

**Climate Change Resilience
for
Developing Country Agriculture
Particularly Africa**

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March 2, 2009

World Bank

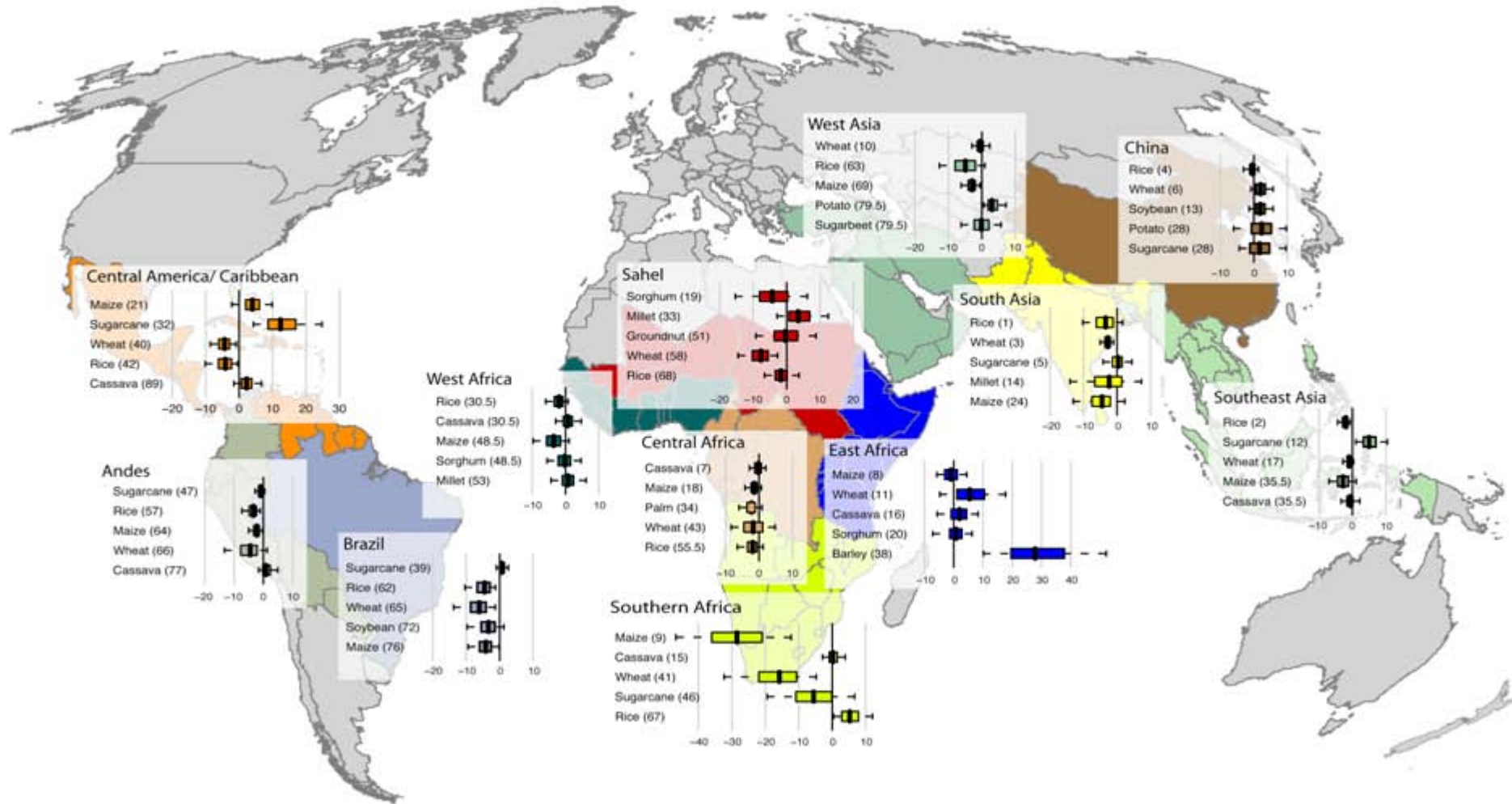
Climate Change Resilience & Agr.

- 1. Making climate science more useful to agriculture**
- 2. Strengthening agricultural research for climate change**
- 3. Managing climate risks & building safety nets**
- 4. Designing carbon markets to foster agricultural development & poverty reduction**

1.) Making climate science more useful to agriculture

- More useful projections of climate impact & adaptation options (Stanford U)**
- Improved collection, analysis & sharing of weather information including seasonal forecasts (ICPAC)**
- Capacity building (U of Colorado, RUFORUM)**

Stanford Crop Impact Model

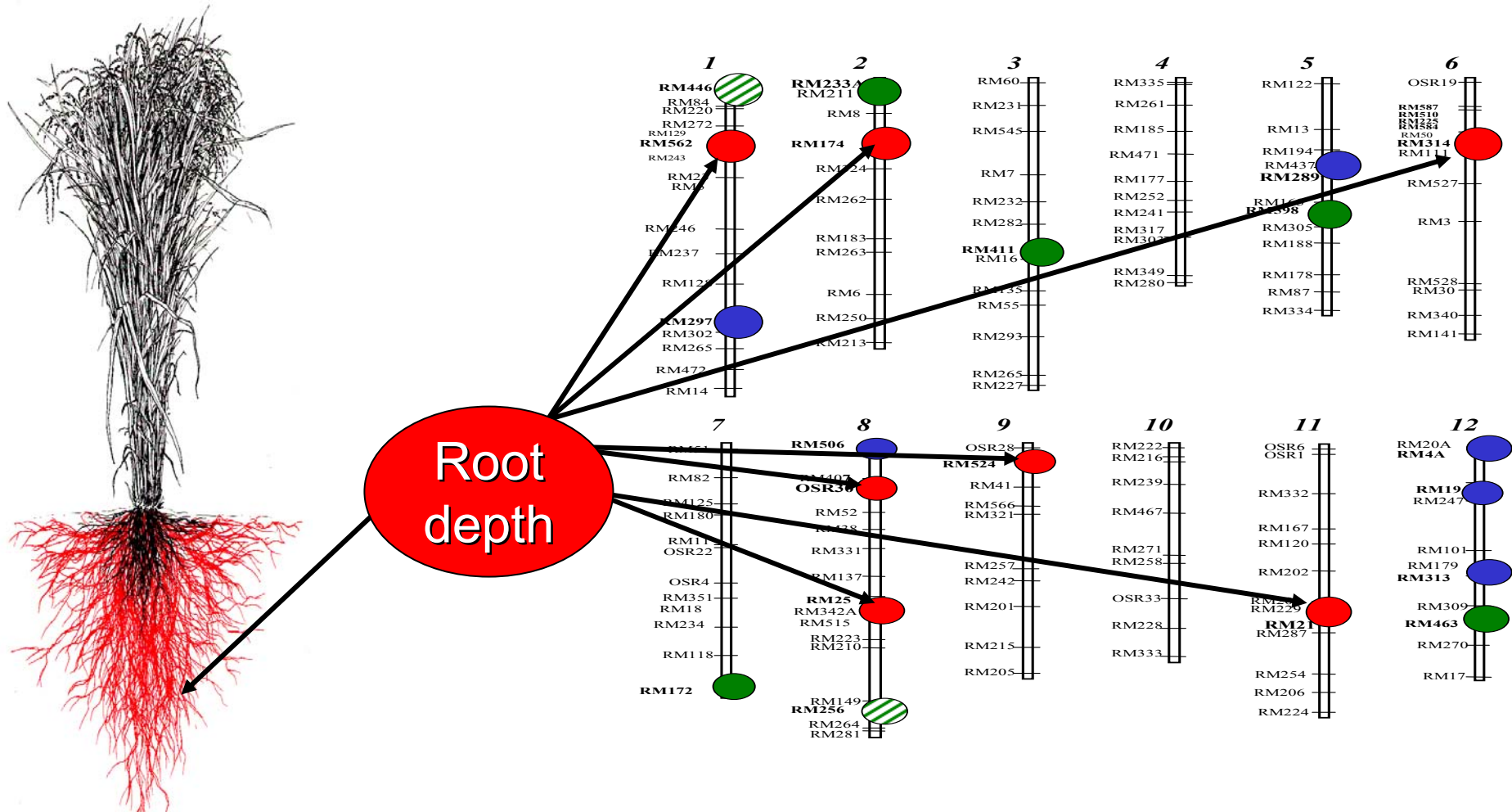


Summary of data presented in: Lobell, D.B. et al, *Science* 319:607-610, 2008

2.) Strengthening agricultural research for climate change

- **Build on existing coping strategies**
- **Increase biodiversity and collect at the margins (Crop Diversity Trust)**
- **More resilient & robust crop varieties (AGRA, IARCs, NARS)**
- **Small holder water management & irrigation (MDG, IWMI)**
- **Livestock management (IUCN)**
- **Capacity building (AGRA, RUFORUM)**

Breeding drought tolerant rice by using MAS to locate genes contributing to the component traits on rice chromosomes



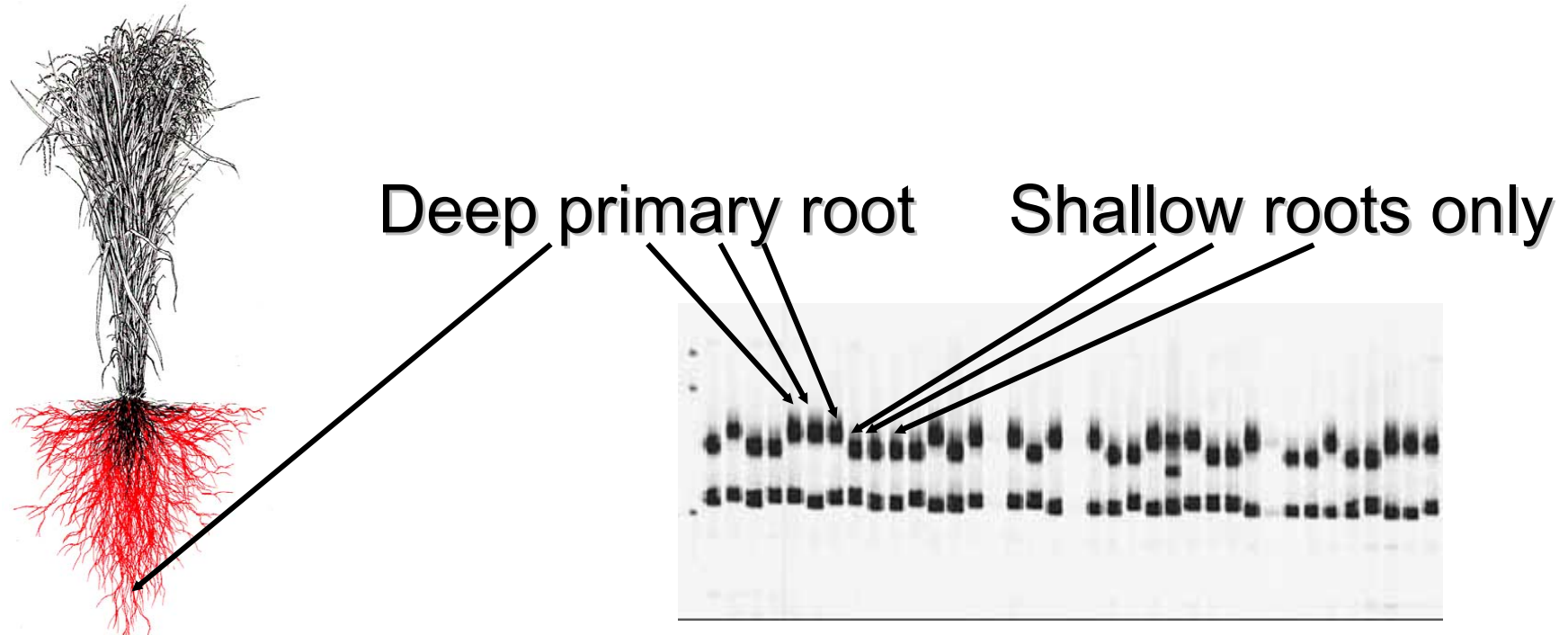
**Requires - Population segregating for trait
- Managed drought environment**



Scoring for root depth



Linked DNA markers can substitute for visual scoring of traits difficult to measure (e.g., deep primary root)



& Can score for multiple genes simultaneously

Drought Tolerant Hybrid Rice



“Drought superior – the first”

East India (Jharkhand & Bihar)

Drought tolerant rice – Ashoka f 200

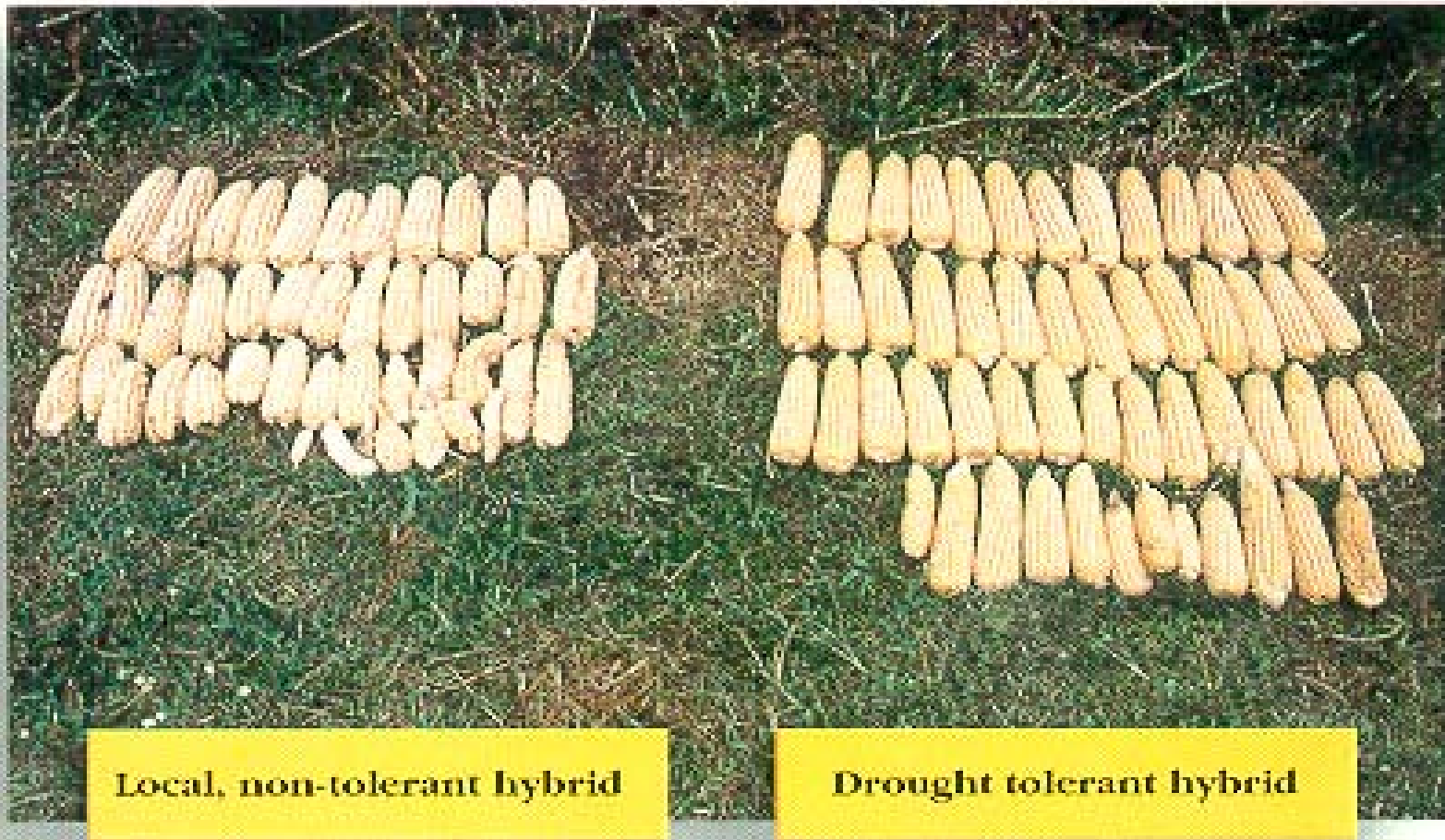
High yields with
adequate rainfall

Resilient to drought
when rains fail



Partners: IRRI, Birsa Agr. Univ. & Gramin Vikas Trust

CIMMYT's Drought Tolerant Maize for Africa



Local, non-tolerant hybrid

Drought tolerant hybrid

3.) Managing climate risks and building safety nets

- **Weather indexed crop insurance (FSD)**
- **Contingency planning and funding for food shortfalls due to climate (WFP)**
- **Markets to move food from surplus to deficit locations (AGRA)**

Money & Markets

Insurance planned to cover farmers from bad weather

➤ **AGRICULTURE** The product is expected to be out in March and will improve access to credit

BY STEVE MBOGO

Kenya is on the verge of rolling out crop and livestock insurance products that will see farmers compensated for crop failure or animal deaths arising from bad weather.

The plan means that even in situation of crop failure, farmers who will have taken the insurance will be compensated, cushioning them from adverse food shortage situation.

The first of the agricultural insurance products will be rolled out in March by particular insurers, says Michael Mbaka of the Financial Sector Deepening Kenya (FSD Kenya)

FSD Kenya is working with the Rockefeller Foundation and other partners including the World Bank and International Livestock Research Institute to come up with the products.

A number of insurance companies are said to have embraced project.

This development would be a major boost to the pastoralist communities who have sometimes lost large herds during drought. This group of framers have over the years faced the uphill task of restocking after bad weather hit their businesses.

The piloting of the products is ongoing in areas which produce cereals, horticulture and keep livestock. The insurance products will target small

holder and large scale commercial farmers.

The weather-index agriculture insurance is expected to motivate banks increase their lending preference to the agriculture sector, which they have avoided because of the inherent risks especially associated with rainfall patterns, said James Nyoro, the managing director of The Rockefeller Foundation for sub-Saharan Africa.

“The risk factors in agriculture are usually higher than in other sectors like manufacturing and financial services. Agriculture is also a low value sector. In situations where agriculture insurance exists, the premiums are very high as a result,” he said.

However, the study that

gave birth to the new products would make them more affordable to farmers, he said.

Agriculture provides just about 24 per cent of the gross domestic product, and employs over 80 per cent of the population directly and indirectly, according to Government statistics.

In spite of this significance, funding in the sector has been low. Data from the Central Bank of Kenya indicates that in the year ending June 2008, credit to the agricultural sector by banks was Sh27.1 billion out of the Sh712.3 billion by banks to the private and public sectors.

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The new insurance product will support farmers by increasing their chances of benefiting from bank loans. PHOTO: OKALL

previous years of Sh28.7 billion or about 4.7 per cent to the year ending June 2007. It came below manufacturing, trade, private households and business services.

Companies like Blue Shield Insurance already have agricultural insurance products covering livestock, poultry and crop losses but mainly losses resulting from hailstorm, fire, diseases, lightning, earthquake, explosion, riots, strike, and malicious damage.

The new weather-indexed products come at the backdrop of the research by the partners that the existing covers for agriculture are prone to bias and discrepancies due to lack of scientific methods to determine the outcomes.

This has minimised the participation of underwriters in the programmes.

“The weather-based index is critical in linking insurance to factual historical data on rainfall or temperature hence determining the current payouts as a result of the occurrence – no inspections and no assessments that lead to disagreements,” said Mr Mbaka.

“This will reduce the moral risks in the industry since farmers will be paid through accredited data from Kenya Meteorological Department

as opposed to easily disputed farm visits,” he added.

It is also based on the fact that Kenyan farmers, especially smallholder groups, have limited access to financing in the formal financial systems as they are viewed as risky.

The new insurance comes at a time when Kenya is facing food crisis resulting from bad weather conditions, among other disturbances in the gone year. The Government is set to declare the food situation as a national emergency and has authorised duty free imports of maize, Kenya's staple food.

The weather risks to agriculture are becoming even higher, experts said, because of the climate change, which is altering rainfall patterns. About 80 per cent of the sub-Saharan Africa will be affected by global warming, research so far shows.

The insurance tools are expected to support Government efforts to commercialise agriculture, pulling it from the subsistence practices.

The planned products are one of the rare financial services because of the complexities of developing it. It involves many stakeholders including insurance companies, banks, and weathermen, among others.

It involves what is known as agrometrical profiling, a process of establishing the amount of rainfall a crop will need to germinate, flower, fill its seeds, mature and get harvested.

The process of developing weather indexed insurance contracts is complex and there are only ten experts in the world who are certified to draft such contracts.

Four of those experts are involved in the Kenyan project through the World Bank Commodity Risk Management Group.

Motivation factor

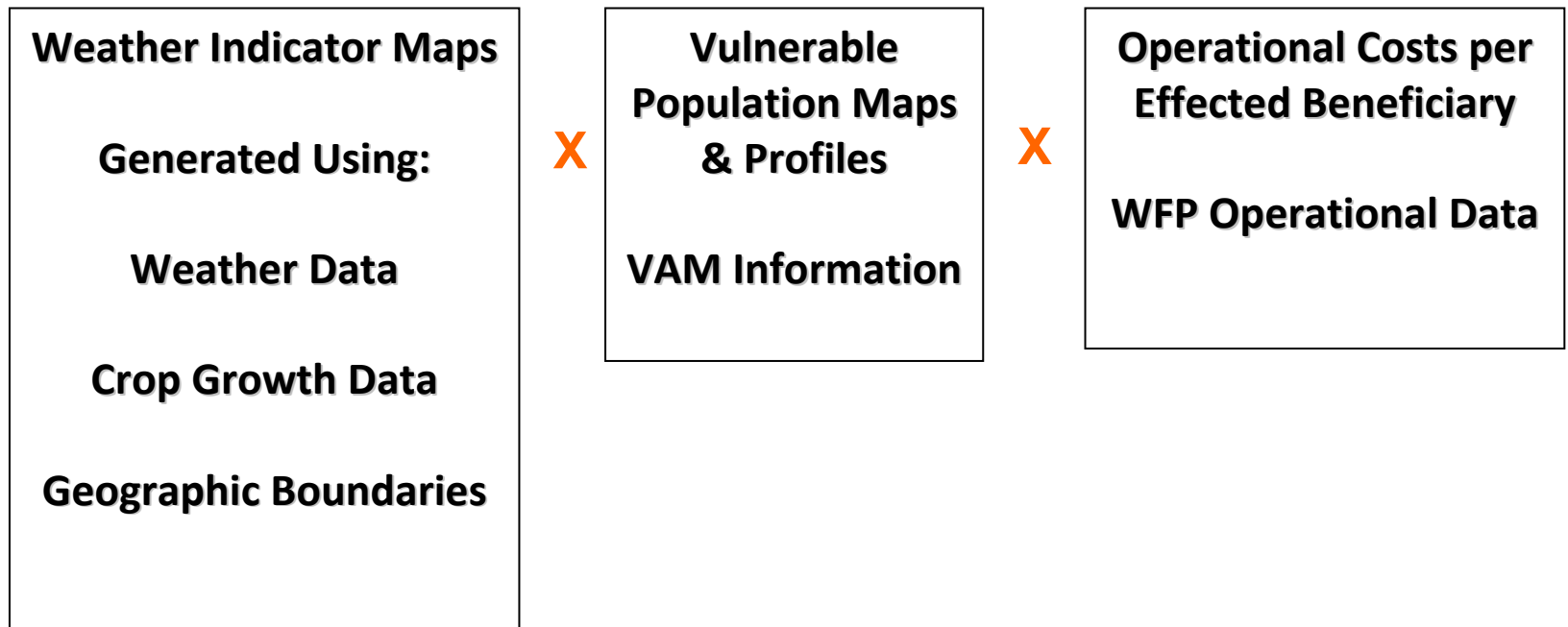
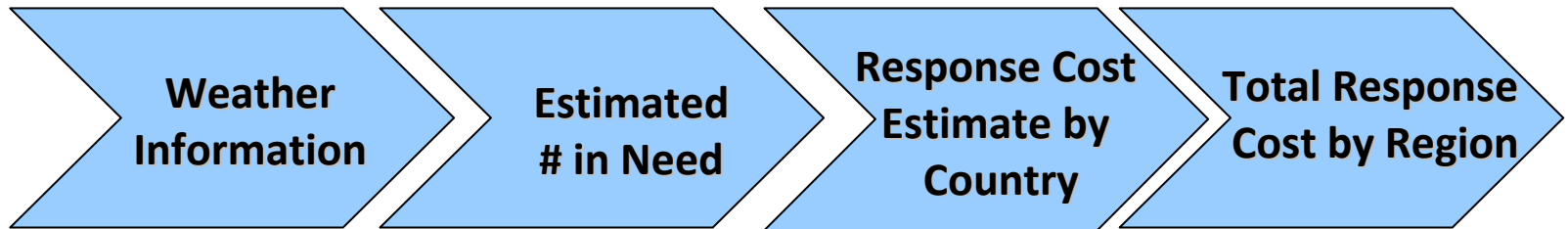
Similar insurance products are under trial in India, China and lately in Malawi where tobacco and groundnuts weather-indexed insurance has been successful. The Kenyan experience will be used to enhance those trials.

Last year, a pan-African security think-tank Institute of Security Studies called for development of livestock insurance in the region to allow compensation on deaths, a motivation factor for the infamous livestock raids.

In Mongolia weather-indexed livestock insurance compensates herders based on the mortality rate of adult animals.

World Food Program

From Data to Dollars



4.) Carbon markets for agricultural development & poverty reduction in Africa

- Influence policy & establish an enabling environment**
- Achieve readiness and build capacity to implement**

Carbon Markets

Influence Policy / Enabling Env.

(COMESA / WWF)

- **Build strong Africa-wide negotiating position**

African Climate Solution & Bio-carbon Initiative

Commit to mitigation

Adopt REDD at Copenhagen

Allow AFOLU by 2013

- **Help African countries take lead & submit**
- **Support US policy allowing AFOLU offsets in developing countries**
- **Promote REAL (Reduced Emissions & Adaptation in Landscapes)**

Carbon Markets

Achieve Readiness & Build Capacity

- **Legal frameworks (WWF, ELI)**
- **National carbon accounting (Clinton, U of C)**
 - Measure, monitor, certify, IT
- **Smallholder seller's fund (COMESA, PTA)**
- **National pilot projects (WWF)**
 - Technology transfer (ICRAF)
 - Smallholders generate credits
 - Optimize benefits for rural livelihoods

Thank You

University of Colorado at Boulder



World Food Programme
Fighting Hunger Worldwide

UNIVERSITY OF COPENHAGEN



IGAD CLIMATE PREDICTION AND APPLICATIONS CENTRE (ICPAC)



"Fostering Climate Prediction and Applications"

Clinton Foundation



GLOBAL CROP DIVERSITY TRUST

PROGRAM ON FOOD SECURITY AND THE ENVIRONMENT

A JOINT PROGRAM OF THE FREEMAN SPOGLI INSTITUTE FOR INTERNATIONAL STUDIES AND THE WOODS INSTITUTE FOR THE ENVIRONMENT, STANFORD UNIVERSITY



FSD Kenya
Financial Sector Deepening

COMESA

Alliance
for a Green Revolution in Africa



World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

