Platform
for Agricultural
Risk Management

Managing risks
to improve farmers'
livelihoods

Knowledge Management

PARM
PLATFORM FOR AGRICULTURAL RISK MANAGEMENT

Agricultural Risk Management: practices and lessons learned for development

K-Sharing & Learning Workshop

25th October 2017

IFAD HQ, Rome, Italy

Presentations

Volume 2

AFD · Cooperazione Italiana allo Sviluppo, Ministero degli Affari Esteri · IFAD Investing in rural people · german cooperation · KFW · NEPAD TRANSFORMING AFRICA

PARM

PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Platform
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Managing risks to improve farmers' livelihoods

Workshop Report

Agricultural Risk Management: practices and lessons learned for development

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VOLUME II
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Contents

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PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Panel A: Fostering integration of ARM into policies

This panel brought together three initiatives aiming at the mainstreaming of ARM into national policies. They encompass capacity building at various levels, risk assessments and the support of governments in drafting and implementing ARM policies.

Presentation A.1:	Adaptation to climate change, disasters prevention and agricultural development for food security- ANADIA Vieri Tarchiani, IBIMET
Presentation A.2:	Rural Resilience Initiative Fabio Bedini, WFP
Presentation A.3:	Farm Risk Management for Africa - FARMAF Gideon Onumah, NRI

Presentation A.1:

Adaptation to climate change, disasters prevention and agricultural development for food security- ANADIA

Vieri Tarchiani, IBIMET

ANADIA aims to:

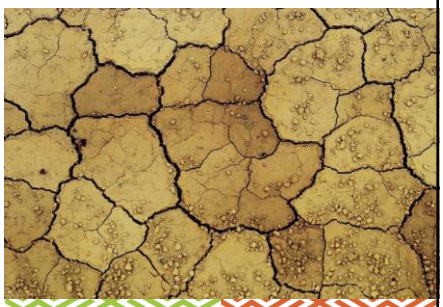
"strengthen the capacity of stakeholders at national, regional and local level to mainstream climate change adaptation and disaster risk reduction in decision making from national to farm scale".

Postulate: **better risk knowledge to better risk management**

ANADIA focuses on:

Drought

Floods



ANADIA
Vieri Tarchiani

ANADIA Approach

Training goal: to stimulate collaboration between the different institutions involved, to identify and adapt appropriate methodologies to the specific context.

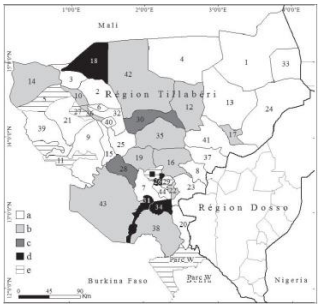
Trainers role: to provide examples of methodology and to stimulate discussion and the active participation of stakeholders to integrate new approaches in their own field.

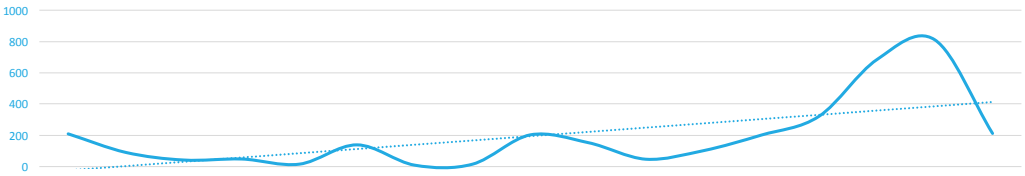
Participants role: to define the contents of the training and / or build the application process.

ANADIA
Vieri Tarchiani

Example of application at mesoscale

Flood risk management, an essential tool for risk assessment and management strategies, a nation wide database on floods events and damages from 1998.





1998 **3.947** localités touchées par inondations

1.758.191 personnes sinistrées 2015

ANADIA
Vieri Tarchiani

Example of application at local scale

Local scale risk assessment

11 communities (first phase and further 9 in the second) among those most affected by different types of floods (river, flash floods) and by drought.

Risk assessment integrating scientific and local indigenous knowledge:

- Literature, quantitative measures and hydrometeorological and GIS analysis tools
- Community workshops and participatory mapping, risk perception and mitigation strategies

ANADIA
Vieri Tarchiani

Example of application at local scale

Agrometeorological Services for smallholder farmers

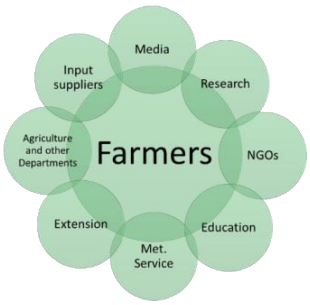
AS, within the WMO approach, are:

- Training and **rain-gauges** to farmers (through RS),
- **Sowing calendar** to be used in association with observed rainfall (through RS),
- **Weather** and **Seasonal forecasts**, expected sowing periods advice (through RS, local media and extension services),
- 10-days agrometeorological **advices** (through local media and extension services).

ANADIA
Vieri Tarchiani

Agricultural Innovation System

1. **Multidisciplinary Working Groups** (bridging the gap between climate and agricultural communities) National/local
2. **Local extension service, NGOs, rural radios** and other local actors to disseminate the innovation.
3. **Model farmers** training + rain gauge + sowing calendars to choose suitable planting dates and appropriate crop varieties. Charged with the role of supporting the whole farming community in their area.



Agricultural Innovation System

ANADIA
Vieri Tarchiani

Conclusions

1. Improved **Climate services** for key stakeholders can be provided according to the scale by strengthening the **relation between local and national technical services**.
2. Agrometeorological Services for farmers are more effective where the AIS is stronger and integrates **multiple actors** at both local and national level,
3. **Integration of scientific and local knowledge** ensures greater added value to climate services (objectivity + trust + sustainability).
4. Need to improve impact assessment, including **economic implications, behavioural changes** and **social aspects of innovation.**

ANADIA
Vieri Tarchiani

Thank you

ANADIA
Vieri Tarchiani

Traditional and informed decision-making

Practice	Traditional decision	Agrometeorological services	Main advantages
Land preparation	Soil moisture, empirical knowledge, indigenous indicators	Advice based on seasonal forecasts and crop calendar	Reduces weeds cover before sowing
Crop variety choice	Locally available varieties, good taste and marketable	Advice based on seasonal forecasts and crop calendar	Crop cycle better fits seasonal pattern (season length, dry spells)
Sowing	First rain, indigenous indicators	Rainfall on the rain gauge according to specific thresholds and in relation to the sowing calendar and weather/seasonal forecasts.	Avoids sowing failures, re-sowing, coincidence of most vulnerable crop stages with dry spells
Weeding	Abundance of weeds	Phenological phase, soil moisture and weather forecasts.	Reduces weeds growth
Fertilization	Late development, weak plants, yellow leaves	Phenological phase, soil moisture and weather forecasts.	Avoids fertilizers leaching and crop scorching
Pesticide treatments	Level of crop damage	In case of outbreaks, according to weather observation and forecasts	Avoids pesticides leaching

ANADIA
Vieri Tarchiani

A pilot farmer in Tera, Niger, said

*"Yes we trust this information but more often there are **social burdens** in our environment that stop us applying the advice on the optimum sowing calendar. In fact we do not want to lag behind and be **marginalized**, we want to avoid the **judgment** of others who think we do not trust God if we do not sow after the first rains like everyone else".*

ANADIA
Vieri Tarchiani

SWOT (from impact assesment 2015)

- **Strenghts**: reduction of N° of sowings (-20%) and crop failures, increase of yield (+22%), diffusion of weather and climate information, collaboration
- **Weakness**: dataset for impact assesment (statistical relevance of results), adoption at scale level, project approach
- **Opportunities**: ICT in information and advices dissemination; integration with traditional knowledge, synergies with other elements of the AIS
- **Threats**: ratio farmer/extensionists and extension of cropping area, cultural and social barriers

ANADIA
Vieri Tarchiani

Presentation A.2:

Rural Resilience Initiative

Fabio Bedini, WFP

R4 Rural Resilience Initiative

BUILDING RESILIENCE TO CLIMATE CHANGE FOR LONG-TERM FOOD SECURITY AND LIVELIHOODS IMPROVEMENT

More than 1.2 billion people in the developing world live below the poverty line and depend on agriculture for their livelihoods. Vulnerability to climate-related shocks is a constant threat to their food security and wellbeing. Strategies for reducing and mitigating risks are therefore essential to overcome hunger, achieve food security and enhance resilience.

The R4 model

R4 has broken new ground in the field of climate risk management by enabling the poorest farmers to pay for crop insurance with their own labor.

> *"This insurance is like saving: you put in your money now and you get it back when the rain is bad and the crops don't do well."*
>
> **Gebre Michael Geday**, Abraha Atsbaha village

ABOUT R4

The World Food Programme (WFP) and Oxfam America (OA) launched the R4 Rural Resilience Initiative (R4) in 2011 to **enable vulnerable rural households to increase their food and income security in the face of increasing climate risks**. R4 builds on the initial success of the Horn of Africa Risk Transfer for Adaptation (HARITA) initiative, pioneered in Ethiopia by OA, the Relief Society of Tigray (REST) and Swiss Re.

R4 currently reaches over 43,000 farmers (about 200,000 people) in Ethiopia, Senegal, Malawi, Zambia and Kenya through a combination of four risk management strategies: **improved resource management through asset creation** (risk reduction), **insurance** (risk transfer), **livelihoods diversification and microcredit** (prudent risk taking) and **savings** (risk reserves). Between 2015 and 2016, as a consequence of the El Niño phenomenon, about $450,000 in payouts were distributed through the initiative in Ethiopia, Senegal and Malawi. In 2017, R4 is expanding also in Zimbabwe.

R4 aims to help communities become more resilient in the face of increasing climate variability and shocks. Thanks to R4's comprehensive risk management scheme, **communities will be stronger in the face of disasters**. They will be able to invest in new seeds and fertilizer to guarantee food is on the table all year long. Protected by insurance, households won't need to sell their assets or take their children out of school in case the rains fail.

WHAT'S INNOVATIVE ABOUT R4?

- R4 has broken new ground in the field of climate risk management by enabling the poorest farmers to pay for crop insurance with their own labor.
- Farmers can access insurance by paying with their labor through **Insurance-for-Assets** (IFA) **schemes**. When a drought hits, compensation for weather-related losses prevents farmers from selling productive assets and stimulates faster recovery.
- IFA schemes are built into either existing government social safety nets or WFP's Food Assistance for Assets programme. **Assets built through risk reduction activities promote resilience** by steadily decreasing vulnerability to disaster risks over time.
- Insurance facilitates **access to credit** at better rates, serving as collateral. Households can invest in riskier but more remunerative enterprises, as well as in seeds, fertilizers and new technologies to increase their agricultural productivity.
- **Participants establish small-scale savings**, which are used to build 'risk reserves'. Savings help build a stronger financial base for investing – but also act as a buffer against short-term needs and idiosyncratic shocks, such as illness and death.
- To ensure **long-term sustainability**, R4 contributes to the creation of rural financial markets, by building local capacity and gradually transitioning farmers to pay for insurance in cash.

R4 Rural Resilience Initiative

BUILDING RESILIENCE TO CLIMATE CHANGE FOR LONG-TERM FOOD SECURITY AND LIVELIHOODS IMPROVEMENT

THE INITIATIVE IS HELPING IMPROVE FARMERS' RESILIENCE

IMPACT EVALUATIONS RESULTS

- In Ethiopia, insured farmers saved more than twice than those without any insurance, and invested more in seeds, fertilizer and productive assets, such as plough oxen.
- **Women, who often head the poorest households, achieved the largest gains** in productivity, through investing in labor and improved tools for planting.
- In Senegal, after two years of bad harvest, R4 farmers were able to maintain their food security compared to others exposed to the same risks.

R4 achievements

	2009	2010	2011	2012	2013	2014	2015	2016
Payouts			$ 17,000	$ 320,000	$ 24,000	$ 38,000	$ 450,000	$ 74,000
Value of premiums	$ 2,500	$ 27,000	$ 215,000	$ 275,000	$ 283,000	$ 306,000	$ 370,000	$ 781,000
Total sum insured	$ 10,200	$ 73,000	$ 940,000	$ 1,3m	$ 1,2m	$ 1,5m	$ 2,2m	$ 5,1m
Farmers insured	200	1,300	13,000	18,000	20,000	26,000	32,000	42,000
Countries	Ethiopia	Ethiopia	Ethiopia	Ethiopia Senegal	Ethiopia Senegal	Ethiopia Senegal	Ethiopia Malawi Senegal Zambia	Ethiopia Malawi Senegal Zambia

Our vision: 500,000 insured farmers in 2020.

COLLABORATION

The R4 Rural Resilience Initiative is a strategic collaboration between the World Food Programme and Oxfam America, with no commingling of funds. Each partner has its own sponsors as listed. R4 is inviting donors to support expansion.

WFP World Food Programme wfp.org

www.wfp.org/r4

With support from

USAID · Norwegian Ministry of Foreign Affairs · Charitable Foundation Cartier

OXFAM America

www.oxfamamerica.org/r4

With support from

Swiss Re · Rockefeller Foundation · the ELMA relief foundation · Hagger & Orrell

Climate and Disaster Risk Reduction Programmes Unit, Policy and Programme Division **wfp.org/climate-change - climatechange@wfp.org**

Photocredit: IRI / Michael Norton

Presentation A.3:

Farm Risk Management for Africa - FARMAF

Gideon Onumah, NRI

WHAT IS FARMAF?

FARMAF or the Farm Risk Management for Africa Project promotes and facilitates enhanced access to innovative tools and methods for managing risks in the farm sector in Africa.

The FARMAF project ran from 2011–2016. It was implemented by AGRINATURA-EEIG in partnership with eight African farmers' organisations at national, regional and continental levels. Funded by the European Union and AGRINATURA, FARMAF was initially carried out in Burkina Faso, Tanzania, and Zambia, with the goal of transferring lessons learnt to other countries in sub-Saharan Africa.

Why is FARMAF needed? What are farm risks?

Investing in any enterprise entails risk but there are arguably more risks involved in farming. Usual farm risks include exposure to climate events such as droughts, floods and hailstorms, which can decimate yields and incomes. Farmers also face difficulties in acquiring farm inputs such as seed, machinery and fertiliser; often the quality of the inputs they buy is variable. When farmers 'escape' these risks and obtain a 'good' harvest, they are often faced with uncertain access to markets for their produce, high price volatility and huge postharvest losses due to limited access to reliable storage and processing facilities. The result is that farmers can make significant losses even if the harvest is good.

Managing farm risk in Africa

Smallholder farmers in Africa are particularly vulnerable to farm risks because the tools to manage them, which exist in advanced agricultural economies, are largely unavailable to them. FARMAF has been promoting such tools in order to provide farmers with protection against severe negative shocks and to enable them to optimise productivity.

FARMAF TOOLS

The risk management tools promoted under FARMAF include:

- **Agricultural insurance**

  Insurance makes it possible for farmers to be compensated for yield losses occurring as a result of insurable risks including the weather-related risks mentioned previously. Insurance offers financial protection to farmers because it allows them to transfer their risk of income loss to a better-endowed insurer. By so doing, farmers are also enabled to repay loans taken for farming even if they suffer losses as a result of the insured risks. Hence, it has become evident that farmers who benefit from agricultural insurance also have better access to farm credit, sometimes on significantly improved terms.

- **Innovative marketing systems**
  - These systems generally are intended to help farmers overcome marketing challenges and risks. They improve access to remunerative markets, minimise uncertainty in trade transactions, enhance farmers' bargaining position, and can help in managing price risks. The innovative marketing systems include:
  - **Warehouse Receipt Systems (WRS)**

    Under these systems farmers can deposit storable produce in a designated warehouse and obtain a warehouse receipt – a document specifying that commodities of stated quantity and quality have been deposited at a particular location. The particular stored commodity has to be delivered by the operator of the warehouse whenever the receipt is presented. It can be used to facilitate trading between people who are far apart from each other (geographically) because there is no need to physically check what is being traded before the transaction occurs. The commodity represented by the receipt can also be used as security for a loan, making it possible for producers to delay the sale of their crop beyond the harvest season when prices are usually very low.

  - **Agricultural commodity exchanges**

    Agricultural commodity exchanges offer 'virtual' platforms (without the physical produce), where sellers and buyers can trade for delivery immediately or at a stated future date. Exchanges allow for transparent trading where delivery and payment are assured. By also fostering trade for future delivery, they create opportunities for market players to manage price risks.

- **Market Information Systems (MIS)**

  These systems collect, process and disseminate information on prices as well as demand and supply of particular commodities in order to enable farmers, traders and other players to make well-informed marketing decisions.

- **Contracting**

  Smallholder farmers can enter into contracts to produce specified crops under particular conditions and sell the produce to large-scale traders, processors, exporters and nucleus farmers. These buyers usually provide inputs on credit as well as extension services to the participating farmers and deduct the cost directly from proceeds from the sale of produce by farmers. The system improves access to inputs as well as markets (often at fixed future prices). Another variant is where farmers enter into contracts only to sell produce at fixed or guaranteed floor prices in the future. This does not involve any supply of inputs but allows farmers to access production finance as price and marketing uncertainties are removed.

- **Collective action**

  Collective action usually involves promoting the formation of groups among smallholder farmers to enable them to buy inputs in bulk and at lower cost, to obtain farm extension services together, access production credit on competitive terms, and to sell collectively into remunerative markets by aggregating and ensuring compliance with relevant commodity quality standards. This approach tends to be adopted in encouraging uptake of all the tools mentioned above by smallholder farmers.


Photo: N Palmer/CIAT

HOW DOES THE FARMAF APPROACH WORK?

The approach adopted in implementing FARMAF actions recognises that risk management in agriculture is multi-dimensional. The approach incorporates the following features:

- **Building on existing initiatives**

  FARMAF pilots build on existing initiatives and avoid 'starting from scratch' which wastes resources through duplication of efforts. The focus is usually on improving and scaling up access to existing tools and/or developing complementary tools.

- **Fostering effective links between tools**

  The approach ensures effective links between risk management tools in order to optimise their benefits, rather than developing each one in isolation. For instance, crop insurance is actively linked to market supply of farm credit and access to inputs as well as farm extension services. A critical link is also made to marketing systems which reduce loan default risk by ensuring farmers can sell their produce through reliable channels and at predictable prices.

- **Capacity building**

  The development of specific tools often leads to new challenges. For this reason, FARMAF actions include capacity building to enable stakeholders to respond in a flexible manner to challenges which may emerge as the tools are developed.

- **Leading role by farmers' organisations**

  In all cases, the priorities of farmers' organisations (FOs) define national agendas for FARMAF actions. Though FOs play a leading role, they usually collaborate with governments and other private sector stakeholders in implementing FARMAF actions.

- **Policy advocacy**

  The policy context is one of the biggest challenges for successful development of most risk management tools, especially where policy actions are unpredictable or disrupt inputs and output markets. Therefore farmers, together with other stakeholders, carry out policy advocacy by ensuring that a supportive policy and regulatory framework is created and maintained for the tools and the farm sector in general. This is achieved through generating and sharing required evidence as well as promoting effective advocacy platforms.

LESSONS LEARNT: HIGHLIGHTS

Agricultural insurance

- Two insurance products have been promoted: the traditional indemnity-based crop insurance and novella index-linked agricultural insurance products, which have shown demonstrable potential in Burkina Faso and Zambia whilst the latter product is being piloted in Tanzania.
- In the absence of subsidies, insurance uptake is low unless insurance is bundled with production loans, an experience which is consistent with emerging global evidence.
- Complementing the private insurance markets with public-funded schemes to cushion the impact of insured risks occurring on a catastrophic scale is important in ensuring sustainability.
- An enabling policy and regulatory environment as well as effective sensitisation activities are crucial in driving uptake, especially of index-based insurance products.

Warehouse Receipt Systems (WRS)

- Warrantage – a WRS exclusively targeting farmers storing in small-scale warehouses – has produced significant positive impacts on household food security, household income and the capacity of smallholder farmers to invest in scaling up cash crop production and other non-farm income generating activities. It is evident, however, that opportunities can also be created for smallholder farmers to trade into remunerative formal markets if effective quality assurance systems are developed for the Warrantage schemes. The evidence further shows that participating farmers who take advantage of such opportunities do not compromise household food security.
- To optimise the benefits of WRS of varying scale, it is necessary to promote complementary tools including forward contracting MIS and commodity exchanges as well as creating and maintaining enabling policy environments.


Photo: N Palmer/CIAT

- The development of WRS and advanced marketing systems can be critically hampered by weaknesses in the regulatory framework.
- FARMAF ICT-based innovations developed under FARMAF have enhanced oversight of certified or licensed warehouse operators – thereby building confidence in the system and scaling up uptake by depositors and financiers.
- Advocacy driven by farmers in collaboration with other stakeholders in agricultural value chains has been valuable in addressing some of the policy obstacles. However, the policy conundrum remains a threat to the sustainability of these systems in most countries.
- Also crucial is sustained capacity building for key stakeholders, including regulators, depositors and financiers.

Market Information Systems (MIS)

- It is possible and beneficial to expand the scope of information provision beyond price dissemination, to include better crop forecasts, more reliable data on available stocks and potential sellers/buyers, as well as facilitation of farm extension delivery.
- If the information is packaged well enough to attract good audience ratings, then commercial sponsorship of dissemination is possible and can make a significant difference in ensuring sustainability of the system.

Collective action

- Collective action has proved effective, for instance, in lowering the cost of inputs acquisition – with farmers obtaining significant discounts (ranging between 10% and 20%) when they buy in bulk.
- Where farmers are sensitised about alternative policy actions – for example through study visits – they are able to partner other actors in effectively lobbying for policy reforms which address their concerns and the risks to which they are exposed.


Photo: H David-Benz


Photo: R Hillocks


Photo: I Porgo

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Southern African Confederation of Agricultural Unions (SACAU) discontinued their involvement in FARMAF towards the end of 2014 for reasons beyond the project.

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Panel B: From germination to the market: transforming risks into opportunities

In this panel, two initiatives transform market risks into opportunities, enabling farmers to access the market and take control over the sale of their produce. The third introduces an innovative hybrid insurance model, to ensure that farmers' produce is insured from the very early stages all the way to the harvest.

Presentation B.1: Commodity exchange trading in Ethiopia
Tewodros Demeke, ATA

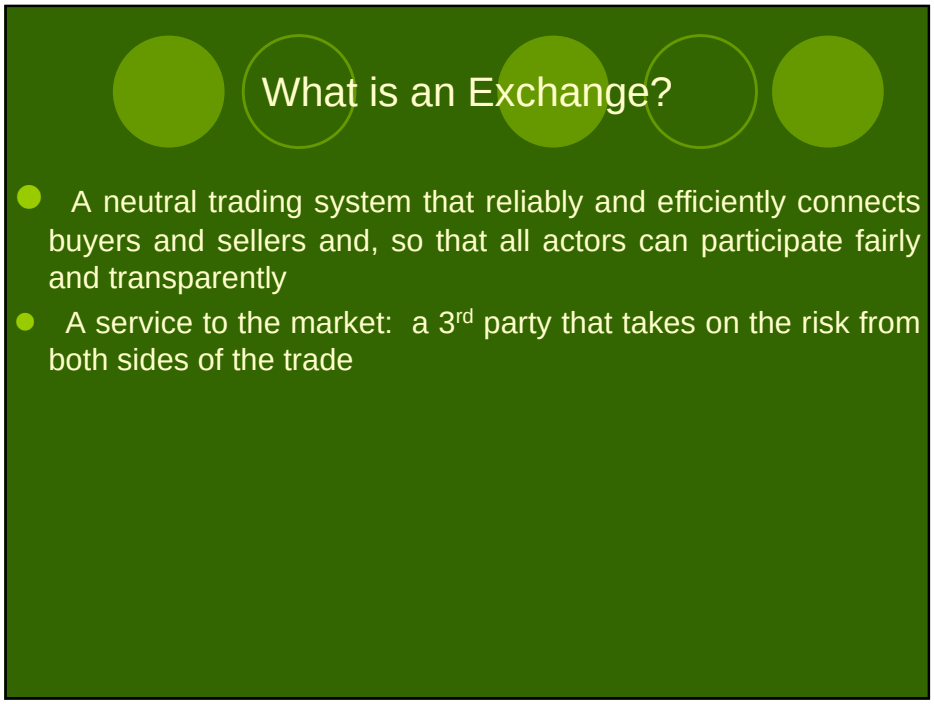
Presentation B.2: Integrated grain value chain lending and insurance
Jean-Michel Voisard, Feed the Future Senegal

Presentation B.3: ACRE Africa's Replanting Guarantee
Stewart McCulloch, VisionFund International, **on behalf of ACRE Africa**

Presentation B.1:

Commodity exchange trading in Ethiopia

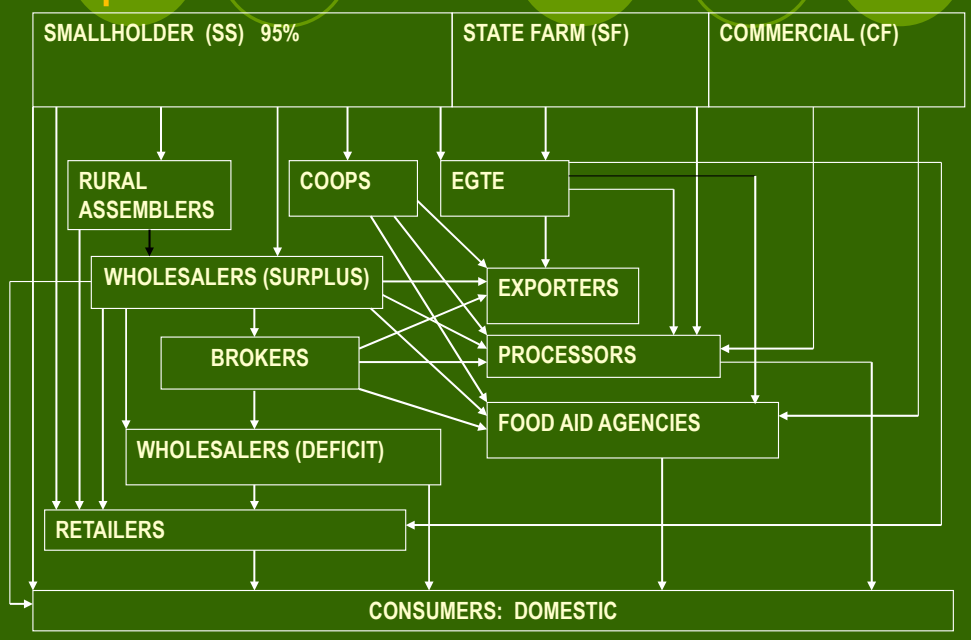
Tewodros Demeke, ATA



Commodity exchange is An idea whose time has come

- As Ethiopia is poised to transform its agrarian economy, so too must Ethiopia's marketing system take the country into the new Agricultural Transformations.
- It is time to enter the modern age of globally connected trading systems, relying on technology and know how, while tailored to Ethiopia's realities and conditions.
- It is time to forge a new partnership between the private and the public in the new arena created by market liberalization.

Current agricultural market structure in Ethiopia



Aims of commodity exchange

- Creating certainty regarding:
  - The quality of the product,
  - The quantity the product and
  - Location of commodities to be traded
- Reduces transaction costs, (in the form of):
  - Cost of sourcing produce for traders and processors
  - The cost of accessing markets for farmers, especially for Premium quality produce
- Improves collection and dissemination of market information systems to all players (Prices on the exchange).
- Developement and strengethening of market infrastructure

Aims continued…

- Develop and strengthen warehouse receipt system,
  - Makes it possible for producers, who so desire, to defer sale during the harvest season, when prices are low and to gain from seasonal price increase
  - Ensures that agricultural produce is stored in well-run facilities, thereby reducing post-harvest losses
  - Allows smallholder farmers to aggregate – sometimes facilitated by inventory finance and sell directly to processors and large traders, rather than through intermediaries
  - Reduce seasonal variability in the supply and prices of agricultural commodities to the benefit of consumers as well as processors

Commodity Exchange will facilitate and increase Access of ARM tolos through

- Developing and streangthening organizational structure in the market and its actors,
- Createing and establishing integrity in the market actors, product and transaction,
- Developing transparency in the trading system,
- Developing efficiency in the market,
- Strengthening farmer empowerment and price bargaining power,
- Strengthening awareness and capacities at all levels
- strengtnening market information system and infrastructure.
- Developing and streangthening cooperative, prívate and governement warehouse receipt system,

Evaluating the impacts of commodity exchange on farmers by measuring

- Incomes of smallholders farmer's
- Smallholder farmer's livelihood situations
- Production and productivity of farmers product
- Farmer's premium for better quality supply
- Market information system and infrastructure
- Access to finance
- Farmers knowledge and capacities
- Farmer's capacity to utilize inputs

Commodity exchange good practices:

- Creating certainty regarding the quality, quantity and location of commodities to be traded,
- Reduces transaction costs
- Improves collection and dissemination of market information to all players
- Represents a transparent and often reliable means by which lenders can liquídate collateralized commodities
- The WRS developed and act as a delivery mechanism, that helps to underpin exchange trading
- Reduce seasonal variability in the supply and prices of agricultural commodities to the benefit of consumers as well as processors
- Encouraging investment in agro-processing and microfinance institutions.
- Facilitates financing of the agricultural trade and the subsector .

weaknesses and lessons learned

- Represent only formal grain market in the country
- Limitad capacities and trainings for smallholder to enhance the productivity and quality of their products
- Less empowerment of domestic as well as international companies to invest in commodity exchanges trading as per the rules and regulation determined by the government is
- Co-organized with interested groups (including from the private sector), regional and national
- workshops and conferences on commodity exchange trading issues, or provide support to such events are less.
- Address only limited export commodities like coffee, sesame and beans (white pea beans and red kidney beans).
- Success in managing severe food crises, but at infant stage for stabilising market prices
- Limited in capacity and mitigating mechanisms on export and domestics price

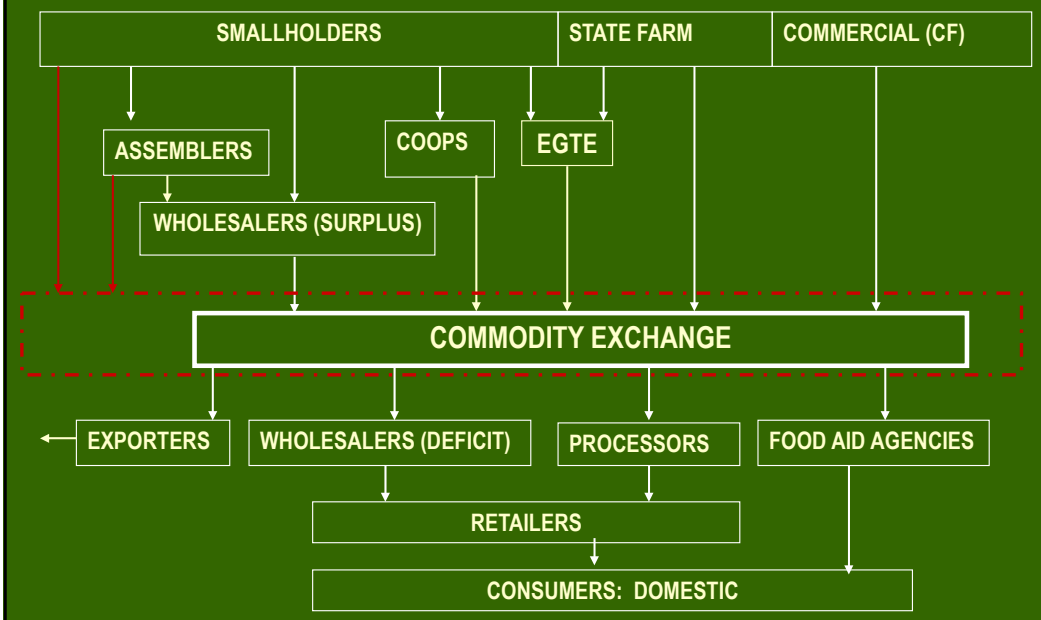
The future is here…

Yes we can !!

Thank you

OCTOBER, 25

Structure with Exchange



Background

- Smallholder farmers in Ethiopia face challenges like agricultural risks(production risk and market risk)
- The predominance of informal marketing systems in Ethiopia creates uncertainty/risk for both producers and traders

This is becouse:

- Increase transaction costs
- Lack storage facilities
- access to trade finance
- Market information center and infrastructure

Presentation B.2:

Integrated grain value chain lending and insurance

Jean-Michel Voisard, Feed the Future Senegal

FEED THE FUTURE SENEGAL NAATAL MBAY
INTERLOCKING CREDIT SYSTEM BASED ON GRAIN COLLATERAL

What is Feed the Future Naatal Mbay?

The Feed the Future Senegal Naatal Mbay Project ("Flourishing Agriculture" in Wolof), funded under the United States Global Food Security Act, supports the Government of Senegal's objectives to reduce poverty and food insecurity amongst its vulnerable rural populations. Through the Naatal Mbay project, USAID aims to boost the incomes of 130,000 farm households representing 45% of households within the project's intervention zones by scaling up and expanding successful technologies, skills and approaches for inclusive growth and resilience in key cereal value chains: rice, maize and millet. The implementation strategy is based on facilitation, linkage, partnership and local capacity development to promote sustainable and market-driven systemic changes.

What is an Interlocking credit system?

It is an approach to lending that focuses on securing the value of grain raw material, for example Paddy rice, as a collateral for both small farmer working capital loans and lines of credit that finance raw material procurement by processors such as grain mills.

When and why to use it

The system may be used in the context of a commercial value chain composed of small farmers and cooperatives capable of producing consistent grain surpluses that cover the value of input and other working capital needs. It also requires a competitive processing sector and a local consumer market capable of absorbing the end-product. It also requires a solid bank with a demonstrated interest in taking a leadership role in structuring the value chain. Finally, the system is further reinforced by the presence of crop insurance products that provide coverage against climate risks.

What risks are addressed by this system

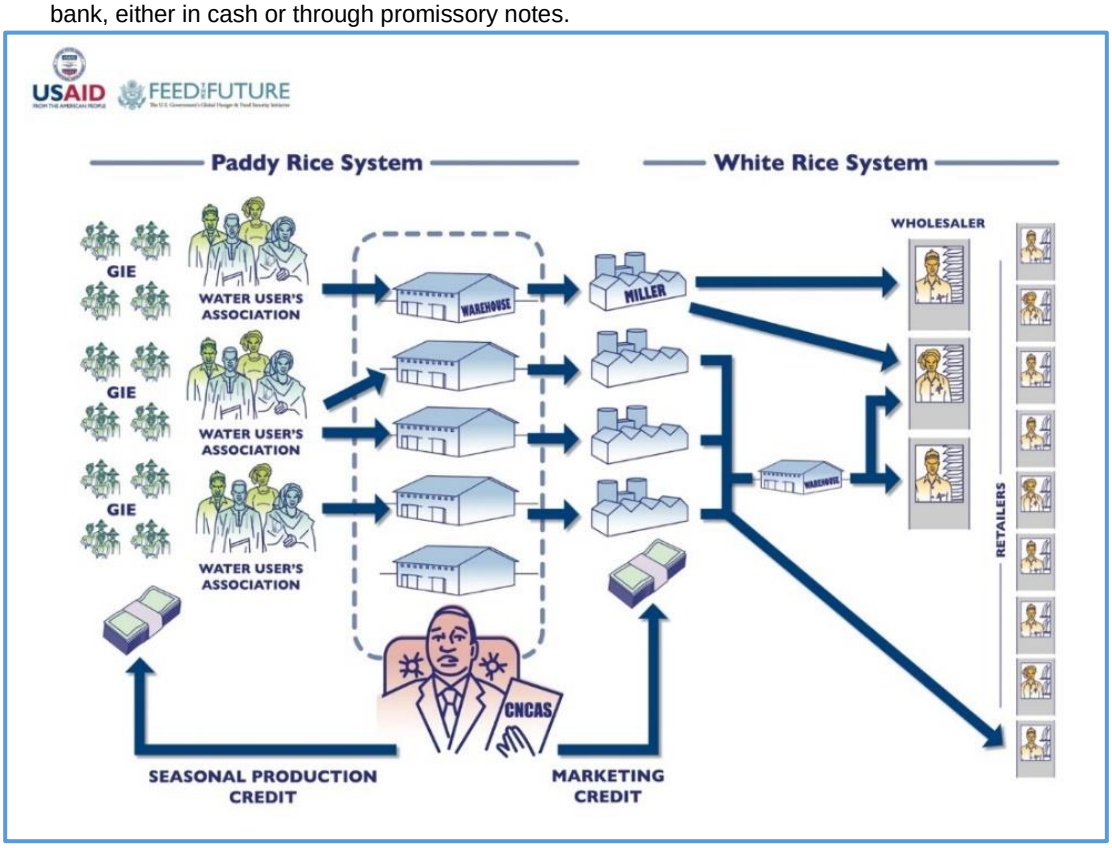
The system provides the farmer with a system that enables them to access quality inputs through loans that are secured by a structure demand of well-funded buyers. Transactions are negotiated and settled under the oversight of the banks, who have a stake in ensuring the success of both parties. The result is a stable price, higher than the spot prices, because millers will pay more for the additional benefit of predictable quality and the logistics efficiency of consolidated stocks. Loans are further secured against climate and agronomic risks by being bundled with a crop insurance product. The system creates a coordinated supply chain with significant productivity gains that secures the industry against downward shifts in world prices.

How does it work (see diagram below)?

- At the outset, **Production Working Capital loans** are made by banks to farmer organizations to finance seed, inputs and land preparation costs. Loans are disbursed by the bank through a voucher system that can be redeemed by authorized input suppliers and service providers. The loans are secured by the commitment by the group to consolidate at a designated warehouse a volume of grain corresponding to the loan value, as well as the purchase of a crop insurance contract to guarantee the bank against climate and pest risks. The volume of grain to be delivered by the farmer as loan reimbursement is calculated based on an indicative price. The price is established at the time of harvest, following a negotiation chaired by the bank and involving the farmer organizations and the rice mills, and reflects current market conditions. Reimbursements are tracked by a team of field stock auditors delegated by the banks that are tasked with verifying the accuracy of the data transmitted to the banks by the warehouse clerks at the consolidation points.

- At harvest, the stockpiles created by the in-kind reimbursements of the production loan are then marketed through **Commercial Lines of Credit** accessed by rice mills that finance the purchase of the consolidated grain from the farmers. As a mill signs contracts with the farmer groups and acquires their grain stocks for processing, the mill's commercial line of credit is activated and then secured through the transfer of ownership of the grain stocks. The bank then draws from the mill's line of credit to clear the farmers' outstanding loans, freeing them to start a new production cycle. These lines of credit are not limited to the grain stocks associated with production loan reimbursements; they also provide cash flow for the mills to purchase residual surpluses from individual farmers and CNs. These subsequent purchases will be priced through spot negotiations.

- As the grain is hauled from the farmers' storage point to the mill, where it is stored, and then processed into commercial white rice, an on-site agent from a **Collateral Management Firm** mandated by the bank monitors the total volume and value of the un-milled and milled grain that is stored on the premises. These figures are promptly reported to the bank's account managers, who check them against the outstanding balance of the commercial line of credit. The line of credit is reimbursed as the finished product is sold to wholesalers and payments are received by the miller's bank, either in cash or through promissory notes.



This system depends on getting banks' recognition of the collateral value of locally produced paddy rice and locally milled rice, which until then was only allowed for stocks of imported rice stored in bonded warehouses. This requires that the following basic conditions are met: i) the farmers need to respect basic quality standards that will guarantee productivity and marketability of the processed product; ii) the market demand for the end-product needs to be sustained and liquid; and iii) the farmers and millers need to demonstrate a capacity to operate profitably within the productivity and price boundaries set by local and international competition.

These conditions are met by coordinating the introduction of the system with capacity building in best practices and quality control, mechanized harvest and grain consolidation services to reduce logistics costs, transition of mills to more sophisticated and productive equipment, and large consolidated volumes of recognized and branded quality that enable mills to service the demand of urban markets with an uninterrupted supply. All of the above was achieved by complementary Naatal Mbay facilitation actions involving farmer organizations, millers, post-harvest service providers, financial institutions and market promotion.

How to apply it in a development project context

- Identify leading organizations: Farmer cooperatives, Millers and a Bank
- Identify available storage space as consolidation points
- Develop a common set of product norms & standards as well as associated testing protocols. These need to be understood and accepted by all parties. Field trainings of all stakeholders need to be held to ensure full applicability.
- Hold training sessions with all parties, separately and jointly, to define the value chain cost structure from field to fork and identify bottlenecks as well as cost reduction possibilities through proper attributions of tasks and improvement of quality level. These trainings become the basis of price setting negotiations.
- Amendment of farmer and miller contracts to include grain collateral clauses.
- Tri-party in-kind payment price negotiation at harvest time.
- Launch of the first consolidation round at selected warehouses and enforcement of quality standards.
- Development of an inventory tracking tool for the bank and stakeholders to monitor reimbursements and off-take on a continuous basis at all locations.
- Clearance of farmer loans against miller contract purchases funded by mirror line of credit.
- Launch of second cycle.

Key lessons learned and tips for applying the tool

- High investment in development and training of all parties in a simple but efficient product norm and testing protocol.
- Price setting should include a sharing of the benefits of the consolidation process and result in a relatively higher price than current market level.
- IT approaches that support the system should be simple to deploy and allow for incremental complexity. The system should allow for redundancy and cross-checking controls by third party services such as audit firms or inventory monitoring services.
- Banks should see project support in systems as a one-off design support and be ready to absorb oversight costs quickly.
- Data and transparency is key. The system needs the development of a strong self-tracking capacity by both farmer groups and millers.

Results to date

In Senegal, the system now links more than 20,000 rice farmers to 20 rice mills. As of 2017, lending to the rice sector has quadrupled, resulting in the annual procurement of $20 million of rice farmgate, which corresponds to 80,000 tons of paddy rice. Loan default rates have gone down more than 15% and recovery rates now exceed 95%. The reduction in perceived risks has resulted in increased private investments in farm equipment, an improvement of rice milling equipment and capacity.

For more information: (jmvoisard@rti.org / RTI International)

Presentation B.3:

ACRE Africa's Replanting Guarantee

Stewart McCulloch, VisionFund International, **on behalf of ACRE Africa**

ACRE Africa's Replanting Guarantee Initiative:
A summary of lessons learnt and challenges encountered

Presented by

acre AFRICA

During IFAD PARM K-sharing Event on "Agricultural Risk Management: practices and lessons for development

2017

About ACRE Africa

Agriculture and Climate Risk Enterprise (ACRE) Africa is a for-profit social enterprises operating as an insurance intermediary to facilitate agriculture and climate risk solutions for smallholder farmers across Africa. Registered as an insurance surveyor registered in Kenya, an agent in Rwanda and Tanzania and operating as a technical partner in other African countries, ACRE Africa works with insurers and other stakeholders in the agricultural insurance value chain to facilitate access to insurance products by smallholder farmers.

In the past eight years, ACRE Africa has:

- Conducted countrywide feasibility studies in Kenya, Tanzania and Rwanda as well as region/client specific ones
- Customized insurance products reaching a large number of smallholder farmers through increasingly better route and speed to market using a market-led product design approach.
- Developed and monitored successful weather indices for major cereals, food crops and cash crops
- Successfully designed and launched an easily adaptable mobile-based registration, compensation platform with embedded geotag instructions in Kenya and Tanzania.
- Re-introduced in the market an improved indemnity cover that addressed the bottleneck of frivolous claims by introducing a mandatory care calendar for insured cows. This is currently being sold by two local insurance companies.
- Developed training manuals and conducted trainings for farmers, agribusinesses, policy makers and local partners.

ACRE Africa's Impact

- Cumulatively, by 2016, over 1,000,000 farmers in Kenya, Tanzania and Rwanda insured
- Insured farmers invested 20% more in their farms and earned 16% more than uninsured farmers

Replanting Guarantee

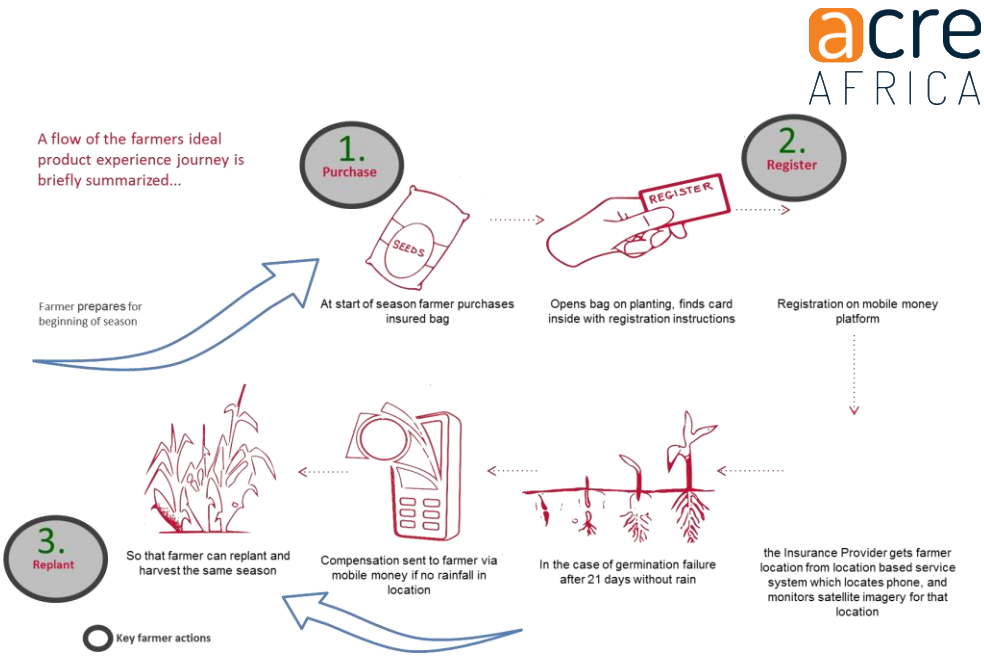
In 2013, ACRE Africa (then Kilimo Salama) carried out a survey that indicated that 49% of smallholder farmers' suffer production losses arising from germination failures. This survey result gave rise to the innovative Replanting Guarantee Product. In collaboration with partners, ACRE Africa pioneered the market-led, data-driven solution using participatory distribution strategies and risk validation processes to enhance product simplicity, affordability and accessibility by smallholder farmers.

How it works

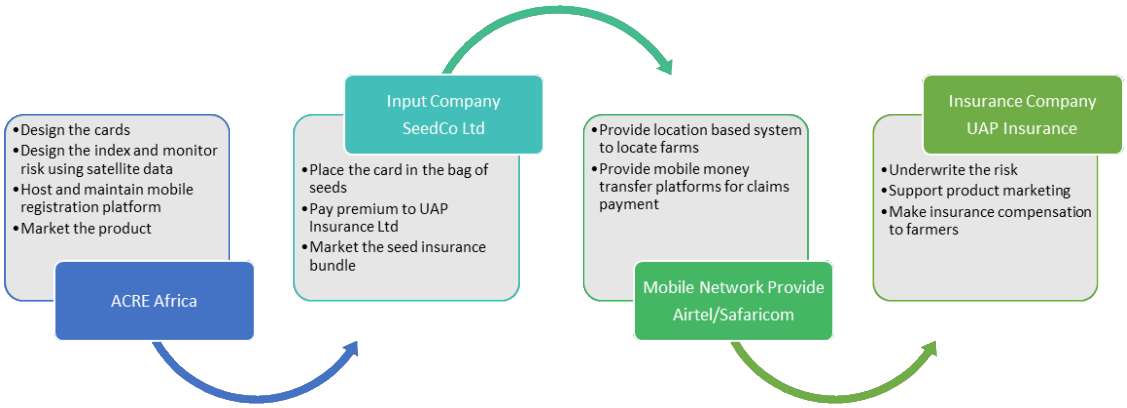
The Seed Replanting Guarantee (RPG) product is implemented through partnerships with, Seed Co Limited, Safaricom Ltd, Airtel Ltd and UAP Insurance Ltd. The Replanting Guarantee Product (RPG) is delivered through a card bearing instructions and a unique code placed in Duma 43 maize seed packets. The instructions prompt farmers' to register for insurance using a USSD code on their mobile phones.

Once registered, ACRE Africa monitors the farmer's location for adverse weather events. An insurance payment is triggered if the weather index indicates a loss of the farmer's inputs investment. The RPG coverage - valid for 21 days upon registration (germination) - allows the customer to purchase another bag of inputs so as to not miss the entire planting season.

www.acreafrica.com | enquiries@acreafrica.com | +254 719249615



Partners Roles and Responsibilities



Models, Lessons and Challenges

The RPG product has a long history or pilot tests and reviews. In an effort to get the right mix of strategies, ACRE Africa has tested three models:

1. **Use of QR codes for registration** – This model was applied during the testing phase of the RPG concept. At the time, without a solid partnership with the seed companies, Kilimo Salama (now ACRE Africa) generated QR codes and attached them to inputs being sold at the agrodealers' shops. The Kilimo Salama team then trained agrodealers on how to register the codes and inform the farmers' of the registration and the benefits of the product.
2. **Use of SMS based registration** – Upon a successful partnership engagement with SeedCo Ltd, Kilimo Salama introduce cards within the bags of seeds. Each card had a unique code with instructions for farmers to send the code in a text message to Kilimo Salama.
3. **Use of USSD code based registration** – This model improved on the SMS based registration system, applying a USSD code to each unique card code. This model is currently being used and has had more successes recorded compared to any other model.

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acre AFRICA

	Snap Shot – Lessons, Challenges, Solutions and Opportunities
Lessons	• The QR code system is capital intensive in terms of purchase of smart phones – majority of the agrodealers have feature phones • Use of QR codes requires intense training each season – agrodealers forgot the process immediately after the season while some misplaced their phones • SMS based registration system resulted into too many messages to the farmers – farmers were uncomfortable with the frequency of messages • Farmers are comfortable with simple registration systems – the USSD code • Replacing alphabetic codes with numeric codes resulted in a 5% increase in uptake • The USSD code success is built on its mimicry of the airtime purchase process which was introduced during the entry of mobile phones into the market in the 1990's • Farmers are able to interpret the messages feedback after registration • Gender: men buy the inputs (seeds); women do the planting – resulting in majority of the registered farmers being women since registration is done during planting • There is a need to extend the policy cover beyond the seed germination stage to cover post germination to weeding stage • There is a need to actively engage the farmers to create trust and relations with the program, improve the compensation and marketing incentive plans

Challenges	• Limited product awareness and product knowledge among the targeted smallholder farmers due to:
	  ○ Limited partner reach – the RPG product is currently distributed using one seed company only (SeedCo has a marketshare of 5% in Kenya)
	  ○ Product awareness drives are too cost intensive compared to the product revenue structure yet the most effective awareness channels require product promoters remuneration, radio campaign fees and incentives for agrodealers
	• One of the major market needs is seed authentication which interferes with the purpose of the RPG registration card
	  ○ some farmers think the card inside is for seed authentication and therefore throw away the card once they see it
	• Negative perception about insurance in general
	• Agro-dealers are very busy during the planting season and therefore do not provide adequate information on the RPG product and support to farmers to register for the RPG product
	• Competing insurance products in the market e.g. the Government subsidized cover confuse the farmers

Way Forward	• Use of low touch interventions like digital messaging that are cost effective and easy to use for product education • Partnerships with farmers to apply peer-to-peer trainer of trainers methodology for awareness creation and information dissemination • Engagement of local administration and farmer leaders to have the RPG product integrated in the local social structures to promote a sense of ownership • Introduction of ACRE Africa's Top Up Cover to cover the full season risks

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Panel C: Using farm practices to manage risks

Farming practices can be used to face risks, by accelerating the regeneration of the soil, by helping farmers protect their ecosystems or enabling them to shift practices to respond to weather changes.

Presentation C.1:	Hydroponic grass Indra Mallo, MAVIM
Presentation C.2:	Farming with Indigenous Micro Organisms Shindhe Shiva Shankar, SARRA
Presentation C.3:	Assisted Natural Regeneration Alice Brié, IFAD

Presentation C.1:

Hydroponic grass

Indra Mallo, MAVIM

AGRICULTURE RISK MANAGEMENT:
PRACTICES & LESSONS LEARNT FOR DEVELOPMENT

K SHARING & LEARNING WORKSHOP
ROME 25TH OCTOBER 2017

HYDROPONIC & AZOLLA FODDER INITIATIVE

PRESENTED BY

MAVIM

MAHILA AARTHIK VIKAS MAHAMANDAL

GOVT. OF MAHARASHTRA, INDIA

THE PROBLEM

DROUGHT

Period 2012 to 2014

Acute shortages of drinking water; green fodder;

Result - Distress sale of milch animals and rural migration

Threat to Programme implementation of Micro Livelihood Plans (MLP) through rearing of goat, and dairy animals.

Criteria to measure the contribution of initiative to ARM - the retention of the MLP animals and repayment of the micro credit bank loans availed by the women Self Help groups.

THE PROBLEM

DROUGHT

Average rainfall received less than 200mm during three years between 2012 to 2014.

Acute shortages of drinking water; green fodder;

Result - Distress sale of milch animals and rural migration

Threat to Programme implementation of Micro Livelihood Plans (MLP) through rearing of goat, and dairy animals.

The criteria used to measure the contribution of our initiative to the management of this agricultural risk was the retention of the MLP animals and repayment of the micro credit bank loans availed by the women Self Help groups.

HYDROPONIC FODDER

AZOLLA BED PREPARATION

STRENGTHS

- Easy to grow in small spaces – plastic trays and soil bed measuring 2/4ft to 3/6ft
- Affordable investment
- Quick growth – Hydroponic within 8 days; Azolla within 10 to 15 days after initiation, repeat harvest every 3 days
- Lack of substitute of other green fodder
- Fodder rich in micro nutrients for animals, result visible in their improved health and reduced mortality
- Used for other household livestock as well namely poultry
- Reduced the drudgery of collection and gathering of fodder material for the women due to its ease of collection by hand, and it's location next to the animals shed

ECONOMICS

Sr. No.``1	Indicators	Azola	Hydrponic
1	Infrastructure cost (per unit per member)	Rs.1000/- (15.36 USD)	Rs.2100/- (32.27 USD)
2	Human labor (In Hours)	1 Hr per day	1 Hr per day
3	Drudgery	Minimum	Minimum
4	Use of the initiative	1) Major use for Goats 2) Used as supplementary food	1) Major use for Dairy, Goats 2) Used as supplementary food
5	Output	1) The weight of the animal increased by 2 to 3 Kgs 2) Immunity of animal increased 3) Natural glow on animal	1) The fat content in milk increased from 4 to 5.50 2) Immunity of animal increased 3) Milk production increased
6	Out come	1) The cost of fodder reduced 2) Cheapest supplementary food made available at home 3) Drudgery reduced	

WEAKNESSES

Hydroponic -

- **Liable to get <u>infected</u> by fungus if not taken out within 7-8 days**
- **The grown fodder needs to be kept in the sun for at least an hour to reduce the <u>smell</u> before feeding it to the animals**
- **Regular spray of water every hour during peak summer time.**
- **Attention to <u>detail</u> necessary to <u>reduce yield loss</u>**

Azolla -

- **Liable to loss if not taken out on time after full germination in the prepared bed measuring 2/4ft to 3/6ft**
- **Maintain <u>water level</u> everyday at around 6inches**
- **Needs <u>change of pond material</u> - dung/ash/soil/water every three months. Need to maintain proper proportion of material of 2kilos each.**
- **The pond needs <u>overhead shade</u> in such a manner that the azola receives morning sun yet is shaded from the strong afternoon sun rays.**

LESSONS LEARNT

In times of the drought crisis, people adopted and adapted to a new practice which had quick and visible results

It reduced daily input cost of cattle feed by at least Rs.50 (0.77USD),

It improved the animal's health and in turn improved fat content of milk and so fetched better returns for the farmer.

It is also accepted by different domestic animals such as poultry, cattle, goat, and even fish, raising their immunity to various diseases.

Later, as we scaled up our micro livelihood plan interventions, this fodder initiative became part of the package of practices such that the women farmers could benefit from the beginning itself.

SANDEEP RAMESH MARATHE
Regional Monitoring & Evaluation officer
NASHIK REGION
91- 8424000809
rmonashik.mavim@gmail.com

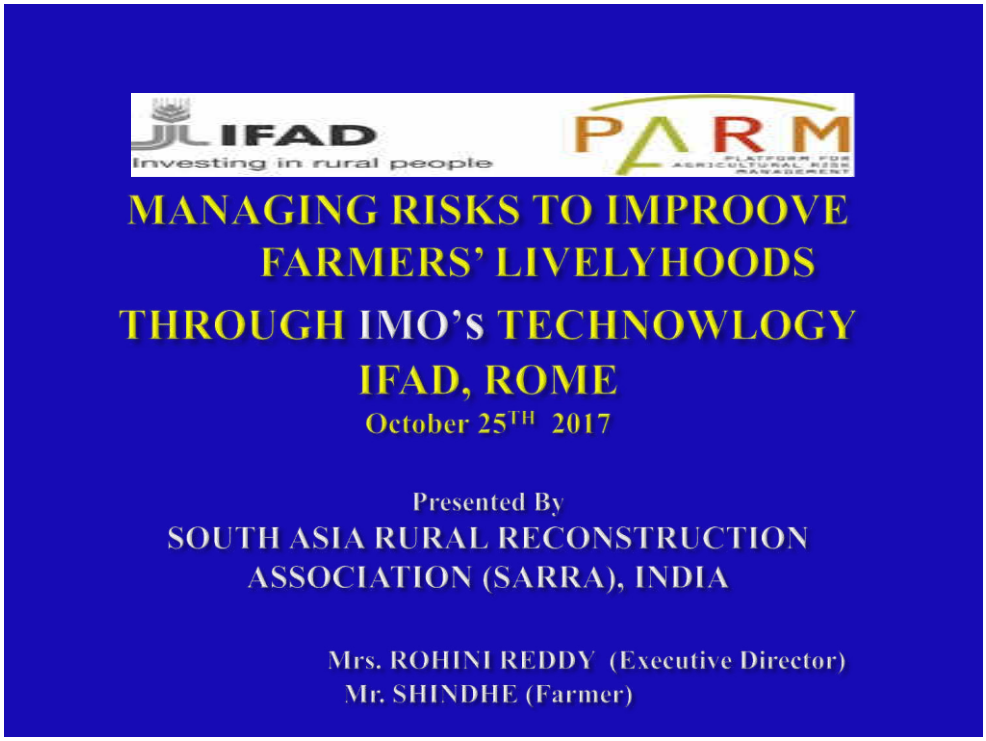
SUCCESS OF AZOLA & HYDROPONIC PLANT CULTIVATION PROJECT

1. I have intervened in the development of processes related to Azola and other hydroponic plant cultivation for needy women of the Self Help Groups which has resulted in the reduction of production cost and increase in their family income.
2. As a result of successful implementation of pilot project, demand for Azola and hydroponic plant cultivation techniques increased in the nearby areas.
3. We are looking forward to replicate this project to the maximum possible extent so that needy women can be

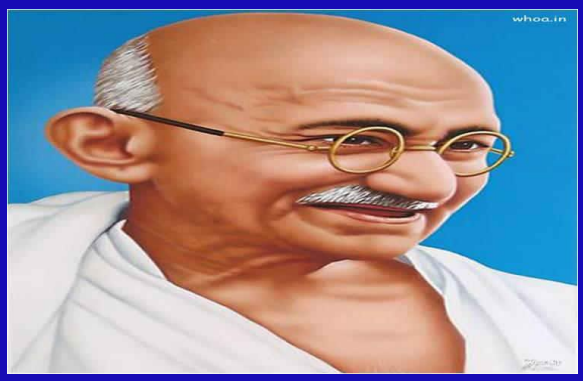
Presentation C.2:

Farming with Indigenous Micro Organisms

Shindhe Shiva Shankar, SARRA



"MOTHER EARTH HAS ENOUGH TO FEED THE NEEDY, BUT NOT FOR THE GREEDY"



-MAHATMA GANDHI

NO CULTURES WITHOUT AGRICULTURE

- **SUSTAINABLE FARMING PRACTICES PROTECTS BIO DIVERSITY AND ALSO HELPS TO PRESERVE TRADITIONAL SEEDS FOR THE SECURITY OF THE LOCAL FOOD SYSTEMS.**

AGRICULTURAL RISKS FACTORS

- **ERRATIC RAIN FALL, NEGLECTED RAIN FED FARMING SYSTEMS** ----- CLIMATE CHANGE
- **LOSS OF SOIL FERTILITY** ----- EXCESSIVE USE OF CHEMICAL FERTILISERS AND PESTICIDES
- **DISAPPEARANCE OF TRADITIONAL SEEDS AND PRACTICES** ----- MONOCROPPING

AGRICULTURAL RISKS FACTORS

- **LAND GRABBING AND ILLEGAL MINING** ----- DEFORESTATION
- **DEPLETION OF GROUND WATER RESOURCES** ----- OVER EXPLOITATION & NO RECHARGING MECHANISMS
- **LACK OF VALUE ADDITION AND MARKETING FACILITIES** ----- LACK OF INFRASTRUCTURE, STORAGE, PROCESSING AND MARKETING

AGRICULTURAL RISKS FACTORS

- GENDER BIAS IN FARMING ----- INFLUENCE OF CULTURE AND CUSTOMS
- INFLUENCING THE FARMERS WITH SUBSIDIES ----- TOP DOWN POLICIES AND PRACTICES
- FARMER FRIENDLY TECHNIQUES AND TOOLS FOR SMALL LAND HOLDING FARMERS FOR WOMEN & MEN ----- LACK OF COMMUNICATION BETWEEN SCIENTIFIC RESEARCH INSTITUTES AND FARMING COMMUNITY

AGRICULTURAL RISK REMIDIES

- PROPAGATION OF DROUGHT AND FLOOD RESISTANT TRADITIONAL CROPPING SYSTEMS
- APPLICATION OF INDIGENOUS MICRO ORGANISMS (IMOs) AND TRADITIONAL KNOWLEDGE TO ENHANCE THE SOIL FERTILITY
- MIXED AND INTER CROPPING OF LOCALLY AVAILABLE SEEDS

AGRICULTURAL RISK REMIDIES

- AFFORESTATION AND STRONG POLICIES BY GOVERNMENT TO PROTECT AND CONSERVE THE FORESTS
- INTRODUCING WATER RECHARGING AND HARVESTING STRUCTURES
- RESPECT THE FARMERS TRADITIONAL KNOWLEDGE AND PRACTICES AND DOCUMENT FOR THE FUTURE GENERATIONS BENEFITS

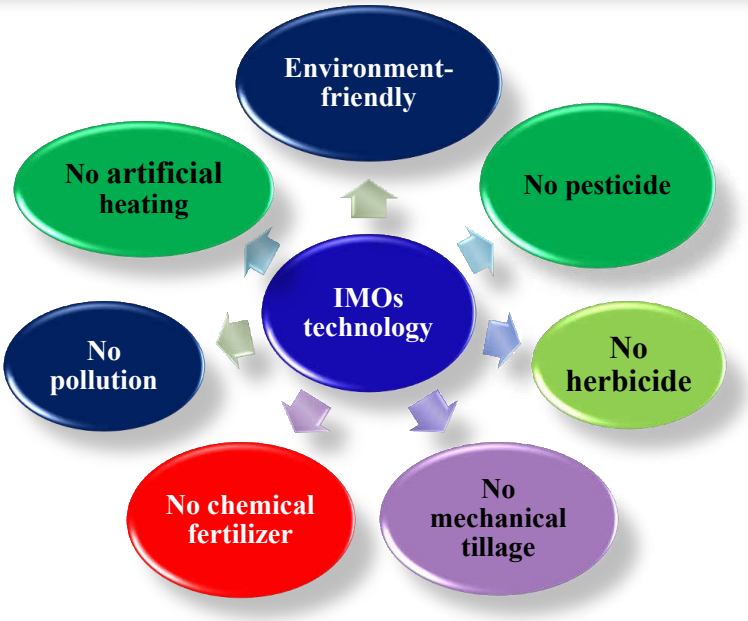
AGRICULTURAL RISK REMIDIES

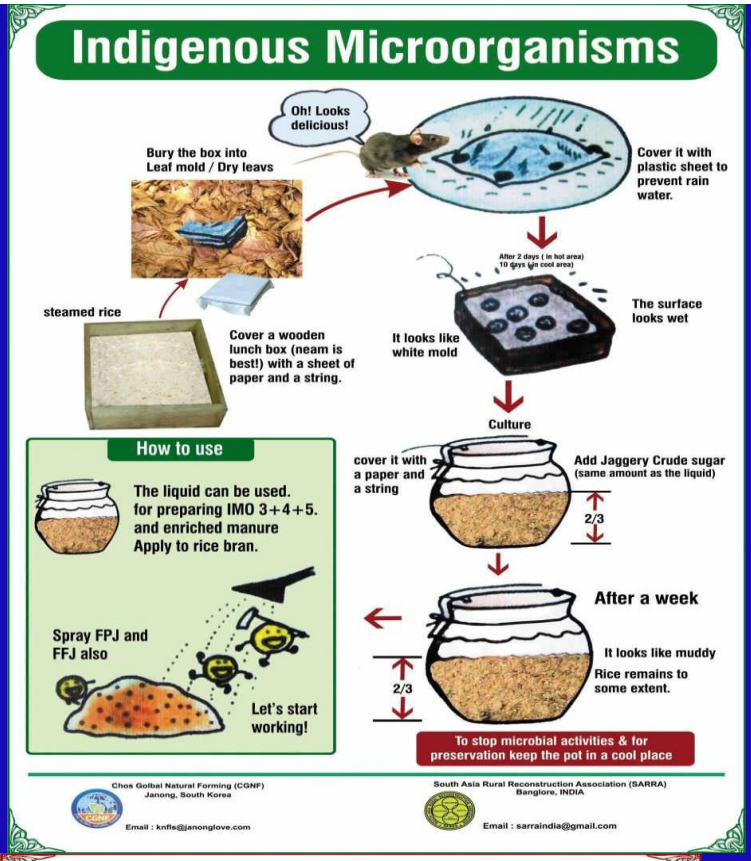
- EMPOWERMENT OF FARMERS ORGANISATIONS AND SCIENTIFIC COMMUNITIES NETWORKS
- PROMOTE TRADITIONAL SEED BANKS INVOLVING THE WOMEN

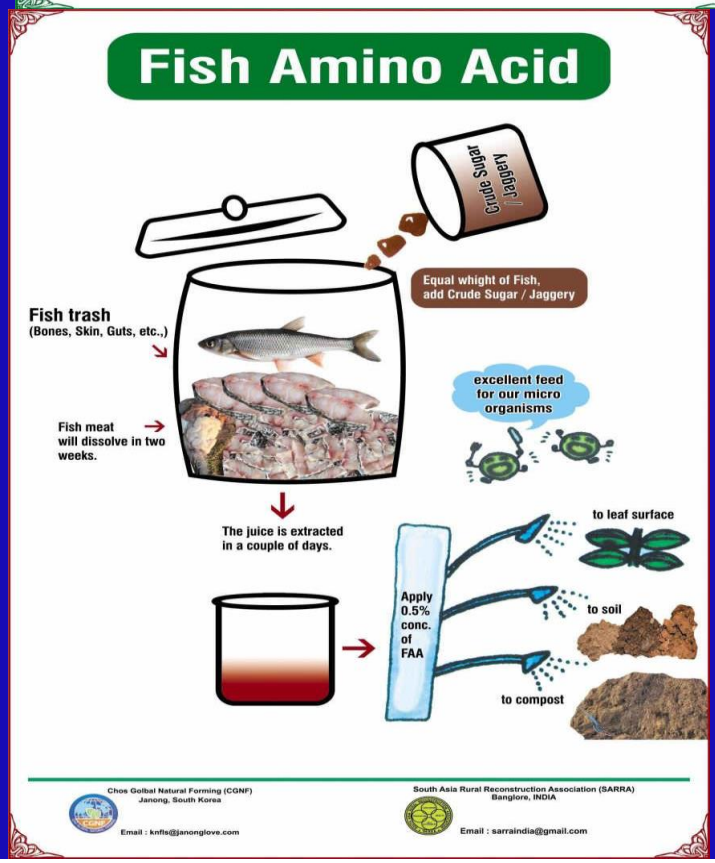
IMO'S KNOWLEDGE

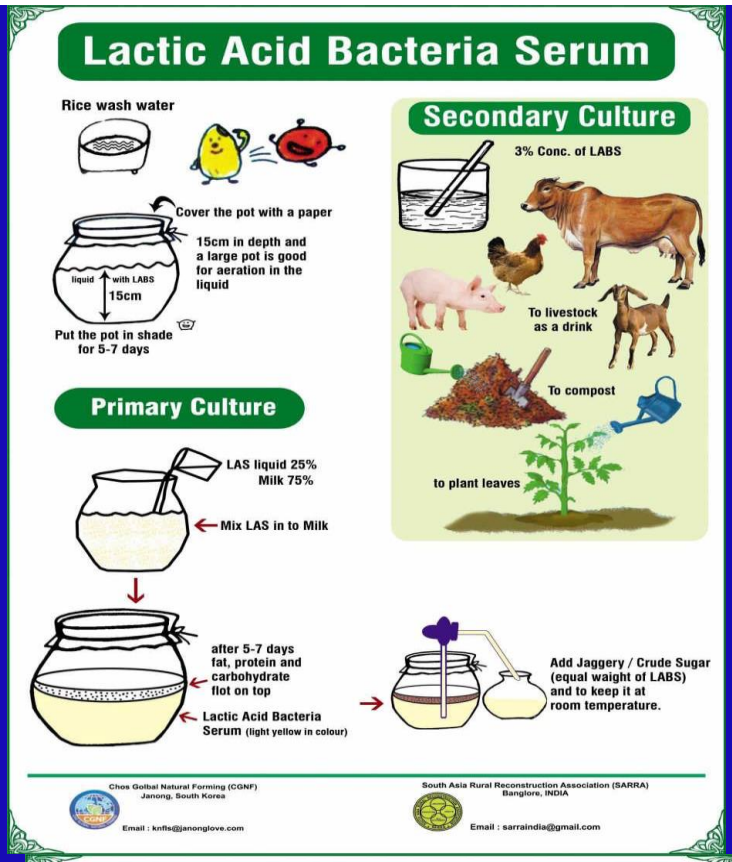
- SIMPLE
- PRACTICAL
- ECONOMICAL
- REPLICABLE
- HIGHLY INNOVATIVE AND INDIGENEOUS USE OF LOCAL MATERIALS LIKE CHAR COAL, RICE, GINGER, GARLIC, PLANT JUICES, FRUIT JUICES, EGG SHELL, COW BONE, FISH ETC..

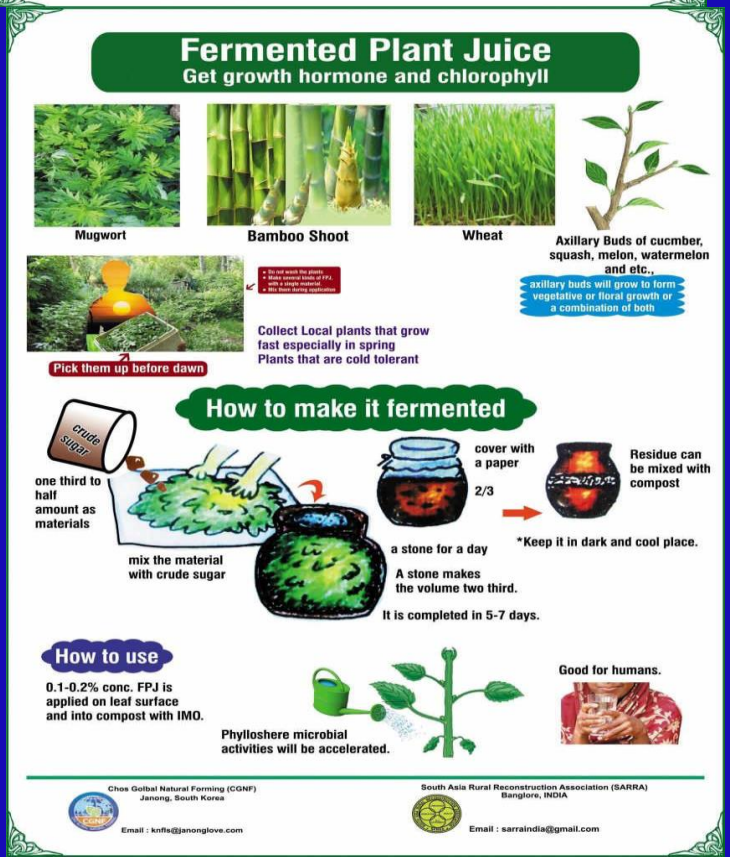
Concept of IMOs Technology an over view




Indigenous Microorganisms
Oh! Looks delicious!
Bury the box into Leaf mold / Dry leavs
Cover it with plastic sheet to prevent rain water.
After 2 days (in hot area) 10 days (in cool area)
The surface looks wet
It looks like white mold
steamed rice
Cover a wooden lunch box (neam is best!) with a sheet of paper and a string.
Culture
How to use
The liquid can be used. for preparing IMO 3+4+5. and enriched manure Apply to rice bran.
cover it with a paper and a string
Add Jaggery Crude sugar (same amount as the liquid)
2/3
After a week
Spray FPJ and FFJ also
It looks like muddy
Rice remains to some extent.
2/3
Let's start working!
To stop microbial activities & for preservation keep the pot in a cool place
Chos Golbal Natural Forming (CGNF) Janong, South Korea
Email : knfls@janonglove.com
South Asia Rural Reconstruction Association (SARRA) Banglore, INDIA
Email : sarraindia@gmail.com


Fish Amino Acid
Crude Sugar / Jaggery
Equal whight of Fish, add Crude Sugar / Jaggery
Fish trash
(Bones, Skin, Guts, etc.,)
excellent feed for our micro organisms
Fish meat will dissolve in two weeks.
The juice is extracted in a couple of days.
to leaf surface
Apply 0.5% conc. of FAA
to soil
to compost
Chos Golbal Natural Forming (CGNF) Janong, South Korea
Email : knfls@janonglove.com
South Asia Rural Reconstruction Association (SARRA) Banglore, INDIA
Email : sarraindia@gmail.com


Lactic Acid Bacteria Serum
Rice wash water
Cover the pot with a paper
15cm in depth and a large pot is good for aeration in the liquid
liquid
with LABS
15cm
Put the pot in shade for 5-7 days
Secondary Culture
3% Conc. of LABS
To livestock as a drink
To compost
to plant leaves
Primary Culture
LAS liquid 25%
Milk 75%
Mix LAS in to Milk
after 5-7 days fat, protein and carbohydrate flot on top
Lactic Acid Bacteria Serum (light yellow in colour)
Add Jaggery / Crude Sugar (equal waight of LABS) and to keep it at room temperature.
Chos Golbal Natural Forming (CGNF)
Janong, South Korea
Email : knfls@janonglove.com
South Asia Rural Reconstruction Association (SARRA)
Banglore, INDIA
Email : sarraindia@gmail.com


Fermented Plant Juice
Get growth hormone and chlorophyll
Mugwort
Bamboo Shoot
Wheat
Axillary Buds of cucmber, squash, melon, watermelon and etc.,
axillary buds will grow to form vegetative or floral growth or a combination of both
Pick them up before dawn
Collect Local plants that grow fast especially in spring
Plants that are cold tolerant
How to make it fermented
crude sugar
one third to half amount as materials
mix the material with crude sugar
cover with a paper
2/3
a stone for a day
A stone makes the volume two third.
It is completed in 5-7 days.
Residue can be mixed with compost
*Keep it in dark and cool place.
How to use
0.1-0.2% conc. FPJ is applied on leaf surface and into compost with IMO.
Phylloshere microbial activities will be accelerated.
Good for humans.
Chos Golbal Natural Forming (CGNF)
Janong, South Korea
Email : knfls@janonglove.com
South Asia Rural Reconstruction Association (SARRA)
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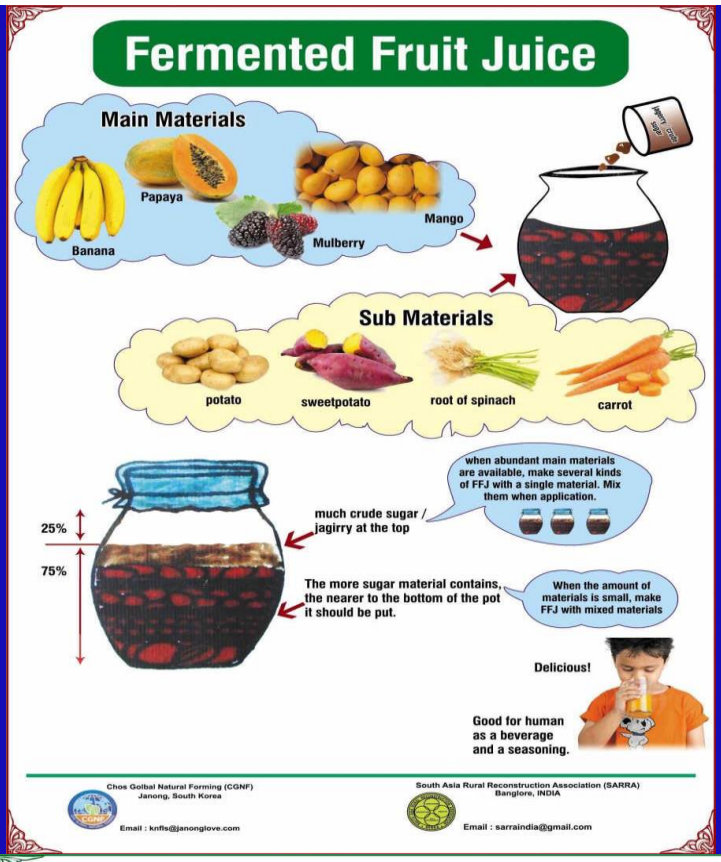
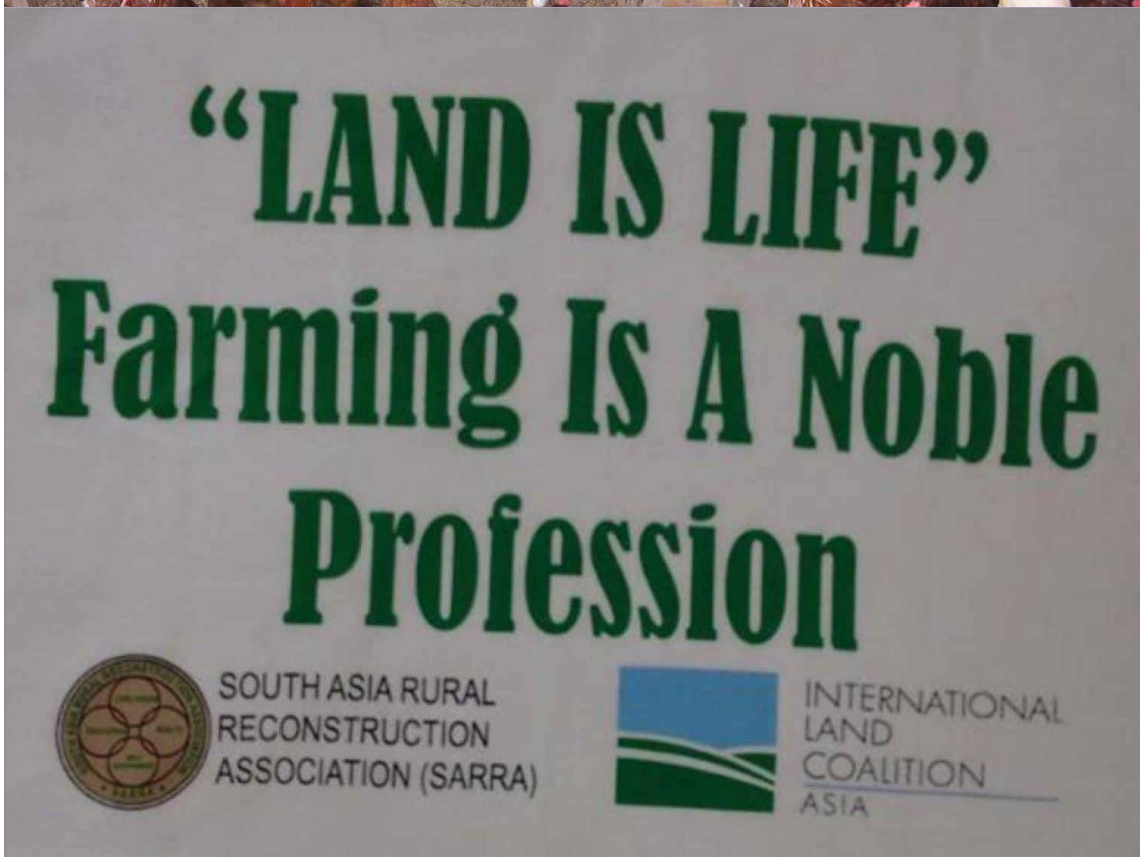
Email : sarraindia@gmail.com


Fermented Fruit Juice
Main Materials
Banana
Papaya
Mulberry
Mango
Sub Materials
potato
sweetpotato
root of spinach
carrot
25%
75%
much crude sugar / jagirry at the top
when abundant main materials are available, make several kinds of FFJ with a single material. Mix them when application.
The more sugar material contains, the nearer to the bottom of the pot it should be put.
When the amount of materials is small, make FFJ with mixed materials
Delicious!
Good for human as a beverage and a seasoning.
Chos Golbal Natural Forming (CGNF)
Janong, South Korea
Email : knffs@janonglove.com
South Asia Rural Reconstruction Association (SARRA)
Banglore, INDIA
Email : sarraindia@gmail.com


Oriental Herbal Nutrients
CINNAMOMUM
GARLIC
GINGER
Rice wine / beer
(same amount as materials)
After 12 hours
Jagerry / Crude sugar
(one third of materials)
It ferments in 4-5 days
Add distilled liquor
1/3
2/3
The extracte is redy in 10 - 14 days
The essence can be extracted 3 time.
How to use
for seed treatment
*when plants are weakened
FPJ 5% conc. + BRV 5% conc. + OHN 1% conc
Spray to leaves to stop Downy mildew and powdery mildew will be stopped.
Chos Golbal Natural Forming (CGNF)
Janong, South Korea
Email : knffs@janonglove.com
South Asia Rural Reconstruction Association (SARRA)
Banglore, INDIA
Email : sarraindia@gmail.com

POLUTION FREE POULTRY (PFP)



SARRA (NES-INDIA) WITH HELP OF INTERNATIONAL LAND COALITION PROGRAMME

- IMPLEMENTING THE FAITH GARDEN PROGRAMME IN SEVEN PROVINCES WITH THE TRIBAL COMMUNITIES OF 200 FAMILIES AS A PILOT PROJECT

FAITH GARDEN

FAITH GARDEN

FAITH GARDEN

FAITH GARDEN

FAITH GARDEN

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

FARMING WITH IMO'S

THANK YOU

Rohini Reddy

Mobile: 00-91-99859-47003

E-mail: kodirohini@gmail.com

www.cgnfindia.com

Presentation C.3:

Assisted Natural Regeneration

Alice Brié, IFAD

Implementing Assisted Natural Regeneration: The case of the PASADEM/GEF project in Niger

Assisted natural regeneration is an agro-forestry technique that aims to help small trees to better growth and so to preserve forestry resources, to better exploit field and woods. The purpose is to perverse trees covering and so to reduce risk of drought and land degradation

The presentation will showcase Niger's experience, through an IFAD funded project, in implementing the Assisted Natural Regeneration technique to improve land restoration and climate change resilience.

The purpose here is not to present this technique as innovative experience to manage risk in agriculture because ANR is a well know practice to management the risk of land degradation. What will be presented is the institutional process and supported measures that went with the implantation of this technique and which allowed communities in the project area to appropriate the method and which enable concrete impact on agro-production, on the environment as well as on food security. To measure the contribution of ANR to actually reduce the risk of land degradation and desertification with try evaluated:

The Impact on the environment

ANR has led to a positive change in the quantity, quality and awareness of the sustainable management of the natural resources of communities in the project area; it has increased the density of trees from 80 to 150 trees per hectare with a soil cover up to 70%. The ecological, economic and financial value of trees has been highlighted on ANR farms. This has reduced the phenomenon of uncontrolled exploitation of wood resources. Intercalary crops which were impossible are nowadays-possible giving hope to the farmers to increase agricultural productivity, the food security and to better manage risk link to increasing desertification and land degradation.

The Impact on population access to technology and productive resources:

Implementation of the ANR technique had immediate effects on the situation of communities. Between 2012 and 2015, ANR was adopted be 60 thousand farmers in more 150 villages and promoted on 90 thousand ha in the project area. The level of adoption of the ANR has increased from 40% in 2012 to 60% in 2015. Communities have appropriated the technique because of its impact on productivity and immediate effects on their environment. In terms of advantage provided, ANR ranked first with 60% of those surveyed and so the project successfully completed the scaling up of the extension of the ANR, through the support of specialized NGOs in association with a Rural Market Group

The Impact on agro-production:

The ANR technique, with its windbreak action, has allowed seeds to better fix and was responsible of a production increase of 150 kg / ha. The technique has also led to an increase in the density of wood on the plots and land productivity increased by 10%.

The Impact on food security:

Sustainable land management practices, which included ANR, have contributed to the improvement of food production. Gains in cereal production were fairly significant and estimated at 14 thousand tonnes per year. With this increase in cereal production in the area through better land management, the number of people fed in addition was estimated at 60 thousand per year. Including timber sales services through ANR and the guard service of the recovered sites, the number of people fed in addition was more than 119,390 people per year.

ANR provides a range of benefits. ANR is considered to:

- be a cost-efficient way of regenerating forest,
- contribute to strengthening biodiversity,
- provide hunting areas and
- increase carbon sequestration and carbon sinks which contribute to climate change mitigation.

The institutional and economic advantages of the ARN

In order to sustain ANR technique during after the project many other activities such as accompanying measures have been carried out. These activities concern; (i) the financing of "environmentally-friendly income-generating activities" for the exploitation of wood resulting from the practice of ANR; (ii) financing of beekeeping micro project through the training and equipment of ANR adopters; (iii) the financing of micro project of fish; (iv) the establishment of pastoral seed banks and the preparation of management plans for recovered sites for sustainable exploitation of restored pastoral areas.

In addition to those activities, management committee were set up to follow up on the ANR activities and its perpetuation. Those committees were elected in general assembly by the beneficiary populations. All committee members are responsible for monitoring and sustaining the sites regenerated. It is this economic valorisation of the areas recovered and secured that constituted an interesting lever to fight against poverty and rural exodus and that factor of mobilization of populations around good practices of sustainable land management.

Lessons learned

One of the most fundamental aspects that can make the success of ANR is the local community engagement. People's awareness of their impact on the environment and their own ability to reduce land degradation and desertification was made possible in this case because the project also supported the implementation of a sustainable land management platform and implementation of sensitization workshop to enable a common vision sustainable land management. This gave to communities a significant role in ANR especially in Niger where people are the main initiator of land use change.

Management committees gathered in economics interest groups, as well as management plans that they elaborated for the rehabilitated sites were central to the sustainability of the actions and in particular those committed within the framework of ANR

The implementation of this SLM platform has enable effective involvement of administrative and authorities, particularly in awareness-raising activities and knowledge sharing from technical service. This has favoured the scaling up process of ANR.

The success of ANR also link the development of income-generating activities around agricultural products, wood and non-wood forest products that offered opportunities to improve population appropriation by valuing the sites who thus felt involved with the generation of income.

Weaknesses

There is the lack of means of operation of the technical services does not allow public officials to have sufficient resources to provide constant and regular support to the populations. In the short term, their presence is still necessary to maintain the monitoring and control system and the deterrence of certain actors to exploit in anarchic way natural resources. In the medium term, only the establishment of an insurance system guaranteeing the sustainable use of resources will allow technical services to withdraw from monitoring to allow for self-control by the populations.

It has also been observed that, so far, wherever impacts are visible, there is a need to strengthen the technical, institutional and organizational capacities of the local committees so that they can fully play their roles in the management of rehabilitated site.

PARM

PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Panel D: Innovation against climate and biological risks

Designing a hybrid insurance product to cover the most vulnerable stages of plant growth, assessing losses through field pictures taken by farmers, or bringing weather information directly to farmers? Innovation can make a big difference in farmers' lives.

Presentation D.1:	Picture-based insurance Berber Kramer, IFPRI
Presentation D.2:	Bima Maono Climate and agro-insurance Stefan Hirche, KfW and Stewart McCulloch, VisionFund International
Presentation D.3:	Agro-met tools Ana Heureux, FAO

Presentation D.1:

Picture-based insurance

Berber Kramer, IFPRI

IFPRI

Picture-Based Insurance (PBI)

Berber Kramer
Markets, Trade, and Institutions Division
International Food Policy Research Institute (IFPRI)
B.Kramer@cgiar.org and @BerberKramer

Platform for Agricultural Risk Management (PARM)
K-Sharing and Learning Workshop
Rome, October 25, 2017

CGIAR | RESEARCH PROGRAM ON Policies, Institutions, and Markets
Led by IFPRI

Motivation

- **Challenges to scaling up crop insurance:**
  - Traditional indemnity-based insurance: high transaction costs, moral hazard.
  - Index-based insurance: low demand due to basis risk, lack of trust, and poor ownership.
- **PhenoCam solution**: Near-surface remote sensing (through digital repeat photography) to estimate productivity
- **Picture-based insurance:** Stream of smartphone pictures, from sowing to harvest, to help improve yield loss estimates

IFPRI

Capturing repeat pictures…

IFPRI

Why PBI?

Improved demand compared with index-based insurance

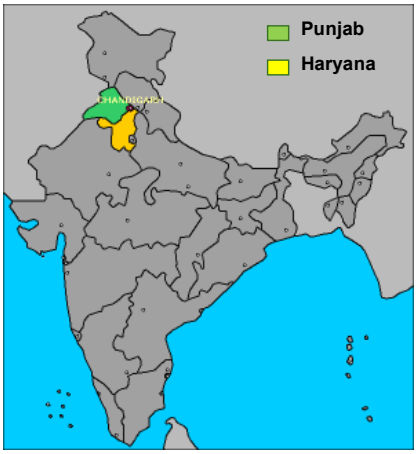
- ✓ Reduced basis risk
- ✓ Improved tangibility and engagement

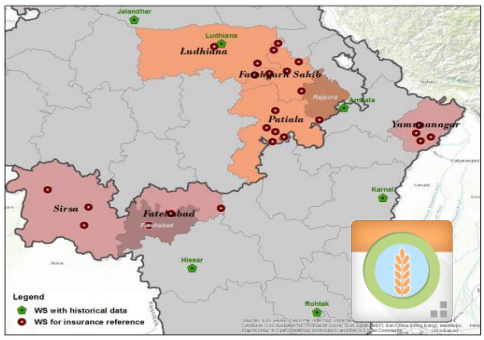
Improved supply compared with indemnity-based insurance

- ✓ Low-cost and timely loss verification
- ✓ Limiting information asymmetries

IFPRI

Formative evaluation in northwest India

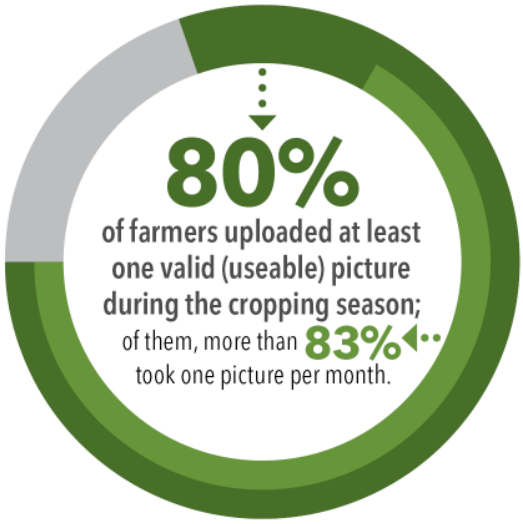




50 villages (750 farmers) received insurance in return for regularly uploading pictures of insured plots

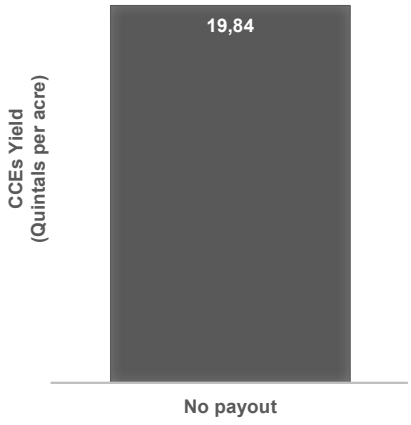
Is this approach feasible?

Are farmers willing & able to provide such camera data?



Does PBI reduce basis risk?

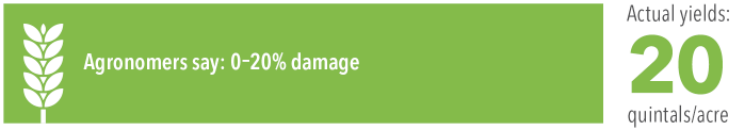
Performance of weather index-based component



IFPRI

Does PBI reduce basis risk?

Performance of picture-based insurance component



IFPRI

PICTURE-BASED LOSS ASSESSMENT INCREASES DEMAND

Willingness to pay on average (Rs.)

No adverse selection

No moral hazard

Work in Progress

- Development of algorithms that can **automate claims settlement**
  - The more data, the better
- **Economic dynamics:** Demand, adverse selection, moral hazard over time
  - Informative also for initiatives using high-resolution satellite imagery
- **Bundling with agro-advisory services**, discounts for 'good' practices
  - Improves data availability, and can help minimize moral hazard
- **We are looking for partnerships and growth in this initiative.**

THANK YOU

Collaborators

- Francisco Ceballos, Matthew Krupoff (IFPRI) and Miguel Robles (World Bank)
- Michael Mann (the George Washington University)
- Koen Hufkens (Ghent University) and Eli Melaas (Boston University)
- Borlaug Institute for South Asia and HDFC Ergo General Insurance, Ltd. (India)

Funding

RESEARCH PROGRAM ON Policies, Institutions, and Markets
CGIAR
Led by IFPRI

3ie International Initiative for Impact Evaluation

Presentation D.2:

Bima Maono Climate and agro-insurance

Stefan Hirche, KfW and Stewart McCulloch, VisionFund International

Transforming African agriculture through insurance

BIMA MAONO – Climate Insurance, microfinance and agricultural development come together to form a holistic support system for powerful agricultural impacts and outcomes:

- ✓ Enhance the resilience of small farmers through climate insurance
- ✓ Enable their graduation from poverty by reducing the risk of investments to confidently develop their farms
- ✓ Expand financial inclusion by encouraging MFIs to increase agricultural lending to small farmers by enhancing their credit worthiness
- ✓ Ensure business continuity of farmers and MFIs through major natural disasters with recovery lending programs

Facilitating significant increases in agricultural investment and productivity:

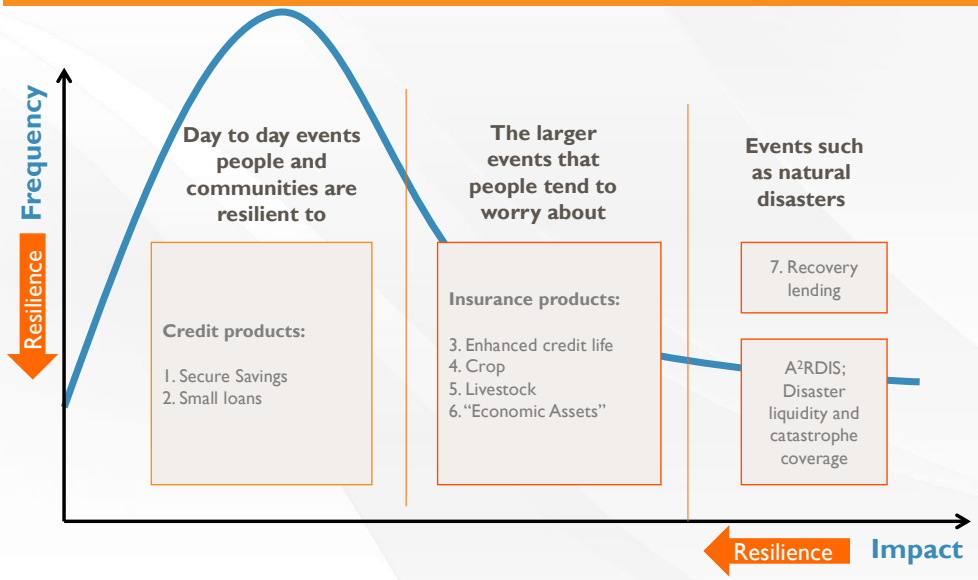
- Up to 250,000 smallholder farms insured
- With over 340,000 climate insurance policies each year
- With up to 1.5m beneficiaries
- In 7 African countries by 2021

VISIONFUND INTERNATIONAL | WORLD VISION | 2

BIMA MAONO

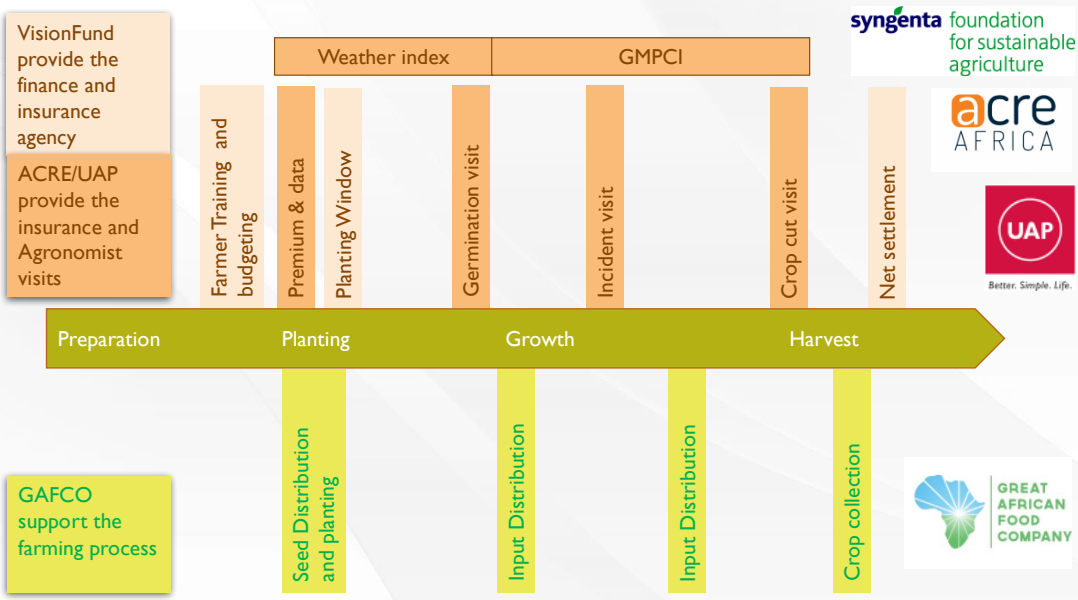
Taking insurance innovation the very last mile

VFI's insurance vision: providing new tools for the poor to enhance their development, recovery and resilience; particularly to cater for the needs of small farmers and women



VISIONFUND INTERNATIONAL | WORLD VISION | 3

Integration of Farming, Finance and Insurance



VISIONFUND INTERNATIONAL | WORLD VISION | 4

Crop insurance integrated in farmer economics

Farmers understand costs and expenses well as it is key to their success in traditional farming. The farmer budgets clarify the investment decision, demonstrating how the insurance addresses their fear of not being able to recoup the cost of production when a disaster strikes and yields collapse.

A farming protocol is set alongside the budgets

Per Acre		Total (USD)	Loan	Self funded	Notes
Expected Revenue		168			Expected revenue = 5 bags
Expenses	Labour	60		60	
	Seeds	20	20		
	Fertiliser	17	17		
	Spray	11	11		
	Insurance	12	12		~10% of insured value
	Others	8		8	
	Total	128	60	68	
Break even revenue = Insurance value		128			Insurable value = 3 bags = 3/5 = 60%
Expected profit to farmer		40			

- ✓ Whilst insurance is 20% of the loan value it is <10% of the insurable value
- ✓ The insurable value represents the true economic investment and breakeven
- ✓ This budgeting rightly brings insurance along side the costs of other inputs

VISIONFUND INTERNATIONAL | WORLD VISION | 5

A²RDIS:

African & Asian Resilience in Disasters Insurance Scheme

ARDIS enables recovery lending, by providing:

- Climate, geographical & agricultural information to support business planning and continuity
- Operational & capacity building support for recovery lending
- "Insurance" payouts to MFIs to restore the balance sheet and cover immediate costs
- Assured liquidity to fund recovery lending

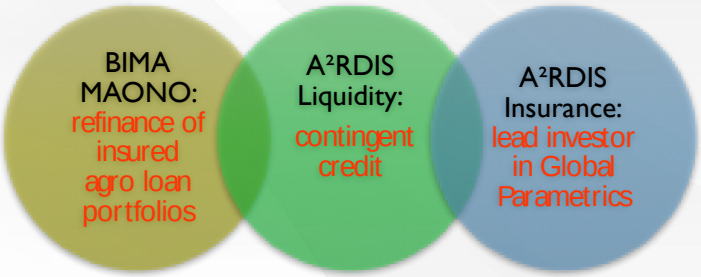
Initial portfolio: Kenya, Uganda, Zambia, Malawi, Mali, Myanmar, Cambodia

VISIONFUND INTERNATIONAL | WORLD VISION | 6

German Financial Cooperation

Building a long term partnership with VisionFund

- Under the G7 InsuResilience Initiative, the German Federal Ministry for Economic Cooperation and Development (BMZ) supports insurance initiatives that contribute to protecting against climate risks an additional 400 million poor and vulnerable people in developing countries by 2020.
- Among other InsuResilience activities on behalf of BMZ, KfW established the public-private InsuResilience Investment Fund that supports VisionFund's holistic approach on three levels:



Federal Ministry for Economic Cooperation and Development

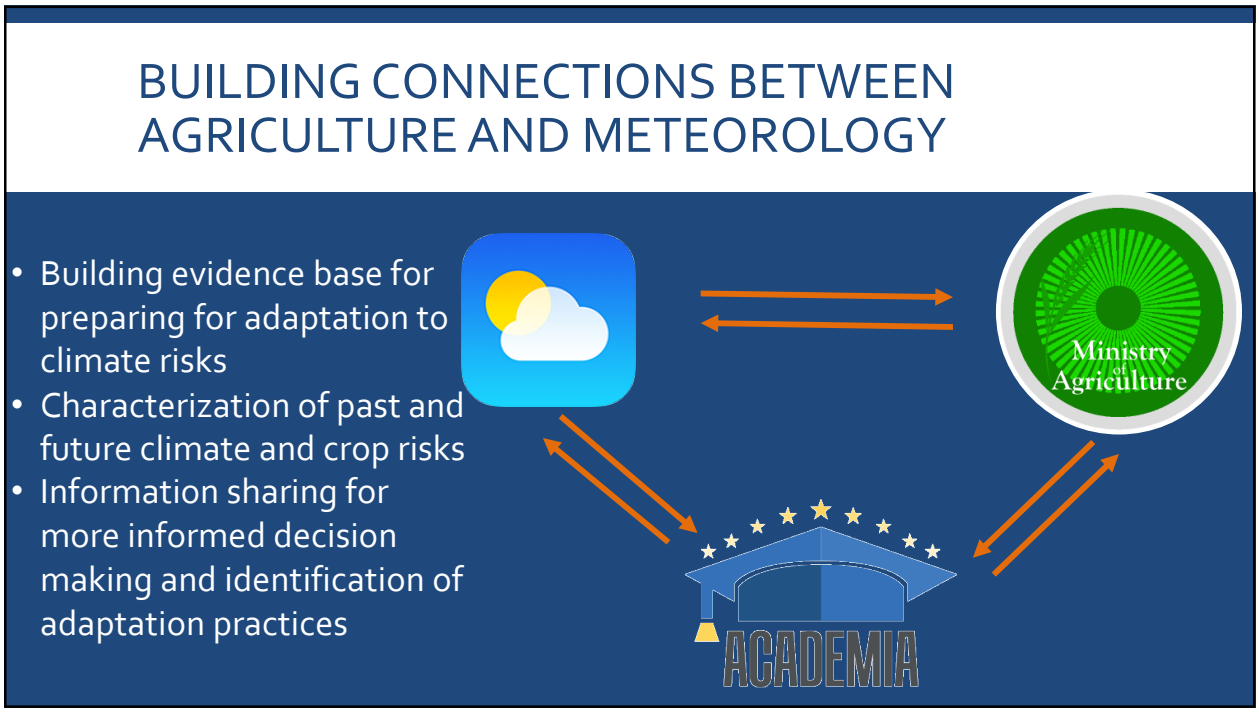
KFW

InsuResilience InvestmentFund

Presentation D.3:

Agro-met tools

Ana Heureux, FAO



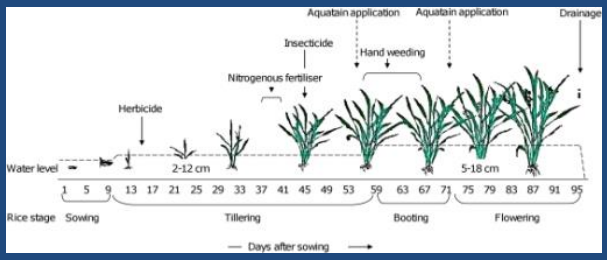
INFORMATION REQUIRED

Meteorological data

- Historical climate data (temperature, rainfall etc.)
- Weather forecasts

Agricultural data

- Local crop calendars
- Past crop yields
- Phenological information



2 EXAMPLES OF AGROMET CAPACITY BUILDING AT FAO

- Macedonia agrometeorological information services
- Senegal/Rwanda agro-met digital services

1.) MACEDONIA AUTOMATIC WEATHER STATIONS AND AGRO-MET SERVICES

- Increasing network of weather stations in the country
- Encouraging information sharing with new web services
- Hosting study tour to build capacity of Macedonian experts in agro-met alerts/bulletins

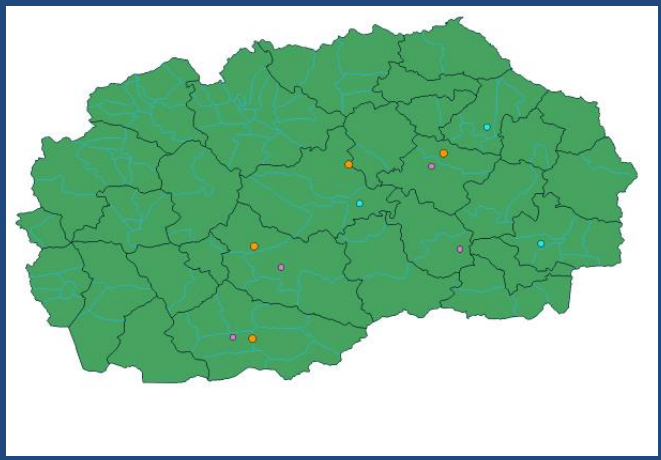
INCORPORATING AGROLOGICAL DATA WITH METEROLOGICAL DATA

PLANT DISEASE RISK WARNING

- Plant disease risk warning
- Real-time agrometeorological
- monitoring from weather stations
- Disease model by plant pathologist
- Weather forecast
- Combined with satellite observation
- Macedonia, Georgia, Tajikistan
- National Hydrometeorological Service

REMOTE SENSING INDICATORS

- NDVI
- NDWI
- LST
- Other indicators



2.) DIGITIAL AGRO-MET APPLICATION IN SENGAL/RWANDA

- Presenting agricultural and meteorological data together via digital services (SMS or app)
- Making information accessible with interactive input from farmers on in these two pilot countries
- Provide as much information as possible to ensure farmers can make informed decisions at each stage in the planting process
- Validate recommendations with farmer feedback

FEEDBACK MECHANISM

Farmers to collect and send back information (e.g. photo, numbers, etc) on the app:

- Today's weather – sunny, cloudy, did it rain?
- Agronomic, phenological information
  - Planting date, failure and replanting
  - How crop is growing, by reporting key stage of crop growth date, or by taking photos
  - Management dates (irrigation, pesticide, fertilizer, etc)
  - Harvest date
- Farmers can ask questions
- Feature to track the actual use of the app to enable monitoring and evaluation

CRITERIA USED TO MEASUREMENT MANAGEMENTS OF AGRICULTURAL RISK

- Successful integration of agricultural and meteorological information in the form of bulletins or alerts
- Number of farmers or people who access information (either via website or mobile phone)
- Number of informed decisions made as a result of increased information
- Validation of information from farmers/national experts

LESSONS LEARNED

- To collect relevant historical data, a working group across meteorological, agricultural and academic institutions should be the first step to understand local requirements
- Understanding local context and needs and making sure activity is country driven is first priority
- The format of available data can be an issue in developing countries (i.e. word/PDF), need to make output attractive to country
- Investment in training in capacity building in new technologies after implementation is key to make sure project is sustainable
- Involve users in the development of applicaitons

PARM

PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Panel E: Accessing information to manage risks

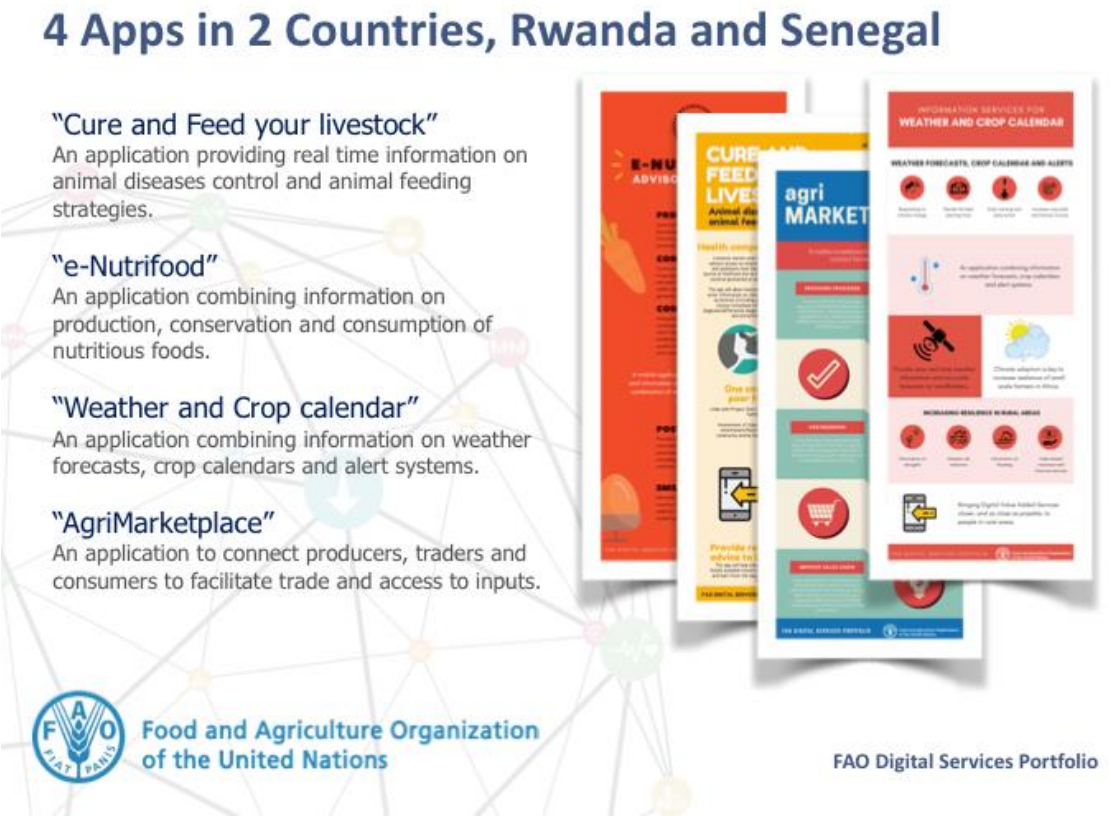
This group brought together initiatives that aim to bridging the information gap between information providers and farmers. Through mobile applications, these initiatives aim at bringing information directly to farmers, about best practices for animal and plant health or through a holistic approach.

Presentation E.1:	Digital inclusion Henry Burgsteden, FAO
Presentation E.2:	EMPRES-i/EMA-i Julio Pinto, FAO
Presentation E.3:	Plantwise Joseph Mulema, CABI

Presentation E.1:

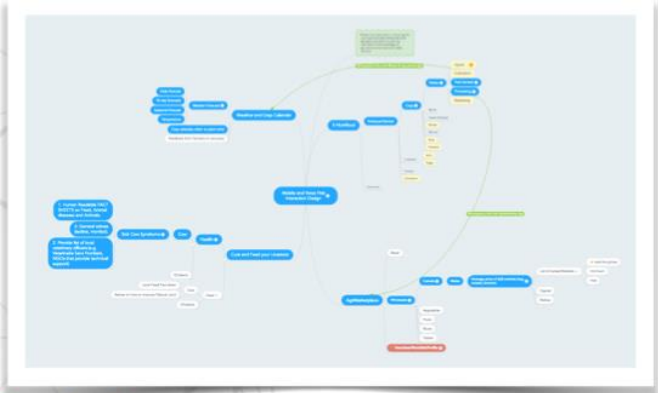
Digital inclusion

Henry Burgsteden, FAO



Device Agnostic Interaction Design

- a.o. Voice (IVR) and Text (SMS / USSD). For smartphones and feature phones
- Profiling through Cooperatives, Media, Farmer Field Schools and Dimitra Clubs
- Human-centered design for mobile agriculture
- Interoperable data services (web services/API)



Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

Cure and Feed your livestock

An application providing real time information on animal diseases control and animal feeding strategies.

- Key messages and workflows (information and alerts)
- Vaccination calendar
- List of local veterinarians
- Waterpoints
- Pasture maps
- Farmer feedback on information and advise

Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

eNutrifood

An application combining information on production, conservation and consumption of nutritious foods.

- Key messages for milk and wheat production chain
- Information and advise on harvesting, cleaning, handling and storage
- Farmer feedback on key messages

Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

Weather and Crop Calendar

An application combining information on weather forecasts, crop calendars and alert systems.

- Weather forecasts (daily, weekly, monthly, seasonal)
- Temperature forecasts
- Agro meteorological information
- Crop Calendar
- Farmer feedback on weather and crop calendar

Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

AgriMarketplace

An application to connect producers, traders and consumers to facilitate trade and access to inputs.

- Interoperable data services for market price information of local markets
- Available at National government through FAO GIEWS pricetool (early warning)
- Farmer feedback on prices

Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

Design Principles

mAgri Design Toolkit

User-centered design for mobile agriculture

Source: http://www.gsma.com/mobilefordevelopment/magri-design-toolkit

Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

Principles for Digital Development

1. Design with the User
2. Understand the Existing Ecosystem
3. Design for Scale
4. Build for Sustainability
5. Be Data Driven
6. Use Open Standards, Open Data, Open Source, and Open Innovation
7. Reuse and Improve
8. Address Privacy & Security
9. Be Collaborative

Source: Principles for Digital Development

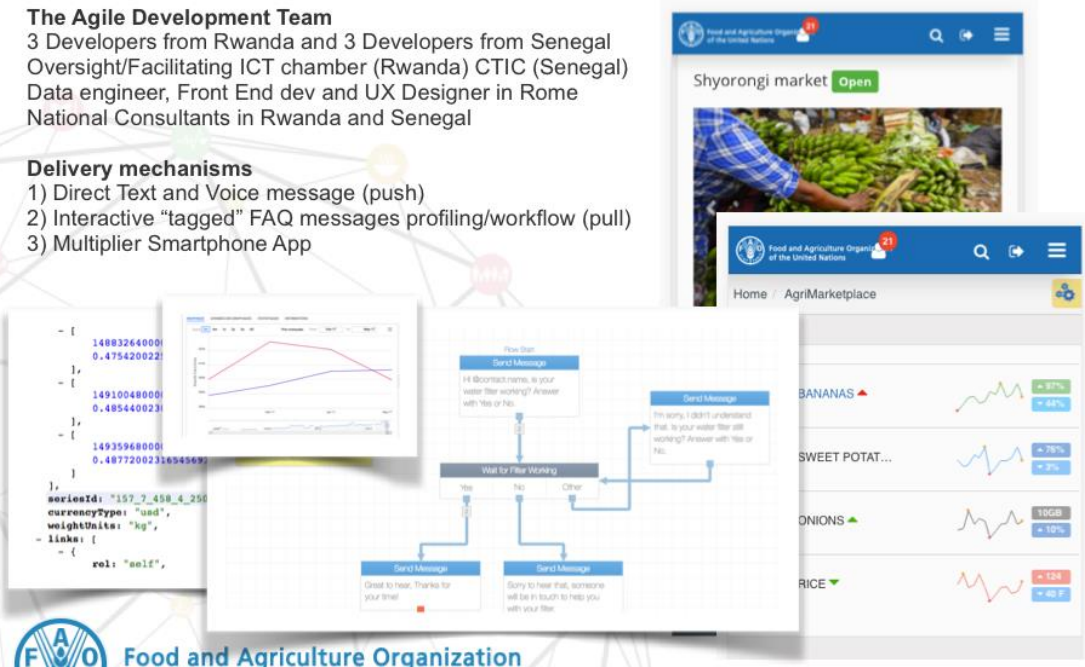
Food and Agriculture Organization of the United Nations

FAO Digital Services Portfolio

Digital Services Development

The Agile Development Team
3 Developers from Rwanda and 3 Developers from Senegal
Oversight/Facilitating ICT chamber (Rwanda) CTIC (Senegal)
Data engineer, Front End dev and UX Designer in Rome
National Consultants in Rwanda and Senegal

Delivery mechanisms
1) Direct Text and Voice message (push)
2) Interactive "tagged" FAQ messages profiling/workflow (pull)
3) Multiplier Smartphone App



Food and Agriculture Organization of the United Nations

Project Milestones

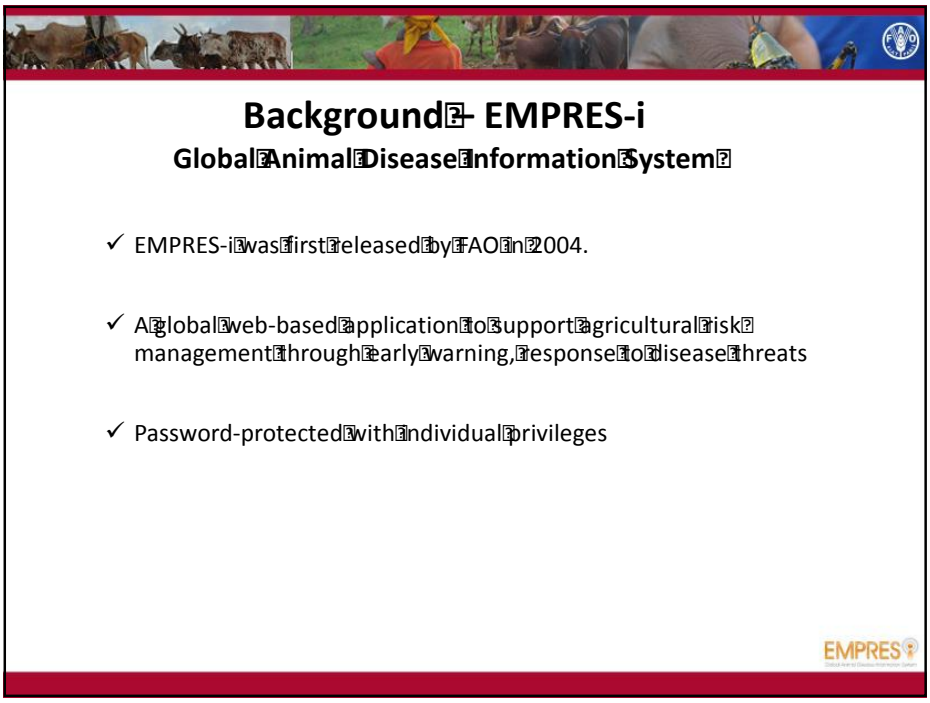
Project Milestones	Status	Date
Developers on board at FAO	Done	15st of July
Local developers in Senegal and Rwanda on board	Done	15th of July
Workshop in Rome with all developers	Done	30th of July – 4th of August
Prototypes of the apps developed	Done	Aug-Oct 2017
Apps testing and adaptation	Doing with developers and farmers	Nov-Dec 2017
Workshop with famers and field workers in the countries	Organized by local strategic partners CTIC and ICT chamber.	Nov 2017
Competition organization	Organized by local strategic partners CTIC and ICT chamber.	Dec 2017
Closing event and competition award cerimony	Organized by local strategic partners CTIC and ICT chamber and FAO country offices	Dec 2017
Monitoring, Evaluation and upscaling and Engagement	Strategic partnerships with WMO, UNIDO, Senegal and Rwanda in place.	Dec 2018

Food and Agriculture Organization of the United Nations

Presentation E.2:

EMPRES-i/EMA-i

Julio Pinto, FAO



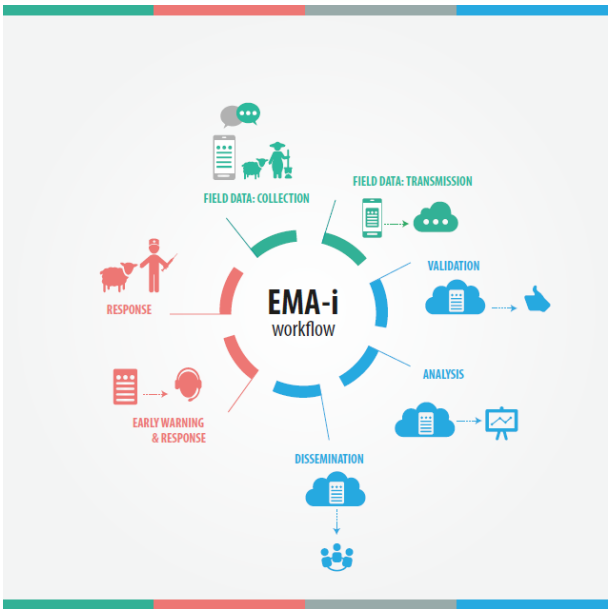
EMA-i and EMPRES-i

EMPRES

Why an app for disease reporting?

- Enhance communication in real-time
- Information transmitted from local to central level
- Improve communication between actors (veterinary services, animal health workers, laboratory experts)
- Effective and early response to disease threats
- Feedback on guidance, advice, services, access to veterinary drugs to support disease management
- Cost/effective compared to traditional systems
- Easy to maintain and sustain in the long term with limited resources in developing countries

EMPRES



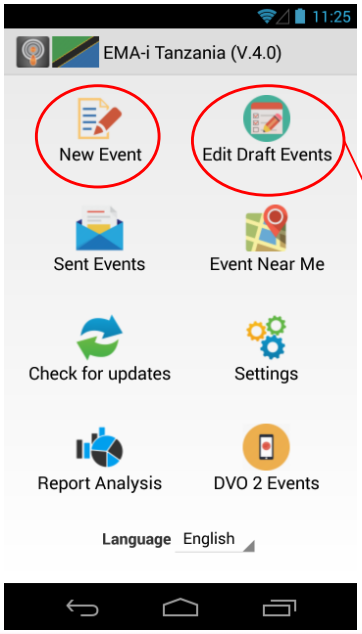
EMPRES

Event Mobile Application (EMA-i)

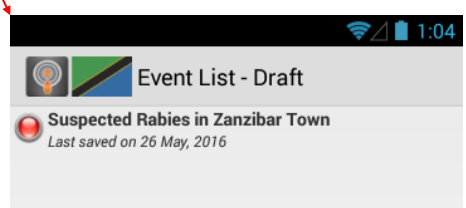
- **To collect** livestock disease data from <u>the field</u>
- To report **in real-time** livestock disease data
- **To safely store** epidemiological data in one database – EMPRES-i platform
- **To access** to reported outbreaks' from a map ("Event Near me")
- **To analyse/visualize** the reported data in charts ("Report Analysis")

EMPRES

EMA-i – data collection:

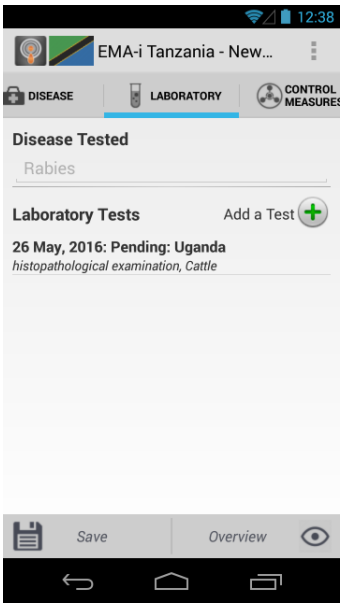


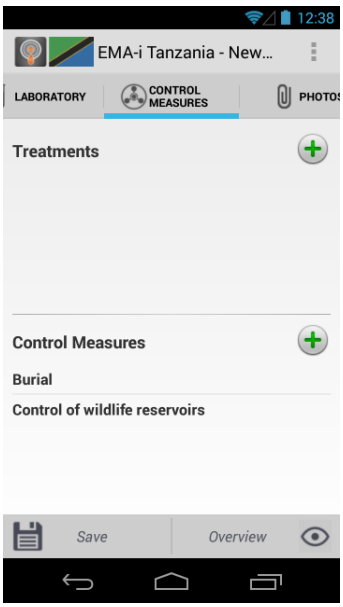
- ✓ Data can be collected with or without internet connection
- ✓ Data from an event can be collected in different moments
- ✓ Drafts are saved and stored in the up and can be easily access at the user convenience

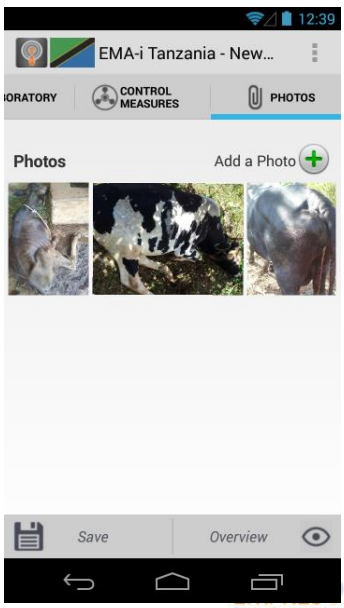


EMPRES

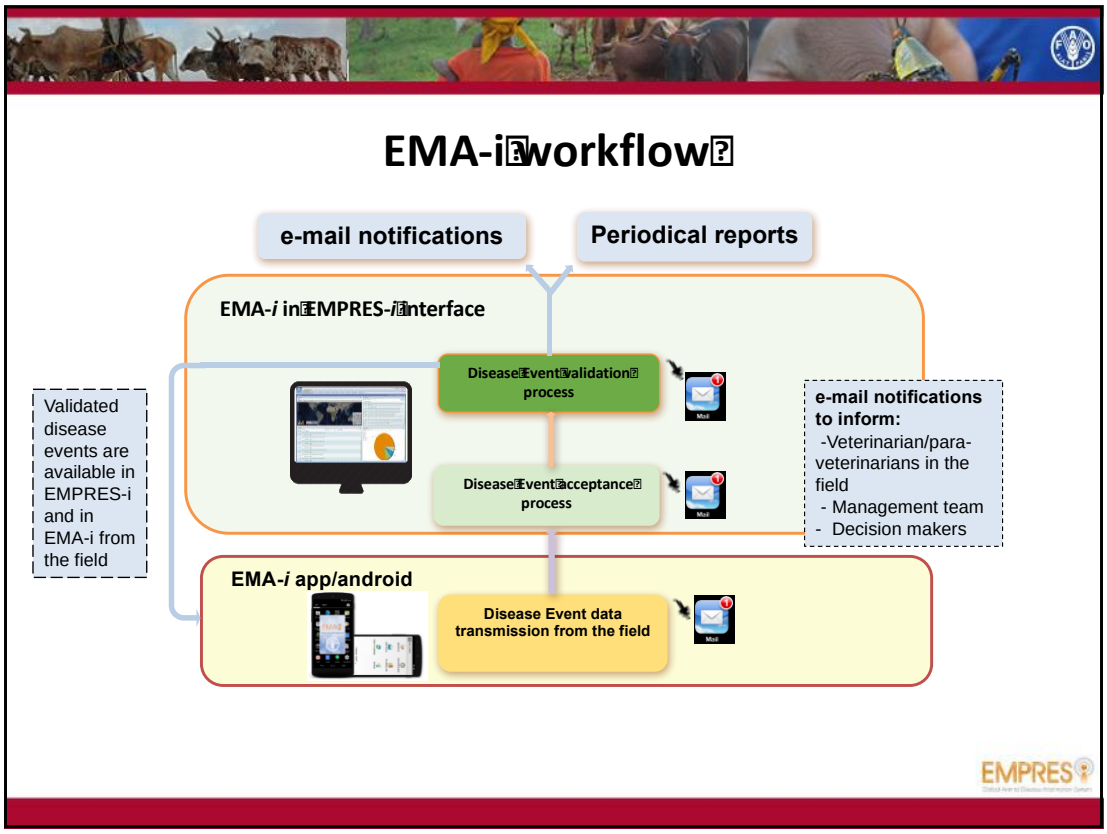
EMA-i – data collection:








EMA-i – data reporting:
EMA-i Tanzania - New...
GENERAL
Event Overview
Save
Validate
Send
Latitude
-6.16524
Longitude
39.1989
Get GPS coordinates
Report Date (dd/mm/yyyy)
26/05/2016
Onset Date (dd/mm/yyyy)
26/05/2016
Surveillance Type
(No selection)
Source of Infection
(No selection)
Save
Overview
Event Overview
General Information
Diagnosis Information
Affected Species
EMA-i Tanzania (V.4.0)
New Event
Edit Draft Events
Sent Events
Event Near Me
Check for updates
Settings
Report Analysis
DVO 2 Events
Language English
➢ Data are sent with internet connection
EMPRES


EMA-i workflow
e-mail notifications
Periodical reports
EMA-i in EMPRES-i interface
Disease Event validation process
Disease Event acceptance process
Validated disease events are available in EMPRES-i and in EMA-i from the field
e-mail notifications to inform:
-Veterinarian/para-veterinarians in the field
- Management team
- Decision makers
EMA-i app/android
Disease Event data transmission from the field
EMPRES

Methodology - EMA-i at country level

- **STEP 1: Preparatory phase: adapting EMA-i to the national animal disease surveillance system**
  - Assessment of existing national surveillance and reporting system
  - Agreement on data property (FAO and National authorities)
  - Personnalisation of EMA-i (Actors involved)
  - Procurement (smartphones, internet…)
  - Training programme

- **STEP 2: Customisation & start-up of EMA-i:**
  - Customisation of EMA-i
  - Training
  - EMA-i/EMPRES-i tested at country level
  - Standard Operational Procedures (SOPs)

- **STEP 3: Monitoring & Evaluation**
  - Strengths and weaknesses of EMA-i

- **STEP 4: Improvement of EMA-i**

EMPRES

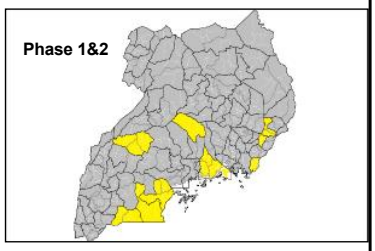
EMA-i: Implementation in Uganda (2013-2016)

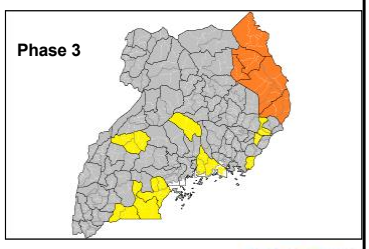
1) **Phase 1: First implementation (January 2013 – July 2014)**
   a. Preparation and customization: January 2013 – July 2013
   b. Implementation – 10/112 districts (15 users)
   c. First evaluation: July 2013 – July 2014

2) **Phase 2: Second implementation (July 2014 – December 2015)**
   - Expansion within the 10 districts
     → More users (33 users)

3) **Phase 3: Third implementation (January 2016 –> onward)**
   - Geographical expansion to **Karamoja Region** (additional 7 districts)

     → More users & more districts





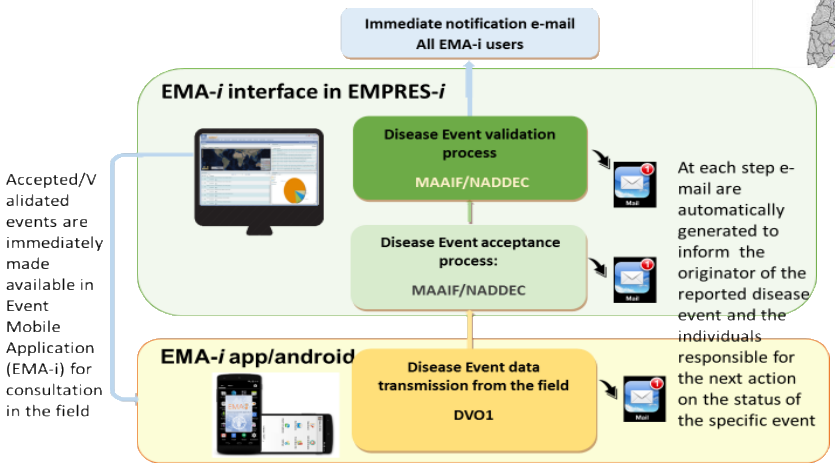
EMPRES

EMA-i: Phase 1 (July 2013 - July 2014)

Geographical coverage: 10/112 **districts:** Nakasongola, Mbale, Rakai, Sironko, Busia, Lyantonde, Isingiro, Masaka, Mukono, Mityana, Kibaale

EMA-i users: CVO, NADDEC (n=5), District Veterinary Officers (n=10)

Customization animal diseases collected: 14 diseases



EMPRES

Phase 1: Results

Title: Event Mobile Application (EMA -i): A novel tool for field rapid disease reporting and information sharing

Authors: F Larfaoui.[1*], N Nantima[3], J Sserugga[3], A Colonna[1], S Ramazzotto[1], S Okuthe[2], J Lubroth[1], J Pinto[1].

[1]Food and Agricultural Organization of the United Nations (FAO), Rome, Italy
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Keywords: Mobile applications, Public Health, Zoonoses, Animal diseases, Surveillance, Data reporting

Oral presentation preferred.

Summary:

Background/Introduction:
Early detection and timely reporting of animal diseases including zoonoses, are a challenge in developing countries, where weak infrastructure, human resources and capacities have an impact to effectively implement adequate disease surveillance and reporting . FAO has developed an Event Mobile Application (EMA -i) for data collection and real-time reporting. EMA-i has been piloted in Uganda to support veterinary services to improve the existing surveillance system.

Materials and methods:
EMA-i was customized for the national animal health authorities; a workflow was established according to the existing reporting procedure from the field to the decision makers and NADDEC. After validation, reports from EMPRES-i are sent to the CVO, NADDEC and DVOs.

Results and Conclusion:
Ten districts out of 112 and 16 diseases were selected including zoonosis such as anthrax, brucellosis, Rift Valley fever, trypanosomosis and rabies. From July 2013 to December 2013, 126 livestock reports were submitted to NADDEC compared to 45 in 2012 and 56 in 2011. Piloting EMA-i in Uganda clearly shows the improvements in reporting time (i.e. from weeks to minutes) from districts and in having a wide range of diseases reported, better interaction and communication between the field and decision makers.

FAO is supporting developing countries in the implementation of EMA -i and providing

"From July 2013 to December 2013, **126 livestock reports** were submitted to NADDEC compared to 45 in 2012 and 56 in 2011".

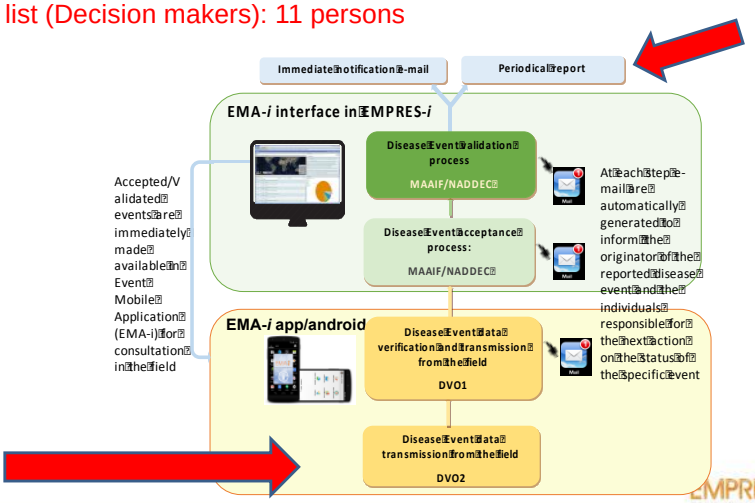
EMPRES

EMA-i: Phase 2 (July 2014 – December 2015)

Geographical coverage: 10/112 districts:
Nakasongola, Mbale, Rakai, Sironko, Busia, Lyantonde, Isingiro, Masaka, Mukono, Kibaale

EMA-i users: CVO, NADDEC (n=5), District Veterinary Officers 1 (n=10), DVO 2 (n=15->18), Guest (n=6)

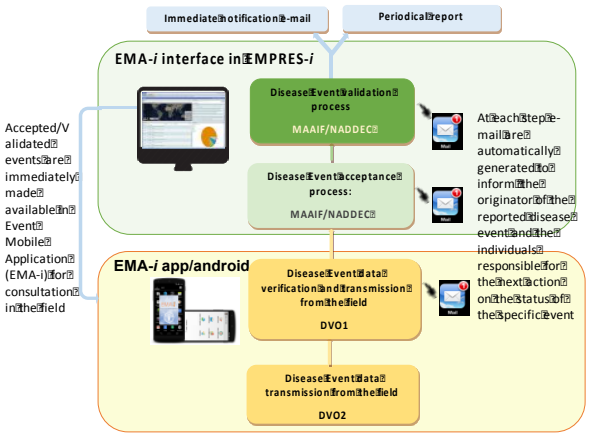
- Periodical report list (Decision makers): 11 persons

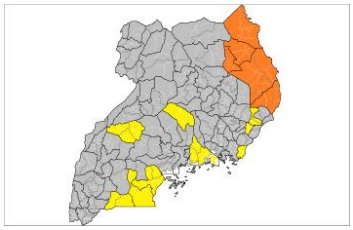


EMA-i: Phase 3: Expansion (December 2015 – onward)

Geographical coverage: 17/112 districts: Nakasongola, Mbale, Rakai, Sironko, Busia, Lyantonde, Isingiro, Masaka, Mukono, Kibaale + Kaabong, Kotido, Abin, Moroto, Napak, Amudat, Nakapiripirit (Karamoja)

EMA-i users: CVO, NADDEC (n=32, acceptance (n=8), validation (n=24), District Veterinary Officers 1 (n=23), DVO 2 (n=110), Guests (n=6)

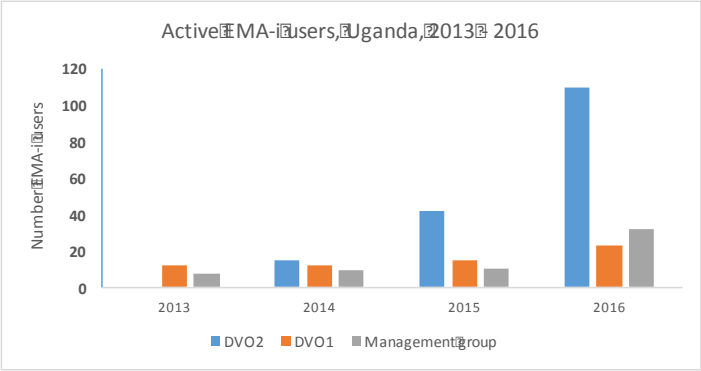




Uganda: Overall results since July 2013

- **EMA-i active users: 162 Animal Health Officers**
  - 110 DVO2
  - 20 DVO1
  - 32 from the Management Group (NADDEC):
    - 18 Verification
    - 20 Validation

- **1,158 disease events reported/sent with EMA-I !**



EMPRES

EMA-i Mali

- Period of implementation: November 2016-April 2017
- 3/11 districts: Koulikoro, Kayes et Sikasso
- Number of users: 25 (districts) + 10 (Management)

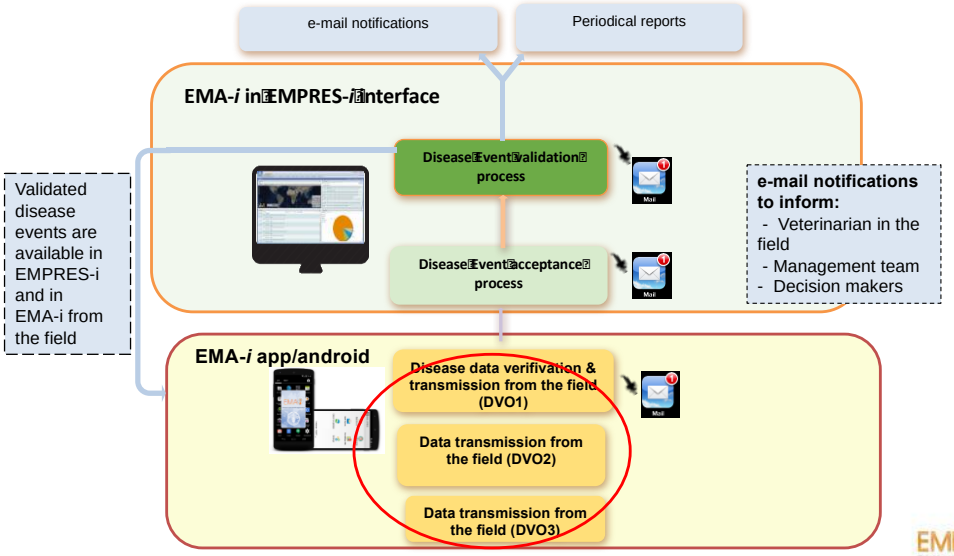
EMPRES

EMA-i Tanzania (Zanzibar)

- Period of implementation: June 2016 - February 2017 (on-going)
- All the island (11 districts)
- Number of users: 35 veterinarians/paraveterinarians

EMPRES

EMA-i flexible tool



EMPRES

EMA-i in practice

- East Africa:
  - Uganda → starterd in 2013 and currently implemented in 21 district;
  - Tanzania → started in Zanzibar in 2016 and mainland in 2017
- West Africa:
  - Mali → started in 2016 and currently implemented
  - Ghana → under preparation
  - Cote D'Ivoire → plan for 2018
- Southern Africa:
  - Zimbabwe → plan for 2018
  - Lesotho → plan for 2018

EMPRES

Future Plans for EMA-i

-Interoperability with Laboratory Information Systems

-Customization and expansion to collection of livestock production, indicators and prices

-Interoperability with Regional Systems, National Databases (ARIS, EIDSS)

- GOOGLE TOOLS for visualization and risk modeling from disease data available in EMPRES-i

EMPRES

Thank you!

contact:

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Fairouz Larfaoui (FAO – GLEWS): fairouz.larfaoui@fao.org
Sabina Ramazzotto (FAO-GLEWS/CIO): sabina.ramazotto@fao.org
Elisa Palamara (FAO-GLEWS): elisa.palamara@fao.org

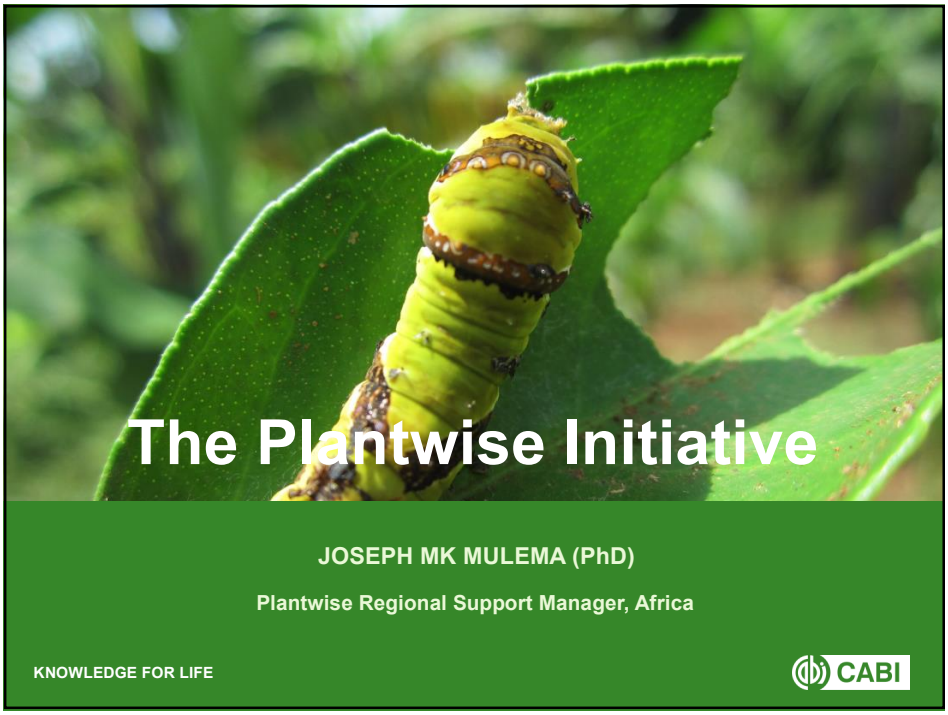
Links:
empres-i@fao.org
http://empres-i.fao.org/empresi3g
http://empres-i.fao.org

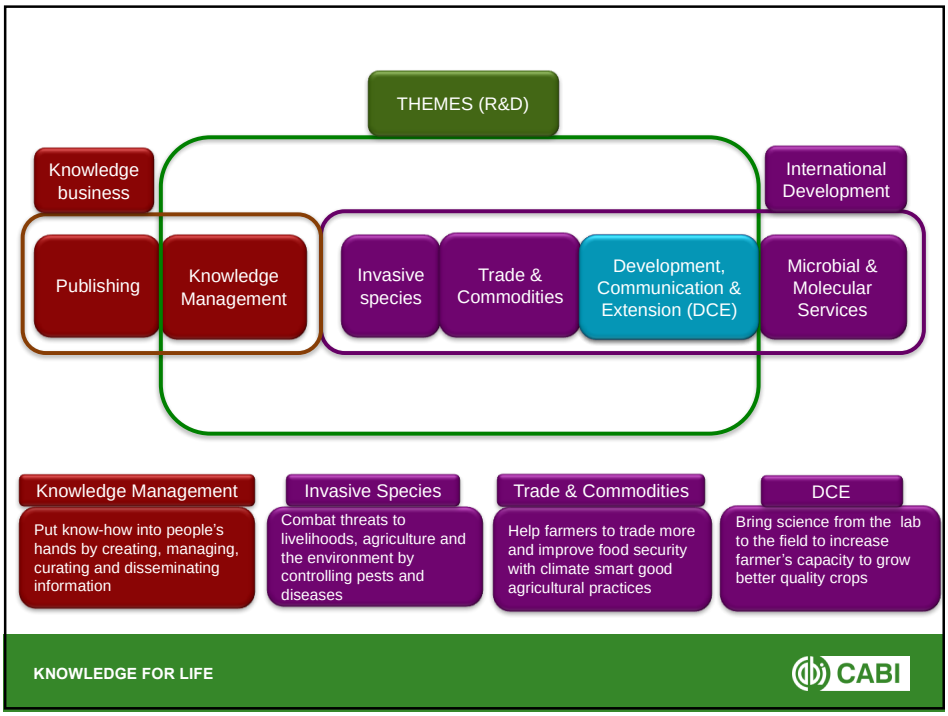
EMPRES

Presentation E.3:

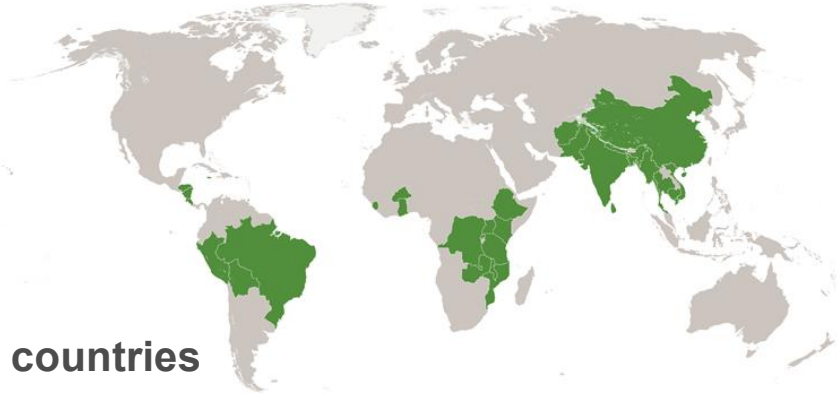
Plantwise

Joseph Mulema, CABI





Countries of operation



34 countries

The Americas
Barbados, Bolivia, Brazil, Costa Rica, Grenada, Honduras, Jamaica, Nicaragua, Peru, Trinidad & Tobago

Africa
Burkina Faso, DR Congo, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, Sierra Leone, Tanzania, Uganda, Zambia

Asia
Afghanistan, Bangladesh, Cambodia, China, India, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam

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CABI

Plantwise

A global programme led by CABI to improve farmers' access to practical knowledge at local level and help them increase food security and food safety

*Plantwise strengthens plant health systems in countries using **PLANT CLINICS** as an entry point*

Components

- Plant Heath Systems Development
  - Plant clinics
- Plantwise Knowledge Bank
- Monitoring and evaluation

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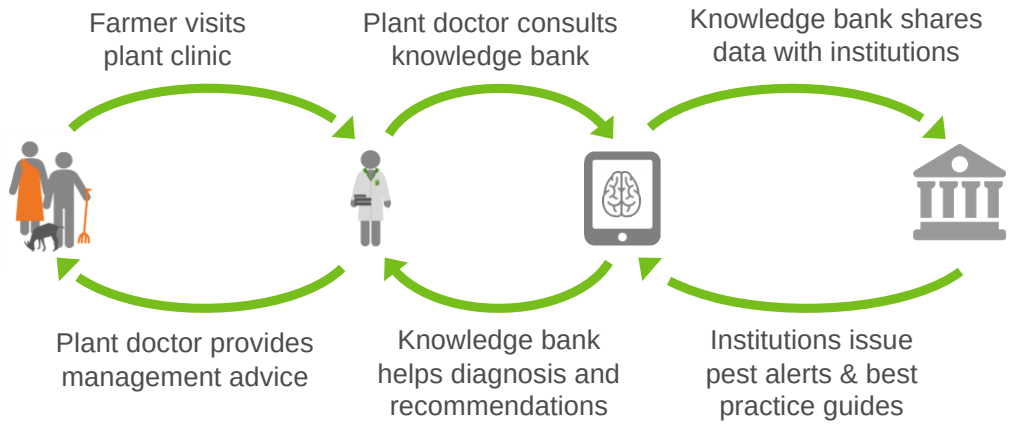
Process



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Although Plant clinics…

are primarily an extension method

They also enable community based surveillance

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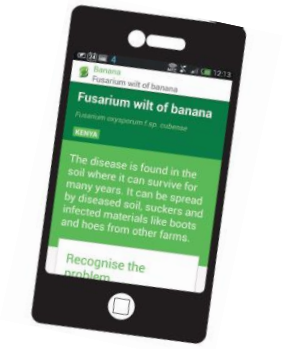
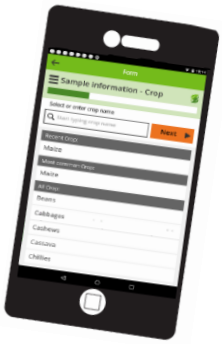
Factsheet Library app



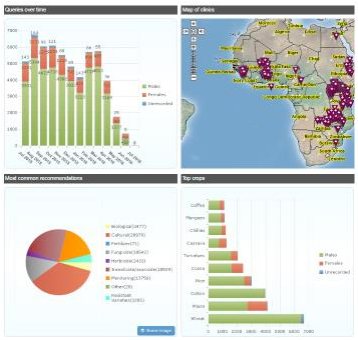
- Available both in Android and iOS
- Anyone with a smartphone can download factsheets of relevance to their country
- **Content can be accessed offline** whenever there is no internet connection

Data collection app



- Available on Android tablets or phones and on any laptop
- Allows offline digitisation of plant clinic data with data downloaded once internet connection made
- Delivers SMS recommendation to farmer's phone

Plantwise Online Management System



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Educational apps

- Plant Doctor Simulator (Android) is designed to **improve extension workers' ability to diagnose key pests**
- a second simulator is being developed to improve extension workers' ability to recommend suitable solutions to farmers

Communication apps

- Not directly developed or supported by Plantwise
- **Plant doctors regularly use WhatsApp, Telegram and Facebook to communicate with one another**
- The **self-help communities that grow usually include diagnostic experts** or plant doctors with access to the Knowledge Bank

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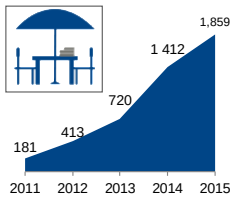
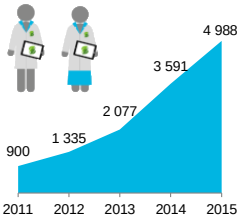
Plantwise key outputs

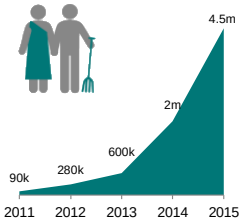
1,800 plant clinics established



5,000 plant doctors trained



4.5 million farmers reached



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Plantwise outcomes and Impact

79% of farmers reported yield increases after visiting a plant clinic

Over half of plant clinic prescriptions recommend non-chemical inputs

70% of farmers reported their income increased after visiting a plant clinic

25% of Plantwise plant doctors worldwide are female

Plantwise has linked with **70 private sector organisations**

All Plantwise countries contribute funds and/or staff time towards activities

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شكرا
ありがとう
جزيلا
merci
शुक्रिया
zikomo
xie-xie
obrigado
efharistó
kiitos
thank you
gracias
zikomo
tak
urakoze
ke itumetse
asante
danke
terima kasih
dhanyawaad
Joseph Mulema, CABI
j.mulema@cabi.org
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PARM

PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Panel F: From insurance to social protection

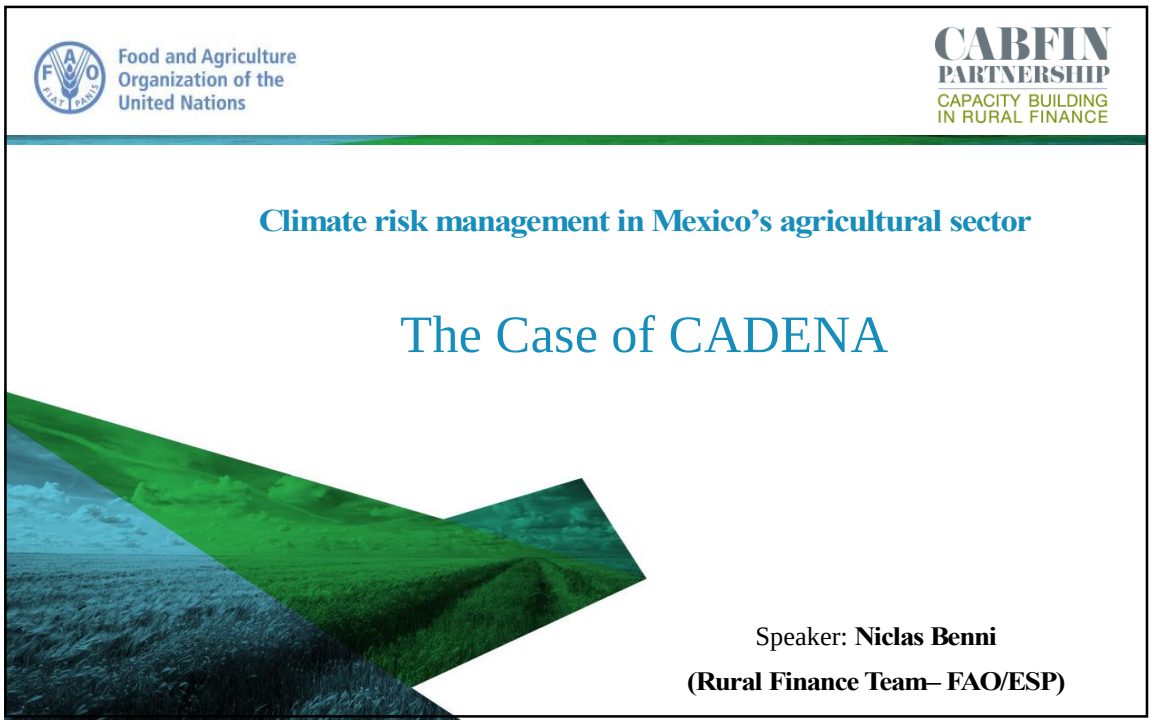
In this panel, presenters provided feedback on index-insurance and how it can be used to help farmers manage risks, and how it can be linked to social protection.

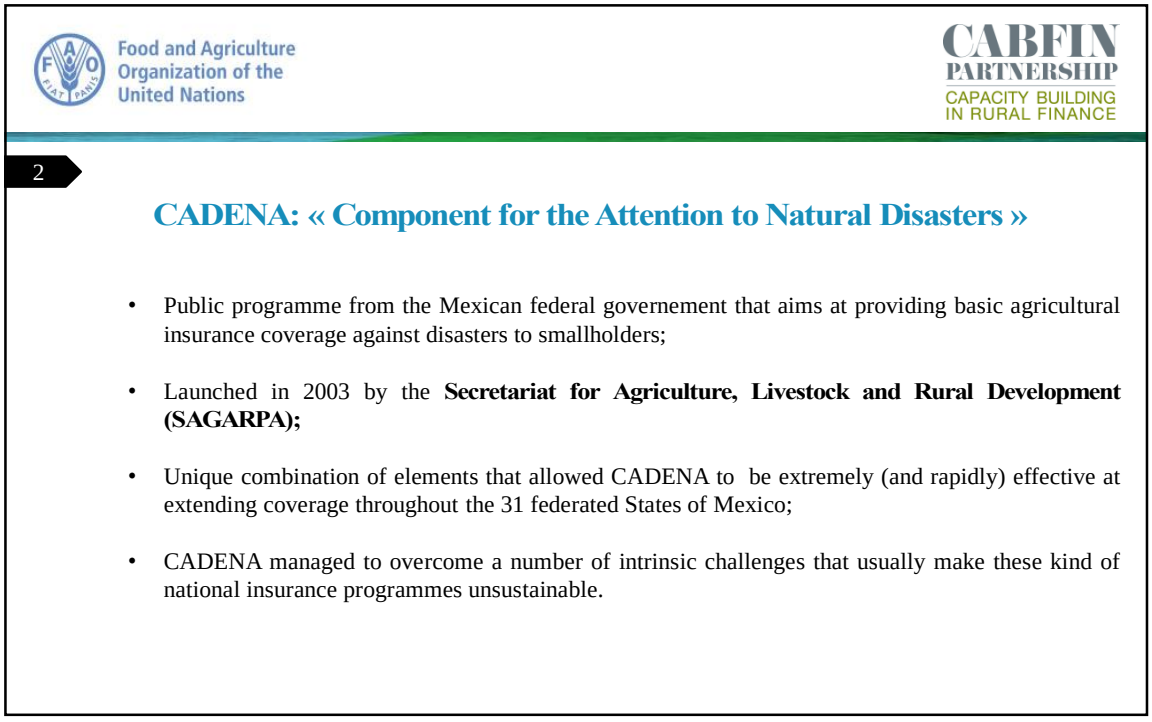
Presentation F.1:	CADENA (a Programme of the Mexican Government) Niclas Benni, FAO
Presentation F.2:	Agricultural Index Insurance: Feed the Future Innovation Lab for Assets & Market Access Jennifer Cissé, USAID
Presentation F.3:	Weather Risk Management Facility Franceso Rispoli, IFAD/WFP

Presentation F.1:

CADENA (a Programme of the Mexican Government)

Niclas Benni, FAO





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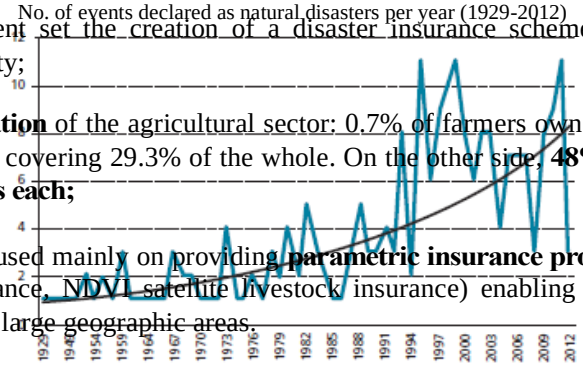
CABFIN PARTNERSHIP
CAPACITY BUILDING IN RURAL FINANCE

3

Why was CADENA developed?

- Exponential rise in recent years of climatic and geological disasters in the country;
- In the past twenty years, **80% of the total economic losses** caused by natural disasters were concentrated in the agricultural sector
- The government set the creation of a disaster insurance scheme for smallholders as a national priority;
- **High polarization** of the agricultural sector: 0.7% of farmers own more than 100 hectares of arable land, covering 29.3% of the whole. On the other side, **48% of farmers own less than 2 hectars each;**
- CADENA focused mainly on providing **parametric insurance products** (e.g. index-based weather insurance, NDVI satellite livestock insurance) enabling coverage of dispersed populations in large geographic areas.

No. of events declared as natural disasters per year (1929-2012)



Source: Centre for Research on the Epidemiology of Disasters (EM-DAT)

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CAPACITY BUILDING IN RURAL FINANCE

4

Two main components in the CADENA Programme

1) Agricultural Insurance Against Catastrophes (*CADENA-SAC)*

Provision of parametric and traditional insurance products against natural disasters, with subsidies from the federal government.

Ultimate beneficiaries: smallholders with less than 20 hectares of annual crops, or less than 60 livestock units;

2) Direct Support to Smallholder Farmers (*Apoyo Directo)*

Post-catastrophe compensation payments to farmers when agri-insurance is not a feasible option.

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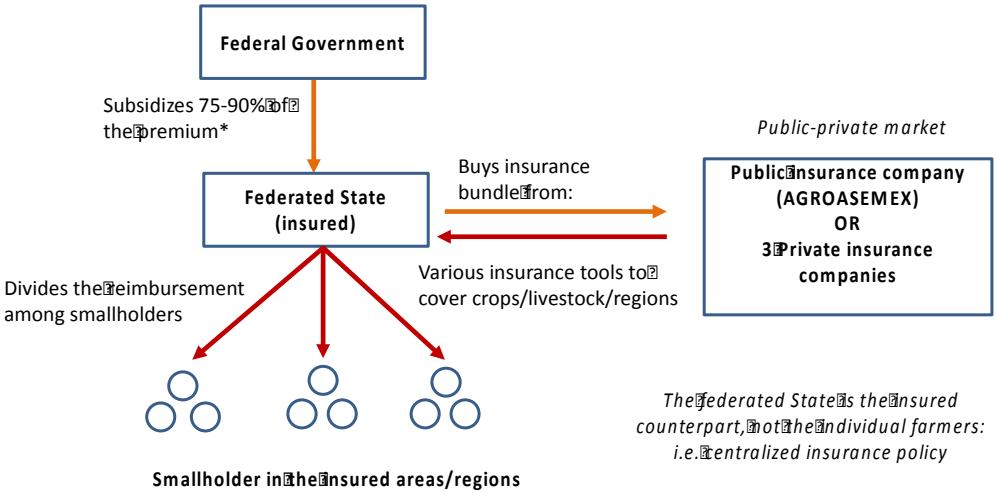
CAPACITY BUILDING IN RURAL FINANCE

5

CADENA's structure: Agricultural Insurance Against Catastrophes (CADENA-SAC)

*(Highest subsidies reserved to most vulnerable States)



The federated State is the insured counterpart, not the individual farmers: i.e. centralized insurance policy

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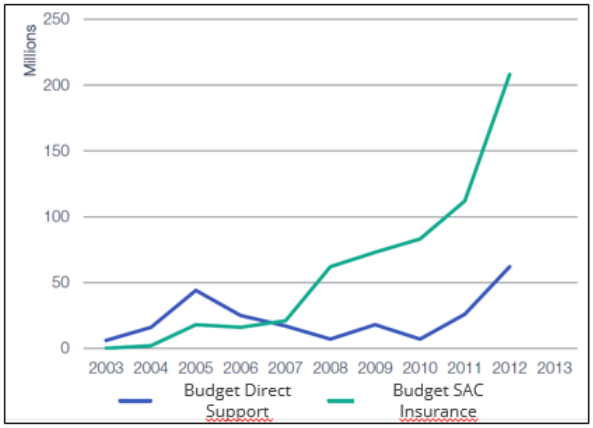
6

CADENA's Results

Federal budget allocated to CADENA (in millions of USD)



In 2013:

- 12 million hectars were covered under CADENA in 31 States
- i.e. 65% of the total production area in the country
- The budget for CADENA had risen from US$ 6 million in 2003 to US$ 292 million in 2013
- 80% of the federal budget was dedicated to the SAC Insurance component

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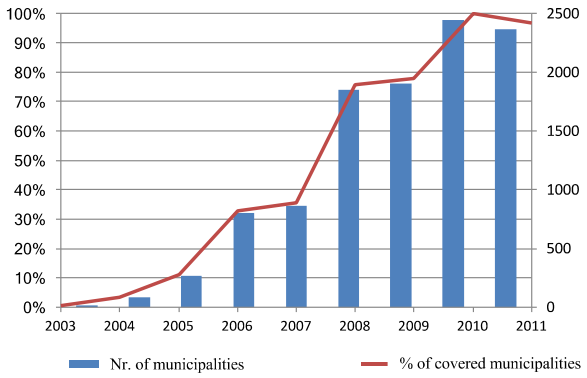
CAPACITY BUILDING IN RURAL FINANCE

7

CADENA's Results (2)

Number and share of total municipalities covered under a component of CADENA



Source: SAGARPA

In 2013:

- 98% of municipalities had become beneficiaries of the Program
- Which translates into yearly coverage for 3.7 million smallholders
- i.e. 82 % of the target population of the Programme

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CAPACITY BUILDING IN RURAL FINANCE

8

Key facts

1) CADENA as an insurance programme used as an implementation tool for a **social safety net for smallholders**;

2) High diversification of risks and extension of coverage **even to the most vulnerable and exposed federated States.** Easier to manage and predict the evolution of federal and statal budgets;

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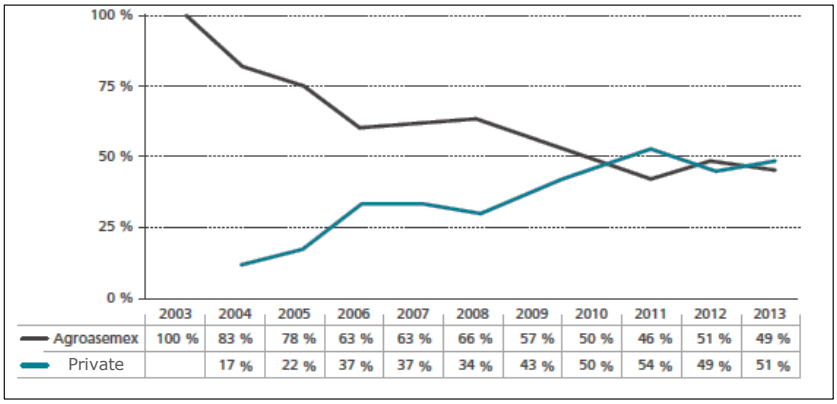
Public-private participation to the market for agri-insurance against disasters (share of the total insured area)



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Agroasemex	100 %	83 %	78 %	63 %	63 %	66 %	57 %	50 %	46 %	51 %	49 %
Private		17 %	22 %	37 %	37 %	34 %	43 %	50 %	54 %	49 %	51 %

Source: SAGARPA

3) CADENA as a **catalyst** for the development of a private market for disaster insurance for smallholders: « paving the way » through public example.

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CABFIN Partnership: Capacity Building in Rural Finance

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giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

UNCDF

For more information, visit **the Rural Finance and Investment Learning Centre (RFILC)** at

http://www.ruralfinanceandinvestment.org/fr/about

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Many thanks

Speaker: Niclas Benni (Rural Finance Consultant, FAO/ESP)

Contact : niclas.benni@fao.org

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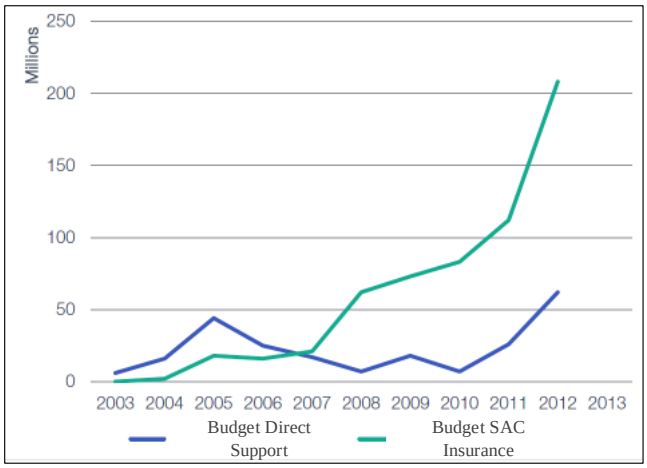
CADENA's Challenges

- **Sustainability:** the CADENA budget has increased exponentially recently (303 US$ million in 2015), with a forecast of a 26% required increase in the near future
- **Competition:** the presence of a non-profit public insurance company (AGROASEMEX) has proven to be a destabilizing factor for competition in the market.

Federal budget allocated to CADENA (in millions of USD)



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No.	Type of CADENA Catastrophe Insurance Program	Basis of Insurance and Indemnity	Insured Perils
1	**Parametric Crop Weather Index Insurance** (*Seguro Agrícola de Indices Climáticos*, SAIC)	Weather Indices measures at ground stations	Drought, excess rain, flood, hurricane wind storm
2	**Crop Area-yield Index Insurance** (*Seguro Agrícola de Índices de Producción*, SAIP)	Area-Yields measured by in-field loss assessment	Comprehensive Multiple-peril
3	**Livestock-Pasture NDVI** (*Seguro Pecuario de Índices de Vegetación*, SPIV)	Satellite measured NDVI Index	All perils which reduce pasture growth (mainly drought)
4	**Traditional Livestock** (*Seguro Pecuario Catastrófico*, SPC)	Decreased forage and extraordinary weight loss in animals	Drought

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CADENA's components:
2) Direct Support to smallholders (*Apoyo Directo*)

- This component is accessible to those federated States that are unable/unwilling to buy an insurance bundle for specific regions/territories under their jurisdiction
- The federated State itself, in cooperation with the local SAGARPA delegation (i.e. the Ministry of Agriculture), is responsible for declaring a natural event as « catastrophic »
- The Federal governement subsidizes 60% of the direct payments to smallholders
- Ce composant représente seulement un 20% du budget total de CADENA.

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7

The creation of a public-private insurance market for smallholders

A federated state can choose to buy insurance coverage from:

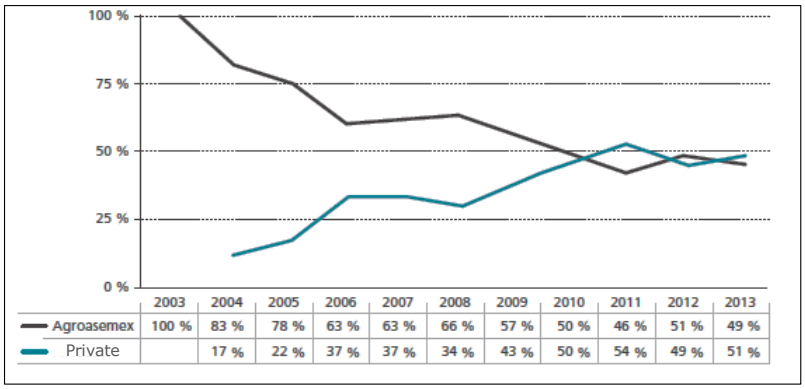
AGROASEMEX:

A public insurance company

or

3 private competiting companies

Public-private participation to the market for agri-insurance against disasters (share of the total insured area)



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Presentation F.2:

Agricultural Index Insurance: Feed the Future Innovation Lab for Assets & Market Access

Jennifer Cissé, USAID

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Agricultural Index Insurance: FtF Innovation Lab for Assets & Market Access (AMA IL)

K-Sharing & Learning Workshop
25th October 2017
IFAD HQ, Rome, Italy

Adapted from presentation by Tara Steinmetz and Andrew Mude

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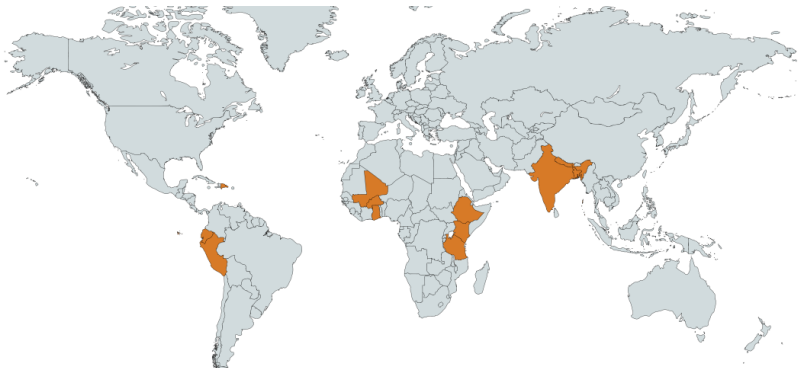
AMA Innovation Lab Research



Countries of Research: Bangladesh, Burkina Faso, Dominican Republic, Ecuador, Ethiopia, India, Kenya, Mali, Mozambique, Nepal, Peru, Tanzania

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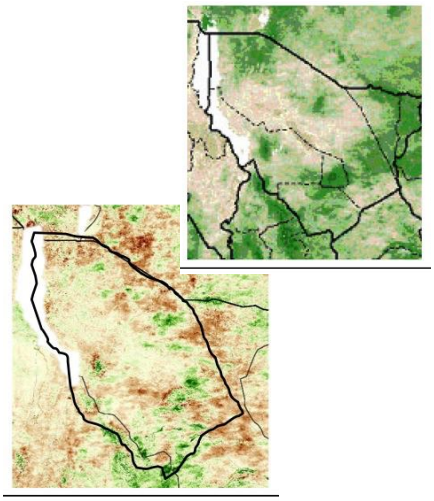
So What is Index Insurance?

- What is being insured is not the consequences of the weather events (lost yields, for example), but some external measure highly correlated with yields (the index).
- Index should be objectively and easily quantifiable, publicly verifiable, and not possibly manipulated by either the insurer or the insured.
- Payouts are based on predicted losses without individual loss verification.
- Reduces the cost of insurance and speeds up payouts.



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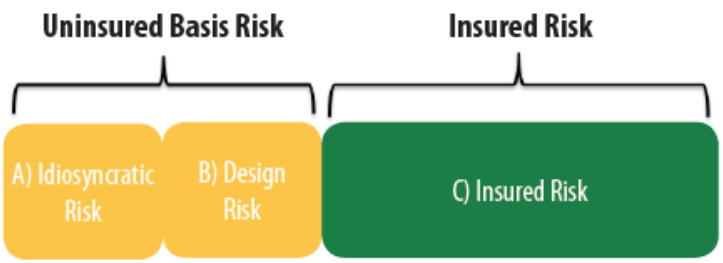
Index Insurance Doesn't Cover All Risk



The goal is to minimize areas A & B, and to maximize area C. It's important to know both the potential – and the limitations – of index insurance.

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AFTER THE DROUGHT

- Index-Based Livestock Insurance paid out after the 2011 drought.
- On average, 36% reduction in sales of remaining livestock & 25% decrease in meal reduction.
- For relatively richer households, insurance led to a 70% drop in asset sales. For relatively poorer households, who tend to reduce meals to cope, insurance led to a 62% reduction in this costly strategy.
- More cost effective than traditional safety nets

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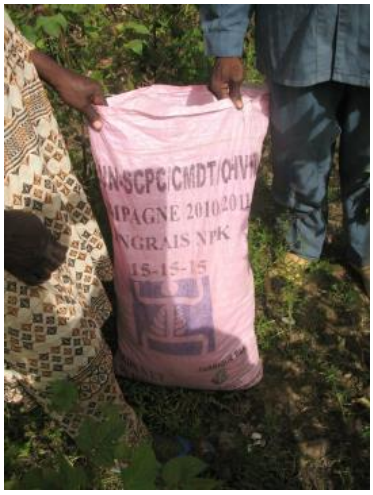
BEFORE THE DROUGHT

- Impacts before drought strikes might have the most direct relevance to market strengthening.
- Insured cotton farmers in Mali increased cultivated area by 55%, use of loans by 3%, & use of productive inputs by >50%.
- For cotton farmers in Burkina Faso, being insured allowed them to invest more in other high-value crops compared to their uninsured peers (in this case, sesame).



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So You're Thinking About Index Insurance?

Components of a Successful Index Insurance Venture

1. Why to consider index insurance for agriculture
2. How to assess if index insurance is a good fit
3. The importance of identifying a feasible high-quality index
4. New innovations in contract design that increase value to farmers
5. What institutional structures have to be assessed
6. The challenges & opportunities for marketing and distribution
7. Ongoing challenges facing the successful scaling of index insurance

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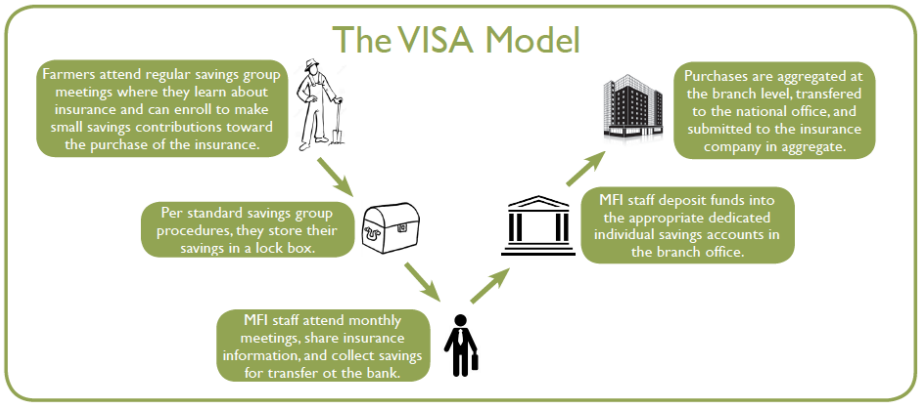
THE "VISA" MODEL

Village Insurance-Savings Accounts



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BUNDLING INSURANCE

- Interlinked credit and insurance may enable farmers to make investments and increase the credit supply.
- Bundling with inputs or other high-value interventions may increase uptake.
- Bundling with shock-tolerant seeds (e.g. CIMMYT's Drought Tolerant Maize for Africa) may reduce the cost of insurance and better cover the risk portfolio

LINDA MBEGU ZAKO NA BIMA

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SMART(ER) SUBSIDIES

- Subsidies could be applied to provide coverage for the most catastrophic events
- Farmers have the option to top-up insurance to cover less catastrophic risk layers
- Will lower overall cost of insurance for farmers and create a minimum market size for insurance companies
- May also increase farmer trust in insurance b/c government is putting their money there
- Or, perhaps, "learning" subsidies may be effective

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RISK MANAGEMENT PORTFOLIO

- Different tools may be required for different points in time for different subgroups of farmers.
- Managing risk through savings requires accumulation of wealth; similarly, access to credit may require accumulation of assets.
- Alternative mechanisms are being tested to diversify the tools available, such as emergency loans through BRAC in Bangladesh (contingent emergency credit that mimics index insurance and is released in the event of a shock for pre-approved clients).

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SAFE MINIMUM STANDARDS

- At a minimum, we should make sure we are not making difficult situations worse.
- To assess safe minimum standards you need to know how often and how much a contract pays out.
- If paying for a particular product would, on average, negatively impact farmers, that product should not have been brought to market.

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TECHNOLOGICAL INNOVATIONS

- Index Design
- Crop Masking
- Education
- Marketing
- Distribution
- Payouts

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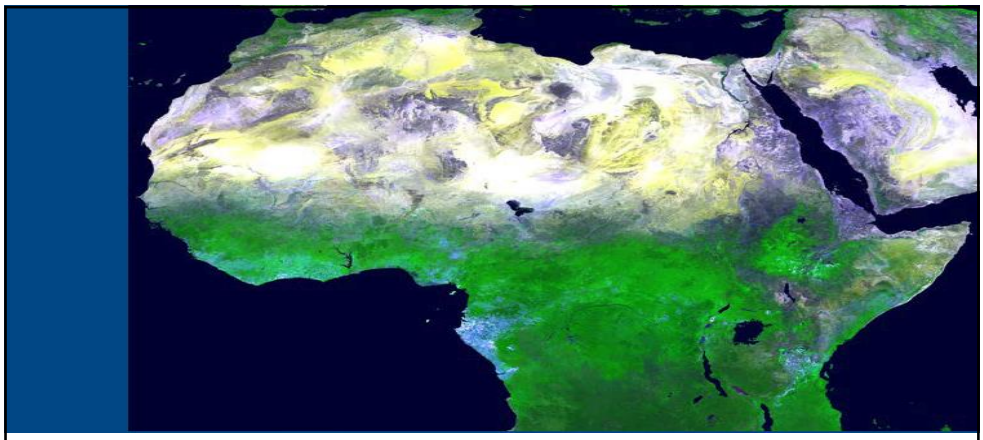
www.feedthefuture.gov

Presentation F.3:

Weather Risk Management Facility

Franceso Rispoli, IFAD/WFP



Remote sensing for index insurance in smallholder agriculture

Findings and lessons from testing in Senegal

PARM 25 October

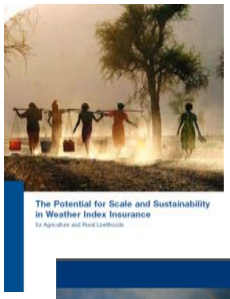
IFAD-WFP Weather Risk Management Facility

1. Project overview
2. Measuring performance
3. Conclusions and recommendations

1. Overview of the project

IFAD-WFP WRMF
Weather Risk Management Facility

- IFAD-WFP partnership on index insurance since 2008
- Focus: **smallholder farmers**
- Index insurance as one tool with potential to:
  - Reduce smallholder vulnerability
  - Enhance food security
  - Unlock access to credit and investment in agriculture
- Part of a holistic approach to agricultural development and disaster risk management



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Researching new solutions: Remote sensing for index insurance

- IFAD-WFP WRMF project, **financed by AFD**, from **2012 to 2016**
- Evaluate **feasibility of remote sensing for index insurance** to benefit **smallholder farmers at village level**
- **Develop, test, validate, evaluate** opportunities and constraints of indices created by **different remote sensing methodologies**
- **Test-case Senegal**, but results to be disseminated across the industry, and feed into IFAD and WFP programmes

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Project focus 1: End-users

- **End-user perspective**: consider requirements of stakeholders in operating and maintaining a viable and sustainable system of index insurance to cover smallholders
- Who are the **end-users** of RS index insurance?
  - Project focuses on **insurers** as the primary **end-users**
  - Project focuses on smallholder farmers as "clients" (**micro level** insurance schemes)

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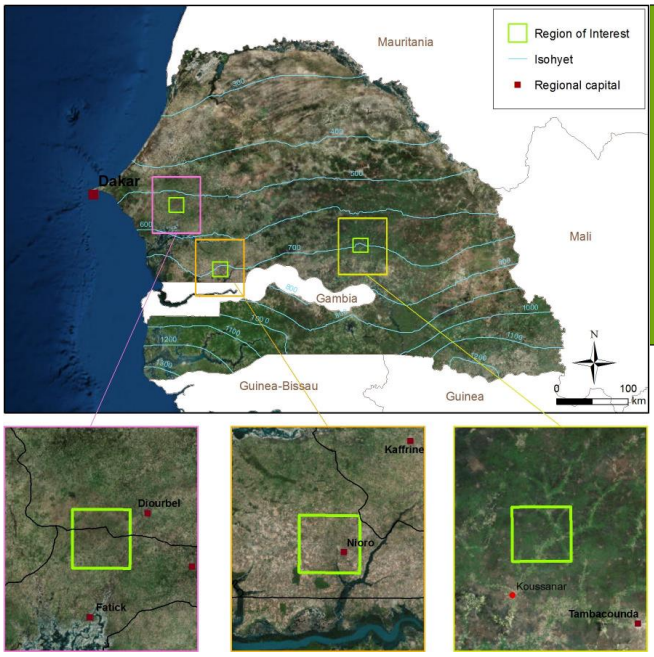
Regions of Interest (test sites)



- Central Senegal
- 3 sites in: Diourbel, Nioro, Koussanar
- 20 km * 20 km test sites
- Groundnut; Millet; Maize

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Remote Sensing Service Providers (RSSPs): Approaches and data sources

RSSP	Type of product/approach	Remote Sensing data used
EARS	Relative evapotranspiration	MSG based relative ET (3km x 3km)
FewsNet (USGS)	Actual evapotranspiration	MODIS based actual ET (1km x 1km)
Geoville	Radar-based estimation of soil moisture SoS based on Soil Water Index	ERS (50km x 50km) METOP ASCAT (50 km × 50 km; 25 km × 25 km resampled to 10 km × 10 km)
IRI	Rainfall Estimates	NOAA based RFE2 ARC (10km x 10km)
ITC	Vegetation indices (NDVI)	SPOT-VGT NDVI (1km x 1km)
VITO	Vegetation indices (NDVI and fAPAR) SoS based on Rainfall Estimates	SPOT-VGT NDVI / fAPAR (1km x 1km) TAMSAT rainfall estimates (4 km × 4 km)
sarmap	Radar crop maps and SoS indicators	CosmoSkyMed (15m x 15m) Sentinel 1A (20m x 20m)

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Input- and Output-based methodologies

A useful distinction is to classify remote sensing methodologies in "Input-based" and "Ouput-based"

- **Input-based** methodologies focus on measuring specific inputs to the production process (e.g. rainfall); other sources of production risk (e.g. pests and diseases) are not captured by the indices. *Rainfall Estimates and Soil Moisture are considered "Input-based"*
- **Output-based** methodologies measure variables connected to the production output (e.g. amount of vegetation, evapotranspiration) and, therefore, are likely to more closely match yield variations generated by drought and by other sources of risk. *Evapotranspiration, Vegetation Indices and SAR are considered "Output-based"*

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Historical Performance Analysis and Product Testing

The performance assessment of the index structures developed by the RSSPs is composed of two parts:

1. **Historical Performance Analysis**: to show how well the methodologies can replicate crop loss over past years in specified areas. It indicates the **effectiveness of design and calibration**
2. **Product Testing**: gauges how well the methodologies can **"predict" losses**, analysing and assessing their performance in comparison with data specifically collected by the project (unfortunately limited observations available)

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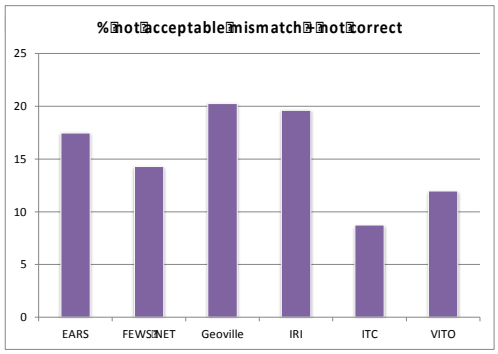
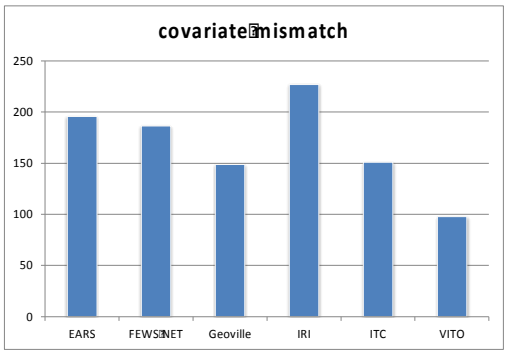
Performance across all crops and regions

Counting number of misperforming events



Cumulating payout deviations



The project report also presents analyses per Crop and per Region

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3. Conclusions and Recommendations

Conclusions

Conclusions have been divided into three main areas:

- Operational applicability
- Technical features
- Performance of remote sensing methodologies

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Conclusions on Programming Features

1. Each of the methodologies tested fulfills the criterion of **operational feasibility** for insurance purposes
2. **Two models** currently exist for operationalizing remote sensing-based index insurance schemes: **external service provision** and **transfer of capacity**
3. Availability of **expertise and dedicated service providers** is a **key challenge**
4. **Knowledge of land use, local farming practices, agronomy and agro-meteorology is necessary**
5. **Remote sensing data are increasingly available,** but there are **constraints on supplementary data** in terms of availability and cost
6. The insurance **regulatory authorities** need to be involved and have, **generally, been supportive** of initiatives for remote sensing index insurance, provided consumer interests are properly protected
7. **Consumer education** will be a key component of success
8. Access to **reinsurance** has generally ceased to be a limiting factor in starting index insurance programmes

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Conclusions on Technical Features

1. **Yield variability between individual farmers in the ROIs can create challenges** in operating index insurance
2. **Input-based and output-based methodologies offer different options** for index insurance.
3. **Ground signal is complex for output-based remote sensing interpretation of smallholder farms**
4. **The methodologies cannot discriminate between yield performance of different crop types in highly mixed cropping areas** at a local (village) level.
5. A key dimension in operating index insurance is the **accurate definition of the unit areas of insurance (UAIs)**
6. There are key operational considerations in determining the **appropriate size of UAIs**
7. **Basis risk remains the main concern** to both insurers and insured farmers

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Conclusions on Performance 1/1

1. The **lack of appropriate yield data and ground information is one of the primary challenges** in designing and testing index insurance
2. **Product design** has a critical influence on performance
3. Project analyses show that, overall, the **historical performance of the index insurance structures** (i.e. their ability to replicate the past history of losses to be covered by the insurance proposition) **is suboptimal**
4. **Crop maps and masks can improve performance**

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Conclusions on Performance /2

5. Methodologies based on **vegetation indices seemed to track loss histories more accurately.** The **use of crop maps and masks,** and the **combination of remote sensing approaches** may have contributed to the relatively better performance.

6. **Product testing** activities indicate that the **index structures developed would not have tracked yield variability to a satisfactory level**

7. **Performance** of the remote sensing methodologies developed for the project **varies across different crops and areas.**

8. **Remote sensing methodologies** can be usefully adopted for identifying key stages of the crop life such as the **start of season (SoS)** or the **end of season (EoS)** date.

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Recommendations

I. **Additional research and development activities should be supported** to further improve the potential of remote sensing for index insurance.

II. Further investment should be made in **ground data collection protocols, capacity and systems.**

III. **Different tools and available data sources should be combined** to develop suitable index insurance products.

IV. Future initiatives should **focus on developing appropriate methodologies for segmenting UAIs** to improve the performance of index insurance products.

V. Index insurance schemes based on remotely sensed data should **carefully plan for measures aimed at mitigating the occurrence of basis risk events.**

VI. The **capacity of private and public remote sensing institutions should be built** in order to fill current gaps in expertise and ensure future sustainability.

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Download project publication:

https://www.ifad.org/topic/wrmf/overview/tags/rural_finance

IFAD > Topics > Rural Finance > Weather Insurance

Project Contact:

Francesco Rispoli f.rispoli@ifad.org

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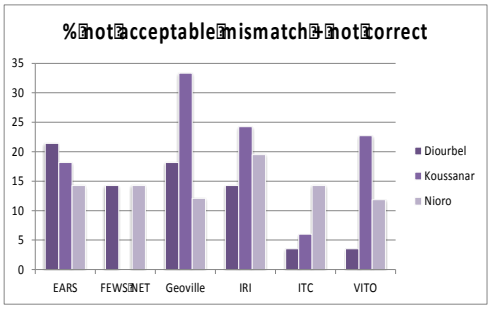
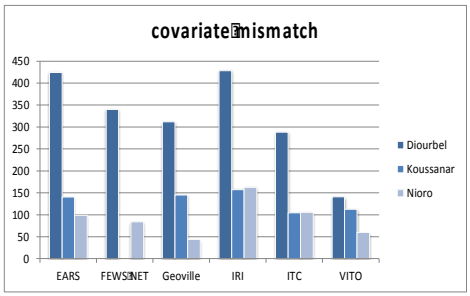
Performance at regional level

Counting number of misperforming events



Cumulating payout deviations



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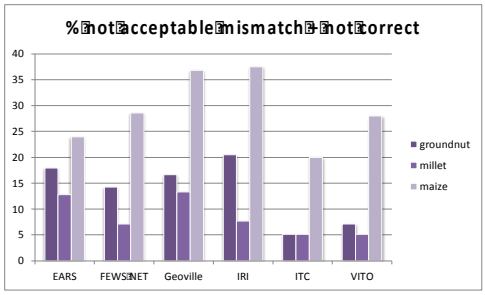
Performance at crop level

Counting number of misperforming events



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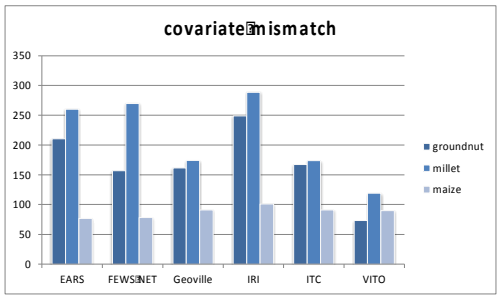

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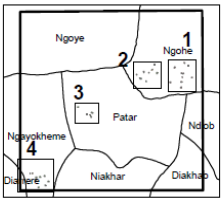
Example outputs of in-field data collection

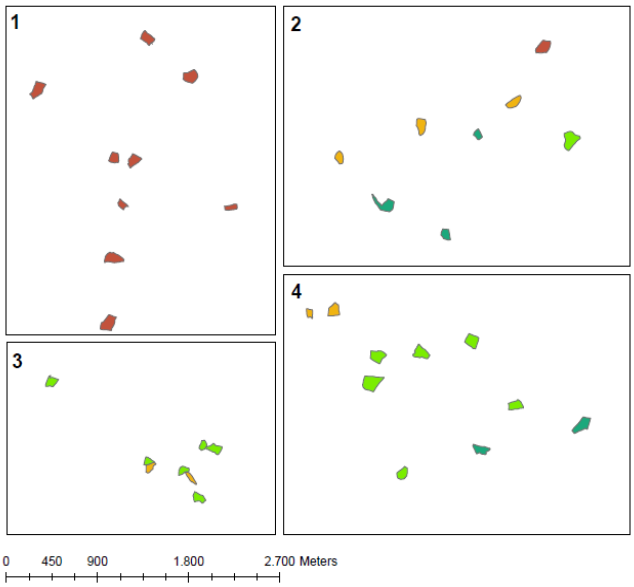
Diourbel



groundnut yield (kg/ha)

- <250
- 250-750
- 750-1250
- 1250-1750
- >1750

min	38
max	1588
average	712
stdev	472
cv	0,66



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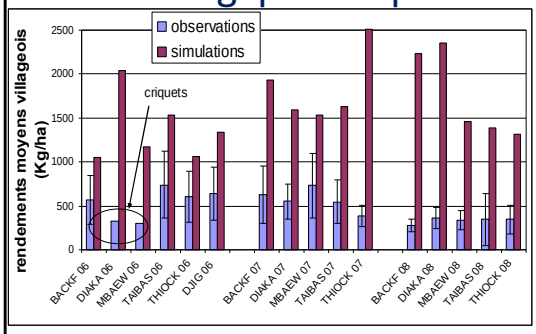
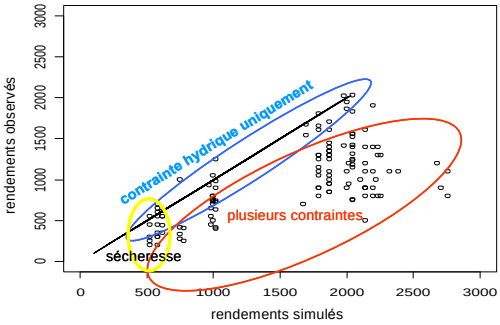
Some findings on yields

- Massive variability of crop yields at individual farmer level, in same year in same villages
- Difficult to assess "normal" farmers actual yields by crop models
- "Yields gap" is important (optimal vs actual yields)





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PARM

PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

Panel G: Managing climate and market risks at macro and micro levels

This panel was added during the workshop to allow for further information-sharing around some Session 2 initiatives. The three initiatives look at ways to manage climate and market risks at various levels, from macro to micro levels, remote-sensing and community level interventions.

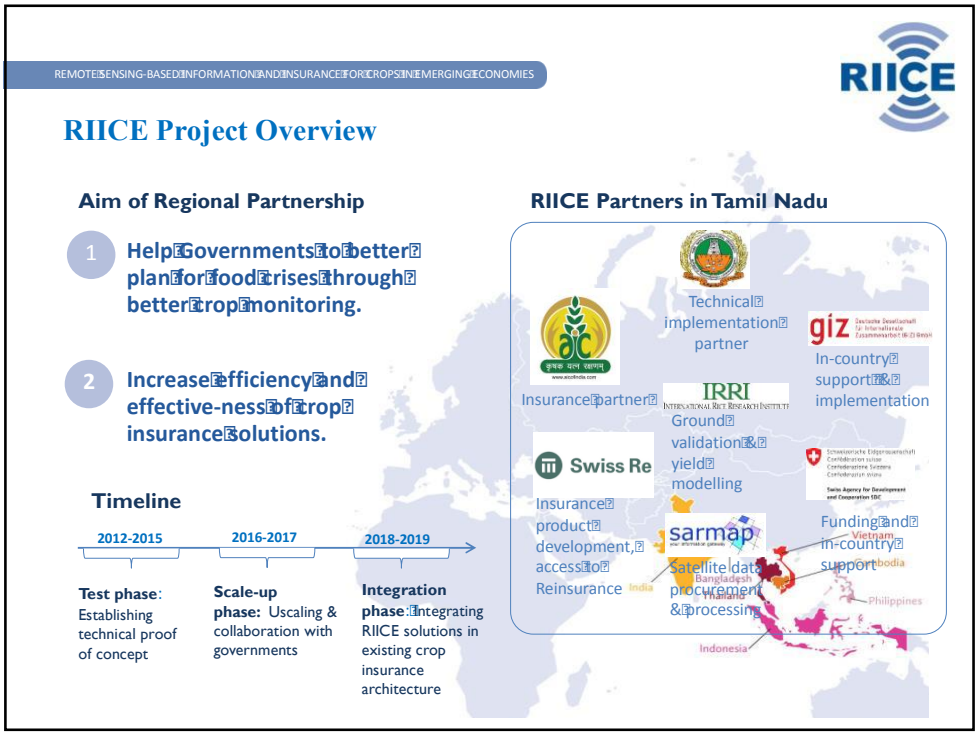
Presenter 1: Manoj Yadav, GIZ - RIICE
Presenter 2: Arun Khatri-Chhetri, CGIAR - Climate Smart Villages
Presenter 3: Norbert Tuyishime, EAFF – eGranary

Presentation G.1:	RIICE Manoj Yadav, GIZ
Presentation G.2:	Climate Smart Villages Arun Khatri-Chhetri, CGIAR
Presentation G.3:	eGranary Norbert Tuyishime, EAFF

Presentation G.1:

RIICE

Manoj Yadav, GIZ



REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES

RIICE

Application of RIICE Technology in PMFBY insurance scheme

Providing objective and ad-hoc evidence on failed sowing and mid-season adversities

PMFBY Scheme Features

- Prevented/ Failed Sowing
- On Account Payment
- CCE Based Compensation

RIICE

- Start of Season & Early Rice Area Maps
- Mid Season Yield Forecast
- End of the Season Yield Estimates & Smart CCE Sampling

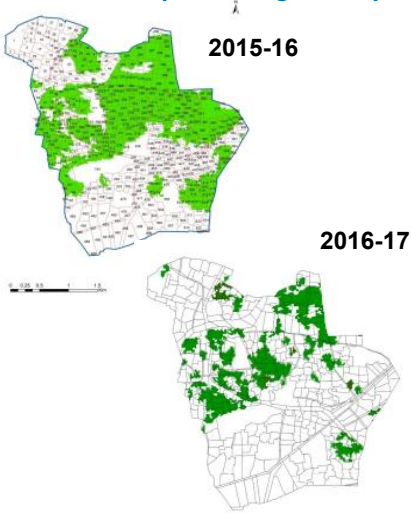
REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES

RIICE

Supporting insurance pay-outs to 22,500 farmers

2016/17: severe draught prevented farmers from planting

Navalur Kuttapattu village, Trichy District



Beneficiary Information*

No of villages under Prevented Sowing	365
Area Insured (Ha.)	31,730
Farmers Benefitted	22,547
Average Area Insured per Farmer (Ha.)	1.41
Total Prevented Sowing paid	5.75 mn EUR
Average Prevented Sowing claim per farmer	255 EUR

*From AICI, RIICE project partner

REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES

RIICE

Providing Disaster Risk Assessment and Relief Support

2015: Seeds distributed to farmers after heavy floods caused crop losses

Block	Flooded area (ha)
Parangipettai	5817
Kurinjipadi	4719
Melbhuvangiri	2398
Kumaratchi	1987
Keerapalayam	1729
Kattumannargudi	627
Vridhachalam	601
Cuddalore	596
Panruti	480
Kammapuram	463
Annagramam	226
Nallur	209
Mangalore	159

Information delivered by RIICE and its national partner Tamil Nadu Agricultural University, helped relief efforts by distributing 50 tons of short duration paddy seeds in Tamil Nadu flood affected areas, after satellite data had been delivered to the state government.

REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES

RIICE

Outlook and Potentials

- Build on the experience of Tamil Nadu in other RIICE geographies: Vietnam, Cambodia, Thailand, Odisha, Andhra Pradesh and potentially Indonesia.
- Data availability is one challenge in designing and implementing crop insurance schemes for small-holders. To achieve outreach complementary activities are needed:
  - Development of sustainable distribution and business models in cooperation with the private sector
  - Raise insurance awareness of small-holder farmers

REMOTE SENSING-BASED INFORMATION AND INSURANCE FOR CROPS IN EMERGING ECONOMIES

RIICE

Thank You

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Presentation G.2:

Climate Smart Villages

Arun Khatri-Chhetri, CGIAR

The Climate-Smart Village Approach: An Integrative Strategy for Agricultural Risks Management

Arun Khatri-Chhetri[1] and Pramod K Aggarwal[1]
[1]CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Borlaug Institute for South Asia (BISA), International Maize and Wheat Improvement Centre (CIMMYT), New Delhi, 110012, India.

Introduction

South Asia is amongst the most vulnerable regions to climate change. Rise in average temperatures, changes in rainfall patterns, and increasing frequency of extreme weather events such as severe droughts and floods have been observed in different agro-ecological zone of South Asia. These changes threaten region's food security. Future agricultural systems also need to explore strategies to reduce GHG emissions wherever possible. Several technological, institutional and policy interventions have been proposed by the experts to manage these climatic risks and to mitigated GHG emissions. Action is needed to integrate top-down government schemes and scientific innovations with the stakeholder needs to build lasting resilience in South Asian agriculture.

Addressing the need for proven and effective climate-smart agricultural (CSA) options, Climate-Smart Village (CSV) approach was developed as a means to agricultural research for development (AR4D) in the context of climate change. It seeks to fill knowledge gaps and stimulate scaling of CSA across the vulnerable regions. The CSV approach is founded on the principles of participatory action research for grounding research on appropriate and location/context-specific enabling conditions, generating greater evidence of CSA effectiveness in a real-life setting and facilitating co-development of scaling mechanisms towards landscapes, subnational and national levels. CSA is seen in a broad sense, including practices, technologies, services and institutional options (Figure 1).

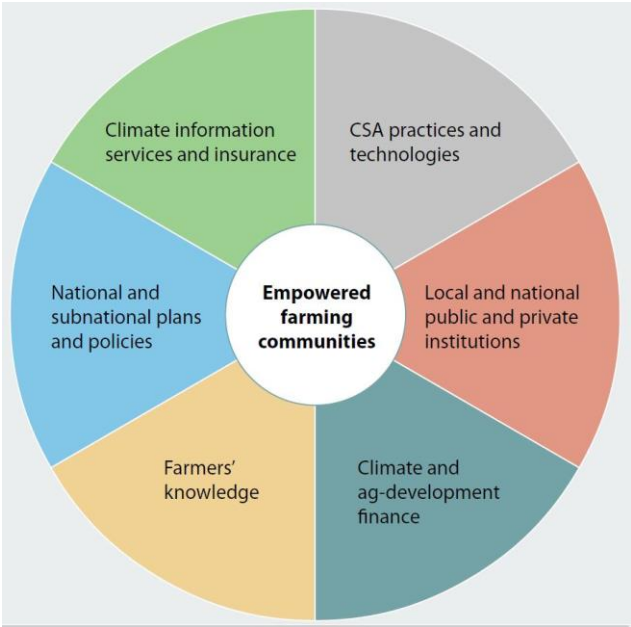


Figure 1Components considered in the CSV

The CSV approach promotes local, incremental adaptation and transformative options and builds local capacities to continue to innovate, experiment, and adapt. The CSV approach aims to have a positive impact on agriculture-dependent communities and this includes ensuring the participation of women farmers and all social groups. Where possible, gender-differentiated aspects are assessed to ensure that prioritization and development of portfolios of climate-smart technologies, best practices, technologies, services, processes and institutional options address gender and social inclusion. In establishing a CSV AR4D site, the very first step is to build trust and partnerships amongst diverse stakeholders; and to get agreement and buy-in to a common approach. Figure 2 presents a systematic framework of building CSVs at the local level.

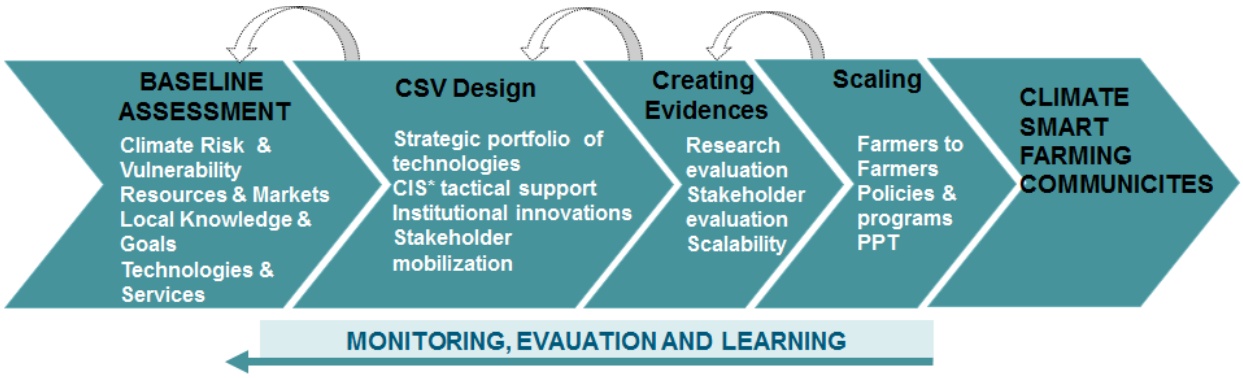


Figure 2 Framework for building CSVs at the local level

CSV Approach for Decision Support

The CSV provides five types of decision support to farmers and other stakeholders, and allows for the research that assesses the effectiveness of such support:

1. Village/community agricultural land use plans and contingency plans considering current and future climate risks, soil and socio-economic conditions, and markets.

2. CSA portfolios that do not become maladaptive in future climate and market scenarios – assessed using models.

3. Strategic guidance before the planting season, where feasible based on seasonal forecasts, on most suitable CSA practices, technologies, services, processes and institutional options. This is done in a participatory mode with local farmer groups and due consideration is given to institutions in the region such as farmers' self-help groups, water-users associations, markets, and the availability of climate and agriculture development finance.

4. Tactical guidance to farmers on using real-time weather forecasts and value-added ICT based agro-advisories; on accessing good quality inputs and technologies for improving water/nutrient/energy use efficiencies, and on risk transfer through insurance mechanisms in case of crop and livestock losses.

Policy level guidance on policy barriers and policy options to unlock CSA and local and national development. This includes consideration of the financial needs to drive scaling.

Key criteria/indicators to assess the results of CSV approach:

Output	Indicator
A. Economic	• Change in productivity of agriculture and allied sectors • Change in net return per hectare • Employment generation • Improvement in input use efficiency (water, nutrients and energy) • Coefficient of variation (CV) in yield and income overtime
B. Environmental	• Total area under climate-smart interventions • Improvement of environmental services • Change in total emission and emissions intensity
C. Social	• Strengthen capacity of women, youth and marginalized groups • Strengthen cooperation and networks in CSVs
D. Institutional	• Level of local institutions' involvement • Coordination among different agriculture and allied sectors
E. Human well-being	• Climate resilient food systems and change in food security • Sustainable livelihoods

Application of CSV Approach in South Asia

Started in 2012 in India, Bangladesh and Nepal, CSV approach aims to scale-up and scale-out appropriate options and draw out lessons for policy makers from local to global levels. Initial pilots include more than 50 CSVs in three countries. The testing of options is done in a multi-stakeholder collaborative platform at CSV sites that are generally a cluster of villages. The key focus of these CSV sites is to generate evidences on synergies as well as trade-offs between different options in terms of productivity, adaptation and mitigation. There is no fixed package of interventions or a one-size-fits-all approach. Options differ based on the CSV site, its agro-ecological characteristics, level of development, capacity and interest of the farmers and of the local government. The results of the CSV approach are usually a portfolio of CSA options and institutional and financial mechanisms. These are available to be scaled out/up by the national/sub-national governments, NGOs and private sector actors in regions with similar agro-ecological conditions.

A number of tools such as Climate-Smart Agriculture Prioritization (CSAP) toolkit, choice-experiments for CSA prioritization, CCAFS Mitigation Options Tool (CCAFS- MOT) for emission measurement, Gender and Social Inclusion Toolbox, crop simulation models, and climate analogues are used in the process. This pilot research done in India (Punjab, Haryana, Bihar, Maharashtra, and Telangana), Nepal and Bangladesh has yielded models of CSA portfolios that can be scaled up for building resilience.

Success of Scaling up CSV approach

To scale-up and out the results of CSV approach, multiple approaches have been followed:

1. Developing CSV sites as learning platforms for building evidences for CSA. Farmers, farmer's organizations, local governments, industry, and other stakeholders are involved with various CGIAR centers and National Agriculture Research System (NARS) in participatory evaluation of all options.
2. Organizing farmer's fairs, video testimonials and village bulletins to scale out good CSA practices and for promoting farmer-to-farmer learnings.
3. Developing strategies to integrate the resultant portfolio of options from CSV sites with the agricultural development strategy/programs of the government and other donors.

Key Outcomes in South Asia:

- Total 29 Climate-Smart Agriculture Technologies are implemented through the Climate-Smart Village (CSV) approach, among them 15 technologies have GHG mitigation potential and 18 technologies can provide benefits to women farmers,
- Total 17,695 households have adopted multiple CSA technologies and practices in three countries (India, Nepal and Bangladesh) in the Pilot CSVs,
- Currently, the government of Haryana in India is implementing the results of CSV sites in 500 villages with a focus on resource conserving machinery, and sensors for optimizing fertilizer use and reducing GHG emissions. State Governments of Bihar, Maharashtra, Madhya Pradesh and Telangana in India have also proposed to finance the use of this approach for building resilience in agricultural systems in thousands of villages. ITC Limited, a multi-business private company of India is also implementing CSV approach to help agriculture-dependent communities in its outreach areas. ITC Limited is building 2000 CSVs in 6 six states (Madhya Pradesh, Maharashtra, Rajasthan, Bihar, Uttar Pradesh and Punjab) in India.
- Similarly, the Government of Nepal has started implementing the CSV approach as a part of the climate adaptation program in 14 climatically most vulnerable districts in 7 States (2 districts in each state). Regular communication and engagement with national and sub-national level policy makers and implementers, policy dialogues and workshops, and periodic visits of CSV sites has created awareness about the CSV approach in the region.

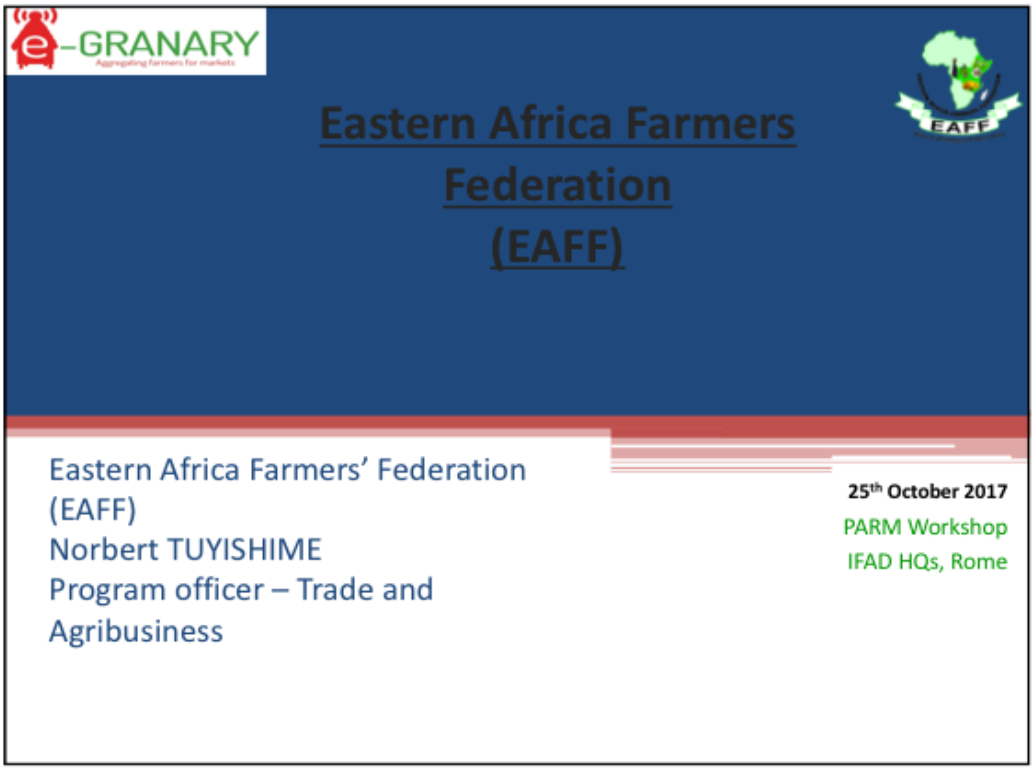
What's Next for CSV Approach

- **Private Sector Promotion/Engagement:** CSA technology dissemination & marketing through ICT, Input supply, Credits and Insurance
- **Building Capacities for Change:** Orientation/capacity building support to government front line staff; farmer groups/cooperatives, community service organizations and private sectors
- **Cutting Edge Research & Knowledge Management:** More science based research; Knowledge generation and application; Diversity of CSA portfolio development
- **Country-Owned CSV Strategic Framework:** Aligning CSA/CSV approach to support implementation of National and Sub-National Agriculture Development Strategy and developing pathways for scaling up Climate Smart Agriculture through CSV approach

Presentation G.3:

eGranary

Norbert Tuyishime, Eastern African Farmers Federation



e-GRANARY
Aggregating farmers for markets

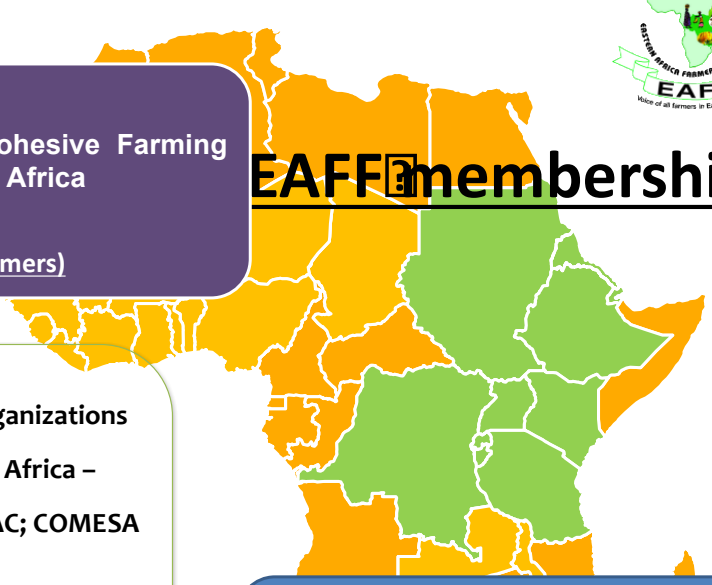
EAFF

EAFF membership

EAFF Vision

A Prosperous and Cohesive Farming Community in Eastern Africa

Currently (> 20 million farmers)



10 countries; 24 apex organizations

Our scope is the Eastern Africa –

Membership scope in EAC; COMESA

& IGAD….

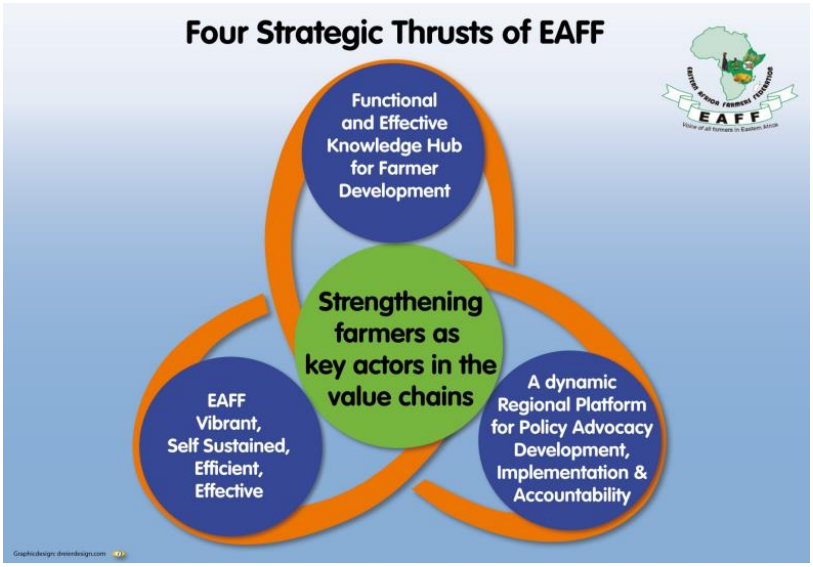
-Producer co-operatives;
- Commodity Associations;
-Women organizations;
-Lobby & advocacy based;

- **Launched in 2001 operations from 2005**
- **Purpose - Regional integration process**
- **Members are producers of crops; livestock; fisheries & Agroforestry**

e-GRANARY
Aggregating farmers for markets

EAFF

2. EAFF 2nd Strategic Plan (2013-2020)



e-GRANARY

Strengthen Farmers as key VC actors.

From 2012 EAFF shifted focus from doing just advocacy and policy work to agribusiness strategy with main aim of empowering member farmers economically through value addition, use of technology, market access and access to affordable financial services

THE PROBLEMS

- ✓ **Lack of good and reliable market** for farm produce. Farmers lack access to regular and predictable large scale buyers that pay a premium;
- ✓ **Lack of financial products targeting smallholder farmers.** Farmers lack a traceable financial history that a credit product or insurance product can be based upon and therefore no access to necessary financial solutions
- ✓ **Poor earnings** due to bad market prices for their produce. Farmers do not benefit from speculation. Majority sell directly after the harvest season, when prices are lowest
- ✓ **Lack of comprehensive data on farmers**
- ✓ **Climate change** is projected to reduce agricultural yields and livestock productivity, worsening the effect of climate shocks on the food system.

PRODUCTS/SERVICES ON eGRANARY

eGRANARY is facilitating provision of **Five** key services to the agricultural sector – communication and e-extension services, quality inputs access, affordable financial services , crop insurance and Market linkage.

Assured buyer for farmers → Farmers access to financial services and crop insurance products → Access to climate smart production techniques and services → eGRANARY, collects data and manages all the strategic partners

Farmers have assured income and can afford to pay for quality inputs, loans, premiums and subscription fees to eGRANARY

Financial companies earn interest and insurance premiums on tailored financial products to farmers

Farmers receive capacity building solutions since they are the backbone of the program.

eGRANARY as a platform is accessible through the dumbest of the phone. Next phase, mobile and web applications

e-GRANARY Achievements –

- Launched in Kenya (*492#) and Uganda (*284*492#) with FAO support. Currently on AGRA support.
- > 28,000 farmers registered in Kenya.
- Signed formal MoUs and agreements with off-taker, insurance company, financing institutions, financial technology company and equipment leasing company.
- Through the e-Granary in Kenya we have an active program on maize and soya beans value chains have been piloted on the platform.
- Currently we are in the second season and cumulatively we have issued **116,250$** worth of in-kind input loans for **36.35MT of certified seed** (Maize -26.15MT and soya – 10.2MT), **53.87MT fertilizer**, planted **3635acres of crop**, farmers have paid cumulatively **premiums of 29,000$;**

e-GRANARY *Achievements – 2*

- in the first season the sum assured was **150,000$** and after long drought we received compensation of **60,000$,** about **4,805** farmers have been reached by the project so far. The in-kind loans varied from **29$ to 50$** per farmer.
- Initial harvest delivery done of Maize and Soya beans approximately 75.7 MT valued at USD 25, 681. The aggregation is on going;
- We plan to reach **>100,000** farmers gradually; and to cover other countries in East Africa.
- Launch of the **EAFF LTD** to eventually oversee the operations of e-Granary.


EAFF
Voice of all farmers in Eastern Africa
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Thank You for listening
merci beaucoup votre attention

PARM
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