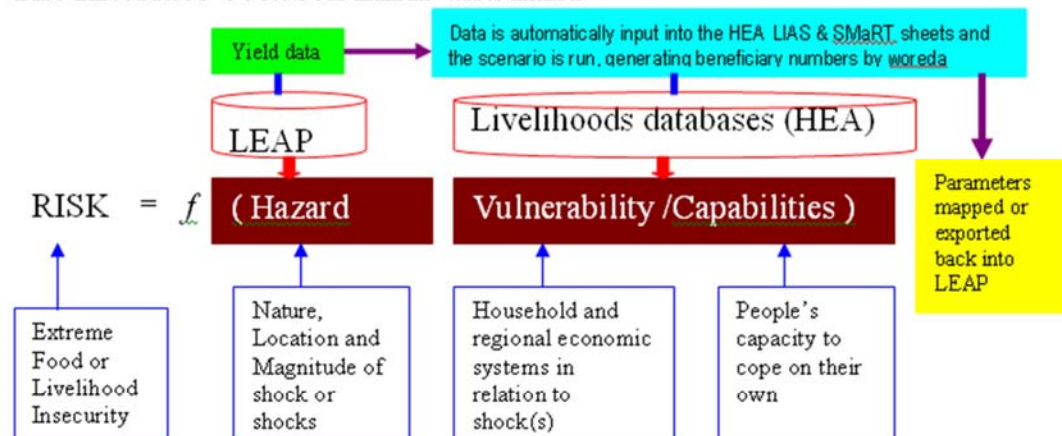
F : Systemic failure level

The parameters N_0 and N_R must be derived either from historical records (for example from the population input data) or from additional knowledge on the current situation in the field. A driving example can be to use the maximum number of beneficiaries as a proxy for population at risk and the minimum number of beneficiaries as a proxy for chronic food insecure. An alternative can be to use vulnerability assessment from companion surveys.

The model parameters (K , N_0) are calibrated by training the model with historical data for needs (N) and RWRSI" (Sandro Calmanti, 2010).

The HEA /LIAS Interface as Trigger for Risk Finance and Insurance

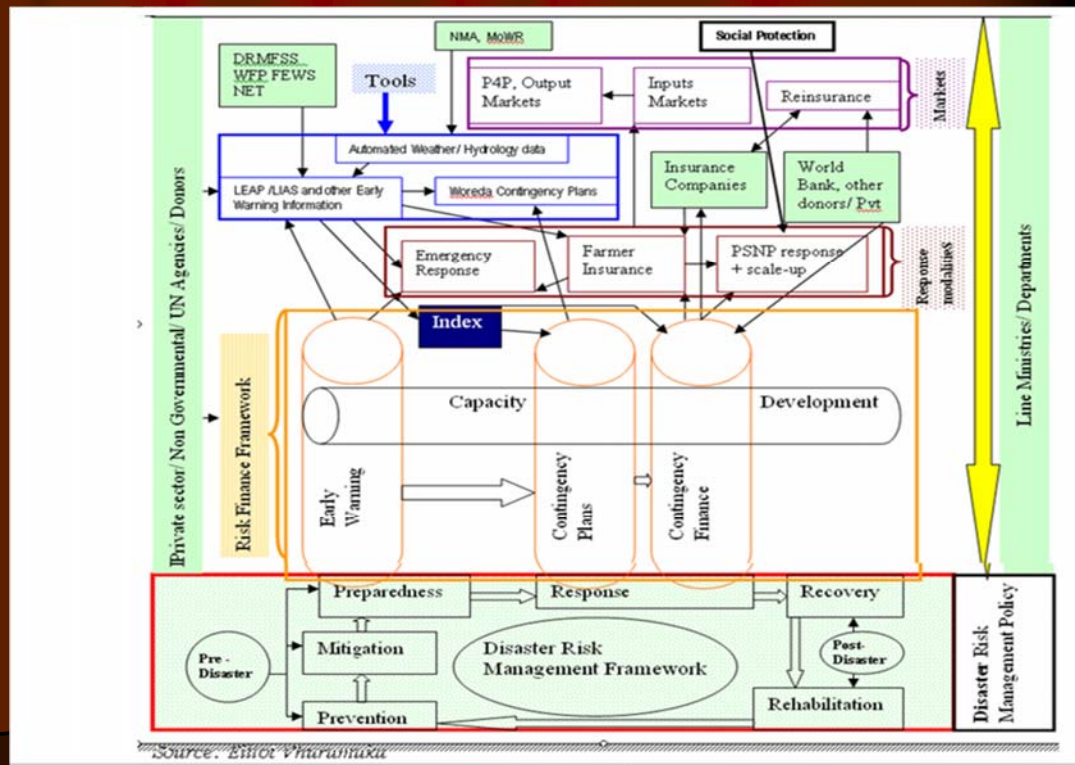
The Interface between LEAP and HEA



Risk = f(Hazard, Vulnerability / Capacity to cope) - This equation sits at the heart of the DRMFSS' disaster risk management strategy

Source: Adapted from DRMFSS/WFP - Lorraine Coulter, 2010

Weather Index Linkage Framework



Conclusions

- Weather Index pilots in Ethiopia have shown that international institutions such as the World Bank, World Food Programme (WFP), The Food and Agricultural Organization (FAO); the local insurance companies such as Nyala Insurance and in 2010 Oromiya Insurance Company; can support the implementation of index insurance.
- Furthermore, the index insurance can provide *ex ante* risk management framework which is inline with the new Government thinking of implementing a disaster risk management framework in Ethiopia.

Conclusions ...Contd

- Added to this, there is a very close linkage between input markets, output markets and financial markets with the index, such that this could stimulate production and reduce overall vulnerability of the rural poor.
- Moreover, index can be used at macro level to scale up the productive safety net programme through use of contingency funds; or some of the needs could be met through micro schemes such as the farmer insurance and any additional transitory needs could then be met through an emergency appeal.
- Hence, use of the weather index in Ethiopia has a potential to reduce food insecurity as response mechanisms could be put in place well in advance before affected vulnerable farmers use negative coping mechanisms, thereby protecting assets and livelihoods.

Thank You