

Crop Insurance

Introduction, Journey So far and

Current market overview

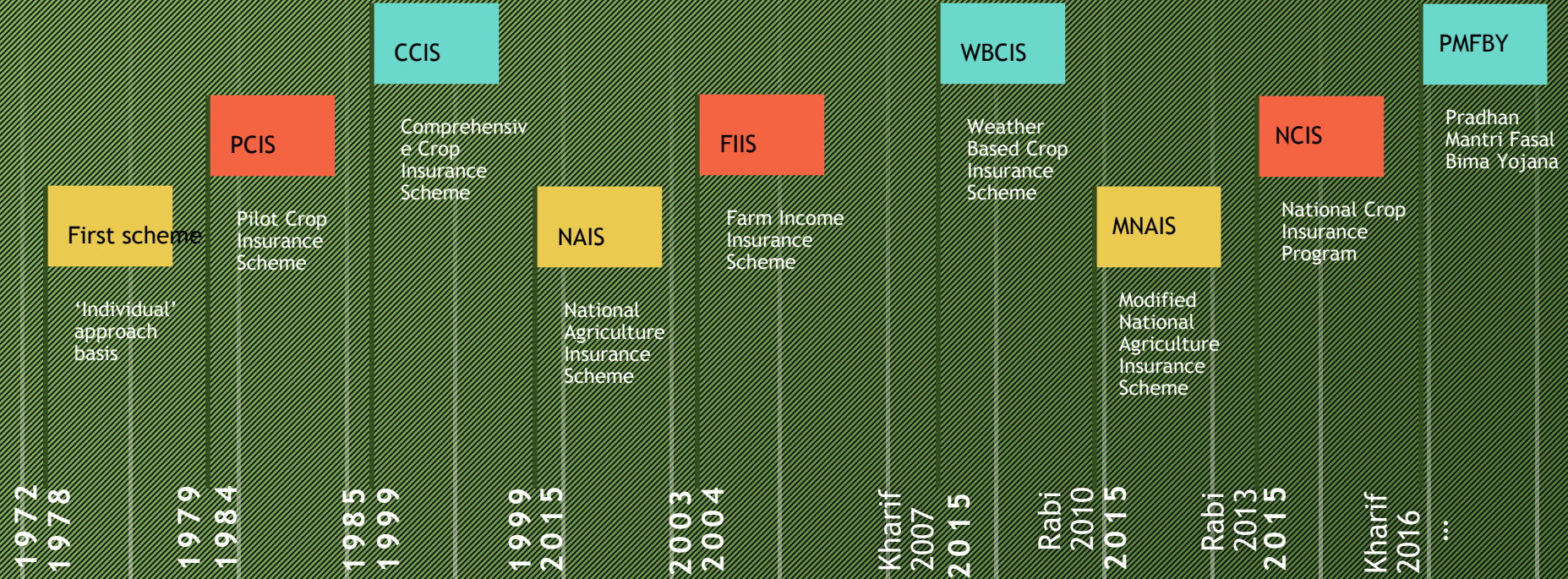


Charles Asirvatham
DGM – Agri, GIC Re

Evolution of Crop Insurance in India

- First ever scheme on 'Individual' approach basis - (1972-78)
- Pilot Crop Insurance Scheme - PCIS (1979-1984)
- **Comprehensive Crop Insurance Scheme - CCIS(1985-1999) - First Nationwide**
- National Agriculture Insurance Scheme - NAIS(1999 – 2015)
- Farm Income Insurance Scheme - FIIS (2003-04)
- Weather Based Crop Insurance Scheme - WBCIS (Kharif 2007 - 2015)
- Modified National Agriculture Insurance Scheme - MNAIS(Rabi 2010 - 2015)
- National Crop Insurance Program – NCIS (Rabi 2013 – 2015)
- Pradhan Mantri Fasal Bima Yojana (Kharif 2016...)
 - Comprised of Yield Index Based Scheme and Restructured WBCIS

Evolution of Crop Insurance in India



Salient Features of PMFBY

- Covers all Food crops, Oilseeds & Commercial / Horticultural Crops
- Compulsory for Loanee & voluntary for non-loanee Farmers
- Risks and special perils covered are :-
 - Area approach: all non-preventable natural risks viz., drought, flood, hailstorm, landslide, cyclone, pests & diseases etc.
 - Prevented sowing/transplantation: all natural preventable risks
 - Localized perils: Hailstorm, landslide & Inundation
 - Post Harvest losses: Cyclone/Cyclonic rain & Unseasonal rains (for crops in cut & spread condition after harvesting)
 - On account payments for Mid Season adversity

Salient Features of PMFBY (Contd..)

PMFBY

- Premium rates fixed at 2%(Kharif) & 1.5%(Rabi) & 5% (horticulture)
- Upfront premium subsidy by Government
- Single series data should be used for CCEs and crop production estimation

PMFBY

- No premium and sum insured capping
- Clustering of districts
- Treatment of yield observed in a calamity year

PMFBY

- Extensive use of technology
- Government (Central & State) to act as the Reinsurer for last resort (for Claims beyond 350% or 35% of TSI at National level)

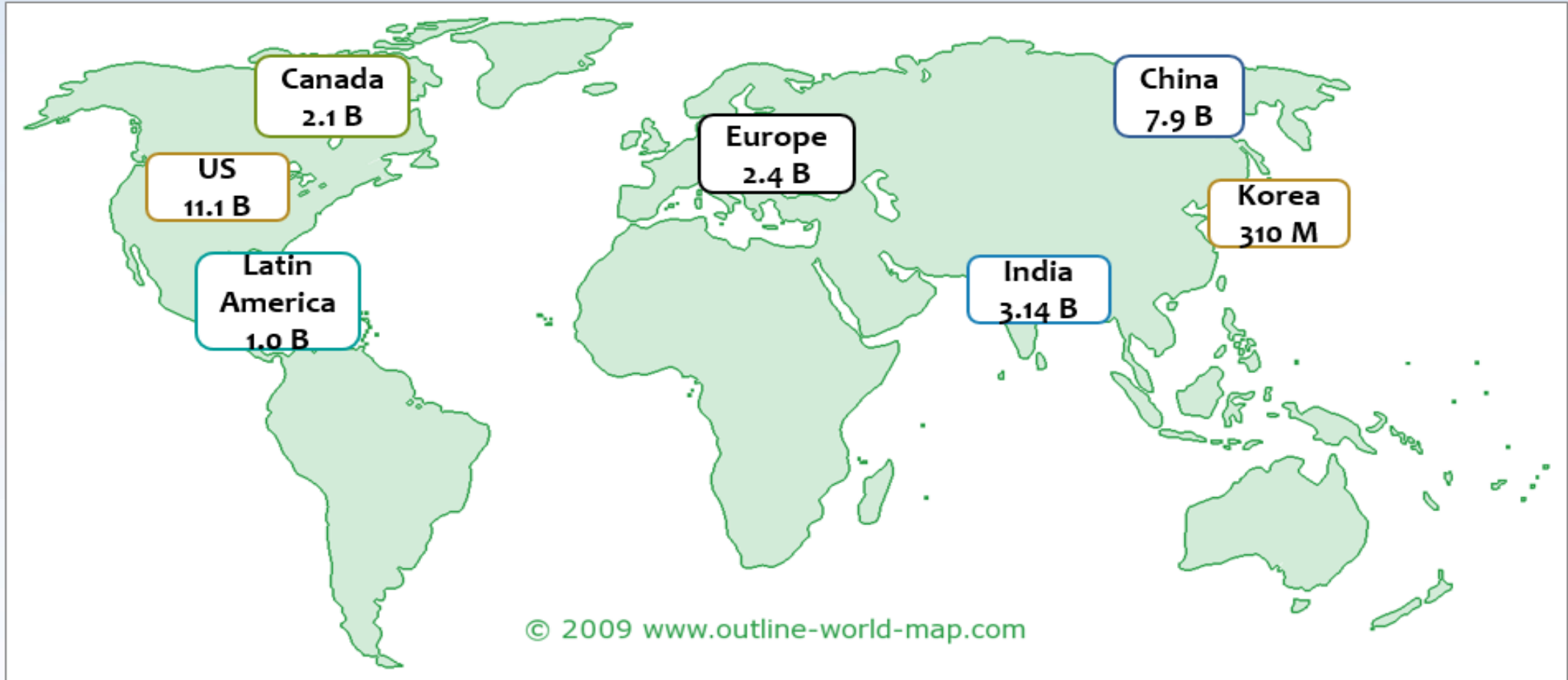
Salient Features of PMFBY Contd..

- Individual farm level assessment for perils covered under Localized and Post Harvest losses.
- Sum Insured: Broadly Scale of Finance for loanee & and non-loanee farmers
- Scheme to be implemented through insurance companies (IAs) empaneled by Ministry of Agriculture (Total 18 Insurance Companies empaneled as on date)
- **Tender process for price discovery and allocation.**
- Allocation of Districts on Cluster basis
- Actuarial Premium Rate
- Government provides upfront subsidy in premium
- All claim liability on Insurance Companies

Salient Features of PMFBY Contd..

- Three Indemnity levels (IL) : 70%, 80% & 90%
- Calculation of Threshold yield which is the average yield of last 7 years (Minus max of 2 calamity years) multiplied by IL
- Claims calculated on actual yield data furnished by State Govt. based on Crop Cutting Experiments (CCEs).
- Extensive use of Technology
- Use of Smart Phones in conduct of CCE's and Transmission of data

World Crop Insurance Premium - India becomes the Third Largest Crop Insurance Market



➤ It is estimated that 104 countries had some form of agricultural insurance

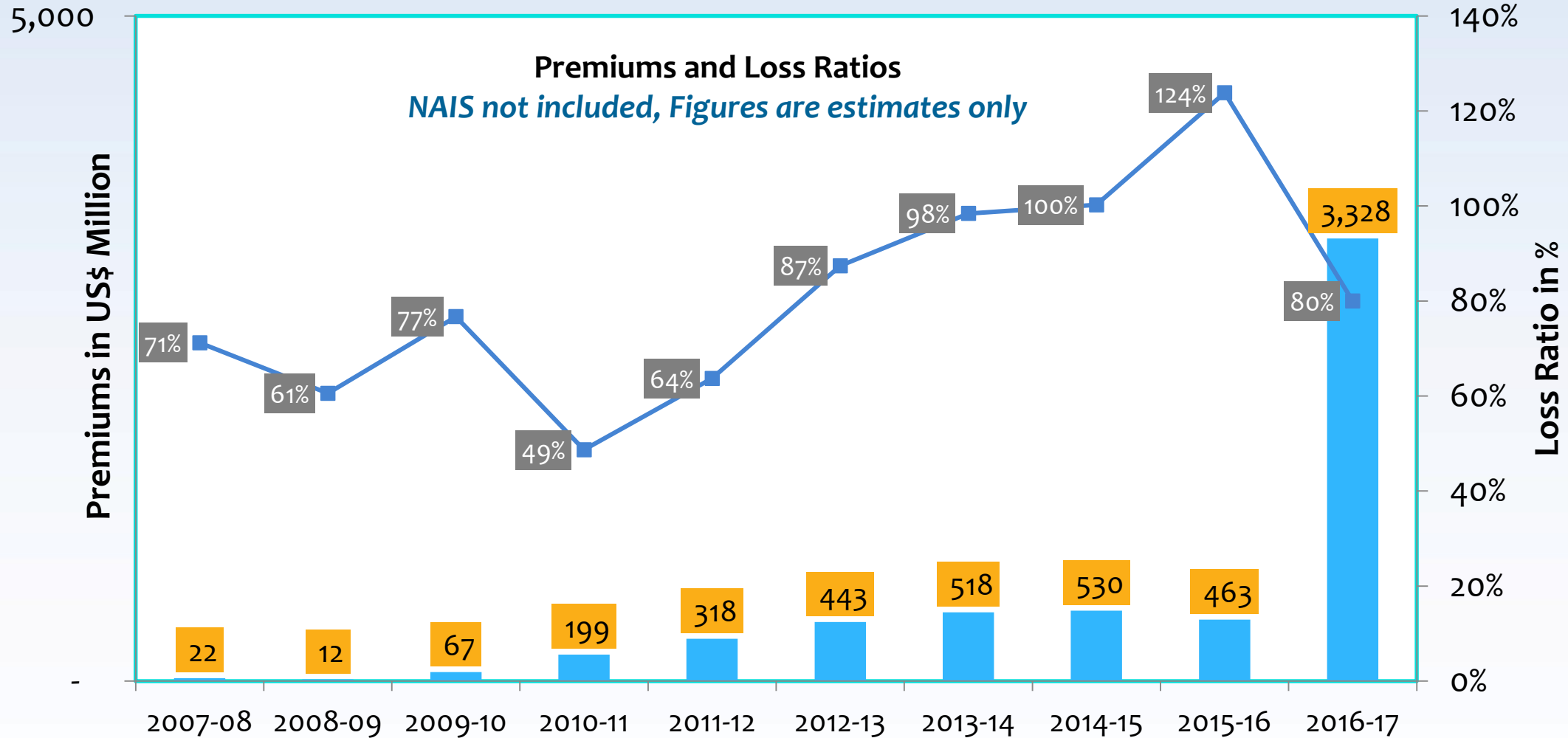
World Crop Insurance Premium - India becomes the Third Largest Crop Insurance Market

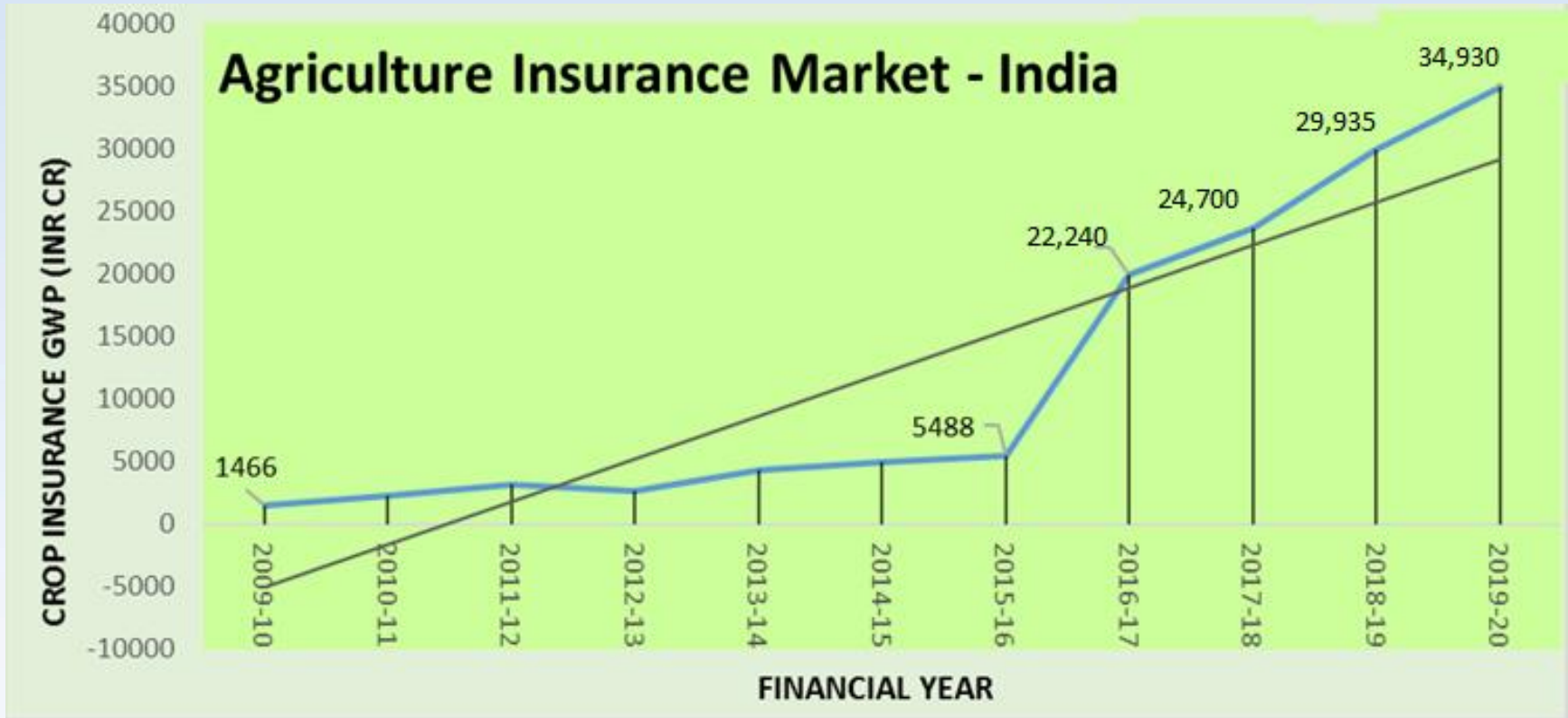
Premiums (USD m)	USA	China	India (2017/18 Est)
Gross Premium	12,000	7,900	3,846
Ceded Premium		2,612	3,076
Ceded to Government RI/ GIC Re		1,775	1,961
Ceded to commercial RI	1,700	837	1,115

- India is the 3rd largest market for gross written premiums
- India is the largest market for reinsurance premiums ceded to reinsurers

Crop Insurance experience so far (estimates only)

Since 2007-08, commercial crop Insurance has given 85% loss ratio





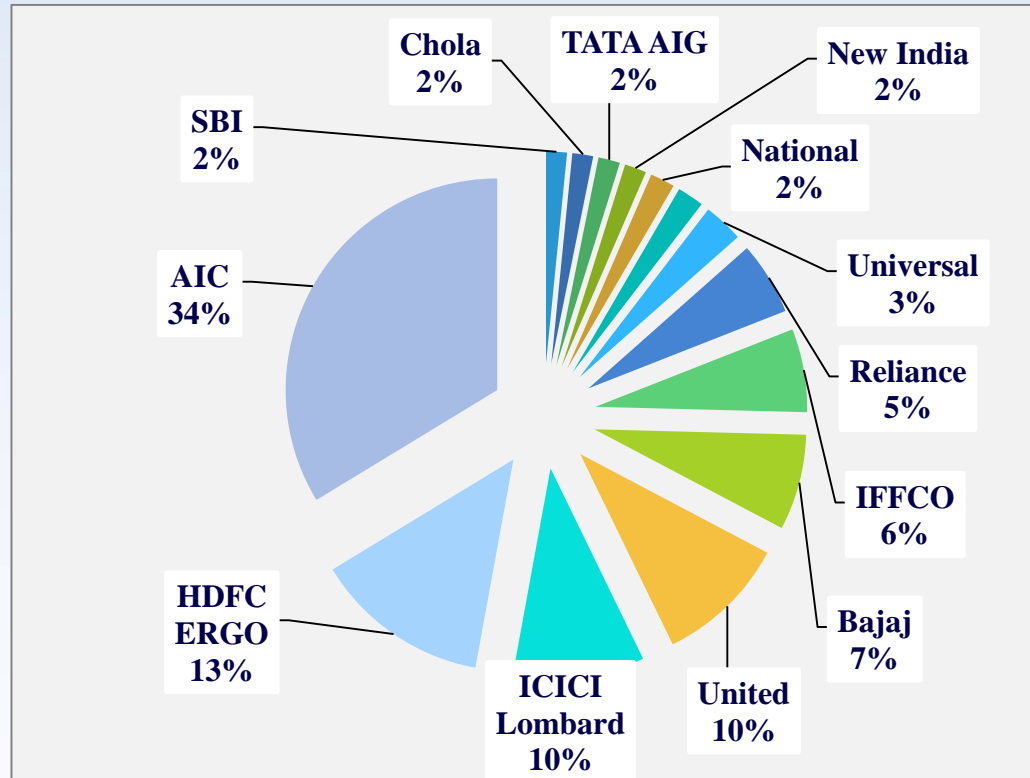
Agriculture Insurance emerging as one of the major lines of business ...with GWP market share of 16% in 2016-17

**GOI -2018-19
29,935 crs (4.6bn USD)**

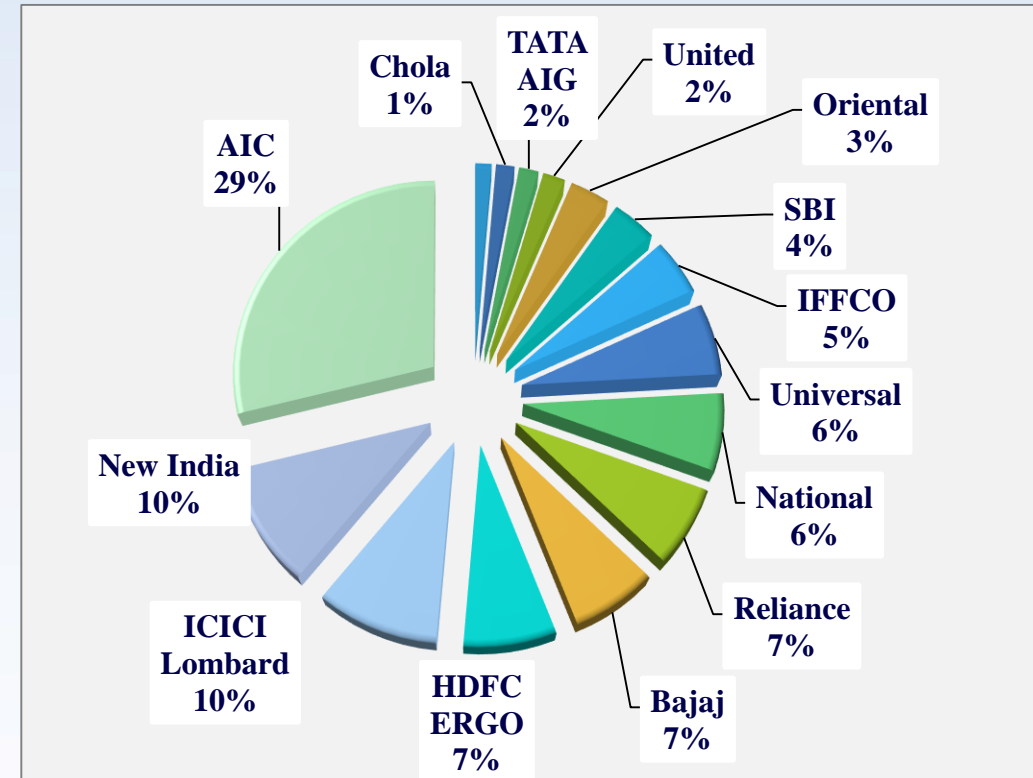
**GOI – 2021-22
Farmers Income X2**

Cedant wise market share comparison- agriculture

FY'17 Market Share



FY'18 Market Share (Rabi premium Estimated)



- Industry size has increased from Rs 220 Bn in FY '17 to Rs 250 Bn in FY '18
- Crop Insurance market is becoming more competitive. New India, National, Universal, Oriental, Reliance have increased their market share in FY'18 , where as the market share reduced for AIC and HDFC Ergo

Crop portfolio overview

PMFBY market overview: FY 17-18

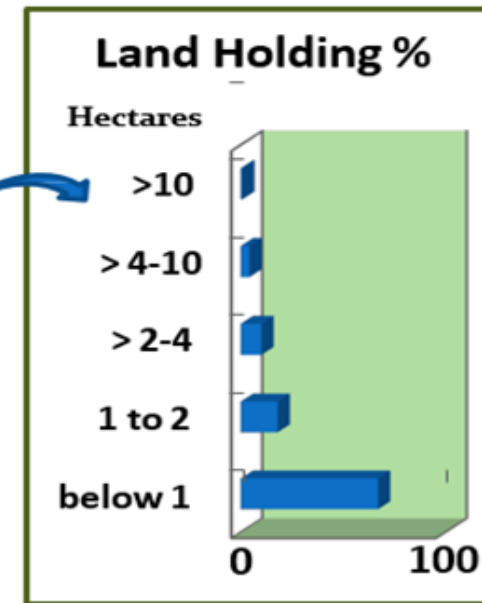
Sector	Company	Kharif GWP	Rabi GWP	Total GWP	Market Share
PSUS	AIC	6,646	2210	8,500	34%
	NEW INDIA	1,443	-	1,443	6%
	UNITED	1,350	575	1,925	8%
	NATIONAL	1,110	32	1,142	5%
	ORIENTAL	524	17	541	2%
	PSU Total	11,073	2,834	13,551	55%
Private	ICICI	1,536	671	2,207	9%
	HDFC	1,152	500	1,652	7%
	BAJAJ	986	853	1,839	7%
	RELIANCE	944	223	1,167	5%
	SOMPO	754	95	825	3%
	SBI	698	172	870	4%
	IFFCO	747	55	802	3%
	TATA	380	290	670	3%
	CHOLA	700	-	700	3%
	BHARTI	151	260	411	2%
	ROYAL	2	-	2	0%
	Private Total	8,050	3,119	11,145	45%
Total	19,123	5,953	24,696	100%	

- Market grown by 8% compared to last year
 - Slower growth (despite increase in scale of finance) due to reduced penetration in some states such as UP, Maharashtra, Karnataka, Bihar
 - Linking of Aadhar card, usage of online portal and loan waiver pertaining to UP and Maharashtra reduced expected growth
- Market share split between PSUs and Private players in 54:46 ratio
 - Future and Shriram stayed out of market during 2017-18

Growth Opportunity in Agriculture Insurance

	Crs	% of Population
India Population	130	
Rural Population	90	69.00%
Cultivators (farmers)	13	10.00%
Agriculture Labour	15	11.00%
Total India work force	50	38.00%
Dep on Agr	28	55.00%

Agri Credit	Crs	Subvention Crs	Short term %
2017-18	10 Lacs	21000	75%
	150 BI USD	3 BI USD	



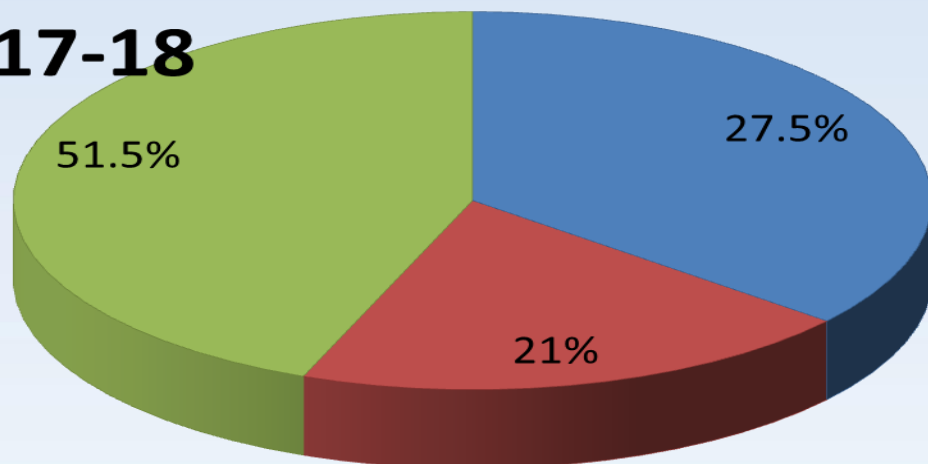
Farmers insured In India (Crs)			
Population	Farmers	Finance (KCC)	Insured
130	13	8 (50% inoperative)	4.2 ✦
70% Farmers uninsured... Huge Opportunity			

✦ Kharif + Rabi
Actual 35MI

GIC Re's Share in Domestic Agriculture Market

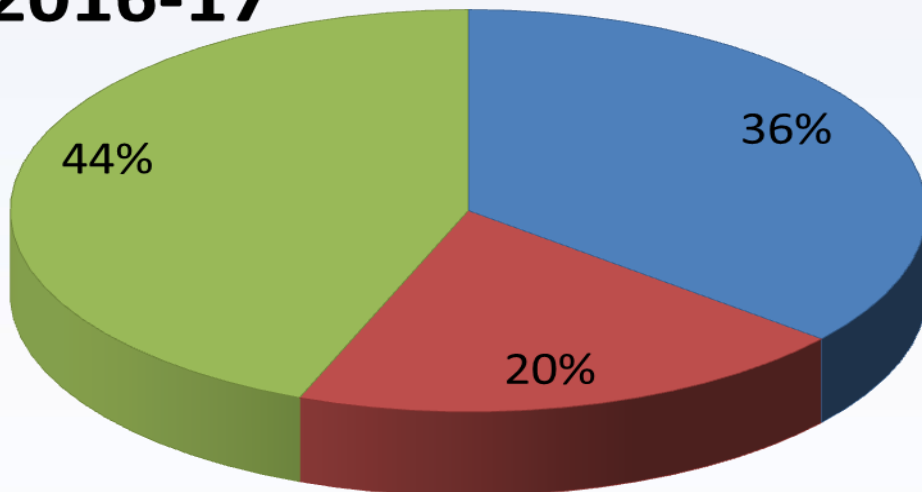
Figs. in INR Crores

2017-18

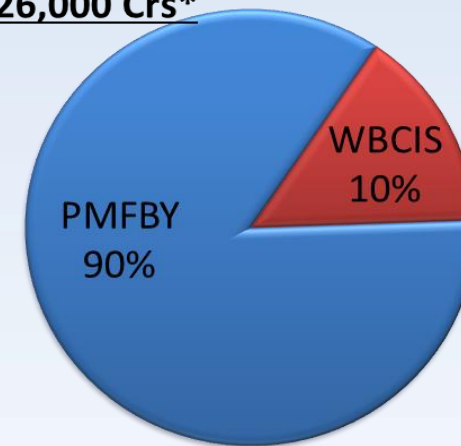


■ Other reinsurers ■ Cedents' retention ■ GIC Re share

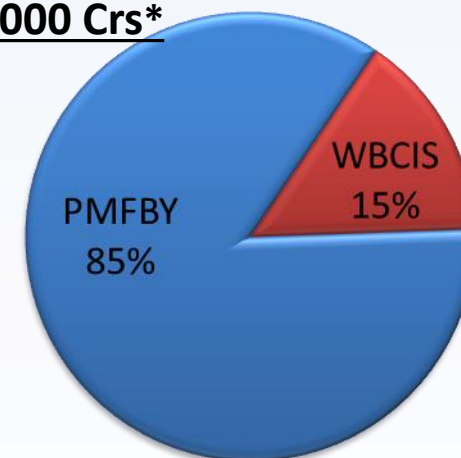
2016-17



INR 26,000 Crs*

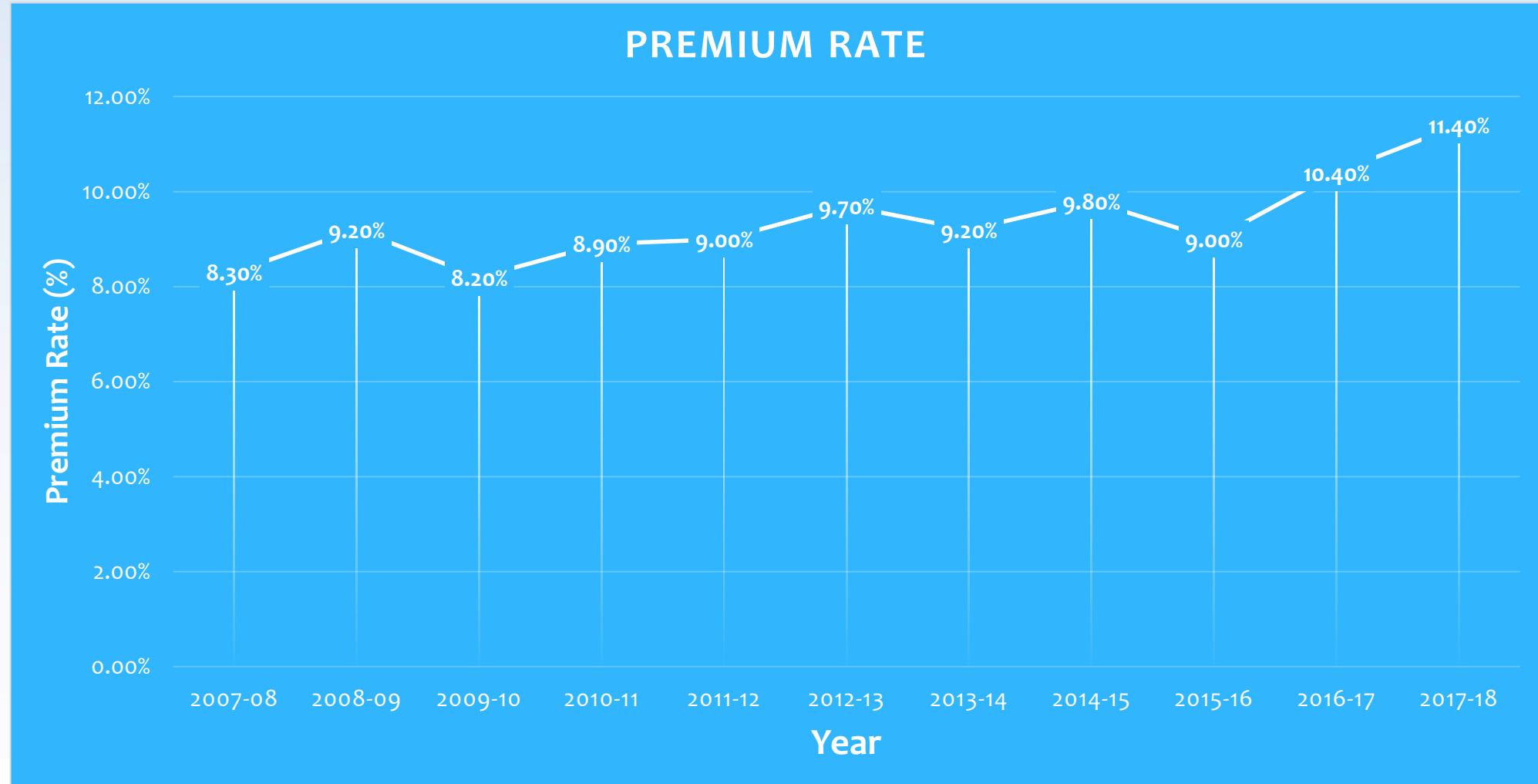


INR 22,000 Crs*



Movement in Pricing

Underlying national level average premium rate (excluding-NAIS) has increased from 8% in 2007-08 to close to 11.5% in 2017-18



NAIS Loss Cost

- * NAIS was implemented from year 1999-00 till 2015-16 (33 seasons)
- * Total claims paid = INR 55,440 crore
- * Total sum insured = INR 4,67,169 crore
- * Loss Cost = 11.86%

“Those who do not remember the past are condemned to repeat it.”

- George Santayana

Need Of Pricing Discipline in Agriculture Insurance

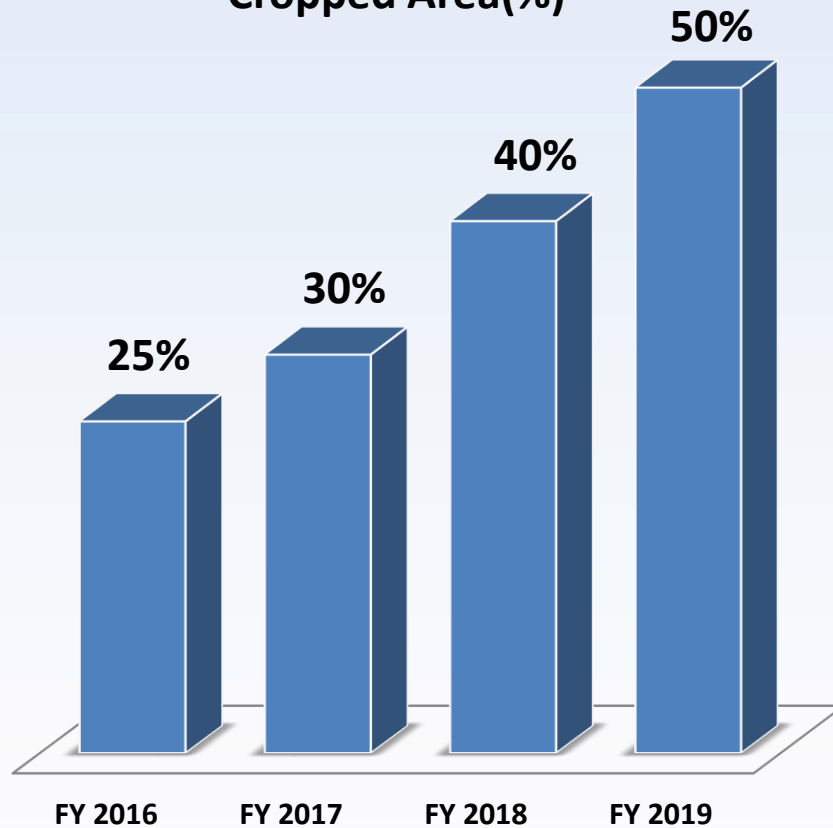
- * Rainfall is the major risk factor in Indian Agriculture, especially for yield index insurance .
- * about 35%(Approx) of the gross crop area is irrigated
- * There are several aspects of rainfall-uncertainty. Other than the variation in the total rainfall during a given period of time, there are significant temporal and spatial variations.
- * While the annual all-India total rainfall has a coefficient of variation of about 11%, the coefficient of variation of the annual southwest monsoon rainfall ranges from 44% to 10% for each of the meteorological divisions
- * The pattern of rainfall across time is also important since crops require appropriate rainfall during critical periods in the crop cycle. The variability of rainfall over short time horizons is significantly greater than over longer time horizons.
- * There are three levels of indemnity — 90%/80%/70%, corresponding to low/medium/ high risk areas for all crops, which is high in comparison to indemnity offered in other countries.

Current Market Overview

- * Crop Insurance Market expected to grow 20% year on Year
- * Reinsurance Capacity is hard to come by, Reinsurance Market still remembers two consecutive loss years of 2014-15 and 2015-16
- * National Portal by MOA, GOI is a path breaking initiative
- * Linking of Land records / Aadhar Data / Banking system eliminates duplication and fraud
- * Area Correction Factor is being addressed through remote sensing
- * Robust dispute resolution system is being contemplated and in the making
- * National Technical Support Unit at New Delhi (by GIC Re) and State level Technical support units being contemplated
- * GIC Re is the largest Agriculture Reinsurer in the world.

Major Drivers and Road Map for future growth

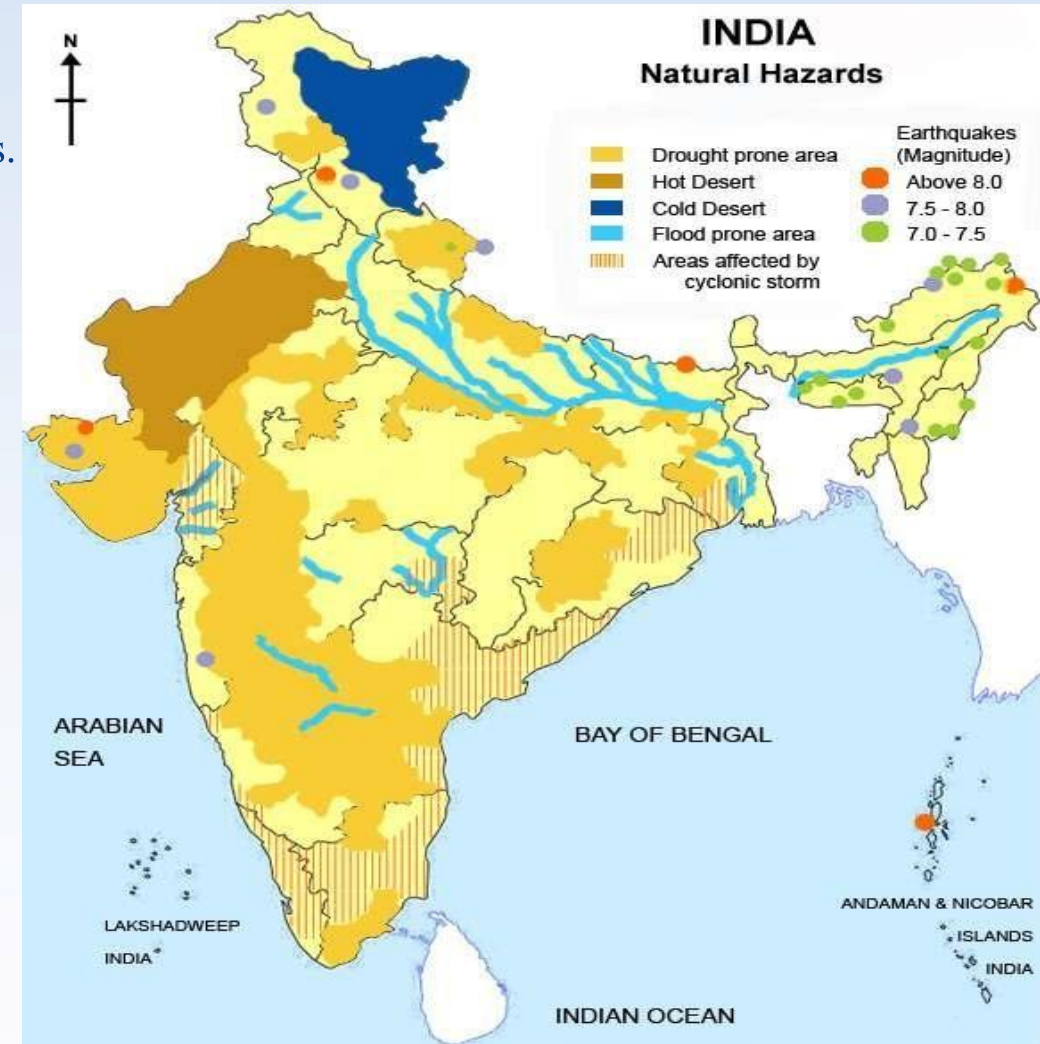
Proposed Coverage of Gross Cropped Area(%)



- Govt. target for proposed coverage of 50% of gross cropped area by FY 2019
- Active Involvement from the Govt. of India and state Govts.
- Premium Rates are technically calculated
- More crops being covered under crop insurance
- Increases in scale of finance for major crops thus increase in Sum Insured
- Increased use of Technology like Digitilation of Land Records, Aadhar Ceding, Satelite Imaging, Use of Smart Phones, Geo tagging, Farmers Portal etc.

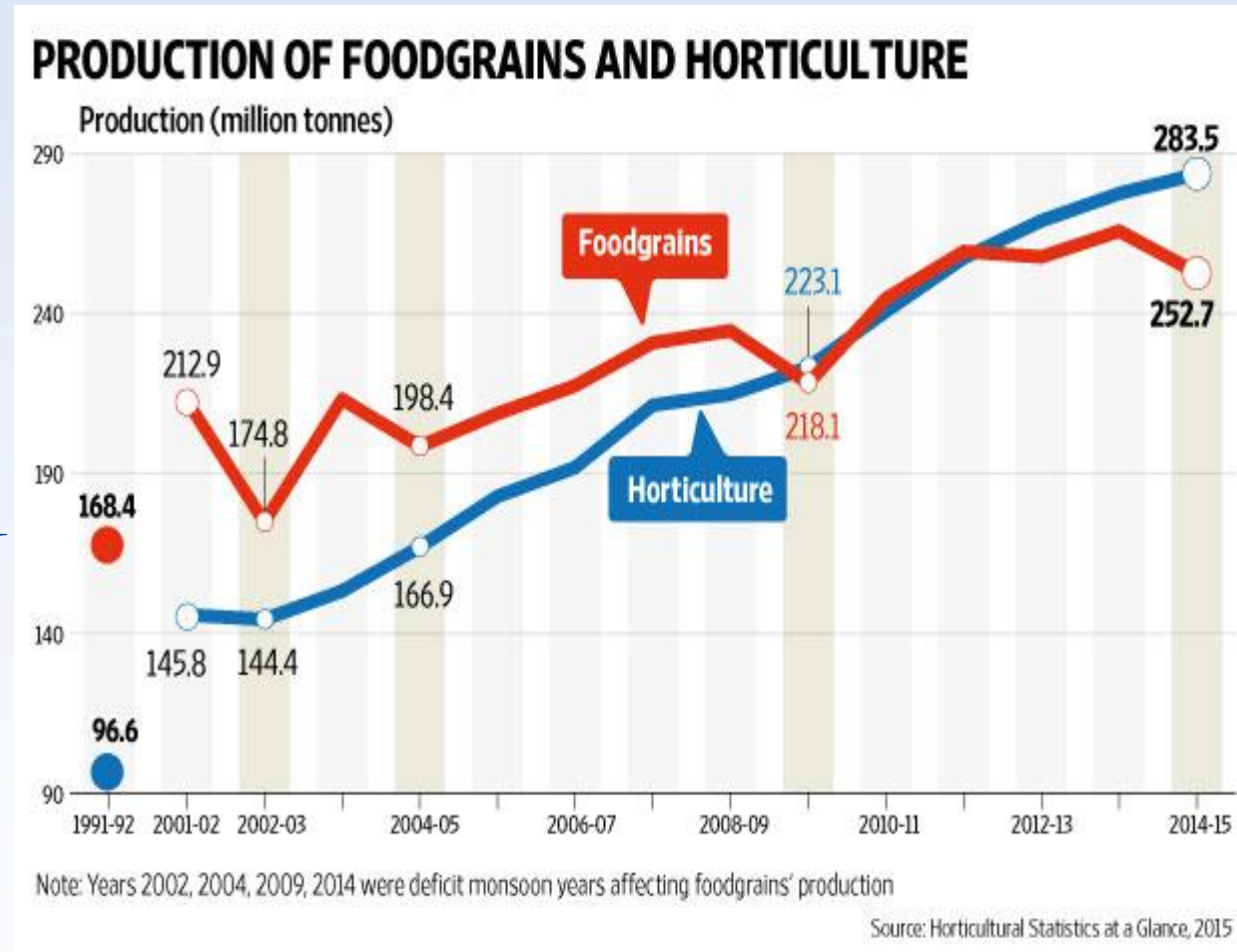
Cat Event History of india

- * According to the **statistics**, 68% of **India's** land is prone to **drought**, 60% to earthquakes, 12% to floods and 8% to cyclones.
- * Only eastern coast of west Bengal , Odisha , Andhra Pradesh and Tamilnadu is cyclone prone
- * Out of 278 cyclones that crossed the east coast, Orissa had the largest share with 98 cyclones (35%), followed by Andhra Pradesh with 73 (26%), West Bengal with 55 (20%), and Tamil Nadu with 52 (19%). However, it is interesting to observe that out of the 60 very severe cyclonic storms that crossed the coast, Andhra Pradesh had the highest number with 18 (30%), followed by West Bengal with 16 (27%), Orissa with 15 (25%), and Tamil Nadu with 11 (18%)

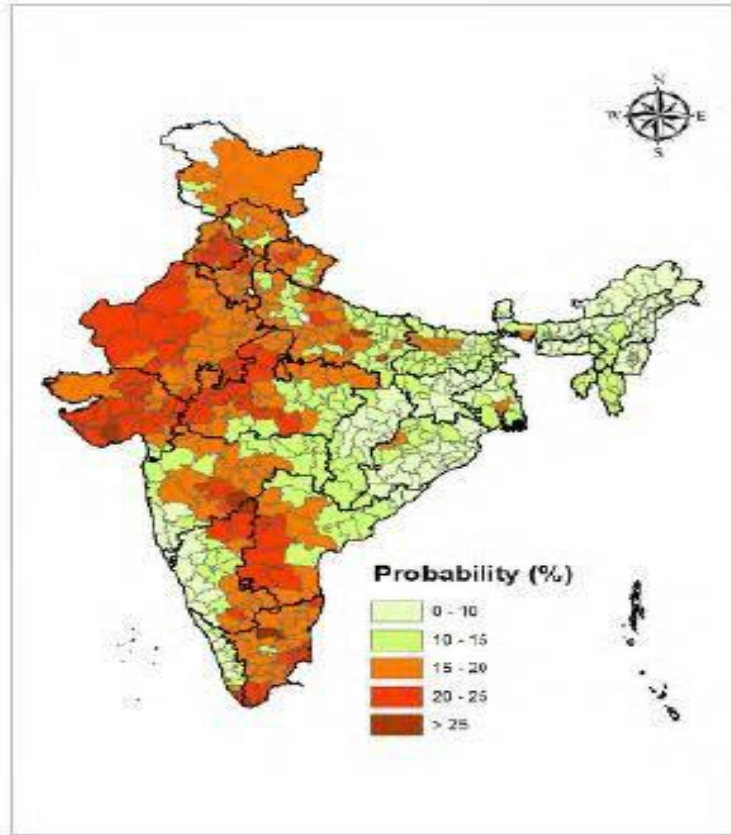


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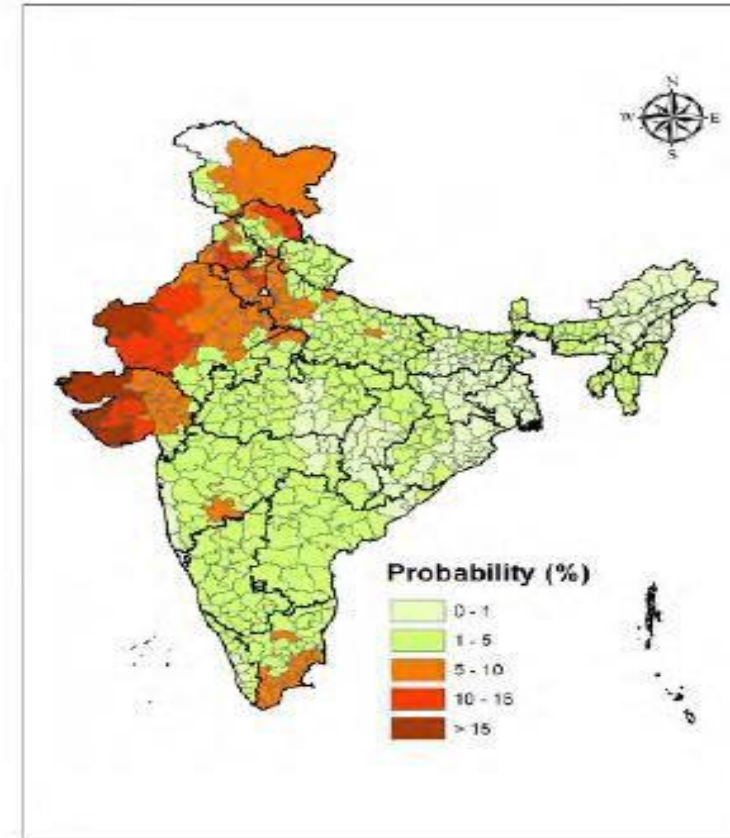
- W.r.t agriculture in India major peril is drought
- The major drought years in India were 1877, 1899, 1918, 1972, 1987 and 2002.
- The drought-prone areas of the country are confined to peninsular and western India (Maharashtra, Karnataka and Andhra) – primarily arid, semi-arid and sub-humid regions.
- An analysis of 100 years of rainfall data reveals that the frequency of 'below-normal rainfall' in arid, semi-arid and sub-humid regions is 54-57%, while severe and rare droughts occurred once every eight to nine years in arid and semi-arid zones. In these zones, rare droughts of severe intensity occurred with almost every third year being a drought year.
- More than 30 districts having a return period less than or equal to 5 for a moderate drought
- More than 80 Districts having a return period less than or equal to 10 for severe drought



Probability of drought (%) (Based on data of 1901-2000)



Moderate drought



Severe drought

**Dr. Ch. Srinivasa Rao Director ICAR-Central Research Institute for Dryland Agriculture Hyderabad-Drought proofing programs

Heterogeneity

- * Heterogeneity arises due to difference in the granularity of data available and the granularity of settlement of claims
- * For example if data is available for Block level and settlement unit is Gram panchayat.
 - i. There were losses in 3 out of 8 gram panchayats (i.e. yields are below threshold
 - ii. While calculating Loss cost, the average data at block level is used In that case the yield that were below threshold will be offset by the yields that were above threshold.
 - iii. Our Loss cost will be zero when there were losses paid in 3 gram panchayats

Example

Threshold	600 Kg/ ha		
	Yield	Loss	Loss Cost
GP-1	630	-30	0%
GP-2	510	90	15%
GP-3	745	-145	0%
GP-4	623	-23	0%
GP-5	764	-164	0%
GP-6	584	16	3%
GP-7	560	40	7%
GP-8	678	-78	0%
Tehsil (Calculated)	636.75	-36.75	0%
Tehsil (Observed)			3.13%

