

Technology in MSME and Agriculture Insurance



India



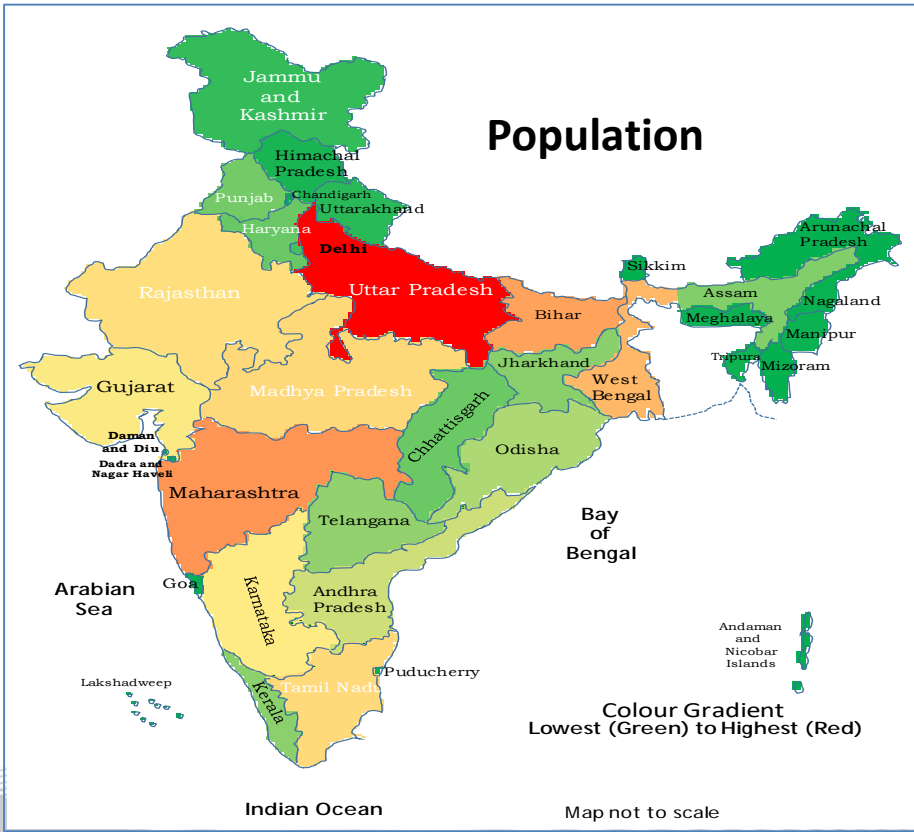
MSME

MICRO, SMALL & MEDIUM ENTERPRISES



Economy Overview

India – Peninsular region with diverse climate, geology & topography



	Europe	India
Population	~0.75 bn	~1.35 bn
Area (mn sq. km)	~10.3	~3.3
Languages	23 official ~60 regional	22 official ~2000 local dialects
GDP per capita (PPP)	€ 33,200	€ 5,450
GDP growth (Last Qtr)	2.1%	8.2%
Insurance (Prem as % GDP)*	2.7%	0.8%
Insurance (Prem per capita)*	€ 560	€ 11

Source: world population review, maps of India, Special Euro barometer 386 report, tradingeconomics.com, Swiss Re sigma No. 3/2017

*Non-life insurance

Non- Life Insurance Industry Overview

Growing at a CAGR of 17% for the past 15 years

Players: 33
Multiline: 25
Monoline: 8

No. of Policies:
182.7 mn

Average Ticket
Size: Euro 100

Motor: 39%
Health: 28%
Corporate: 16%
Crop: 17%

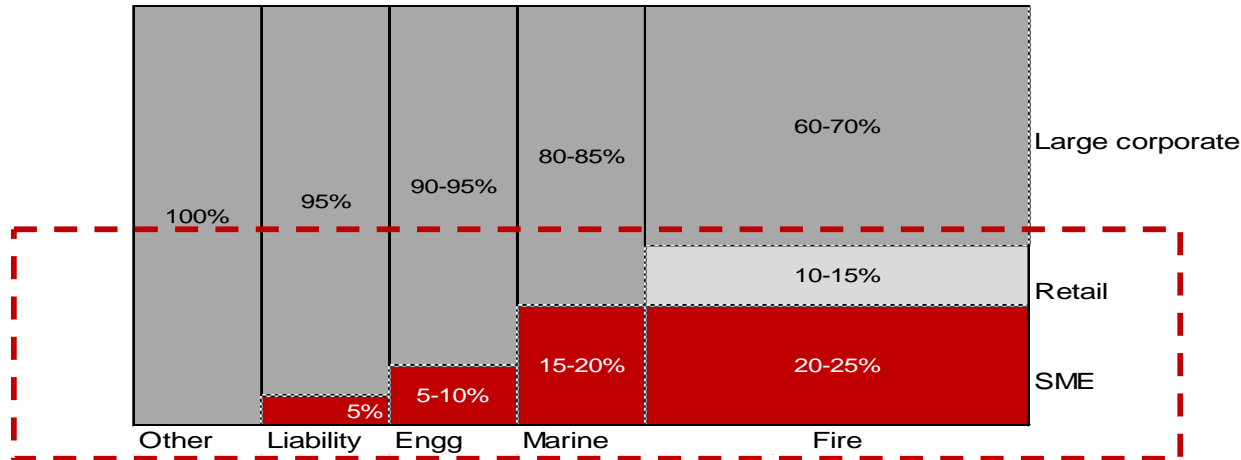
GWP:
Euro 18.8 bn

No. of Offices:
>11,000

No. of Agents:
>4,25,000

Claims:
~1 in 9 policies

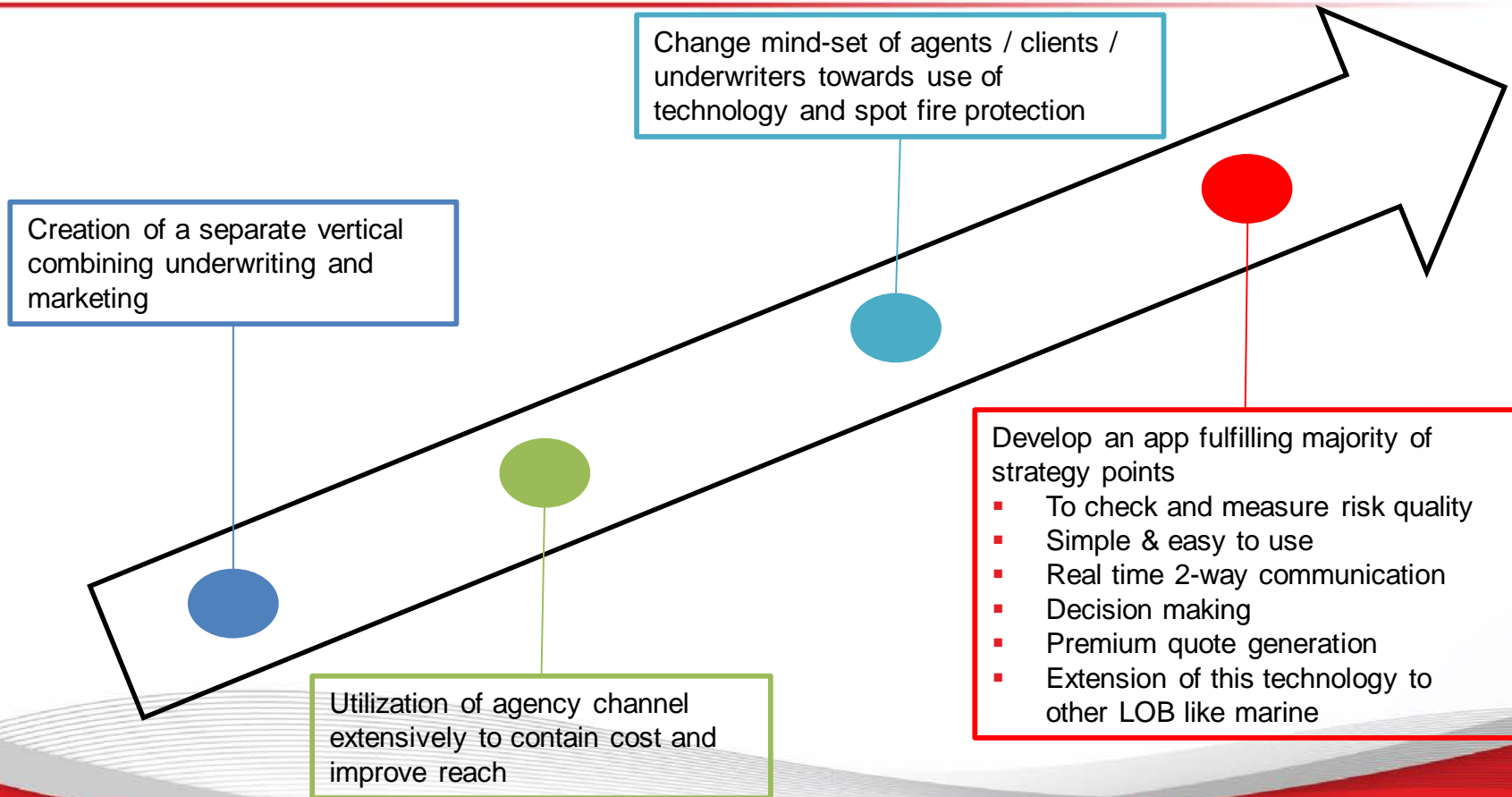
Reinsurers:
1 Indian
9 foreign branches

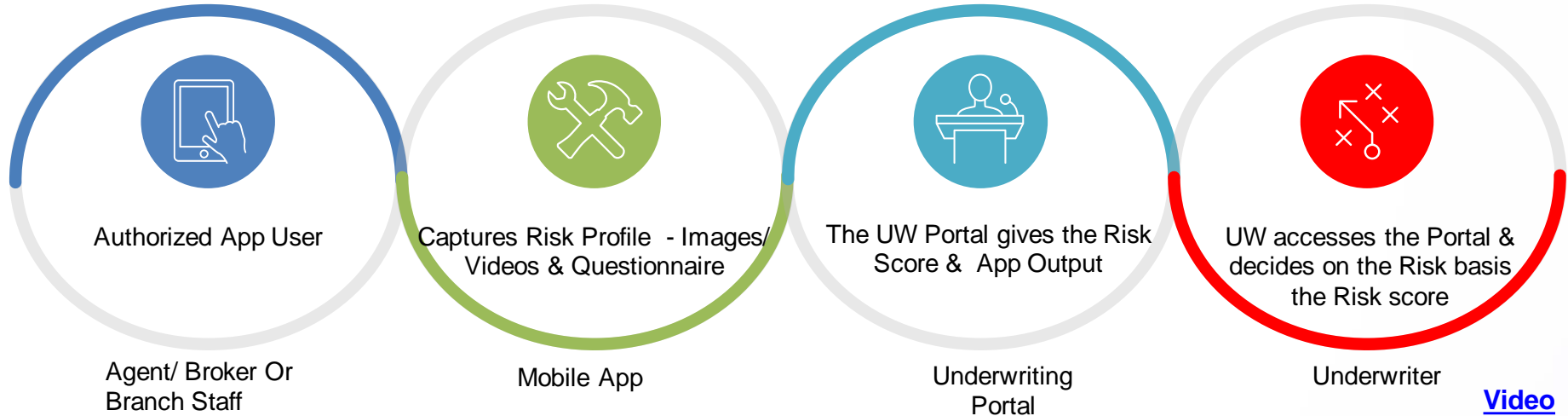


Based on the FICCI report "India-General-Insurance-Vision-2025",
Source: IRDAI, BCG analysis

- SME contributing sizeable part to corporate lines
 - 20-25% of property portfolio premium contribution from SME
 - 20% of marine portfolio
 - Overall about 17-20% of corporate lines is SME
- Brokers an important channel to develop SME portfolio
 - Direct marketing is impractical in this segment owing to smaller ticket size and wide geographical spread

Contours	Sum Insured below €12 mn (INR 1 bn)
	Widely distributed across the country in industrial and in tier 2/3 cities
	Low usage of technology
Market	Predominantly written by state owned cos. because of its wider distribution reach
	Loss ratio is generally good on a larger volume
	Claims settlement by state owned companies far from satisfactory
Constraints	Low ticket premium size; less than Euro 1,500 per policy; need volume
	High operational cost due to limited foot print
	Inability to check quality of each risk by a risk engineer leading to scalability challenge





Advantages for insurer

- Scalability
- Underwriting oversight
- Risk improvement specific to SME
- Spread

Advantages for insured

- Quick turnaround service
- Risk advisory – specific to their requirements and cost effective
 - Resulting in lower cost in long term and less down time

Industry

- New Scheme (PMFBY) launched in 2016
- Increased scale of finance, lowest premium rates
- Add on covers introduced
- 3rd largest general insurance product in India

HDFC ERGO

- 2nd largest private insurer with 9% market share
- Covered >7 mn farmers
- Thought leader in the industry and part of committee formed by World Bank and Govt of India
- Only company to represent insurance sector in review to Prime Minister

Challenges

- Manual crop acreage estimation
- Delay in receipt of crop health status for reserving
- Disputed yield data due to lack of transparency in conduct of manual CCEs
- Larger time window of CCEs resulting in delay in claim settlement

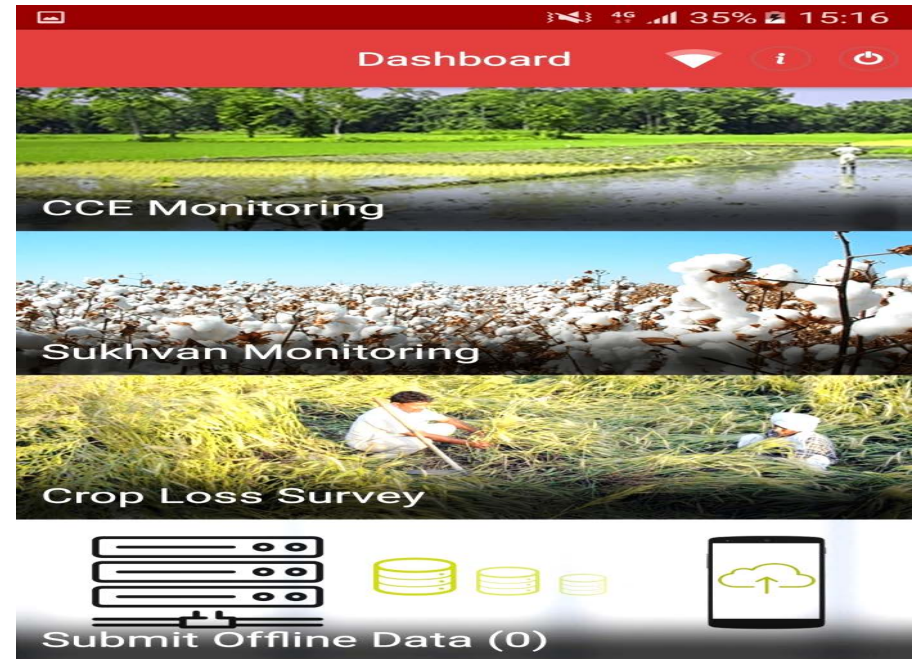
Use of Technology in Agriculture Insurance

Claims Management: Extensive usage of technology for claims control

CCE Monitoring (Mobile App)

- Personalized Dashboard
- Easy data entry with GPS tracking with Lat Long details
- Image/video upload with Geo tagging
- Signature capture of farmer and present authority
- Offline data save and auto submission of survey
- Real time claims provisioning
- Tracking of crop loss survey
- Have monitored >38,000 CCEs covering around 83% of exposure

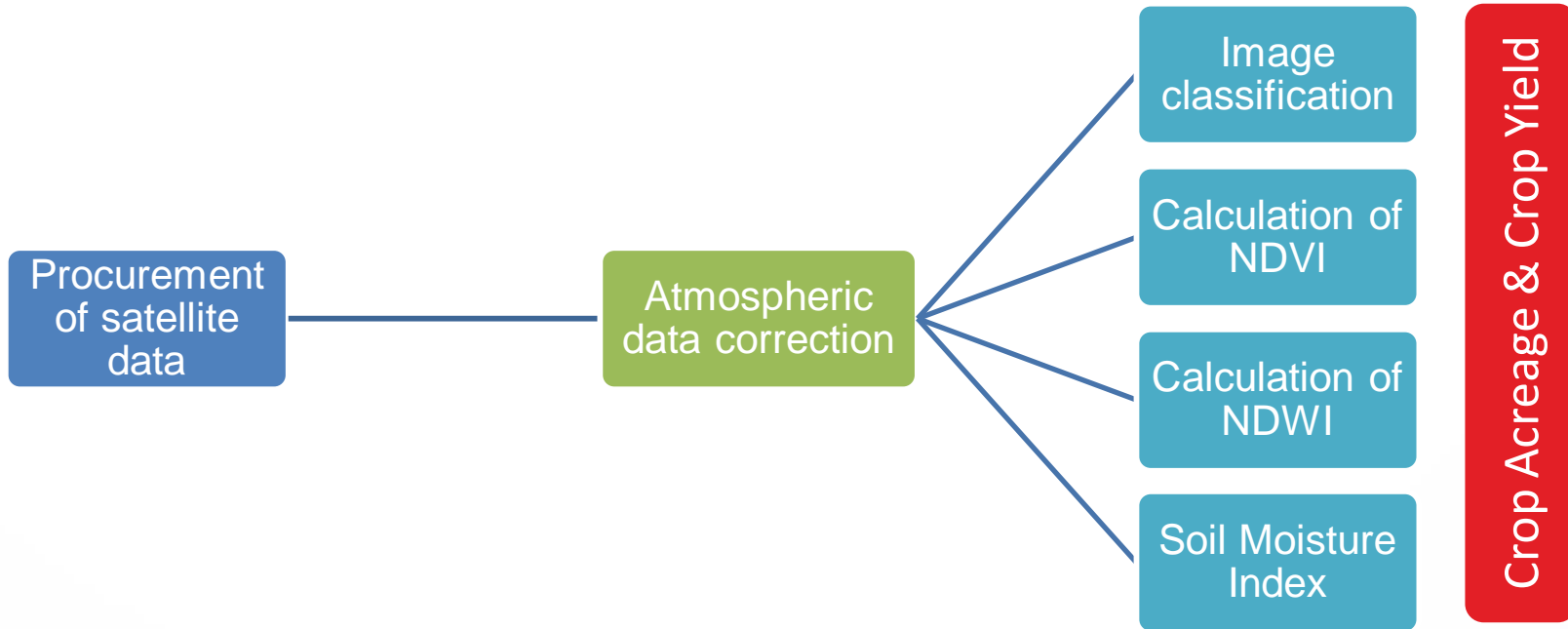
Pictorial depiction : CCE app dashboard



CCE: Crop Cutting Experiments
Sukhvan = Dry weight

Use of Technology in Agriculture Insurance

Portfolio Monitoring based on remote sensing technology & rainfall pattern



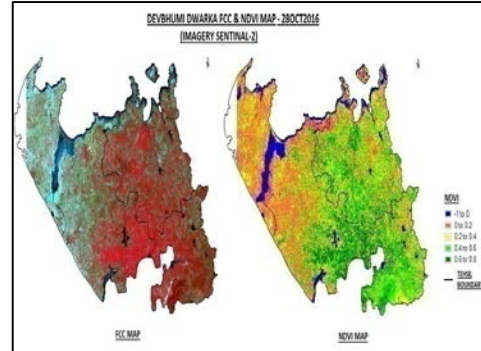
NDVI: Normalized Differential Vegetative Index
NDWI- Normalized Differential Water Index

Case Study: Usage of Satellite Imaging

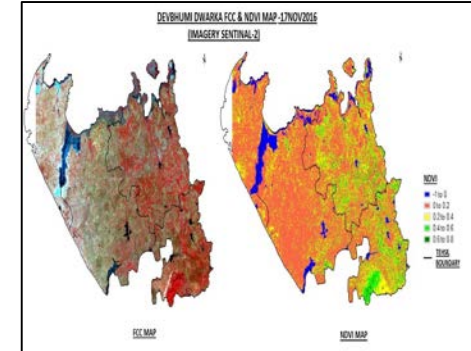
Technology usage resulting in claim saving of ~13mn euro

Crop availability study

- Govt reported yield estimation date: 22nd Nov
- Satellite image (Sentinel 2) date: 28th Oct and 17th Nov
- Based on NDVI map: Crop available on 28th Oct but no crop available on 17th Nov
- NDVI based map study reveals crop is already harvested before 17th Nov and no CCEs conducted on 22nd Nov



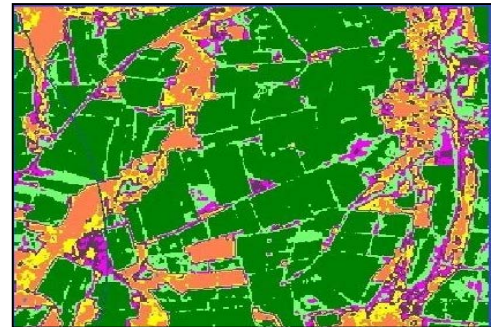
Sentinel 2 Image-28th October



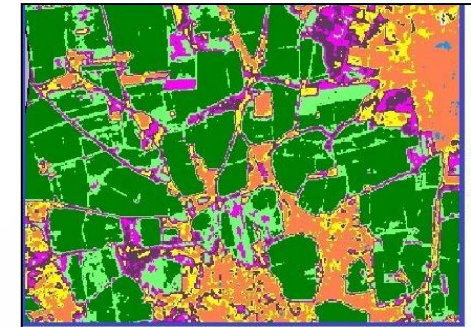
Sentinel 2 Image-17th November

Yield discrepancy study

- Govt reported yield in two adjacent villages - 4731 and 90 Kg/hectare
- NDVI points based on Satellite image (just before maturity stage) for both village: 0.8-0.9
- NDVI based study reveals estimated yield for both should be in the same range indicating non adherence of guidelines for conducting CCEs in the village reporting lower yield



Inset image- Samor Village



Inset- Hansthal village

Use of Technology in Agriculture Insurance

Drones: Future of Crop Loss Assessment



- Remote sensing through UAV allows non-destructive sampling to observe agronomic indicators in every square metre. These UAVs have the ability to send images every fifth second and provide geo-referenced images.
- Usage of UAV along with satellite images is future of crop loss assessment.
- Both usage of Drone and Satellite Images & Remote Sensing can replace crop cutting experiments
- Only challenge is the availability of drones

Case Study: Usage of Drone Technology

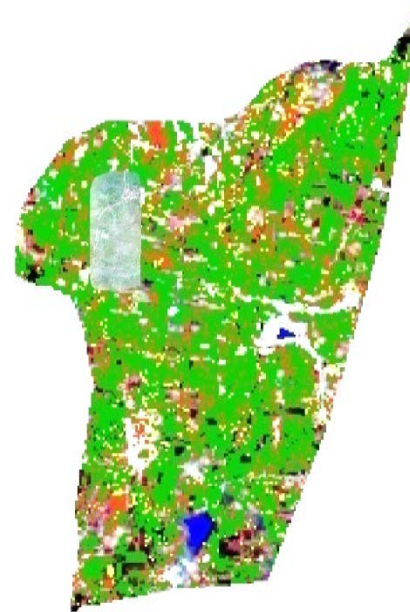
Claim Management in flood affected area

CAT Loss Monitoring (Drone Technology)

- Drone was flown in locations affected by flooding
- Loss assessment based on images / videos captured by UAVs using extrapolation techniques at village level
- Highlights of Study:
 - The values calculated basis images were extrapolated to the entire village
 - Actual Losses calculated ~ 40% of Insured area impacted against initial loss estimates of 85%

A sample drone image and cat loss estimation grid

Below mentioned picture taken for a village where loss affected area was around 9%



Particulars	% Area
Water	0.3%
Good Crop	28.9%
Partial crop damage	7.6%
High crop damage	1.4%
Others (Built Up etc)	61.8%

9%

Use of Technology in Agriculture Insurance

Other Technological Innovations: Picture Based Crop Insurance

Project objective is of usage of farmer's own smart phone pictures with geo tagging to detect crop damage, reducing basis risk and cost of loss verification

Pilot project for Rabi wheat crop in six districts in Haryana and Punjab by the HDFC Ergo General Insurance Company Ltd in collaboration with International Food Policy Research Institute (IFPRI)

- **The study explores the viability of PBI approach:**
 - PBI can reduce basis risk
 - No tampering, moral hazard, adverse selection in first season
 - However, need for subsidies remains
- **Areas for future research:**
 - Agro-advisory services, no-claim discounts
 - Developing automated procedures for identifying damage
 - Identifying growth stages from pictures to improve index product



Potential for PBI as top-up product, in existing area-yield or weather-index products

THANK YOU

GRACIAS
ARIGATO
SHUKURIA
GOZAIMASHITA
EFCHARISTO

DANKSCHEEN
JUSPAXAR
SPASSIBO
NUHUN
SNACHALHUYA
CHALTU
YAQHANYELAY
TASHAKKUR ATU
WADEEJA
MAITEKA
SUKSAMA
EKHMET
ATTO
MAAKE
GRAZIE
MEHRBANI
PALDIES
YUSPAGADATAM
HUI
UNALCHEESH
SPASIBO
DENKAMJA
NEHACHALHYA
TINGKI
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