

IDF Mexico

Parametric Insurance for
smallholder farmers

Introduction / Design

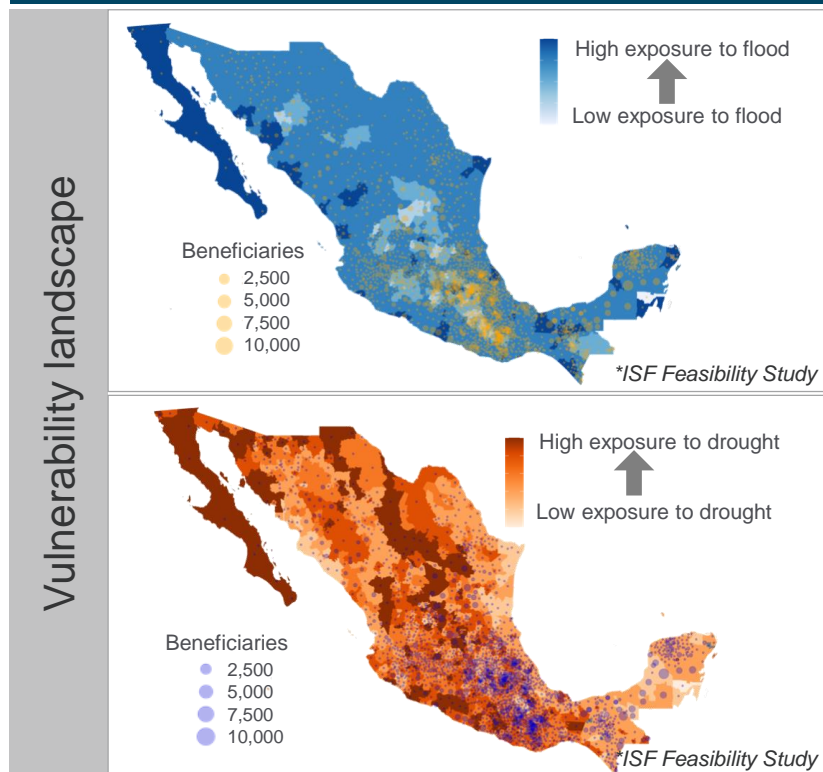


Executive Summary

1. Without access protection, the impact of climate risks affects smallholder producers more strongly due to their vulnerability and exposure
2. To address this protection gap, in collaboration with the Ministries of Finance and Agriculture, we propose a parametric insurance cover with direct pay-out to smallholder farmers, learning from gaps in the CADENA model
3. A parametric excess rain and drought coverage designed to mitigate risks and provide fast payout
4. To calibrate insurance cover and operational principles for a two-year nationwide roll-out, a 6-month pilot has been designed by a well orchestrated working group, all stakeholders ready to participate
5. Combining technology and field presence to facilitate enrollment while fostering awareness and understanding of the insurance cover
6. No intermediaries between insurance consortium and smallholder farmers for indemnity pay-out to favor program transparency
7. The consortium has kicked-off several workstreams to be ready for pilot implementation starting in Q1 2022
8. By the end of the pilot we expect to have documented the benefits for smallholder farmers and ironed out operational considerations
9. With improvements from the pilot experience, the program will be fully operational in January 2023

Without a protection coverage, the impact of climate risks affects smallholder producers more strongly due to their vulnerability

Smallholder farmers have a high exposure to drought and excess rain...



Affecting agricultural activity, but hitting vulnerable (with no means of protection) people harder

Agriculture is affected by Natural disasters

- **80%** of economic losses due to natural disasters affected the agricultural sector¹.
- **76%** of the total cultivated area (22 million Ha) is seasonal and exposed to excess of rainfall, droughts and changes in temperature².
- **80%** of the 5.3 million producers have less than 5 Ha in rainfed land³ and do not have access to irrigation

Smallholder farmers are the most vulnerable

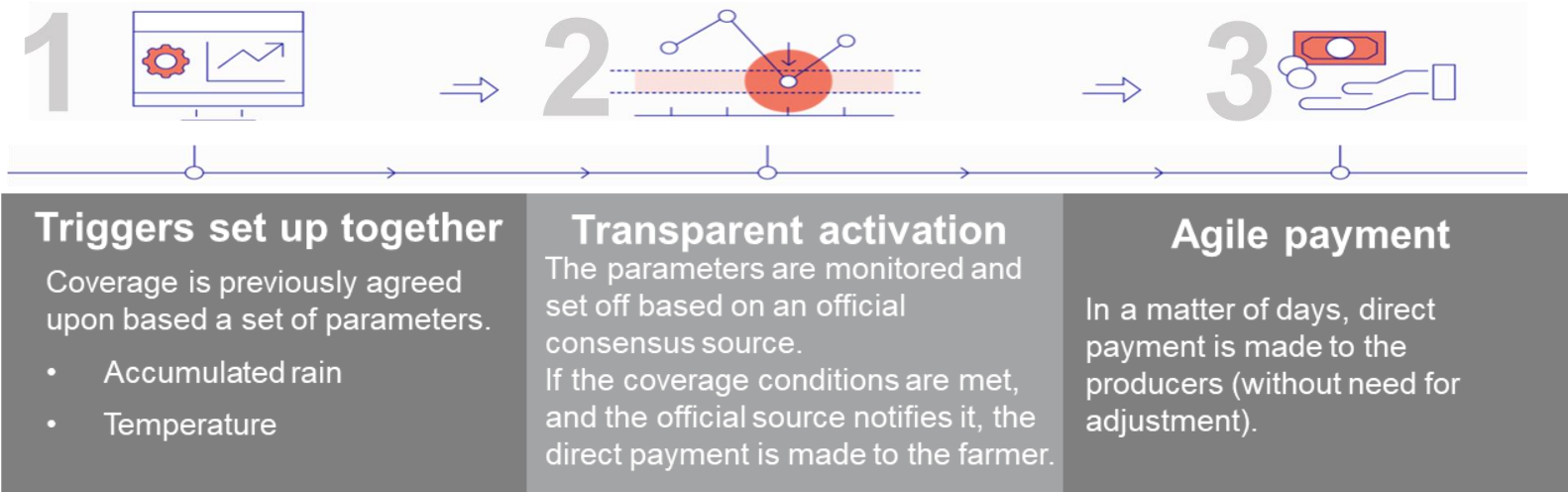
- 4.4 million smallholder farmers across Mexico
- Mostly indigenous communities living in less connected rural areas, with an income of less than USD 4/day
- Growing crops for self-consumption, with lands of less than 5Ha, corn is the staple crop (82.4%)
- Crops are concentrated in areas of high exposure, and depend on weather for irrigation
- Have no protection for their crops, becoming not only an economic but also food security hazard if something happens

¹ World Bank, Agriculture Insurance Market Review N.4, 2013, data from 2000-2020
² ENA 2017
³ ENA 2019

Solution | To address this protection gap, we propose a parametric insurance cover with direct pay-out to smallholder farmers, using the lessons from CADENA

Key pain-points	CADENA catastrophic insurance program	IDF consortium parametric insurance program vision
Policyholder	Each State was contractor and direct beneficiary	Ministry of Finance / Ministry of Agriculture as policyholder, but farmers as beneficiaries
Product and pay-out	In-place loss adjustment created lengthy claims processes with high admin costs	Parametric excess rain-fall & drought tracked via satellite; rates & triggers agreed in advance, fast and direct pay-out without loss adjustment
Cost efficiency	State level pricing negotiation, insurers placing reinsurance individually ultimately ended in high costs	Global placement will lead to larger exposure and diversification; synergy with current SADER programs for end-to-end enrolment and payouts
Risk & pricing	Lack of sufficient data = high assumptions on risk quality = conservative pricing	Satellite data points will increase accuracy (from municipalities to “pixels”) = better risk assessment = more adequate pricing
Transparency	States received payouts and dispersed it to smallholder farmers at discretion	Farmers will be beneficiaries, receiving fast pay-out directly with no intermediation

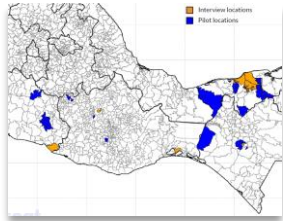
Parametric Insurance is the ideal alternative for the target segment



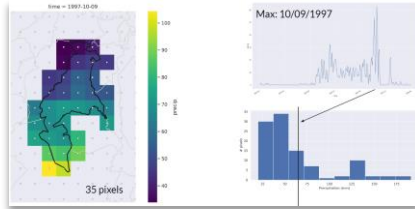
- **Cost effective.** Traditional insurance would be unfeasible due to costs
- **Reliable.** A third party ratifies the trigger
- **Efficient.** Fast payment to producers
- **Simple.** Removes operational complexities

Insurance product | a parametric excess rain and drought coverage designed to mitigate risks and provide fast payout

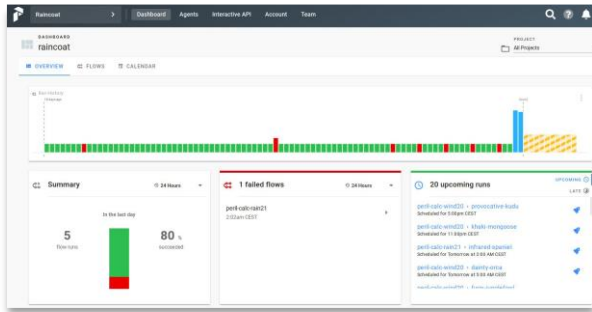
Precipitation based triggers for drought and excess rain



Municipalities identified



Triggers to be determined at kernel level

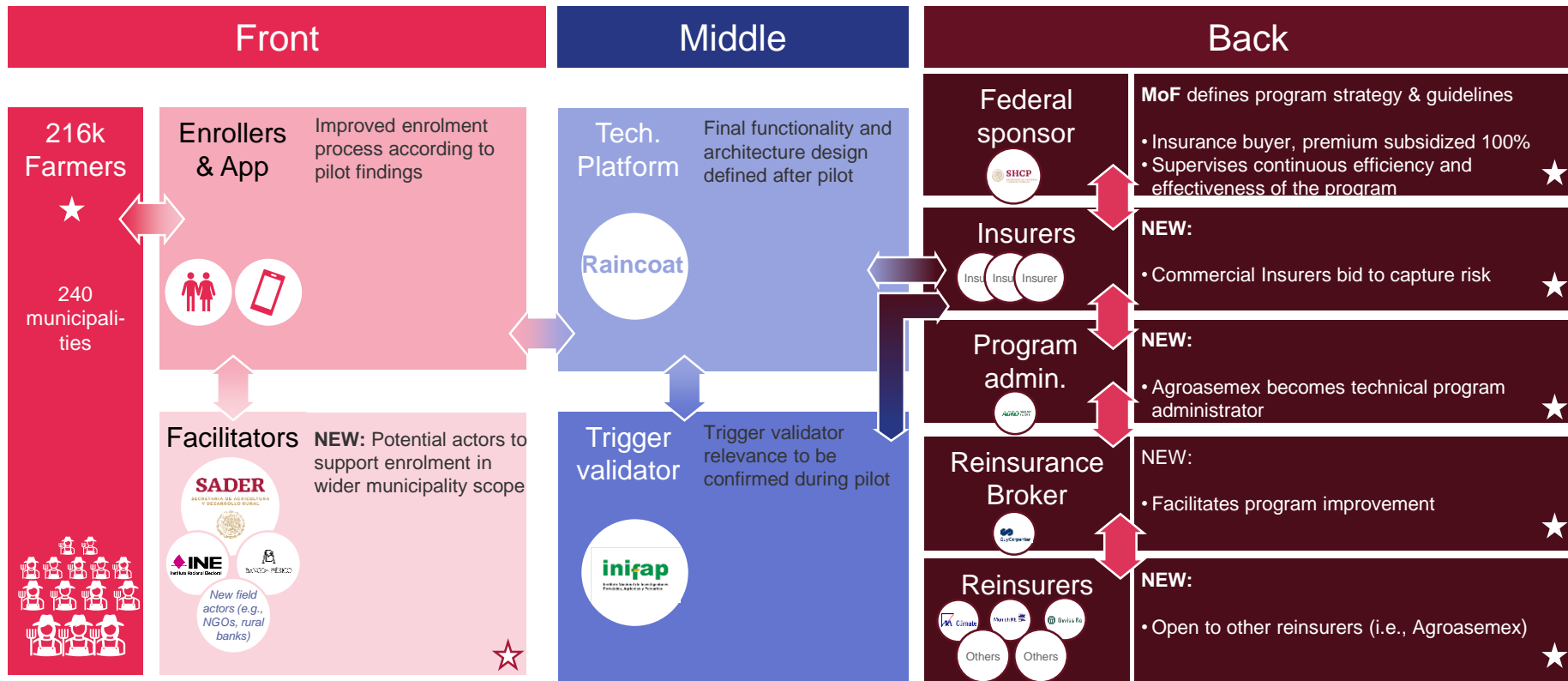


Automatic monitoring via Raincoat

Product characteristics

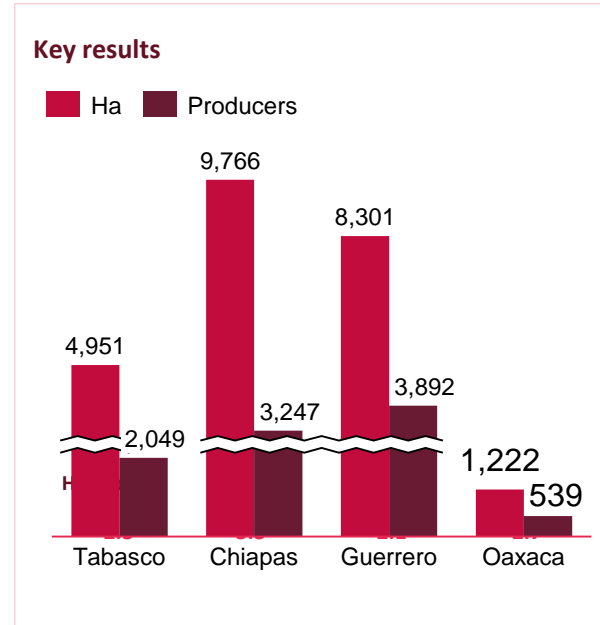
1. Settled on CHIRPS data (higher resolution + shorter publication time)
2. Grid selection for index based on municipality or farmer location (when available) already loaded on Raincoat platform
3. Consideration of an aggregation period to reproduce more accurately damages caused by rainfall events
4. Stepwise payout function to mitigate basis risk
5. Determination of attachment and exhaustion points to approximate historic RoL metrics
6. Total sum insured per Ha of ~ 100 USD (max payout of ~500 USD per farmer)
7. INIFAP to work as calculation agent
8. Data correlation analysis between CHIRPS, CONAGUA and ERA5

Roll-out | Operating Model | With improvements from the Pilot, the Program is expected to become fully operational in 2023 with additional Federal funding

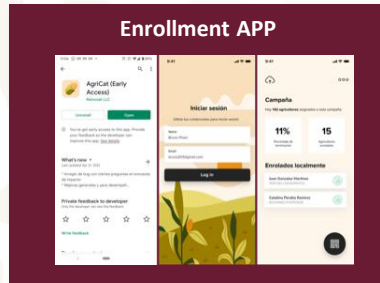


Pilot results and the lessons learned are a solid base to successfully scale up the program in 2023

1. Enrollment of beneficiaries reached **9,727 producers** in total (24,240 Ha)
2. Parametric **product meets the needs** of small producers
3. The IT tool successfully facilitated enrollment, using a simple process (2 min. avg time per enrollment) and communication with the Insurer
4. Data protection, accountability and transparency successful / validated
5. The SADER database with the necessary quality (3.2% errors) for roll out
6. Communication and operating model established with the Insurer
7. Opportunities to be more inclusive identified, to be applied in next stage
8. First claims report. No municipalities severely affected (Hurricane Ágatha)



IT support during enrollment proved effective as a calculation agent and as an interface for insurance systems



Middle-Office & Dashboard



Calculation Agent



Resultados

Enrollment App

- Available for download on Android phones (Apple for next stage)
- All field staff used the tool
- Offline operation to avoid connection problems
- Capture of 6,150 unique phone numbers, image capture for control
- Data encryption for information security

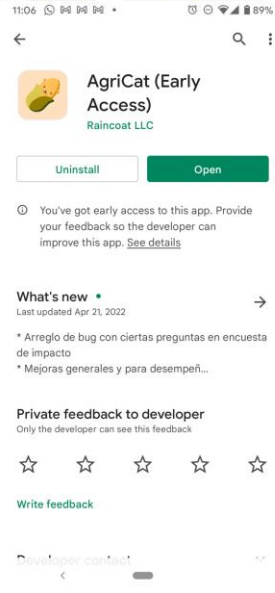
Middle-Office & dashboard

- Facilitates producer management with access profiles, customer service, and portfolio monitoring
- Management interface between enrollment information, CHIRPS data, and sending information to central carrier systems

Calculation Agent

- Measurement of indices and triggers OK,
- Expected to send notice of loss to insurer and contracting party on a monthly basis

AgriCat (enrollment App)



Relevant points

- Powered by Raincoat
- Aimed at field personnel
- Only authorized personnel can download the app and registration is required
- Possibility of working offline by downloading information to the phone
- All enrollment data is encrypted, accessed using a QR code
- When network access available, the enroller uploads the information to the cloud

AgriCat (enrollment App) being used in the field



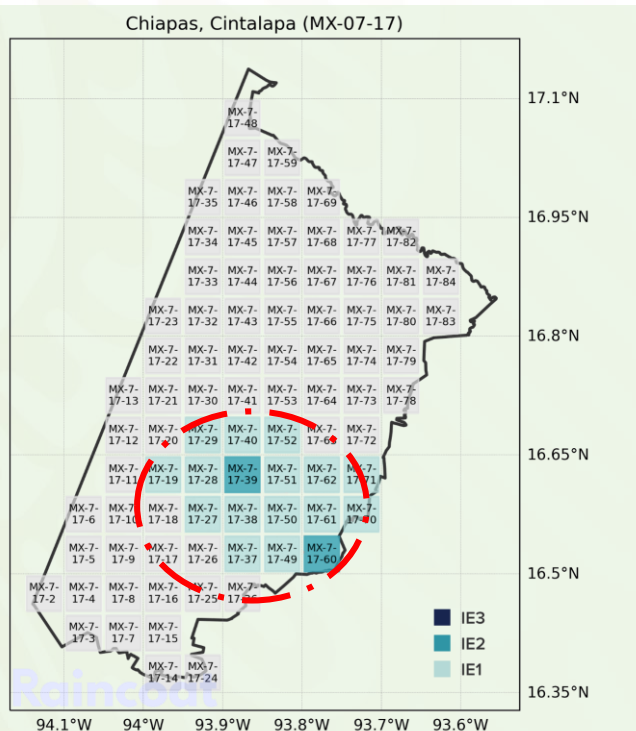
Coverage triggered in Cintalapa, Chiapas

- **Municipality:** Cintalapa
- **State:** Chiapas
- **Inception Date:** May 20
- **Report Period:** June 1st to June 30
- **Status:** Coverage not triggered

- **1st step trigger:** according to location
- **2nd step trigger:** according to location
- **3rd step trigger:** according to location

TRIGGERED for 634 farmers
TRIGGERED for 112 farmers
NOT TRIGGERED

Triggers



Precipitation

