

Climate and Disaster Risk Finance (DRF):
A Learning Program Designed for Bangladesh

DAY 4: DRF INSTRUMENTS – DEEP DIVE

Bangladesh Executive Education Program

Disaster Risk Financing (DRF) for Agriculture

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Disaster Risk Financing
& Insurance Program



Global Shield
Financing Facility



Context



Disaster risk financing (DRF) in agriculture refers to financial strategies and tools used to manage the economic impact of disasters on the agricultural sector.



Why is DRF in Agriculture important?
From 2005 to 2015, floods, droughts, and other natural disasters caused about US\$96 billion in damage to crops and livestock in developing countries.



Production risks

Droughts, floods, hurricanes, storms, severe rain/hail or frost, extreme heat

Forest fires, lightning, earthquakes
volcanoes, landslides, etc.

Locust disasters and invasions



Market risks

Market price risk
(volatility of prices
of agricultural
inputs and
outputs/products)



Institutional risks (favorable environment)

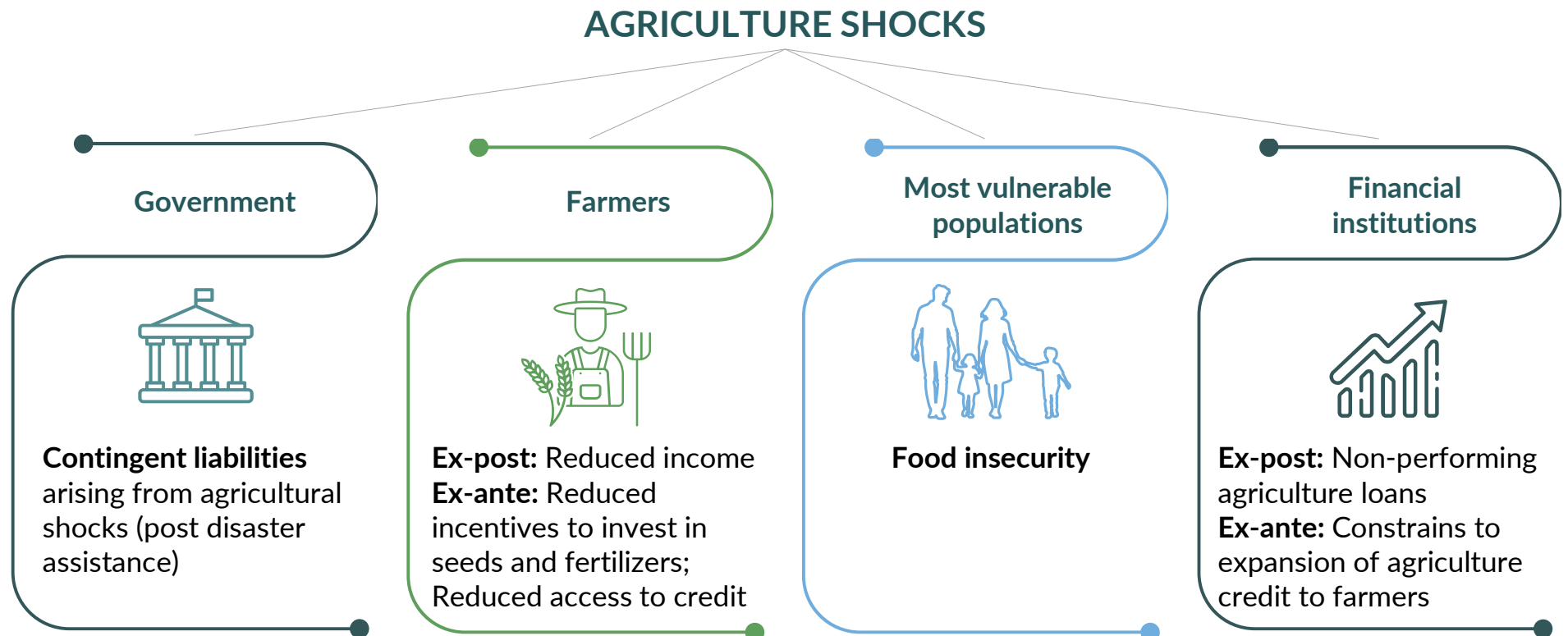
Conflicts

Macroeconomic shocks

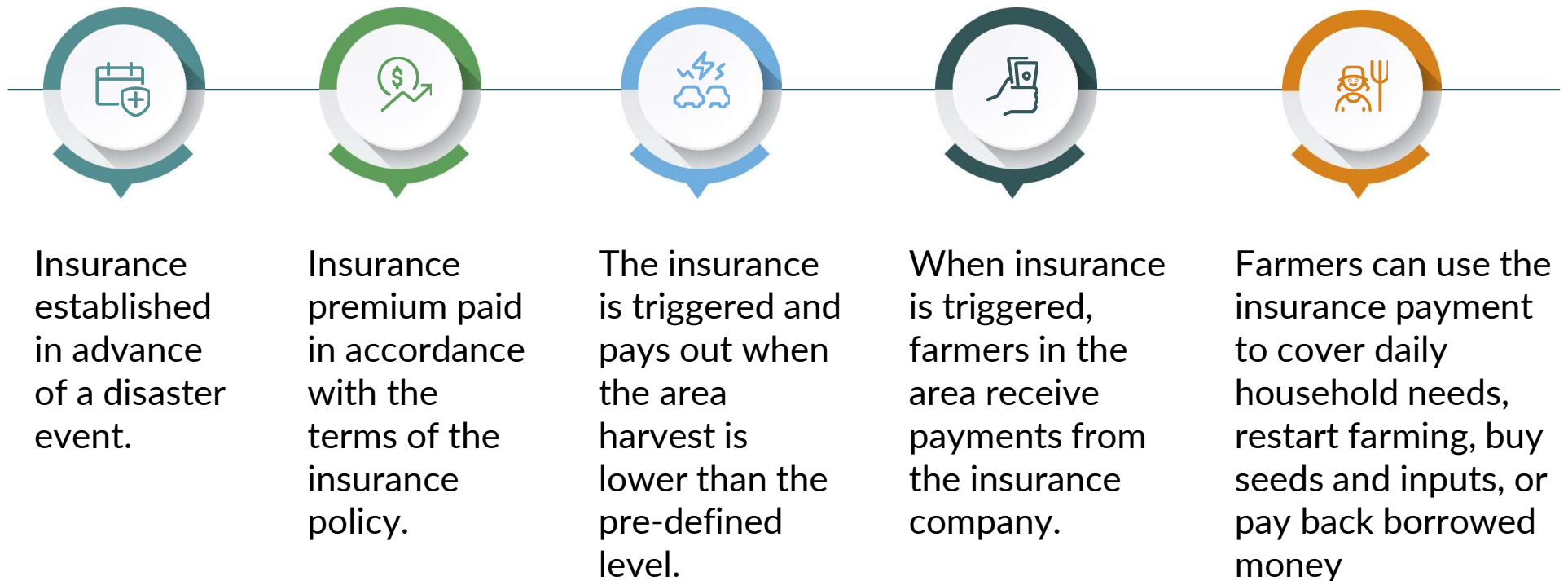
Policy risks e.g., price
caps

Context





Impact of climatic shocks to agriculture sector



How Agriculture Area Yield Index Insurance (AYII) works?



Today's example at a glance

<p>Objective</p>  <p>Offer timely and reliable financial support to help farmers and the government manage, respond to, and recover from climate shocks and disasters, thereby protecting livelihoods and ensuring food security.</p>	<p>Target Group</p>  <p>Farmers</p>
<p>Hazard(s) covered</p>  <p>Protection against multiple hazards such as floods, excessive rainfall, cyclones, drought, heat stress, pests, and plant diseases.</p>	<p>Trigger</p>  <p><i>The harvest in the area is below a certain level, usually a portion of the normal average harvest.</i></p>

PMFBY – Area Yield Index Insurance (AYII) for India - What is it?



PMFBY stands for Pradhan Mantri Fasal Bima Yojana, which is an Area Yield Index Crop Insurance program in India. It is designed to provide farmers with timely financial support when their crops are damaged due to natural disasters, extreme weather, pests, or diseases. The program aims to protect farmers' incomes, reduce distress, and support food security.

Purpose and Function

The goal is **not to measure losses for each individual farm.**

The scheme works like a safety net for farmers in the same area.

If the **crop production in that area falls below a pre-agreed proportion of the normal average level**, the insurance makes a **payout to all farmers** there.

Key components

Covers multiple natural risks that affects the crop production in a defined insured area

Reduces moral hazard: farmers cannot influence its own payout

Reduces adverse selection: farmers cannot influence yield outcome in a whole defined insured area

Preconditions

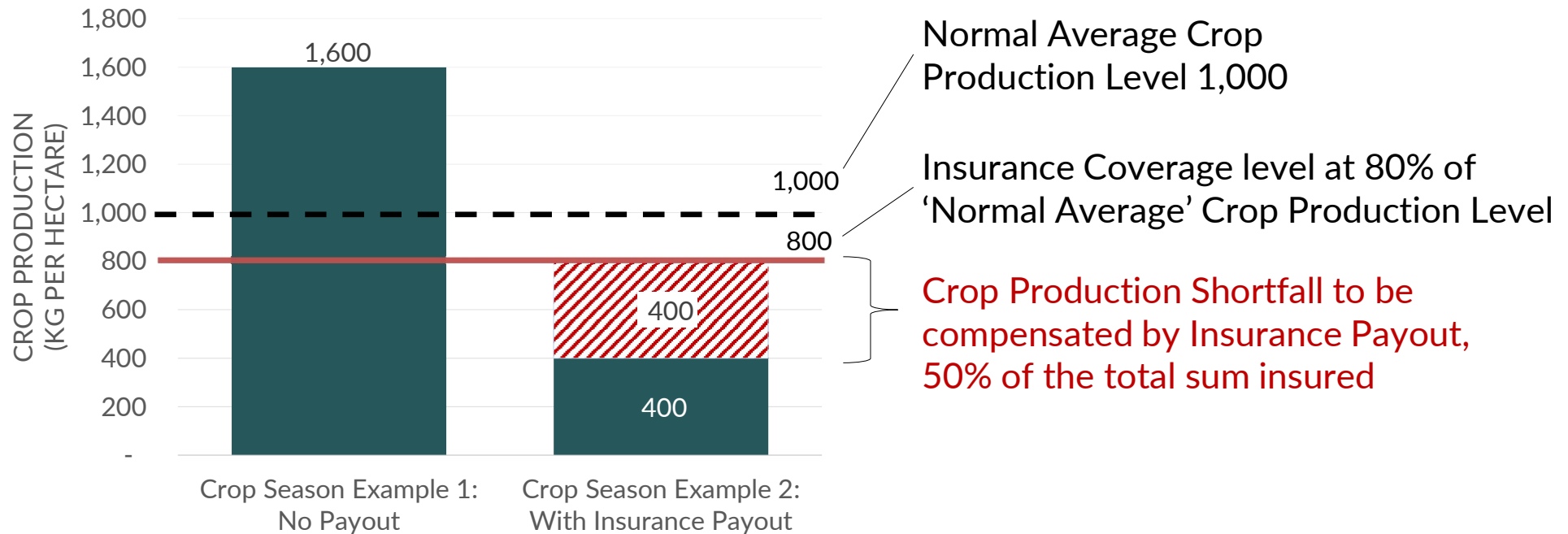
Similar farming areas: Each insured area should have farms that grow the same crops, use similar farming methods, and experience similar weather conditions.

Reliable past records: There should be long-term records (ideally 15 years or more) of how much land was planted and how much crop was produced in the area.

Simple and trusted system: A low-cost and timely method is needed to measure the actual crop production after harvest, in a way that farmers and insurers can all agree on.

PMFBY – How does it work?

PMFBY provides a payment to farmers when the crop production in a particular area is much lower than usual, for example, below 80% of the normal average production.



PMFBY - How does it work?

(Crop Cutting Experiments (CCE))

Crop Cutting Experiments are field-based measurements used in AYII to estimate the average crop production in a specific area. By taking crop samples across multiple farms and locations, insurers can determine whether overall production has fallen below the threshold that triggers a payout.

Step 1

The farming area is divided into smaller zones where farmers grow the same type of crops and face similar weather conditions.

Step 2

A few farms are randomly selected from each smaller zone.

Step 3

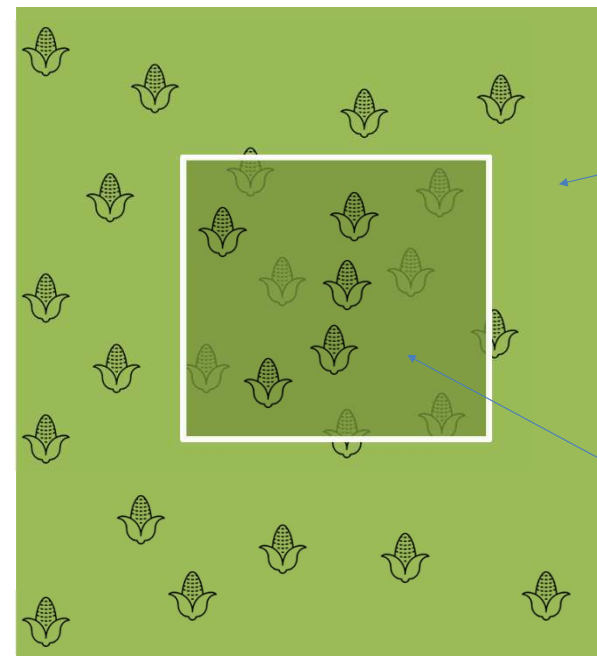
For each selected farm, a small section of the farm is harvested and measured to see how much crop was produced/grown.

Step 4

The total harvest from these samples shows the average crop production for the whole zone.

Step 5

If the average crop amount is much lower than normal, below the threshold pre-defined in the insurance contract, the insurance pays all farmers in that zone the same proportion of shortfall.



Zone/farms that crop similar types of crops and exposed to similar weather conditions

Randomly sampled plot in a selected farm

From shock to support: how funds flow?



Hazard occurs
Crop damage event (drought, flood, pests, rain, hail) detected by weather/satellite data; officials check and report via PMFBY.



Trigger verified
CCEs and remote data confirm village-level loss; reports uploaded to National Crop Insurance Portal (NCIP); low production level below threshold triggers insurance payout.



Finance mobilized
Sample losses verified; insurer calculates, processes claims digitally; payments auto-prepared for approval and payout.



Funds flow
Approved funds released via Public Financial Management Systems (PFMS); insurers credit Aadhaar-linked accounts; farmers get SMS with amount and status.



Benefits received
Payouts give quick cash after shocks, help repay loans, buy seeds, fix fields, and steady homes—turning disaster into recovery.

PMFBY – Key Program Features



Comprehensive crop protection: Protects crops across all stages of the crop cycle
Pre-sowing & germination losses
Mid-season misfortunes (e.g., drought, flood, pest attack, hailstorm)
Post-harvest losses (up to two weeks for crops left to dry in the field)



Suitable for smallholder farmers: 85% are small & marginal farmers; mostly growing cereals, pulses, oilseeds, depending on location.



Affordable premiums: Farmers pay 2% for Kharif (Monsoon crops– Jun-Nov), 1.5% for Rabi (Winter crops– Oct-May), and 5% for annual commercial/horticultural crop. Remaining premium cost is split 50:50 between the central and state governments, except in the northeast (90:10). 2023 Central government US\$1.6 billion allocation to PMFBY mostly for premium subsidies.



Technology Integration: Use of remote sensing (satellite data) and digital tools help measure crop production more efficiently, gradually reducing the need for manual field measurements. Centralized weather platforms provide timely information to support the program.



Enhanced Communication: Local help centers, village leaders, and a door-to-door enrollment app make it simple for farmers to join. Digital payments ensure faster and more reliable payouts.



Granular Risk Assessment: Insurance coverage is organized at the village level for more precise measurement of losses, reducing the chance of under- or over-compensation for any specific individual.

What's the impact?

PMFBY is the **largest government-supported crop insurance scheme in the world**, covering around 35 million farmers across India.

It is the **3rd largest scheme** by volume of Gross Written Premiums (total funds involved) – nearly US\$4 billion.

The program covers 59 million hectares, about **30% of India farmed land**, though still below the 50% target.

About **60% of farmers now have access to formal crop credit**.

Strong support for farmers: For every Rs. 100 (US\$ 1.2) premium paid, farmers received Rs. 517 (US\$ 6) in claims, demonstrated strong financial support and value to farmers.

By providing financial protection, PMFBY helps farmers plan better, reduces risks to their income, and supports steady food production.

3 Challenges and 3 Lessons Learned



Delays in Insurance Payout

Challenge: Payments often delayed over a year post-harvest due to slow CCE reporting, staff shortages, late subsidy release

Lesson: Faster loss reporting, better central-state coordination, smoother payment processes needed



State Participation and Trust Issues

Challenge: Some states (Bihar, WB, Andhra Pradesh, Punjab) withdrew or avoided PMFBY; high subsidy needs vs. perceived low payouts.

Lesson: Trust and scheme design drive participation; national pooling stabilizes risk; states withdrawing must provide alternate crop support



Balancing Costs and Coverage

Challenge: Affordable premiums vs. comprehensive crop/risk coverage strains state budgets.

Lesson: Full subsidies improve access; careful financial planning required to ensure sustainability

Relevance for Bangladesh



Strategic Importance of Agriculture

Agriculture sector contributes to approximately 16% of GDP

Provides jobs for about 50% of workforce

High vulnerability of farmers/rural communities to climatic shocks and disasters, threaten food supply, incomes, and access to credit.



Impact on Key Crops

Cyclones and floods contributed to 80% of emergency spending by donors.(40% and 38% respectively).

Paddy and wheat suffer average annual losses of US\$ 375 million (roughly 6% of total value, 1969/70–2007/08).



Why Action is Needed

Protect farmers & economy

Manage financial impact of disasters

Strengthen long-term agricultural resilience

Key Takeaways

1

Agriculture is central to jobs and growth: Protecting the sector safeguards rural livelihoods and contributes significantly to the economy.

2

Bangladesh faces similar risks: Like India, Bangladesh is highly exposed to climate shocks that threaten crops, livelihoods, and food security, highlighting the need for innovative risk financing for agriculture.

3

Strong government support is critical: India's PMFBY received US\$ 1.6 billion in 2023, mainly for premium subsidies, to make insurance affordable for farmers, enabling wide farmer coverage.

4

Collaboration under fiscal federalism: PMFBY demonstrates cooperative risk management between central and state governments, balancing innovation and institutional challenges.

5

Technology drives efficiency: Modern tools, remote sensing, satellite data, and digital payment system streamline risk assessment, reduce costs, and improve insurance management

6

Pre-arranged insurance enables rapid response: Parametric triggers release funds quickly and transparently, supporting timely recovery after disasters.

Thank you



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Community
of Practice



LinkedIn
Group



Discussion

Break out for 10 minutes in groups, then come back to present findings.

Working group questions:

1

Which **features of the PMFBY** model are most relevant for Bangladesh?

What **enabling factors** would be needed to implement something similar here?

2

3

How could the **PMFBY case study** be adapted to the Bangladeshi context?