Disaster Risk Finance for Agriculture

Module 7

Risk Finance Instruments 1
Macro and meso-level
Risk Transfer for Agriculture

Disaster Risk Financing & Insurance Program

SUPPORTED BY WORLD BANK GROUP

African Risk Capacity
Sovereign Disaster Risk Solutions

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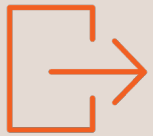
Structure of Webinars

Total of 8 Factsheets & 90-minute Webinar for each Factsheet

Different guest speakers

Live audience polls & interactivities: Please participate

Q&A: Please share your questions via chat



Breakout sessions at the end of each Webinar: Please register

Certificate of participation from the World Bank*

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Certificate from World Bank

Participants will have an opportunity to obtain "Certificate of Informed Policymaker" from the World Bank on successful completion of following criteria:

Participation Certificate:

Participants need to attend 4 out of the 8 webinar sessions and complete a short survey/quiz.

Program Completion Certificate:

Participants need to attend 7 out of the 8 webinars and complete a short survey/quiz.

Webinar Road Map

SESSION

1. Introduction to DRFA
2. Reducing & Preparing for Risks in Agriculture
3. The Role of Financial Market Solutions for Building Resilience to Shocks in Agriculture
4. Structuring an Agriculture Financial Protection Scheme
5. Implementing an Agriculture Financial Protection Scheme
6. Risk Finance Instruments 1 – Agricultural Insurance
7. Risk Finance Instruments 2 – Macro and meso-level Risk Transfer for Agriculture
8. Risk Finance Instruments 3 – Risk Retention Mechanisms for Agriculture

Overview of fact sheets

FACT SHEET #

1

- Four core principles of DRF, risk layering, and types of DRF instruments
- How agriculture fits in the broader DRF picture

2

- Introduction to risks facing rural households and agri sector
- How farmers, businesses, govts can reduce risks
- How farmers, businesses, govts can prepare for risks
- Outline a comprehensive approach to reduce and prepare for risks

3

- Benefits of greater access to finance including: enhanced resiliency of the agricultural sector, rural livelihoods, and economies
- Financial tools available including: credit, savings, insurance, transfers, climate-smart agriculture financing, and value-chain finance and when to use these tools

4

- Different aims of DRF and who to protect
- Potential objectives and priorities for covering certain risks
- Disaster risk financing instruments in agriculture sector – what exists
- importance of pre-planning the financed disaster response and delivery channels

5

- Different stakeholders in implementing a DRFA scheme
- Typical roles and responsibilities of the public and private sector in supporting and developing DRFA
- Importance of monitoring and evaluation

6

- Policy objectives of agriculture insurance
- Agricultural insurance products – key features, benefits, constrains of index insurance
- Public-private partnership in agriculture insurance – Overview and delivery models

7

- Overview and objectives of macro-level risk transfer for agriculture
- Structuring a macro or meso-level risk transfer solution – alignment with other financing instruments and other things to consider

8

- Sovereign risk retention mechanisms for agriculture
- Structuring risk retention instruments – key features and things to consider

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RECAP OF
Module 06

Micro-level risk transfer

Key takeaways of Module 6

- Micro-level crop and livestock index insurance products are often more suitable to small farmer conditions than indemnity-based products, but basis risk and farmer awareness are major challenges
- Agricultural insurance works well when bundled with other inputs and services
- Strong government involvement and financial support is crucial to the scale-up / sustainability of agricultural insurance in low- and middle- income countries
- PPP frameworks offer a more sustainable solution than private only or public only agricultural insurance programs in low and middle income countries
- Premium subsidy support is a feature of most programs in developing and developed countries alike which have scaled-up, but should be prudently planned

Word Cloud 1: Which people, organizations or groups might need to purchase insurance and risk transfer products?

Go to www.menti.com

(or prepare the QR scanner on your phone)

QR:

Use the code: 4861 4219

Content

1. Micro, meso and macro level products
2. Overview of meso level risk transfer for agriculture
3. Case study: Meso insurance in the Democratic Republic of Congo
4. Case study: Burkina Faso's credit guarantee options
5. Overview of macro level risk transfer for agriculture
6. Case study: ARC Limited

Micro, meso and macro

level products

Meso-level risk transfer solutions

Meso-level

Parametric or index insurance held by an institution, either to transfer default risk by a microfinance institution, manage production risk by contract farmer or agroprocessors, or to aggregate demand of members (such as a farmer's association taking out a policy to protect its member farmers). *DRC, Bangladesh.*

Credit guarantee purchased by financial institutions to mitigate credit risk by transferring part of their losses on loans in the event of default in exchange for a fee. May be used by government and development financiers to incentivize lending to underserved segments (e.g., agri-producers) by minimizing financial institutions' risk*. Burkina Faso*

Macro-level risk transfer solutions

Macro-level

Sovereign risk insurance purchased by a government to provide liquidity and smooth budgets at times when natural disasters occur. Commonly purchased through **regional insurance pools** such as the African Risk Capacity (ARC), to improve affordability and build regional ownership and technical capacity. May be used by government and development partners to provide support directly to affected households to mitigate the impact of shocks. *Mexico 2003, CADENA: crop & livestock; ARC 2014 – in 2019/20 drought insurance in 11 African countries + humanitarian organizations; Kenya 2015, KLIP: livestock-pasture; Ethiopia 2017, SIIPE: livestock-pasture*

Alternative risk transfer products like cat bonds, weather derivatives and price derivatives have similar objectives to sovereign insurance, but the risk is placed into the financial markets via different mechanisms *(not the focus for this presentation). Jamaica 2021, US$185m*

How do micro, meso and macro index insurance products differ?

Type of insurance	Who?	How?
Micro	• Individuals are policyholders • Usually smallholder farmers • Often grouped in farmer organisations	**Farmer** ⇄ premium / payouts ⇄ **Insurer**
Meso	• Aggregators are policyholders (MFI, bank, co-operative, agro-processor, contract farmer, input supplier…)	**Beneficiaries (farmers, linked to aggregator)** ⇄ aggregator sets the **premium** & **payout rules** to individual famers ⇄ **Aggregator** ⇄ premium / payouts ⇄ **Insurer**
Macro	• Government/development partner is the policyholder • Payouts made directly to vulnerable farmers	**Beneficiaries (vulnerable subsistence farmers)** ⇄ Government sets the payout rules to individual farmers ⇄ **National or State Government** ⇄ premium / payouts ⇄ **Insurer**

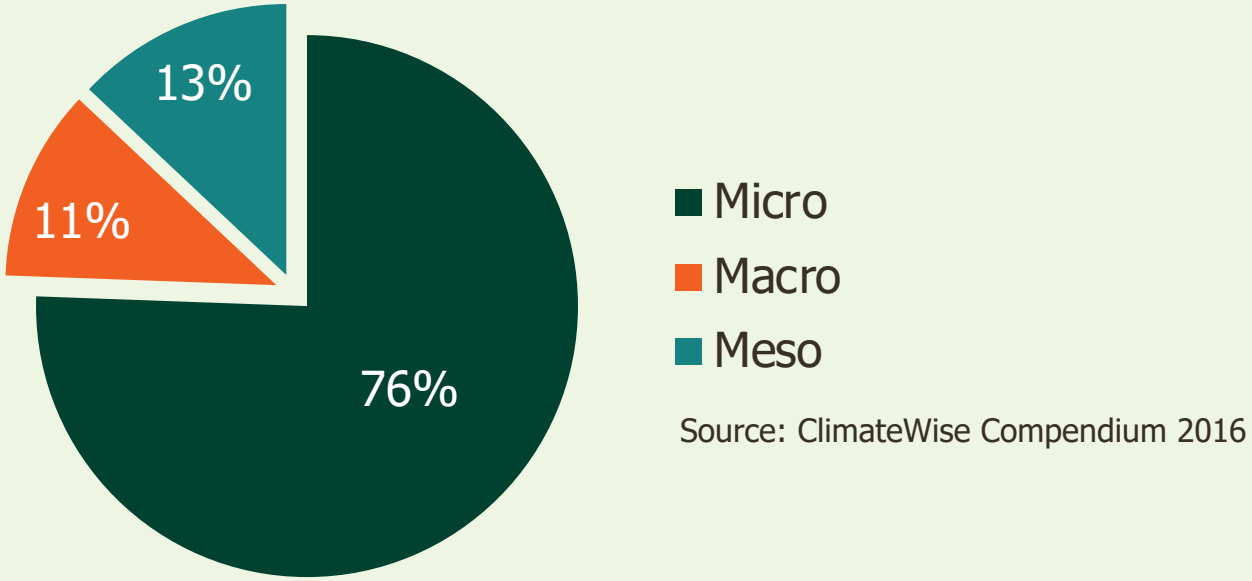
What are the tradeoffs of macro/meso vs. micro level products?

	Meso- and macro- level	Micro-level
Outreach	Financial protection can reach hundreds or even thousands of small poor farmers directly or indirectly under a single policy	Limited
Affordability	More affordable premium due to reduction of sales and operational costs e.g., marketing and promotion, underwriting and claims processing	Less affordable premium due to high retail costs
Supply of insurance	The scale and spatial spread of meso/macro insurance allows for sufficient business volume and more viable terms than those of a small micro-level project.	Less attractive to local and international insurers
Supply of credit	Meso risk transfer can be used to protect lenders' portfolios, increasing their willingness and ability to lend	Farmer may use policy in place of collateral to gain access to credit
Certainty and timing of payout	May be slow if distributed by aggregator or government	• Farmers have **more certainty** over payout • **Arrival of payouts** may be **faster** • May be **more objective/transparent** than when payouts are distributed by aggregator
Behavioral changes	Limited	Individual policyholder may be confident to invest knowing they will be protected in the event of a disaster, this allows them to focus on production optimization

Although the rationale for meso and macro programs is strong, experience is still limited

Interest and investment in meso and macro schemes is increasing and share of these schemes are expected to grow.

Split of global agricultural insurance programs



Source: ClimateWise Compendium 2016

OVERVIEW OF

Meso level risk transfer for agriculture

Why Meso-Index Insurance?

Meso-level insurance covers aggregated exposure to systemic risk and can be easier and more efficient than micro-level insurance for individual farmers:

- **Reduced number of transactions** of higher value
- Staff of meso-level institutions potentially **more financially aware and educated**
- Transfer of aggregated risk is, **less exposed to idiosyncratic fluctuations and basis risk**
- Major **cost savings** for insurers in administration and operating overheads
- **Strong business rationale** and win-win for all parties (insurer, risk aggregator, farmers)

However, benefit to farmers is dependent on program structure and aggregator; aggregators can buy index products to protect their own financial exposure to systemic risk and may (or may not) create payout rules that **directly** or **indirectly** benefit farmers.

Example 1. Pure portfolio financial protection for regional risk aggregators

Farmers

Farmers do not participate directly in the insurance cover:
- indirectly contribute to premiums through load on loan repayments
- may not receive payouts.

Indirect benefit for farmer, risk aggregator can use payouts to:
- Reschedule loan and interest payments for small borrowers who have lost their businesses or crops and cannot repay their loans and
- Extend new loans to the business to put it back into production and for farmers to ensure they are able to purchase seeds, inputs and to plant in the new season.

Risk aggregator

Insurer: Provides payouts if event is triggered

Insurer

Risk aggregator: purchases meso-level weather index insurance cover
- protects loan portfolio against catastrophe climatic risk which results in crop failure and inability of farmers (borrowers) to repay their loans.

Example 2. Combined portfolio and farmer financial protection by a regional risk aggregator

Farmers

Contributes to premiums, amount set by risk aggregator

The risk aggregator may elect to distribute part or all of the payout to its clients (borrowing farmers).

Farmers are (usually) provided with index insurance awareness and education and training, to increase understanding on insurance program and claim payouts.

Farmers are deemed 'direct' beneficiaries

- Contribute to premiums
- Receive payouts.

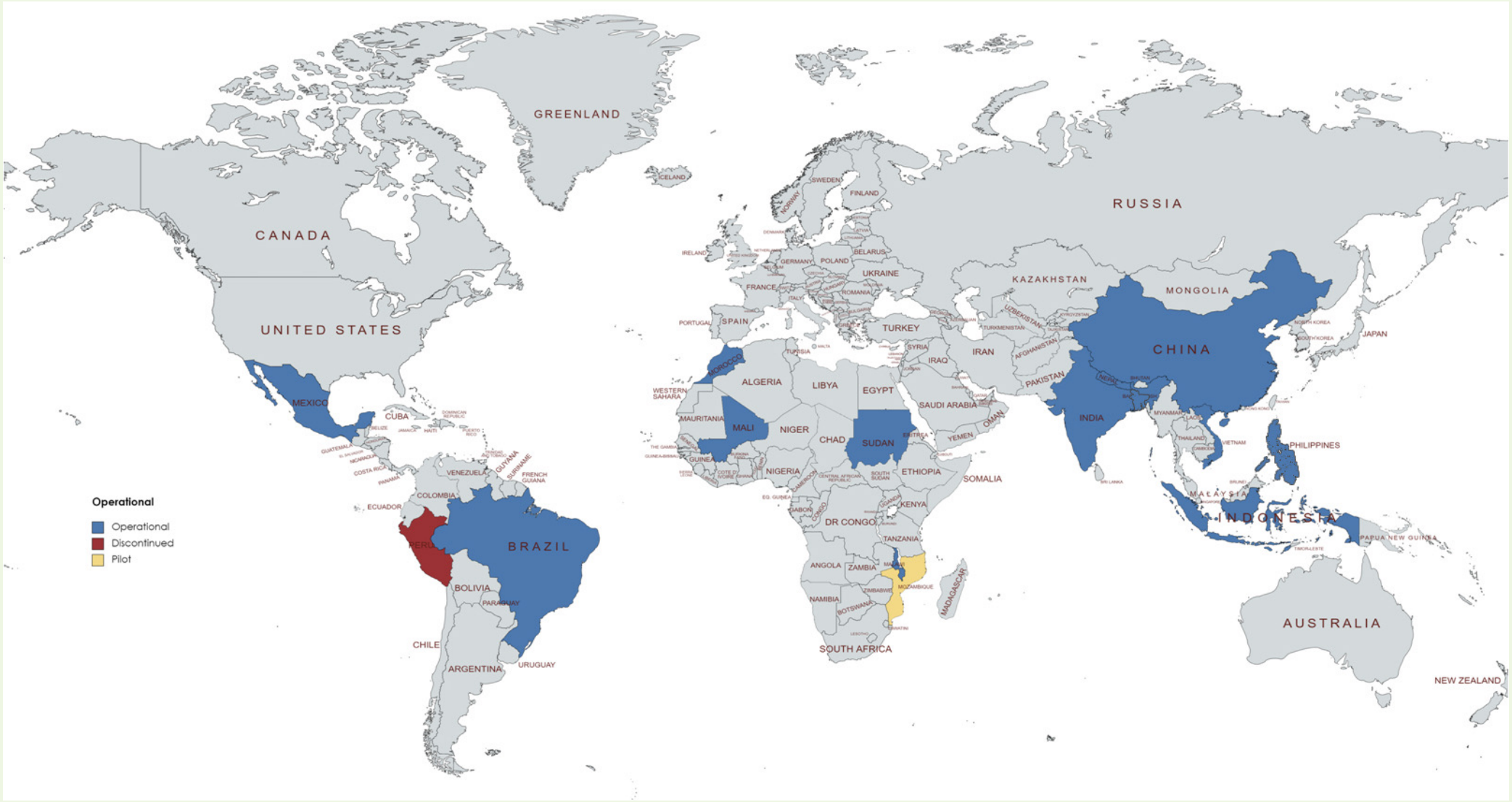
Risk aggregator

Insurer: Provides payouts if event is triggered

Insurer

Risk aggregator (e.g. rural bank) purchases a single meso-level weather index insurance policy from an insurer on behalf of large numbers of small farmers that it works with

Experience with meso-level index insurance is relatively limited but the outlook is positive



CASE STUDY:

Meso insurance in the Democratic Republic of Congo

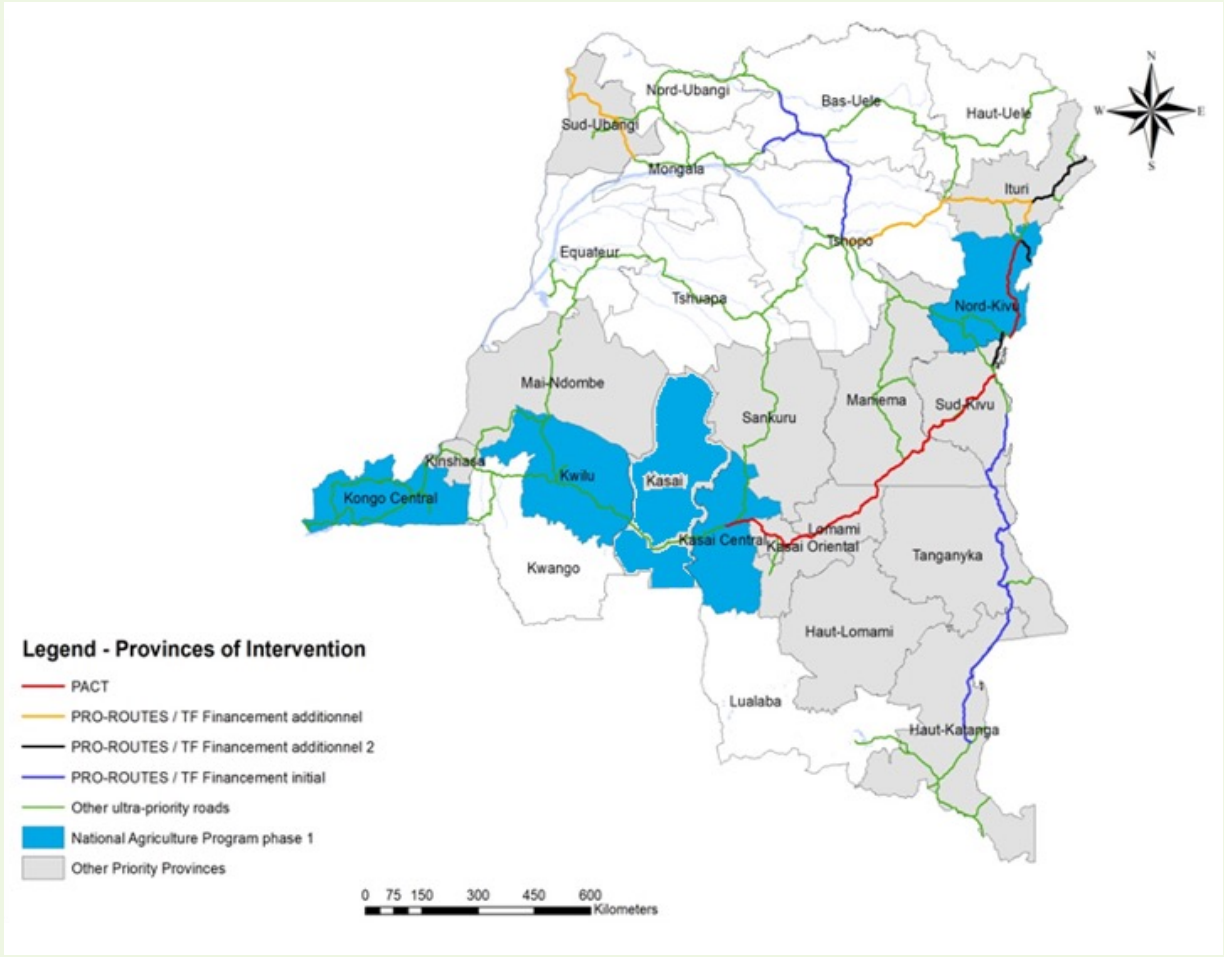
The National Agriculture Development Program aims to improve the productivity and resilience of the agricultural sector in the DRC

- **Multi-phase approach:** 15 years, US$1.5 billion, national coverage
- **Phase 1:** 5 years, US$500 million, 5 regions
- **Over 1.7 million farmers** included in the protection scheme

Improved farmer productivity through investment in technical packages

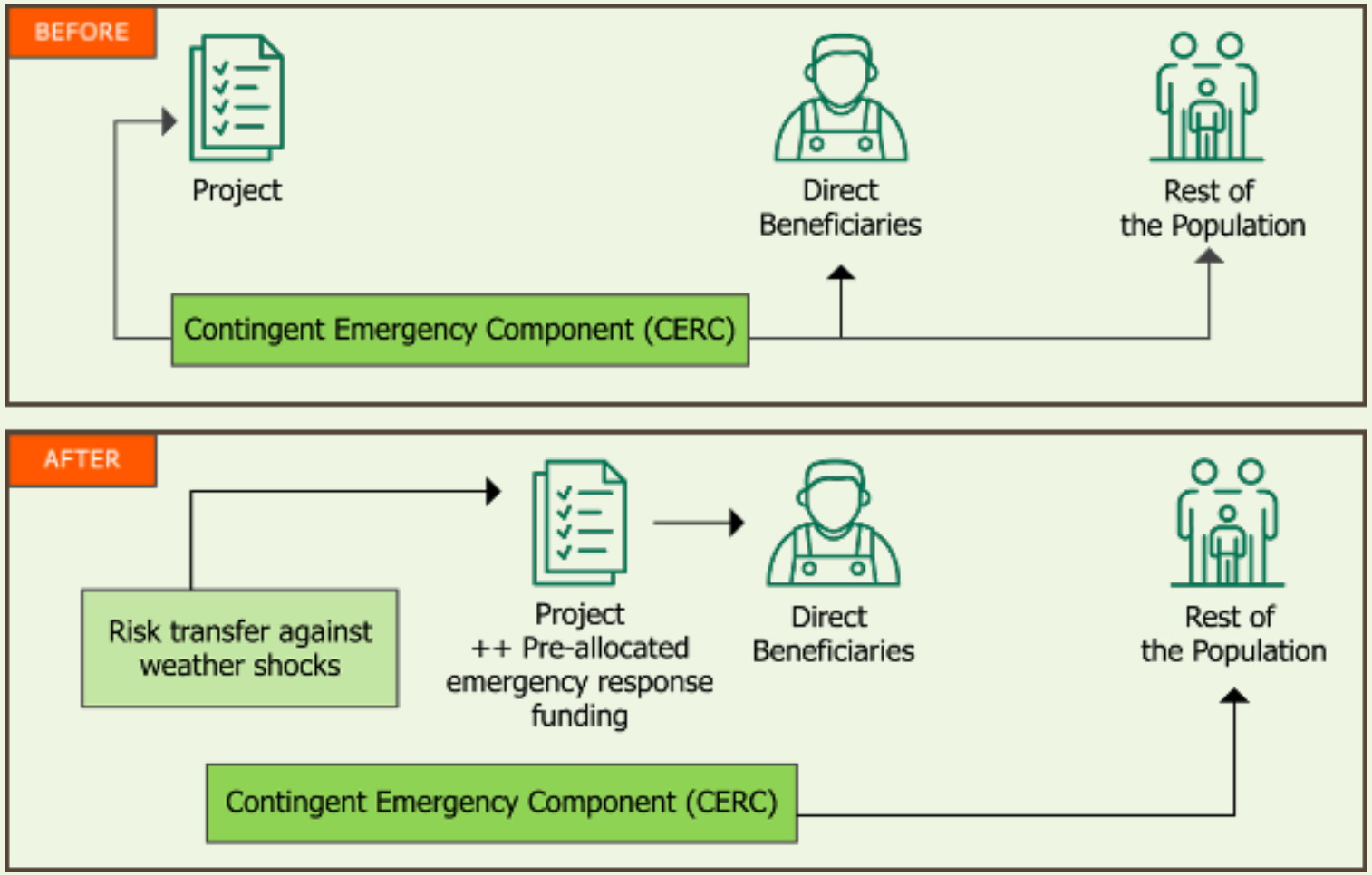
Infrastructure upgrades to facilitate market access

Strengthening farmers' resilience to disasters



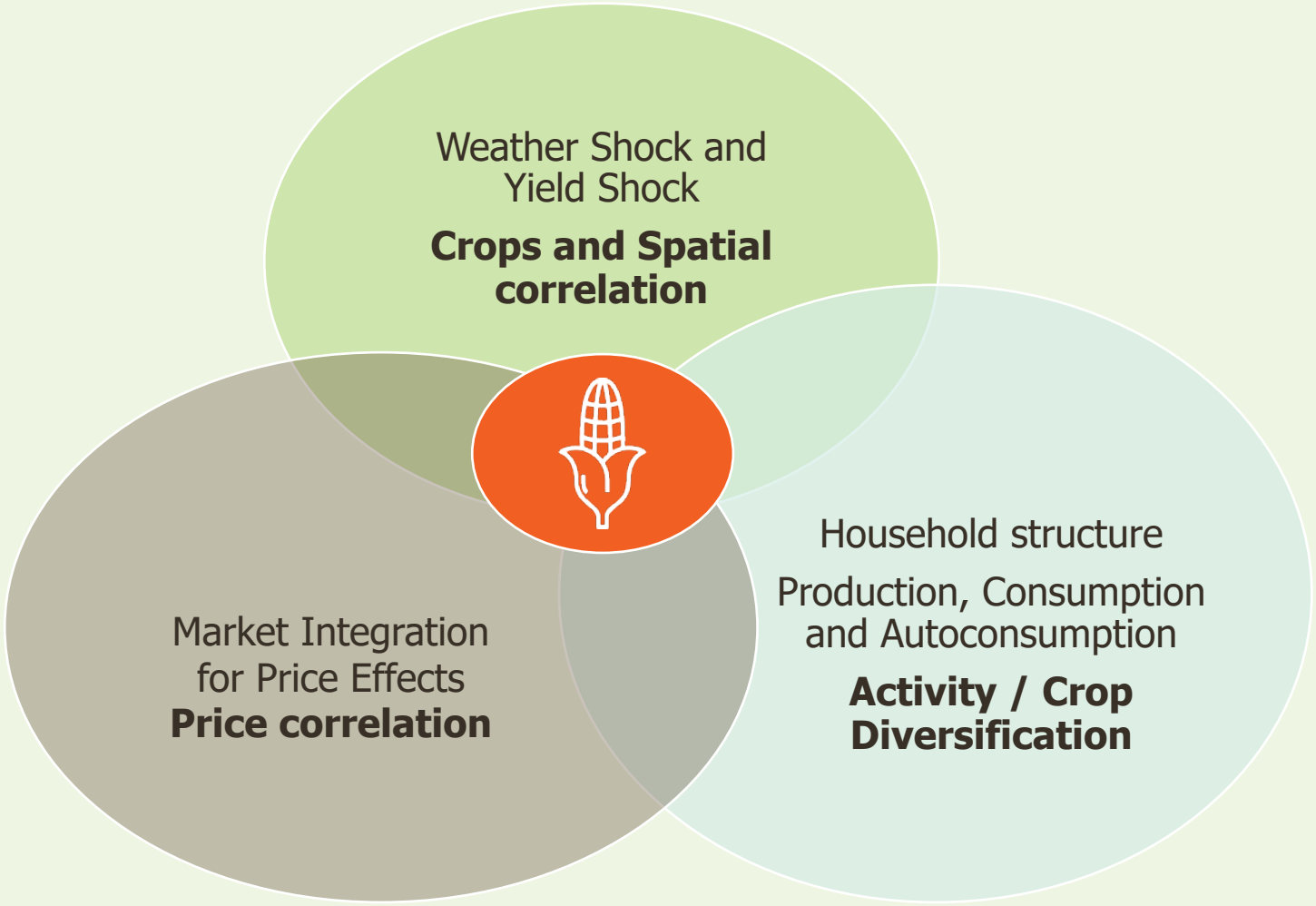
What was the intervention that was needed in DRC and why?

One of the key success factors of the program is to secure the income of the farmers during their transition phase.



Key design considerations in the meso product

Vulnerability assessment and Basis Risk

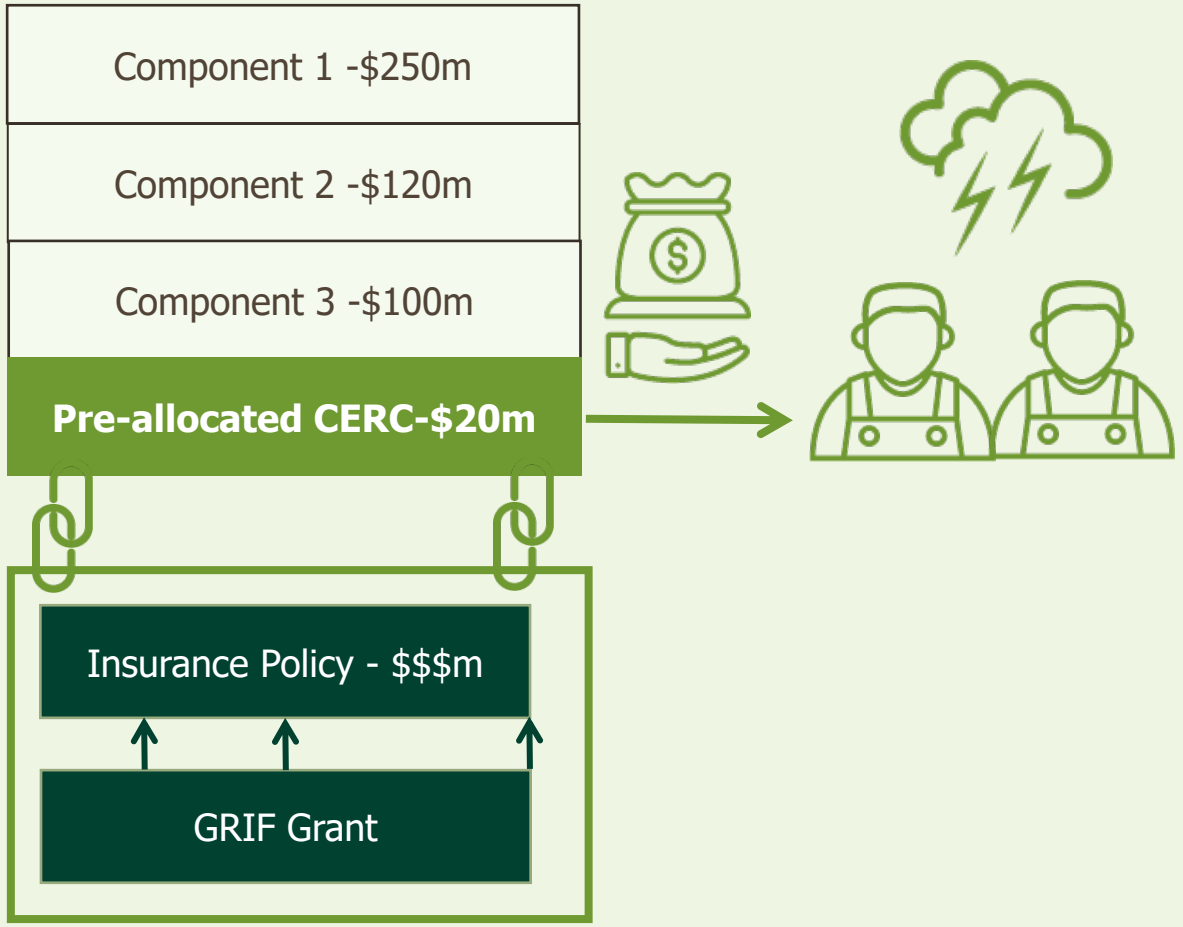


Lack of historical yield data impacts the quality of the correlation between the moisture soil index and yield levels.

Uncertainty on price elasticity to harvest: what is the likely impact in the price of maize and cassava following a shock to harvest.

Baseline productivity gains from the program. If the NADP allows farmers to produce more, then what is the right base for the insurance payout calculation?

How did this product interact with other risk finance instruments?



Event Severity

Risk Transfer

For rare but severe weather events, parametric insurance will compensate farmers.

Triggered by a weather index

Reserve Fund (pre-allocated CERC)

For relatively frequent shocks, a reserve fund is set up and to compensate affected farmers .

Mixed soft and hard triggers. E.g., alert of humanitarian associations on the ground + severity threshold

Classic CERC and other project mechanisms

For low severity shocks, the classic response mechanisms will remain in place.

Soft trigger only: Government declaration of emergency and needs assessment that triggers the classic CERC mechanism

How to ensure the product meets its objectives?

An incremental approach to capacity strengthening of the local private sector is key to ensure sustainability.

Disbursement channels & Contingency planning

Identifying the right delivery partners and mechanisms, ones that can be present and perform effectively and efficiently during a crisis (i.e., mobile delivery vs cash) is key to ensuring the success of any agricultural risk financing strategy. Ex-ante planning through contingency plans by type of AG emergency in identifying and outreaching to the most vulnerable rural populations will ensure quick delivery of cash transfers, seed packages, or other resources to meet urgent household needs and sustain livelihoods after disasters strike.

Ownership

Efforts to mainstream Agricultural Risk Management into policy processes and investment programming need to be country-led, embedded in the national legislative framework and managed directly by governmental institution to ensure broad-based stakeholder engagement, optimization of response strategies, and sustainability over time.

Capacity building for data collection

Building strong monitoring systems that can collect and share data in "real-time" and don't require on-site presence is key in FCV contexts. One way to achieve this goal is through alternative data sources, such as remote sensing data crop cutting experiments.

Sustainability

To ensure broad-scale buy in and to effectively manage expectations, risk management and risk financing strategies require sustained stakeholder engagement (with government agencies, especially ministries in charge of agriculture and livestock, and finance – the latter as custodians of national budgets – but also with civil society and the private sector), as this is critical to informing the dialogue and ensuring that the requirements and priorities of both policymakers and target beneficiaries are met.

CASE STUDY:

Burkina Faso’s credit guarantee options

Overview of Credit Guarantee Schemes

- Partial credit guarantee scheme (CGS) provide credit risk mitigation to financial institutions by absorbing part of their losses on loans in case of defaults in return for a fee
- Aim to minimize financial institutions' risk in lending to underserved segments (MSMEs, agri-producers)
- Important design features make CGS an attractive instrument to crowd-in financing from private financial institution

Coverage ratio

The share of the losses underwritten by CGS

High enough to attract FIs **but** should not eliminate the risk entirely

Leverage ratio

Multiplier effecting of CGS

Allow to guarantee loans higher than the size of the endowment

Delivery approach

Loan-by-loan (individual guarantee) approach

Portfolio approach using a set of pre-agreed criteria

Main Benefits

Reduction of collateral requirement

Extension of debt maturity

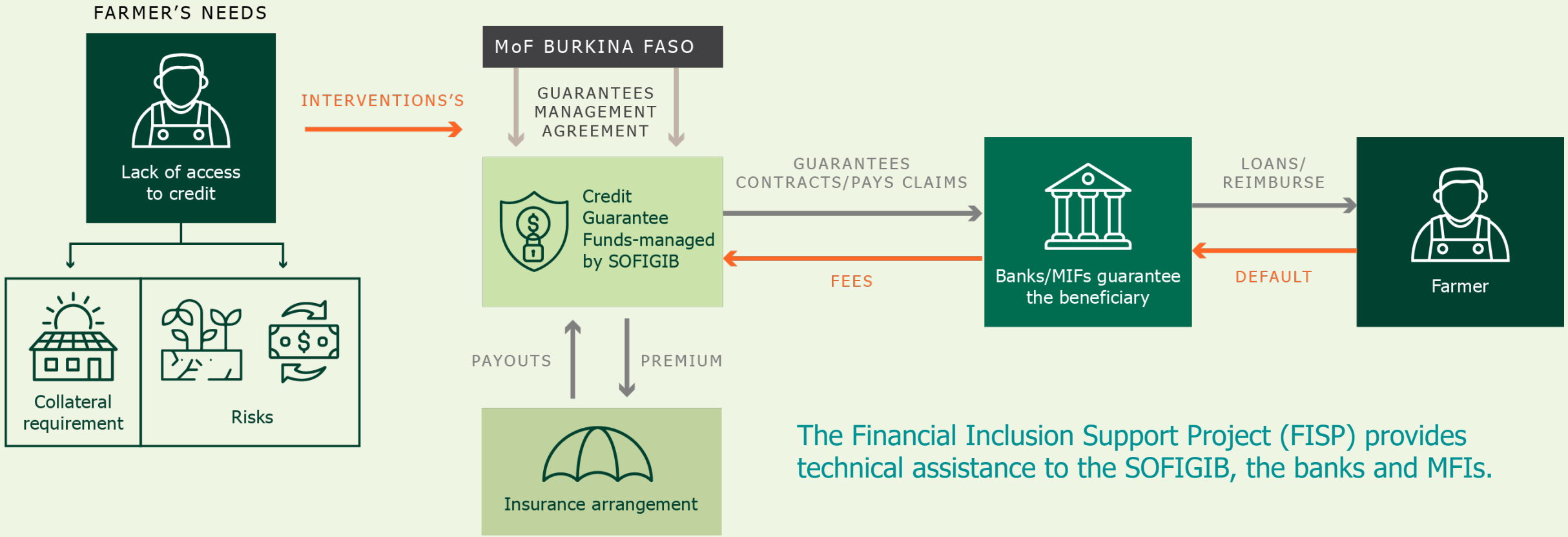
More favorable debt amortization/ repayment schedule

Extended list of available lenders

Introduction of new borrowers to the market

Introduction of large-scale lending operations

What was the intervention that was needed in Burkina Faso and why?



The Financial Inclusion Support Project (FISP) provides technical assistance to the SOFIGIB, the banks and MFIs.

What were the key design considerations in the meso product?

Enhanced PPCG: before considering a backstop to the funds, governance and risk management within the PPCG should be functioning well

The scope: Although climatic hazards are an important cause of default, they are not the only source of credit risk.

- The PPCG will be insured against a climatic hazard (drought) likely to create large-scale credit losses, rather than directly insuring the credit risk.

Data : the required data for designing such solution is not systematically available and when it exists the lack granularity remains a constraint. Data is the backbone of risk modelling

Insurance market and regulatory framework: important consideration for potential participating insurance companies, brokers and reinsurance

How did this product interact with other risk finance instruments?

Ministry of Solidarity and Social Protection	Ministry of Agriculture and Animal Resources	Ministry of Finance and Economy
Adaptative safety nets	Grain reserves: physical and cash	Budgetary reserve
	Agriculture insurance programs	Enhanced PPCG

! Lack of risk finance strategy

How to ensure the product meets its objectives?

Quality design of the instruments:
For the PPCG

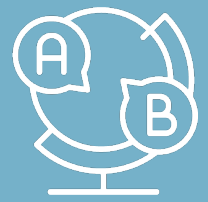
- Design should minimize moral hazard and adverse selection:
  - Partial guarantee: PFI keeps an interest in screening loan applications and selecting viable borrowers
  - Portfolio guarantee and automaticity: PFI cannot limit guarantee coverage to the riskiest loans and all loans meeting pre-agreed eligibility criteria, verified at the time of the claim, are automatically processed for a payout
- Stop loss mechanism embedded
  - When the nonperforming portfolio is above 15%, the PFI can no longer enter loans on the guarantee
  - No claims will be paid by the PPCG when the loans portfolio degradation rate reaches 30%
- Insurance arrangement as a backstop
  - Strong analytics to identify the appropriate index, minimize basis risk

Capacity strengthening: Building capacities of national stakeholders from the feasibility analysis throughout the design of the solution and beyond, including residential technical assistance.

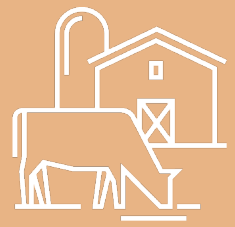
OVERVIEW OF

Macro level risk transfer for agriculture

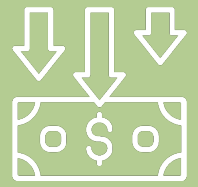
Why use macro-level index insurance to finance disasters?



Direct welfare benefits
Late response can lead to decreased child nutrition and reduction in income per capita (GDP). Studies showed that the later the response, the more costly the impact for households.



Pre-empts negative coping strategies
Households tend to cope with disasters by selling livestock and productive assets, reducing food consumption, and taking children off school for example. These responses often have long-term, irreversible and sometimes intergenerational effects.



Reduces the cost of response
According to recent studies, a late humanitarian response costs approximately 7 times that of an early response, and donors could save up to 30% on humanitarian aid spending if funding was provided earlier.

Macro-economic benefits
Reduces the need for governments to divert scarce resources away from basic public services therefore protects development gains. Reduces leakages and improves fiscal discipline and limits budget volatility which contributes to national stability.

How can macro-level insurance be used?

Macro-level insurance

Sovereign insurance policy

Commonly through risk pools like ARC

- **Policyholder**: government
- **Beneficiary:** government
- **Payout**: lump sum used at government's discretion

Macro insurance policy

Mexico (CADENA), Kenya (KLIP), Ethiopia (SIIPE)

- **Policyholder:** government
- **Beneficiaries:** households or farmers or pastoralists
- **Payout:** may be direct payments to beneficiaries from insurer or lump sum for government to transfer to beneficiaries

Example 1. Cadena Mexico

- Mexico was the first country in 2003 to introduce macro-level crop and livestock index insurance products under Cadena
- CADENA helps stabilise marginal and subsistence farmers consumption and incomes until the next season
- Has enabled beneficiaries to increase their expenditure by about 27% and their incomes by about 38%;

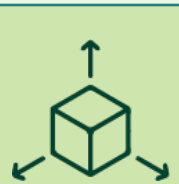
Risks and production covered

- Drought, Excess Rain/flood, Frost, Windstorm (hurricanes)
- Crop
- Livestock
- Fish

Beneficiaries

Subsistence crop and livestock and aquaculture/fisheries producers without access to formal bank credit

- In 2011, reached 2.5 million small-scale subsistence producers or 56% of the total of 4.5 million producers in 31 states



Modalities

- State Governments purchase cover on behalf of eligible subsistence farmers registered with the local municipality.
- Premiums financed on a 20:80 ratio between state and federal government.
- Four private commercial insurers and the state reinsurer Agroasemex tender for business on an annual basis.

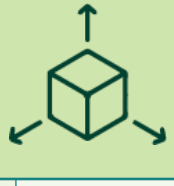
Example 2. Kenya Livestock Insurance Program (KLIP)

Risks and production covered

- Droughts - widespread depletion of forage and grazing resources that lead to livestock death due to starvation.
- Livestock in arid as semi-arid lands across 8 counties of northern Kenya.

Beneficiaries

- Vulnerable pastoralists
- Currently covers about 20,000 vulnerable pastoralists



Modalities

- State Department of Livestock of the Ministry of Agriculture, Livestock and Fisheries (SDL-MALF) purchases policy and pays 100% of premium
- SDL identifies vulnerable pastoralists with help from county administrations and local community leaders.
- Local insurance companies tender for KLIP on an annual basis.
- Insurers make direct payouts to each of the beneficiaries' registered bank or mobile money account

KLIP is a macro-level pasture-drought index insurance cover that provides payouts in the event of a drought for asset protection

CASE STUDY:

ARC Limited

Why did ARC choose to design a macro insurance product?

What problem was ARC looking to solve with the product?

- Lack of disaster preparedness
- Ad-hoc post-disaster response
- Absence of pre-arranged financing tools

- Improve disaster preparedness and response by assisting countries to better prepare, plan and respond to disasters
- Shift from post-disaster response to pre-arranged financing

What were the key design considerations in the sovereign macro product?

Satellite Rainfall Data
- RFE2, ARC2, CHIRP

WRSI Index
- Drought index based on rain-fed agriculture

Contingency Planning
- ARC payout to be used as per the Final Implementation Plan (FIP) to deploy operations

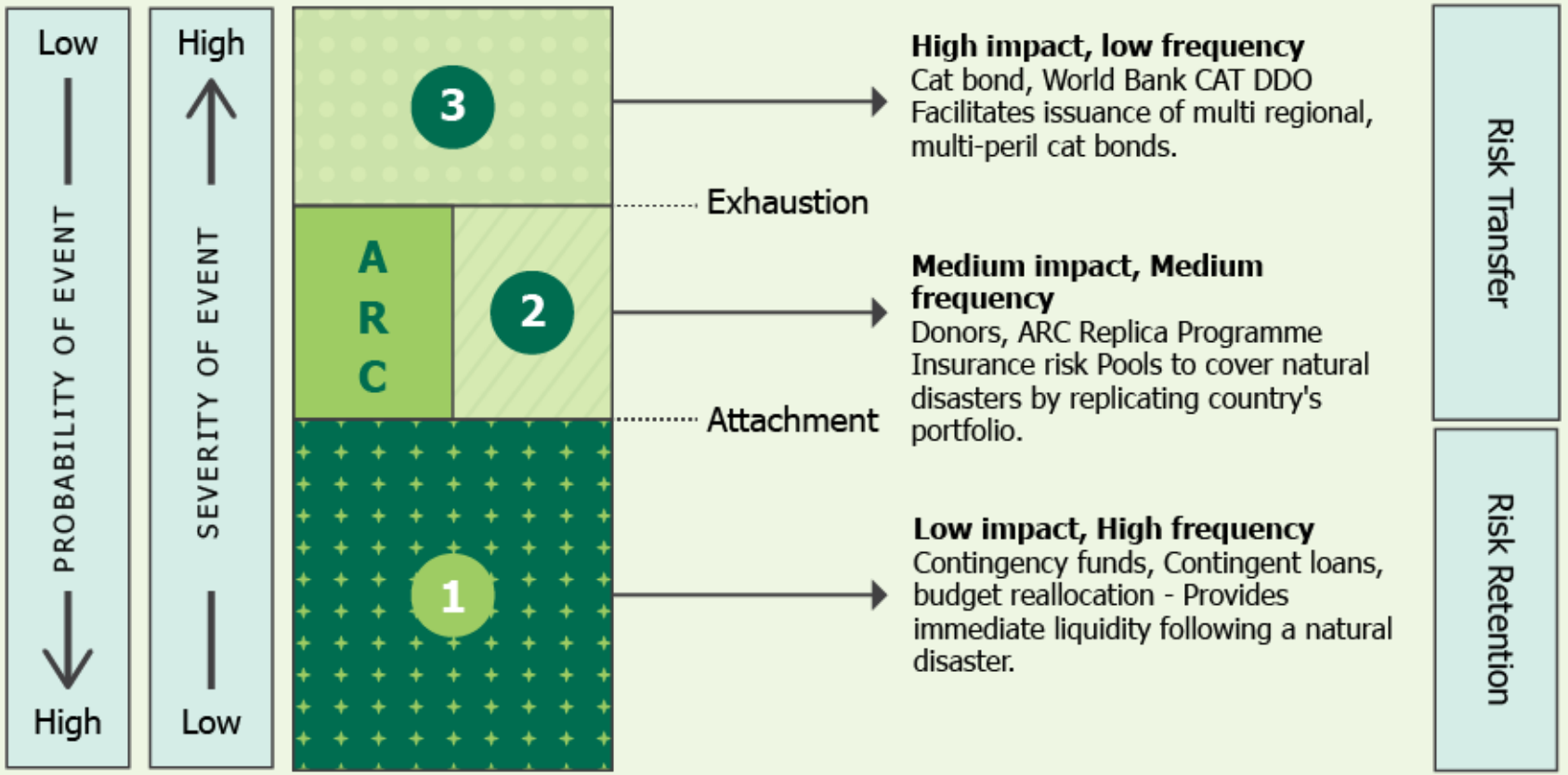
Population Affected by Drought – Vulnerability Profiling, Income distribution for agriculture

Risk Transfer Parameters
- Attachment
- Exhaustion
- Coverage Limit
- Ceding Percentage

Average Response Cost Per Person – Operations plan in contingency plan used to derive this

Modelled Drought Response Cost (MDRC) – Monetary (USD) value for Drought impact

How does this product interact with other risk finance instruments?



How to ensure the product meets its objectives?

1. A minimum benchmark of five years:

- Credible indicator for the detection of droughts
- Higher duration benchmarks reduce the volatility of the risk profile

2. Using rainfall dataset starting from 2001:

- Validating the impact of disasters in the 1980s is difficult and adds uncertainity into the model
- Shift in agricultural practices over time

3. Minimum attachment level of 1-in-4 years:

- Greatest benefit from insurance is obtained when used to protect high impact events

4. Quality Assurance and Basis Risk Management:

- Improved model customisation and validation processes
- Using most recent data to reduce basis risk

5. Independent Loss Calculation Software:

- Enables easy detection of errors

6. Product ownership for the Member States:

- Autonomy and full control over model parametrization
- Flexibility in selection of risk transfer options

Risk reduction, product design and challenges

No explicit incentives were incorporated as part of product design

An indirect incentive to reduce risk exists due to lower premiums for lower risk

Embedded/direct incentives required to drive investment in risk reduction

Challenges

- Lack of a holistic risk layering approach; no other tools to complement insurance
- Unavailability of reliable data for model parameters
- Absence of enabling political, institutional, and regulatory frameworks

LESSONS LEARNED AND

Final conclusions

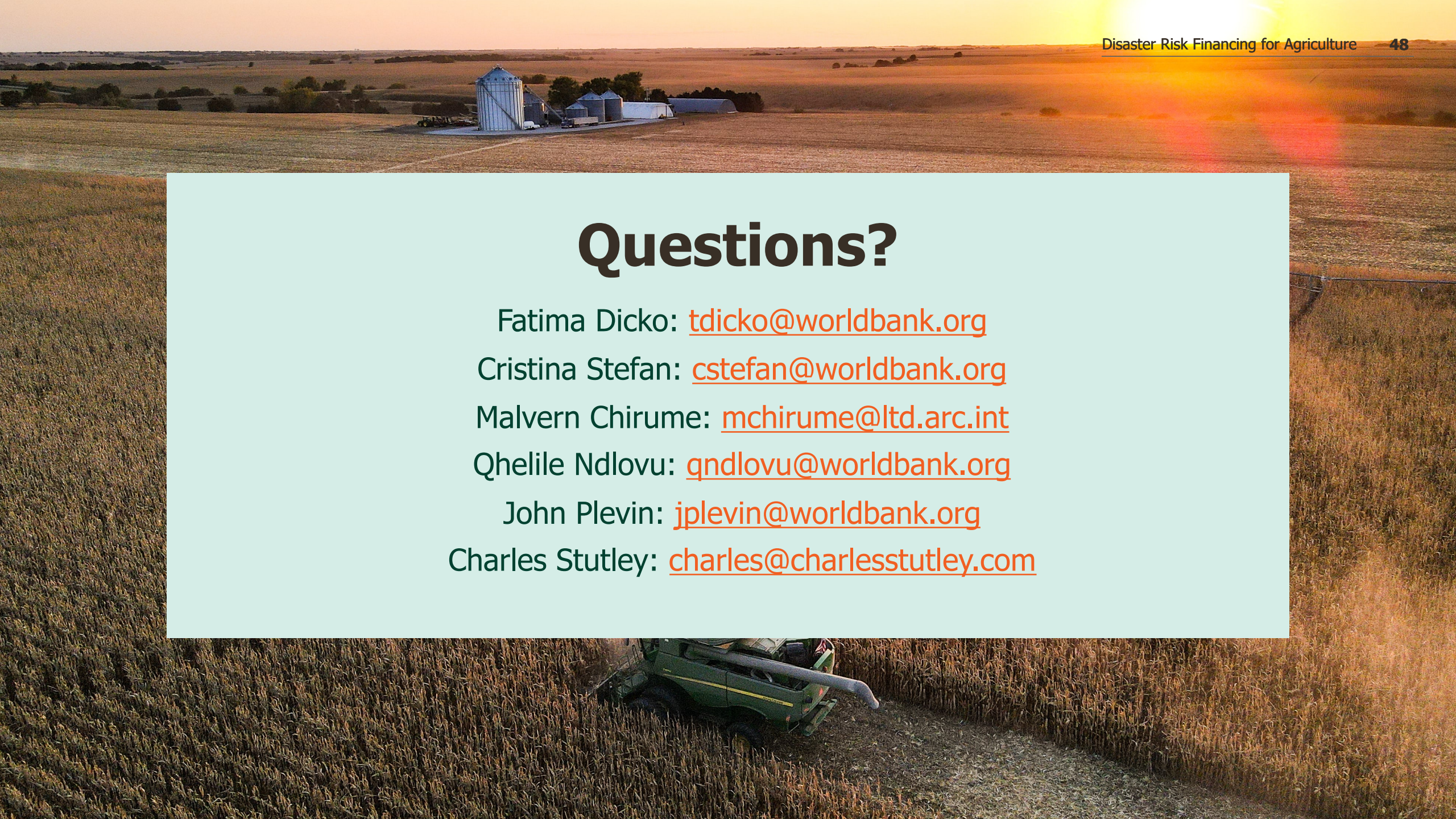
Key takeaways of Module 7

- **Design of meso and macro risk transfer programs should consider the specific challenges and risks faced by target beneficiaries**

- **Macro and meso-level risk transfer programs can be structured differently to achieve different objectives** such as: ensuring supply of financial services after disasters, reducing basis risk relative to micro insurance, or protecting aggregators or other value chain actors

- **Meso and macro-level index insurance can reduce basis risk compared to micro insurance**. However, it remains critical to ensure that the index and payout distribution is designed carefully

- **Partial credit guarantee (PCG) schemes provide a direct way of protecting financial institutions from credit risk, including that from disasters**. This can be used in place of, or alongside insurance for of agricultural borrowers to increase willingness and ability to lend for productive activities. Schemes must be very carefully designed to manage moral hazard and covariate risks



Questions?

Fatima Dicko: tdicko@worldbank.org

Cristina Stefan: cstefan@worldbank.org

Malvern Chirume: mchirume@ltd.arc.int

Qhelile Ndlovu: qndlovu@worldbank.org

John Plevin: jplevin@worldbank.org

Charles Stutley: charles@charlesstutley.com

Next session

SESSION

1. Introduction to DRFA
2. Reducing & Preparing for Risks in Agriculture
3. The Role of Financial Market Solutions for Building Resilience to Shocks in Agriculture
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