



# **Agriculture insurance the experience from Mexico and India**

*Dr. Rolando Hernández*

# Mexico

*Special thanks to ProAgro Insurance company  
and the University of Chapingo*



## Mexico has a high risk because of:

- Drought
- Floods
- Frost
- Extreme wind
- Hurricanes

There are different instruments to hedge the risk:

- FONDEN and CADENA
- Commercial insurance
  - Private insurers
  - Fondos

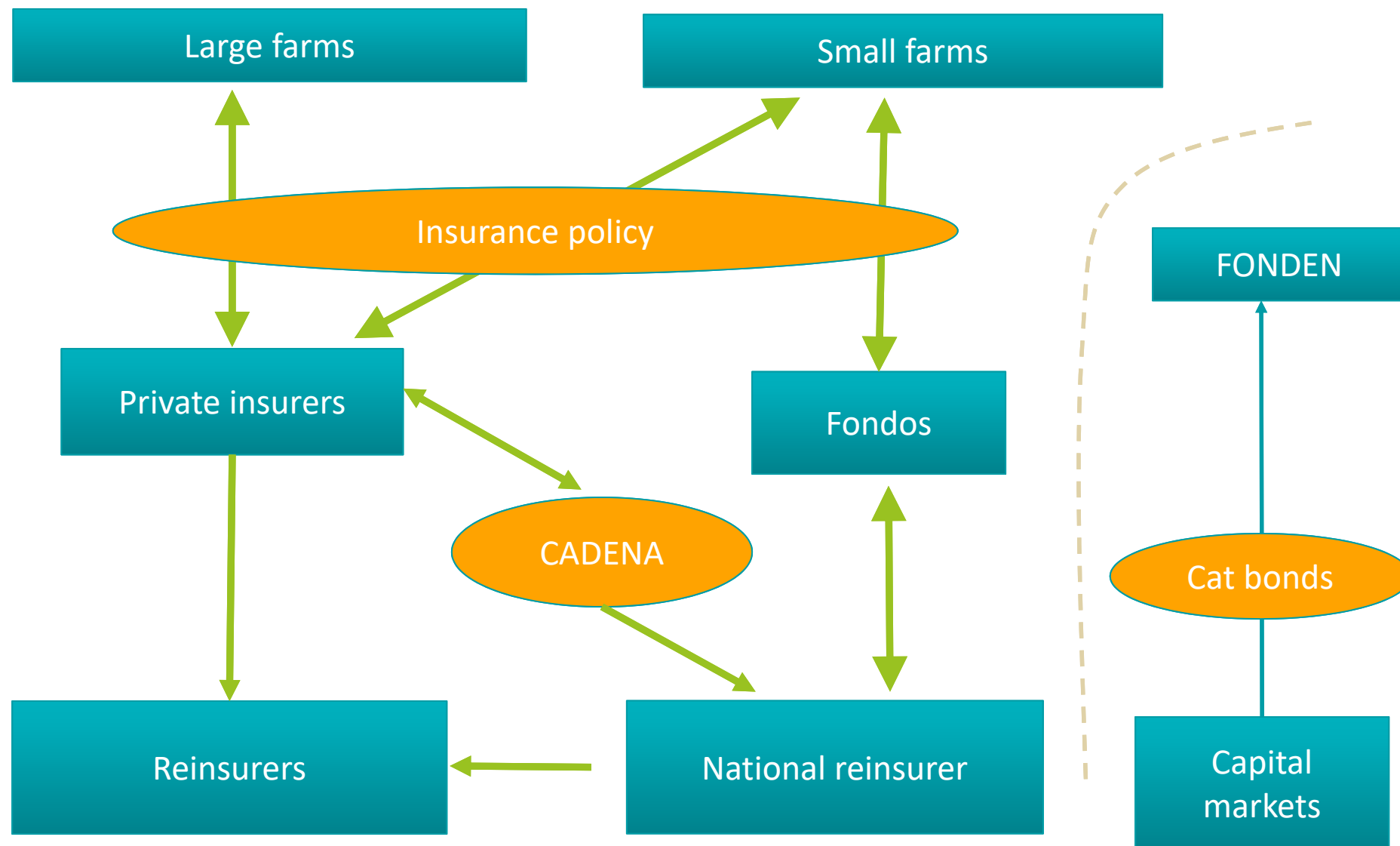


# Insurance has been a part of agric. policy since the 40's



1. Commercial insurance (subsidized by Ministry of Finance)
  - a) Private companies
  - b) Fondos de aseguramiento
  
2. Componente de Atención a Desastres Naturales en el Sector Agropecuario y Pesquero (CADENA). (subsidized by Ministry of Agriculture)
  - Designed to support actions of the federal government and state governments when catastrophic events arise from weather contingencies that affect the productive activities of the rural sector.
  - In México CADENAs are operated by AGROASEMEX and by some private insurers
  - The main characteristics of these schemes are:
    - Massive
    - For catastrophic events
    - Low operating costs
    - Transfer to international markets.

# Agriculture insurance in Mexico



## Fondos de Aseguramiento

400 Fondos de Aseguramiento.

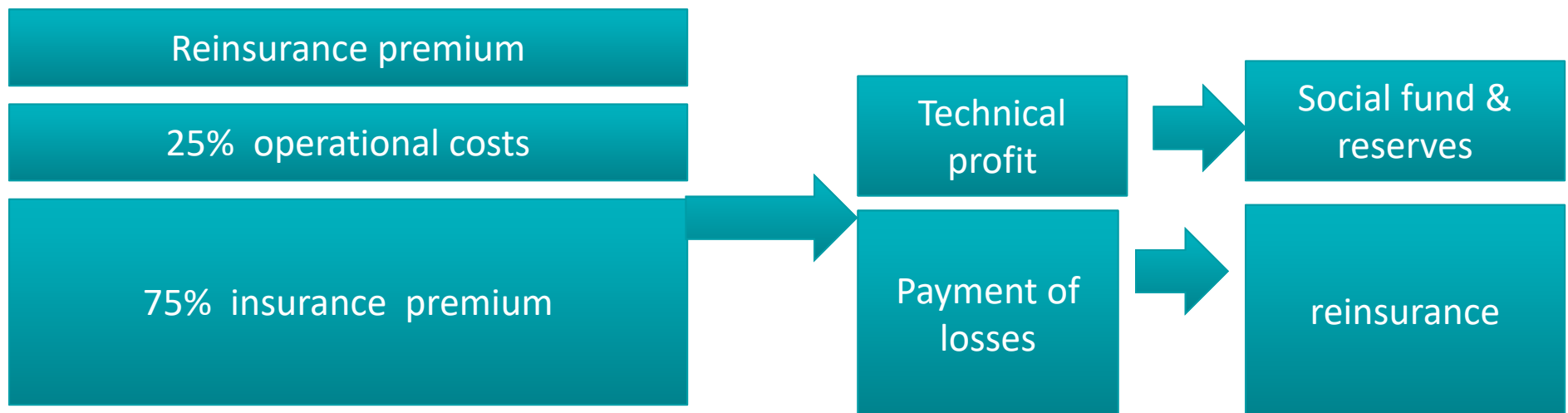
## Aseguradoras Privadas

- ✓ 6 Compañías privadas:
  - General de Seguros, SAB
  - Mapfre Compañía de Seguros
  - PROAGRO, Compañía de Seguros
  - SURA
  - GNP.
  - Tlálloc Seguros
  - Banorte

Source: ProAgro Compañía de Seguros, Mexico

## The Fondos

- They work under the rule of mutuality
- There is a special law covering the operation of the Fondos
- The Fondos offer insurance and work without pursuit of profit – the technical result from the operations can be used only for risk mitigation
- Fondos must buy reinsurance





## Distribution of the technical profit from the Fondos from one year

5% reserve for employee's laboral liabilities (pasivo laboral)

25% for special contingency reserve

70% for Social Fund

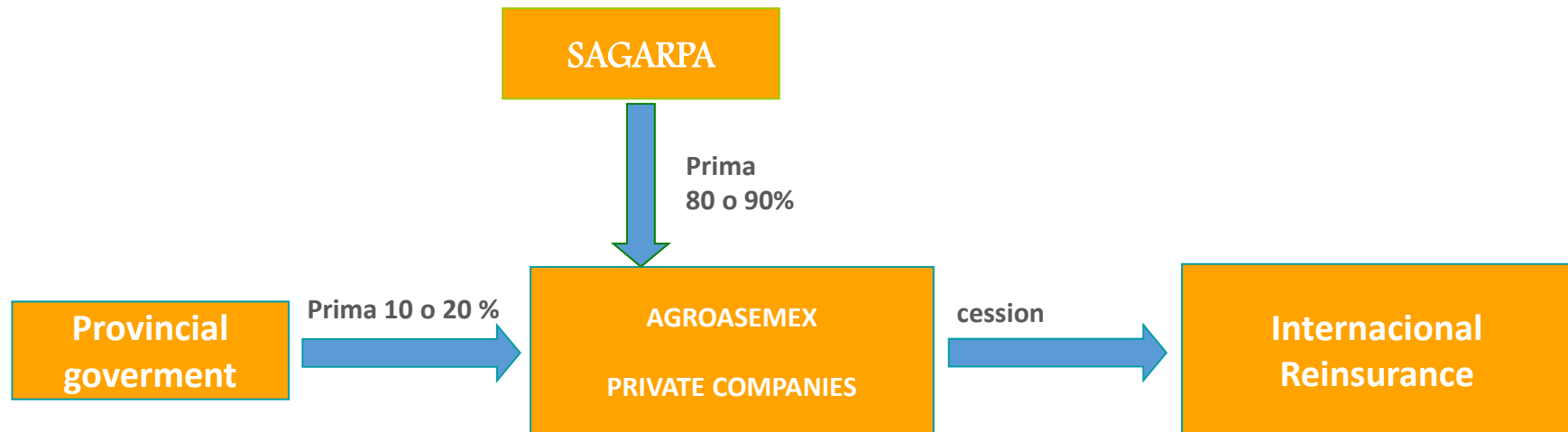


- Reduction of the cost of the premium to the farmer
- Equipment
- Risk reduction measures
- Increase in the technical reserves

## Co-participation in the insurance premium

Marginalization level (CONAPO)		
Federal Provincial government	High or very high	Medium and low
	90% 10%	80% 20%

### Proceso de contratación



# Eligibility to CADENA insurance

Federal and provincial government buy the insurance and pay 100% of the premium

## Eligibility 2018:

Farmers producing under rain or irrigation

Annual crops up to 20 hectares per farmer  
Perennial crops up to 10 hectares.

livestock: up to 60 Animal Units (insurance of forage supplement )

### Montos de apoyo CADENA

#### Agrícola Suma Asegurada/ha.

Temporal	1,500
Riego	2,500

#### Pecuario Suma Aseg. /U. Animal

Todas las especies	600
--------------------	-----

## Parametric methodology

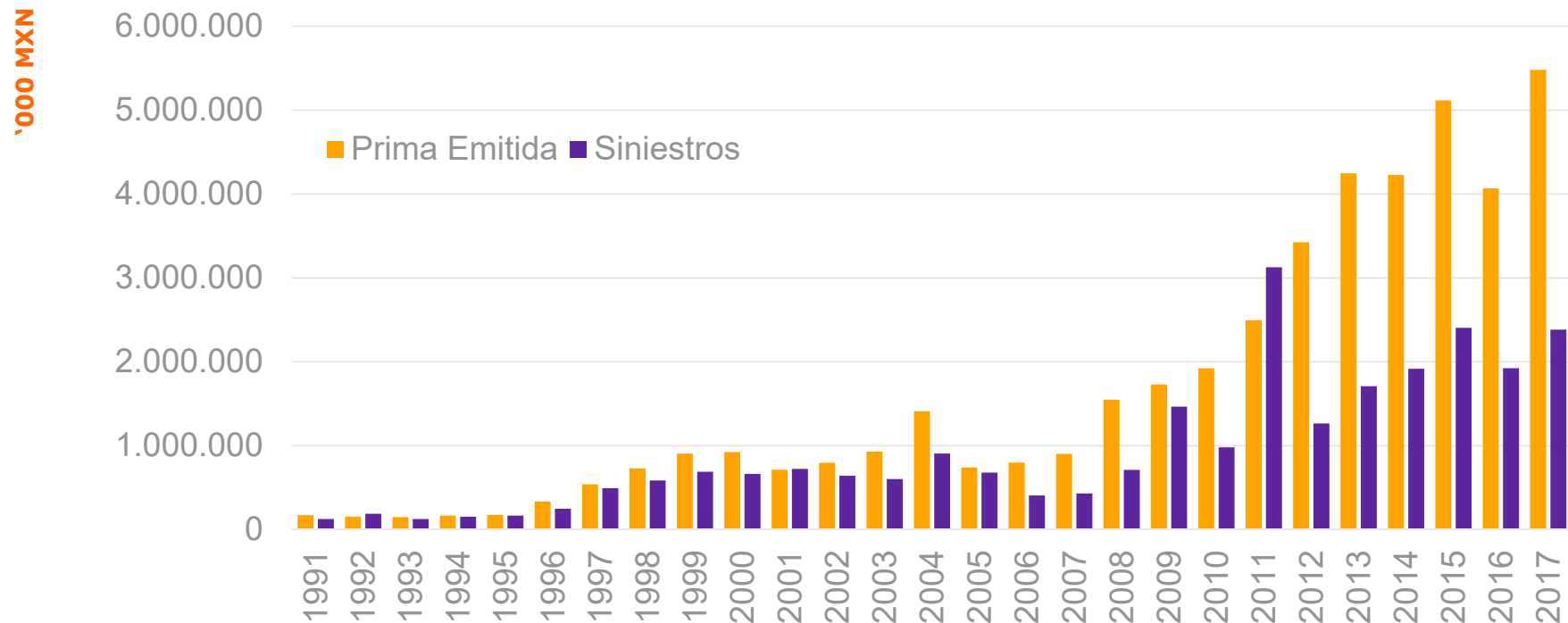
- Parametric insurance uses instruments that on an indirect way reflect the levels of production or damage of the insured unit
- The instruments can be:
  - Precipitation levels, temperature
  - Vegetation index

## Traditional methodology

- Uses a physical inspection of the insured units

# Insurance premium and losses in crop & livestock

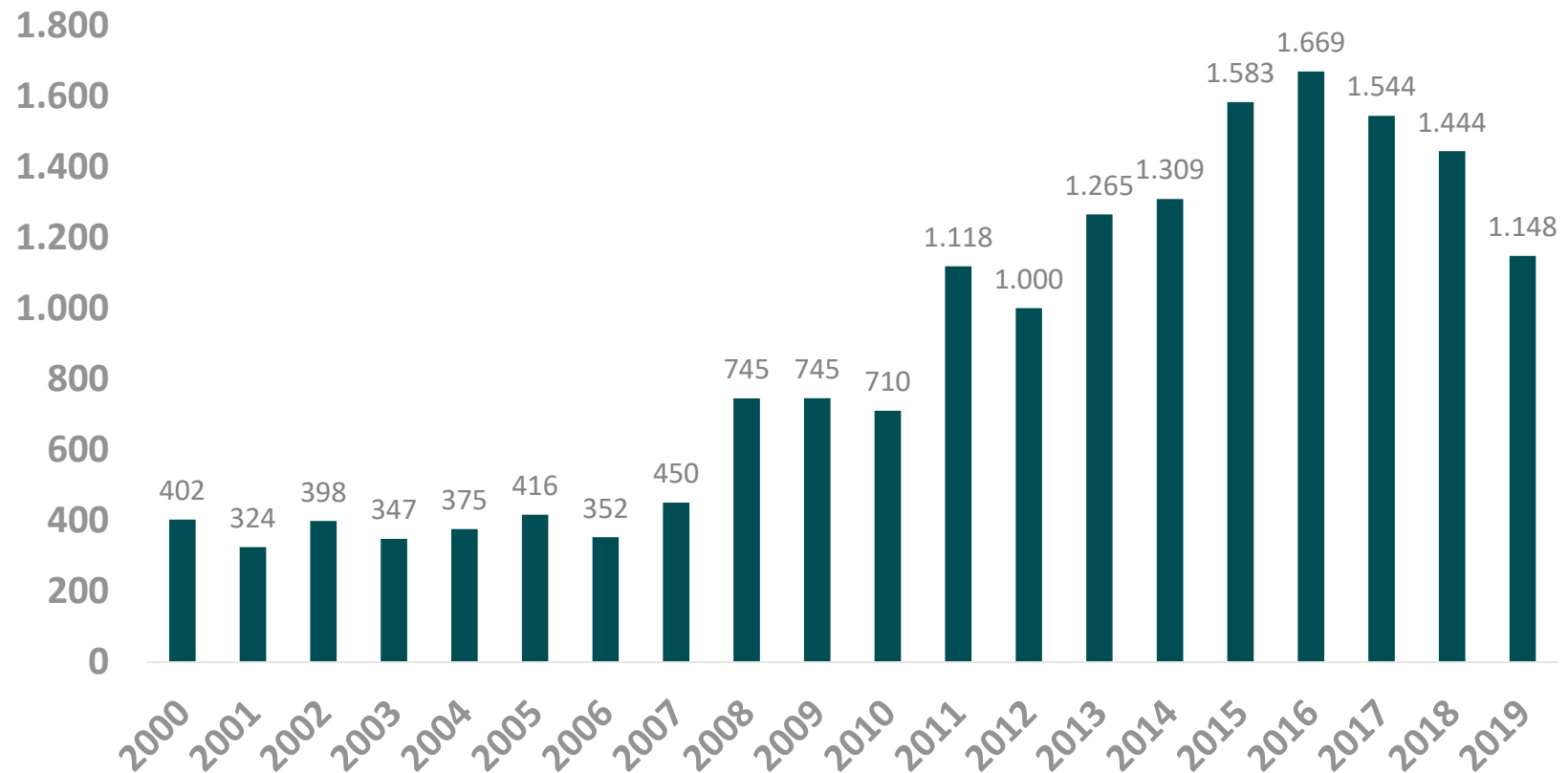
## Commercial insurance



Source: J. Reyes Altamirano C. – University of Chapingo, with data of the Comisión Nacional de Seguros y Fianzas (CNSF)

# Subsidies to the insurance premium

000'000 MXN (millions of Pesos)

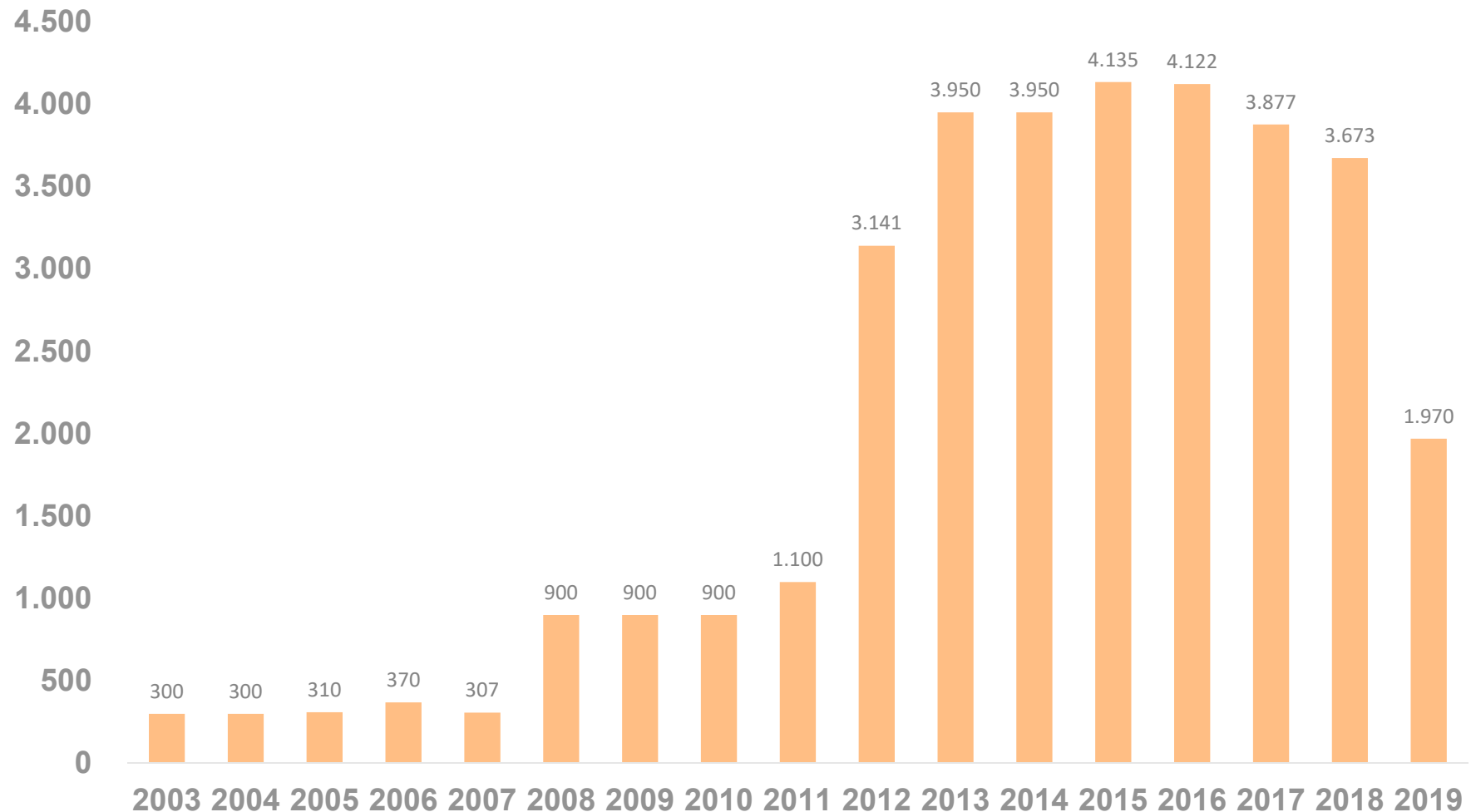


Source: J. Reyes Altamirano C. – University of Chapingo, with data of the Comisión Nacional de Seguros y Fianzas (CNSF)

En el año 2016 se subejercieron 107 millones de pesos de subsidio a la prima del seguro por reducción en topes máximos, requisito de apoyar sólo siembras del 2016 y falta de presentación de coordenadas geográficas en los vértices de los predios asegurados.

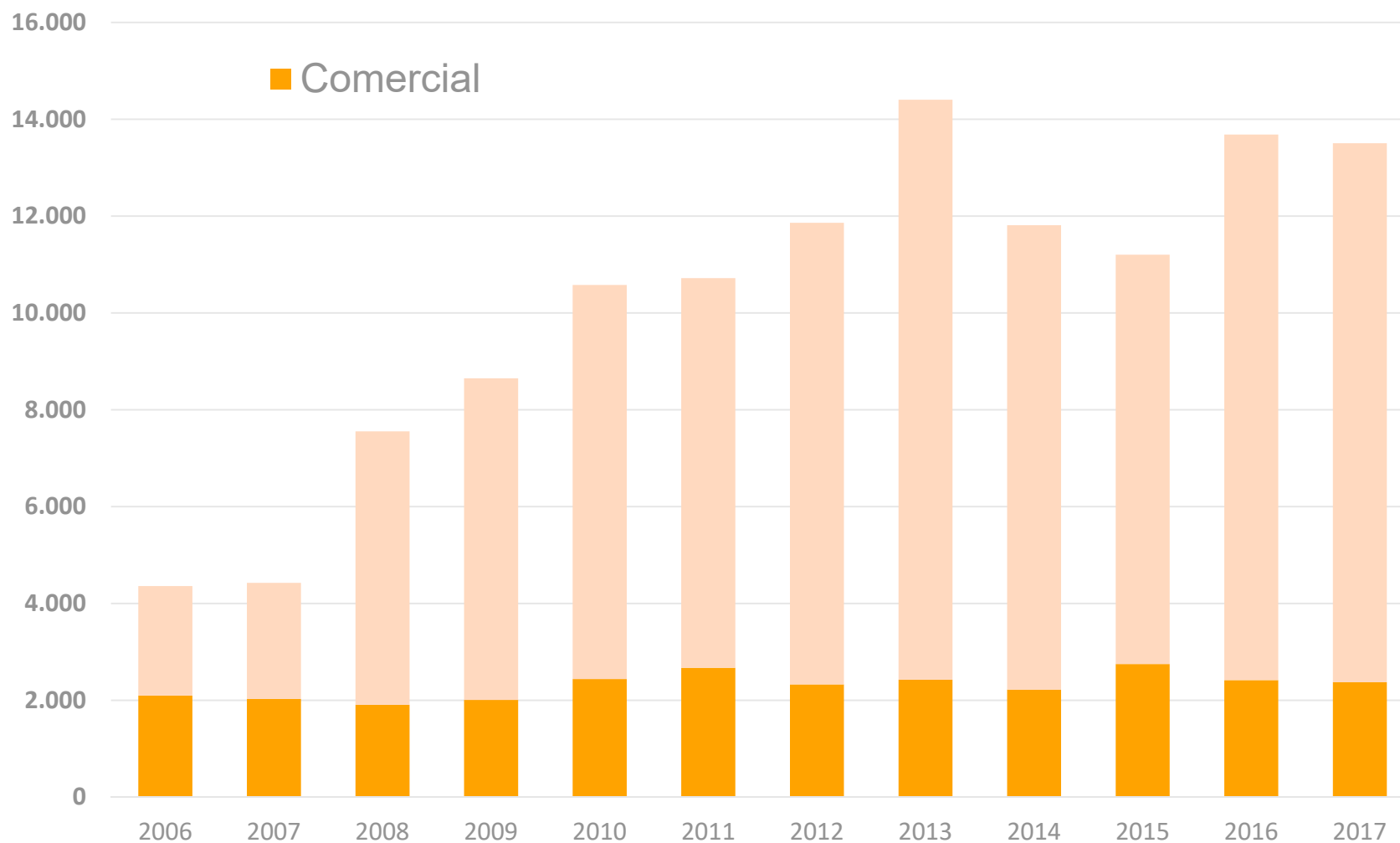
# Budget for the CADENA insurance premium

000'000 MXN (millions of Pesos)



Source: J. Reyes Altamirano C. – University of Chapingo, with data of the Comisión Nacional de Seguros y Fianzas (CNSF)

# Insured area ('000 hectares)

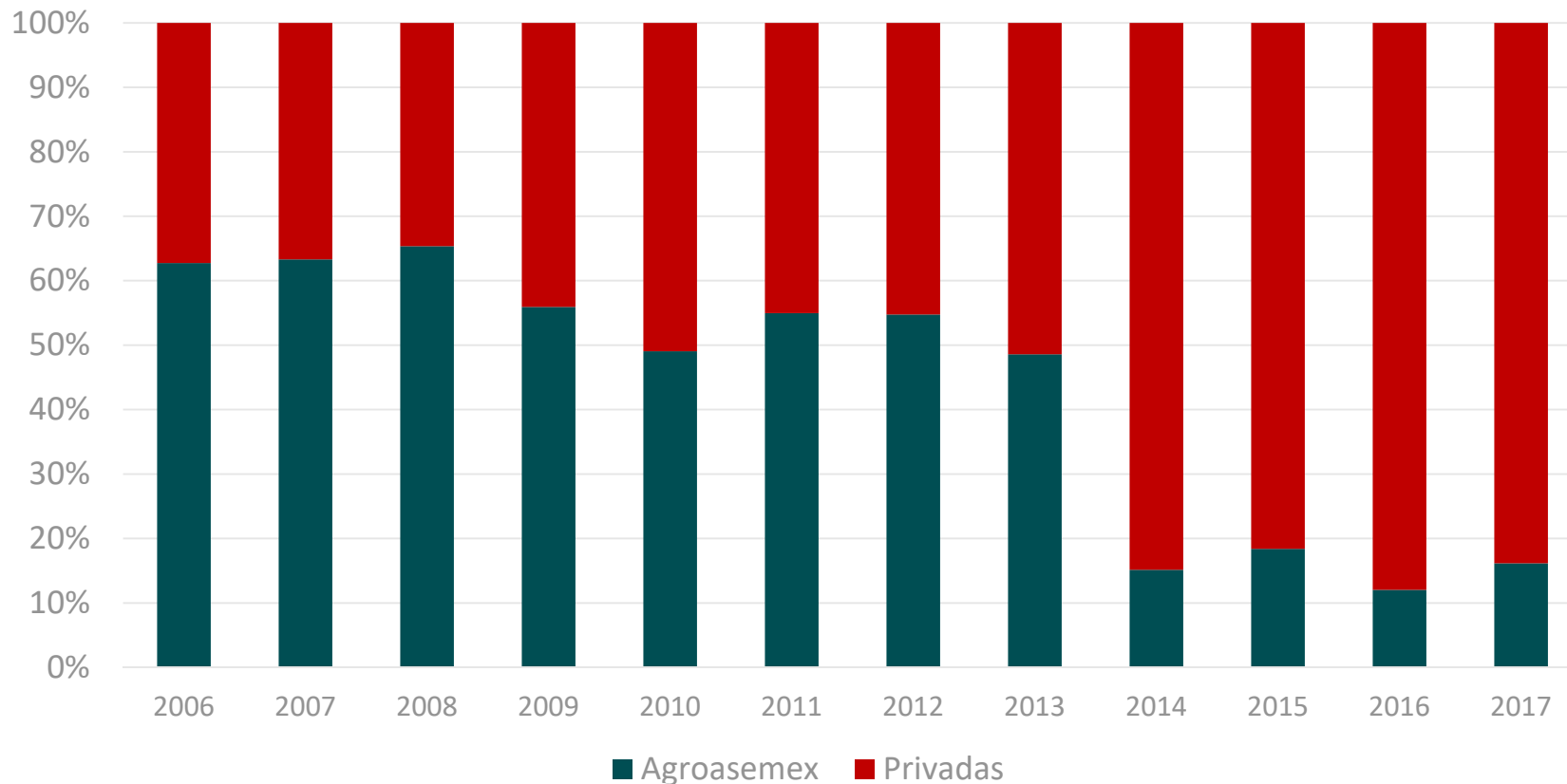


Source: J. Reyes Altamirano C. – University of Chapingo, with data of the Comisión Nacional de Seguros y Fianzas (CNSF)



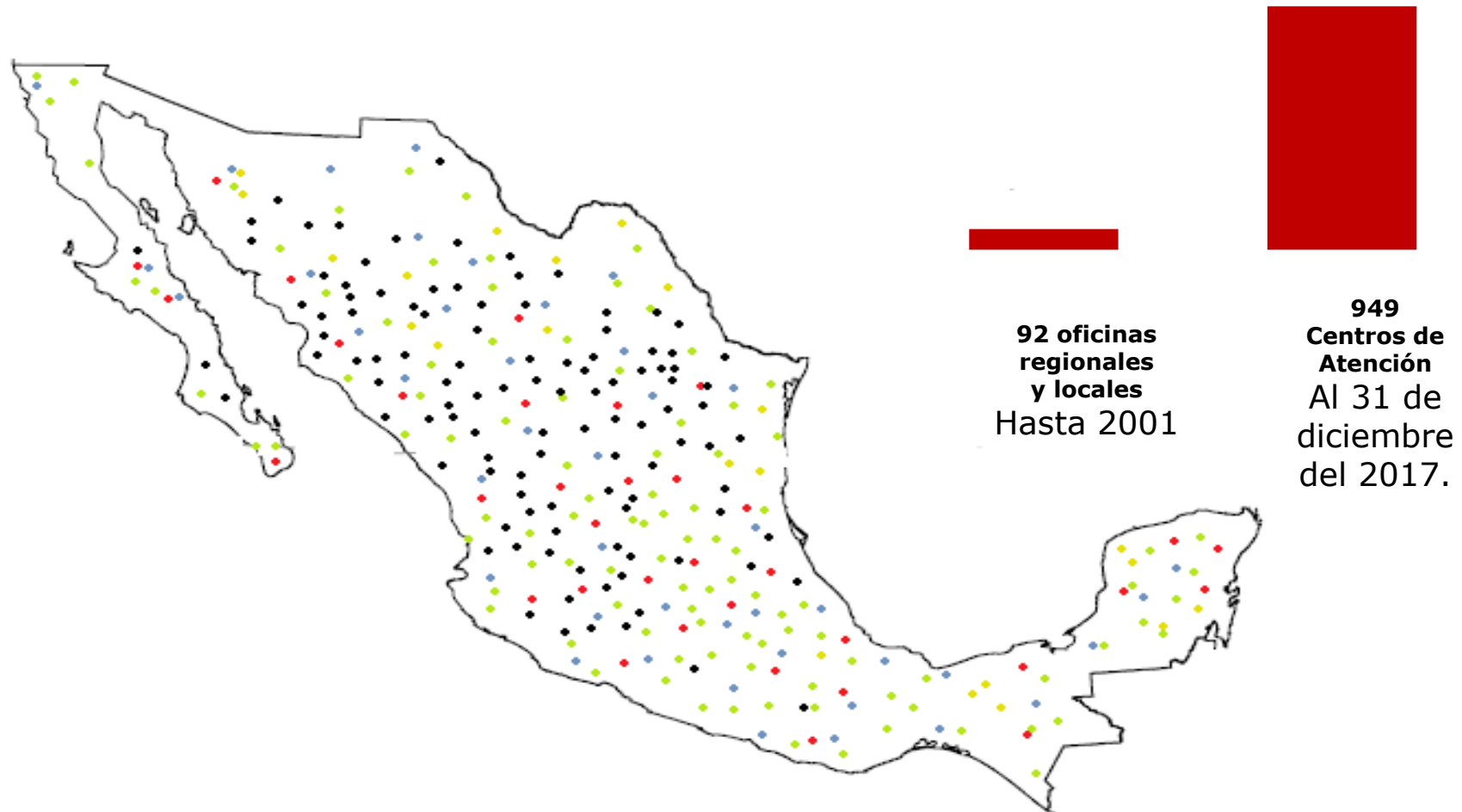
# Participation in insured area in CADENAs (%)

## Participación en la superficie asegurada contra riesgos catastróficos (%)



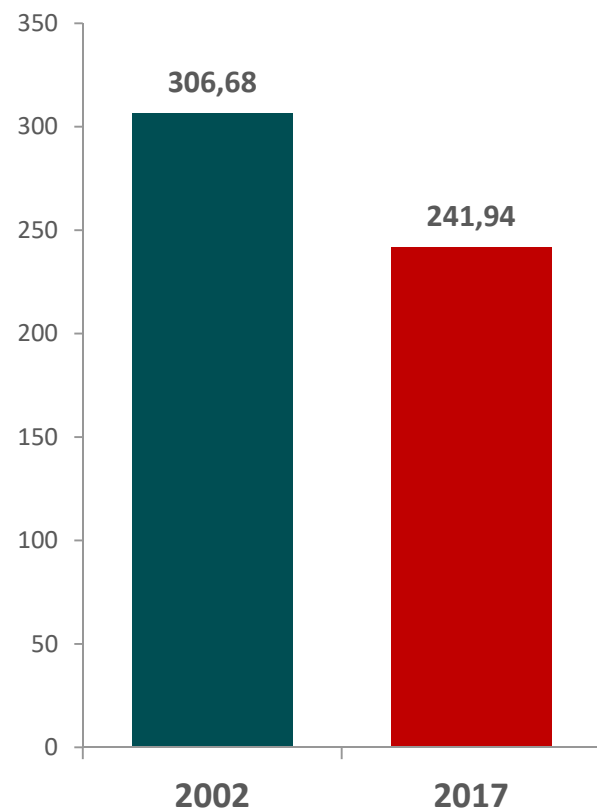
Source: J. Reyes Altamirano C. – University of Chapingo, with data of the Comisión Nacional de Seguros y Fianzas (CNSF)

# Opening of the CADENA to the private sector

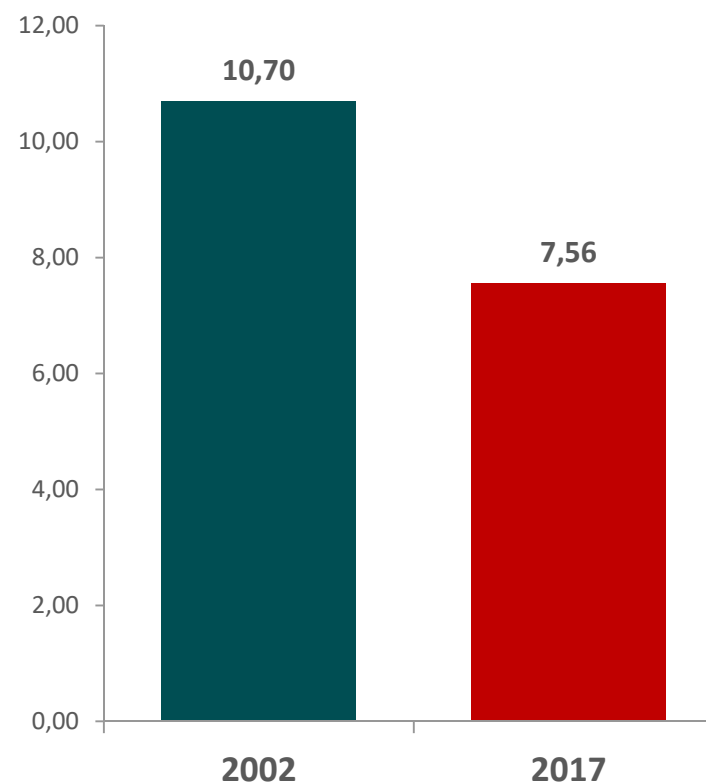


Source: Protección Agropecuaria Compañía de Seguros – ProAgro Mexico

**SUBSIDIO AGRÍCOLA**  
\$/HA.  
A PRECIOS DE 2002



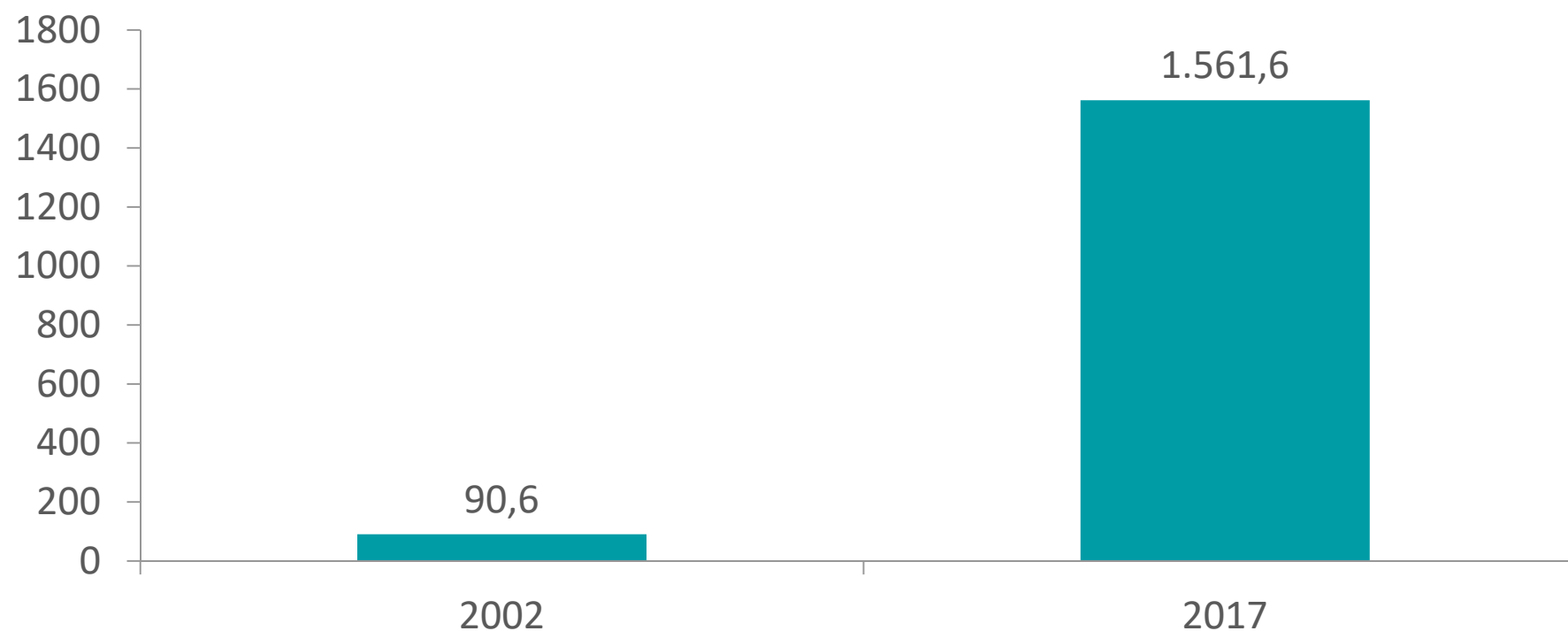
**SUBSIDIO PECUARIO**  
\$/CABEZA O UNIDAD  
A PRECIOS DE 2002



Source: Protección Agropecuaria Compañía de Seguros – ProAgro Mexico

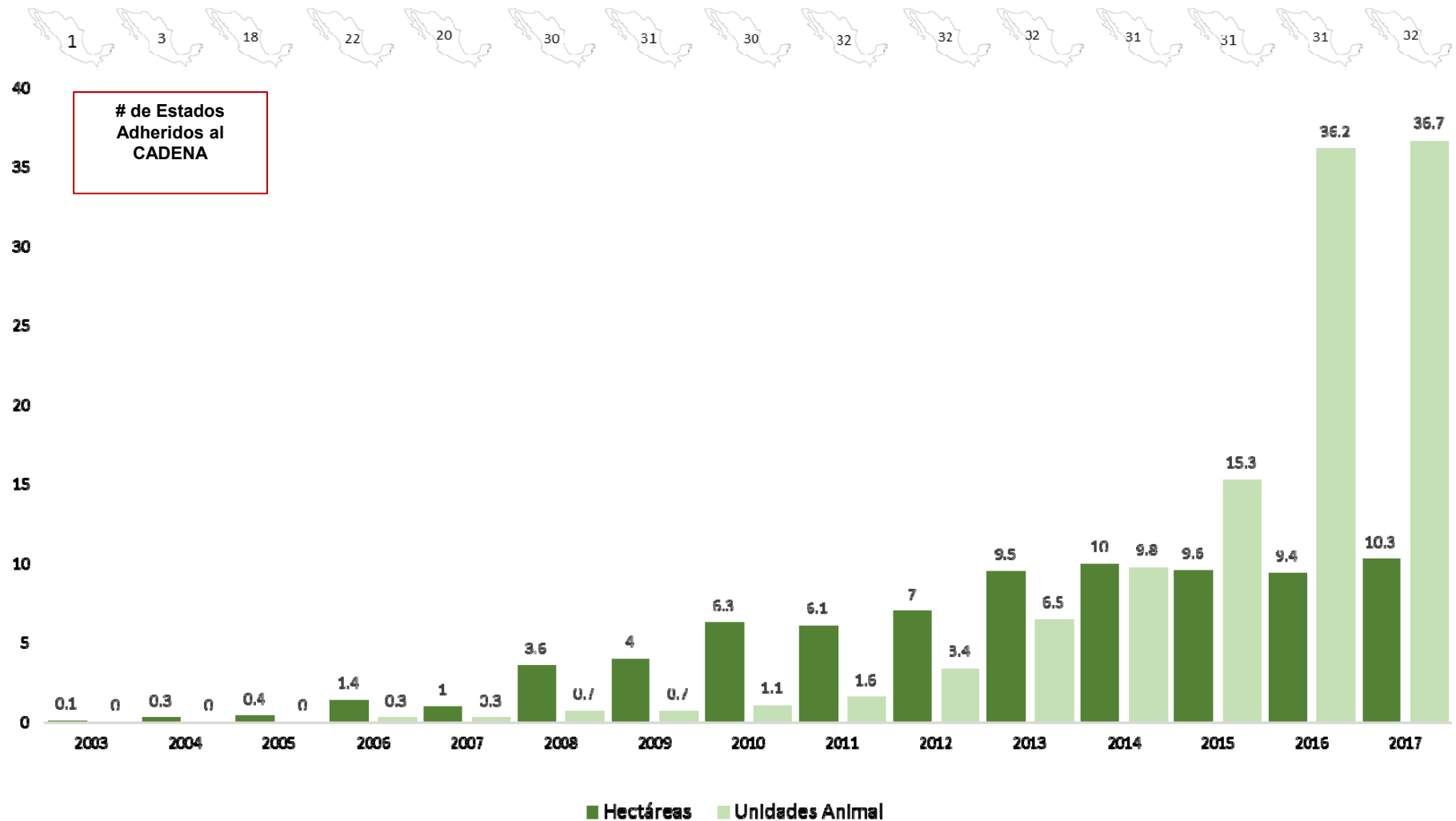
# Insured area in the south/ southeast of Mexico

## Superficie Asegurada (miles de hectáreas)



Source: Protección Agropecuaria Compañía de Seguros – ProAgro Mexico

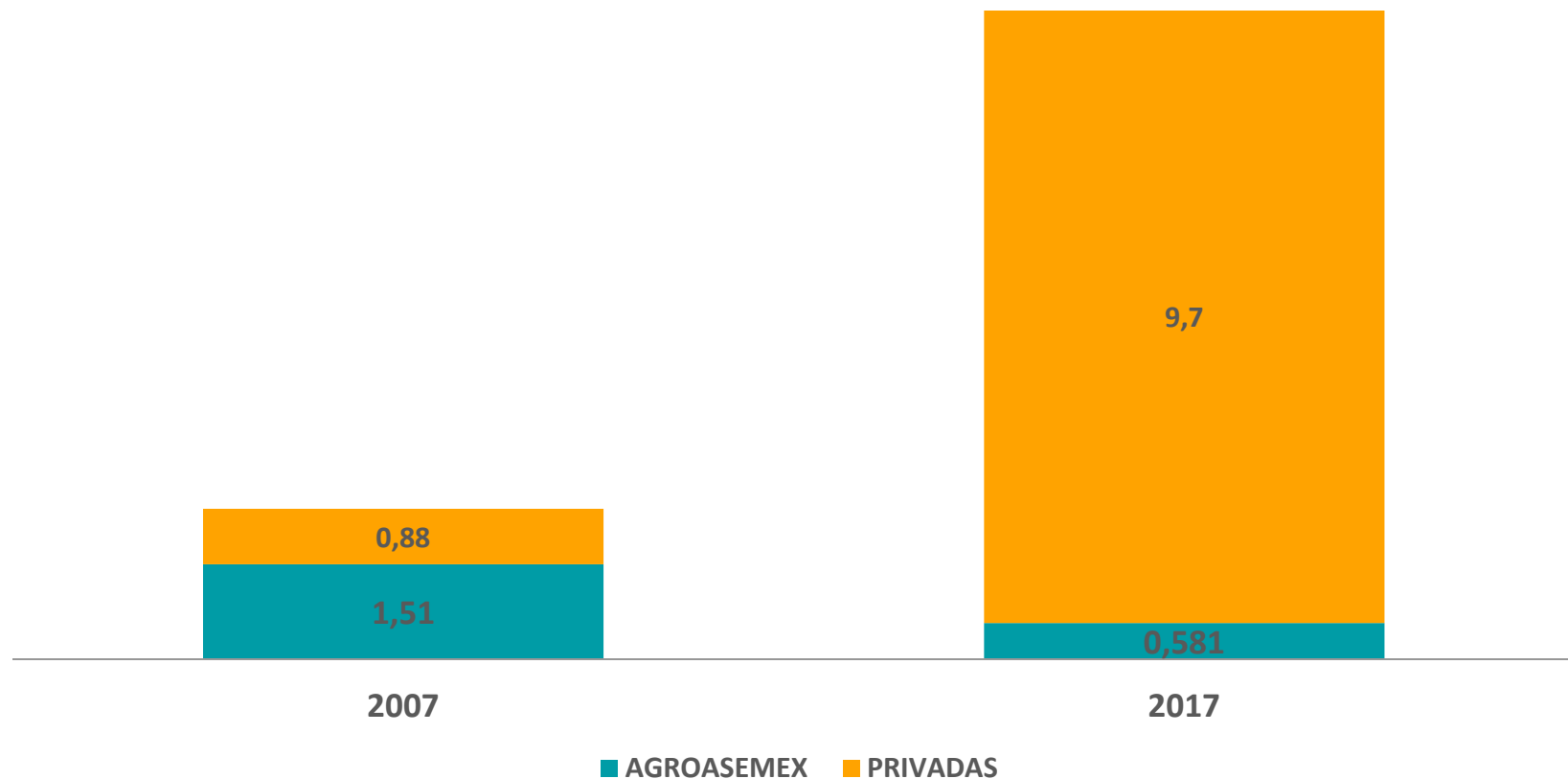
# CADENA – insured Federal States



Source: Protección Agropecuaria Compañía de Seguros – ProAgro Mexico

# CADENA – growth in insured area

Sum insured Superficie Asegurada  
(millions of hectares)



Source: Protección Agropecuaria Compañía de Seguros – ProAgro Mexico

India



- Population: 1.25bio
- 120mio farmers plus 150mio farm workers
- Small-scale farming – subsistence agriculture production (avg. farm size less than 2 ha – fragmented farming – lack of capital for investments (seed quality, fertilizer, etc.)
- Government supporting farmers with capital (loans), technology (information, irrigation) and inputs (fertilizer, seeds, etc)
- Arable land: 160mio ha (World Bank)
- Major Crops: Rice, Wheat, Maize, Oilseeds, Sugarcane
- Dependent on monsoon rainfall between June and September – a failed monsoon with less rainfall leads to considerable crop losses with all consequences to the rural population and food import/export considerations



- Kharif (June-October) is the largest crop season (65%), Rabi is the winter/dry season and smaller due to the type of crops grown
- Crop Insurance Penetration: 30% (estimate)
  - Loanee Farmers – the loans reported by the banks to the crop insurers are automatically covered – farmers' premium share added to the loan rate
  - Non-Loanee Farmers make their own decision about enrollment
- El Niño has a significant impact on the monsoon performance
  - around 2 out of 3 El Niño years have produced severe droughts in India with an El Niño return period between 2-7 years
- Lack of crop storage facilities produce large crop losses after harvest (30% possible)
- Irrigation facilities and investments growing steadily, but leading to shrinking water levels in certain areas

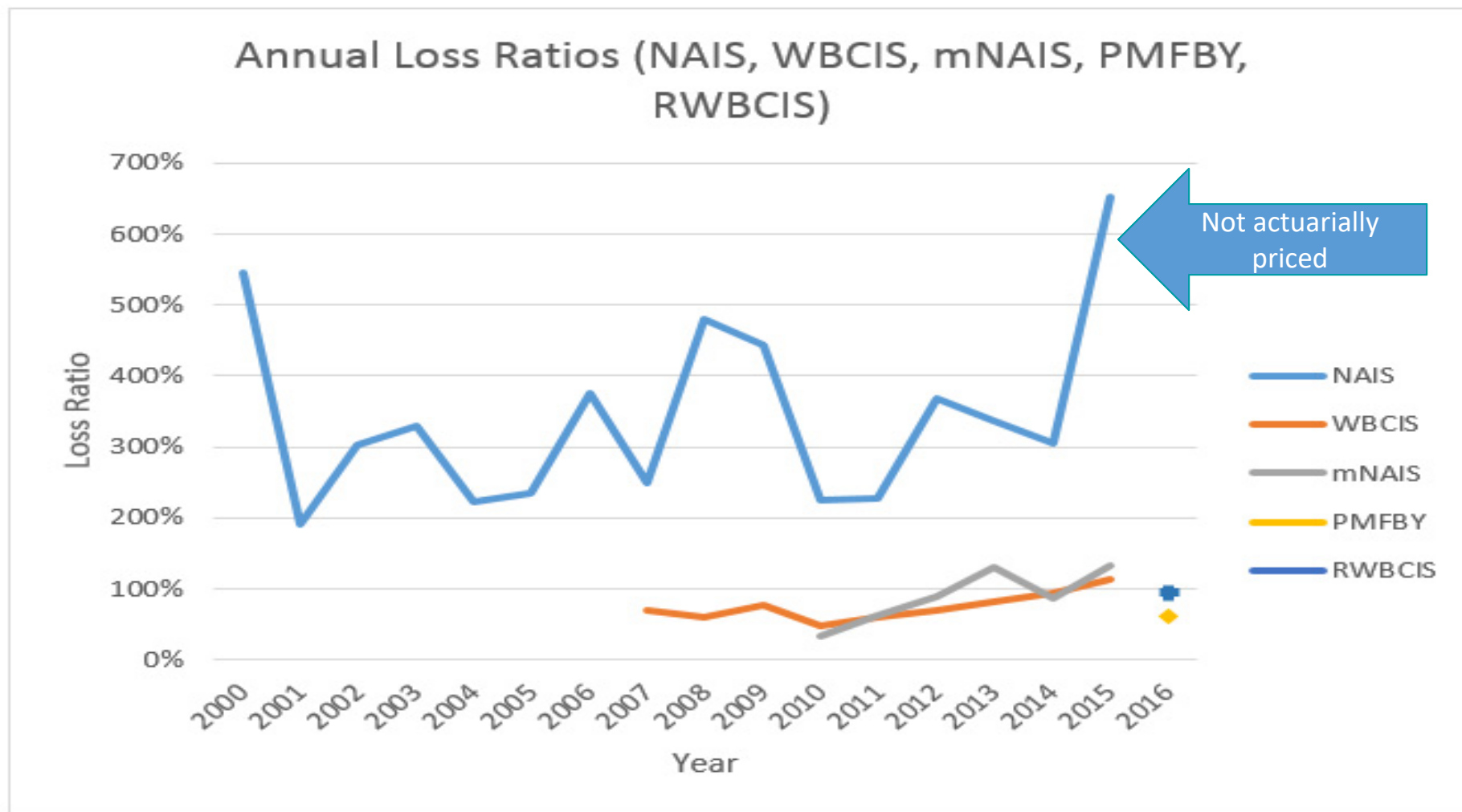
# India Crop Insurance – Historical Development (1)

- Prior to 1999 Government of India tested various crop insurance schemes on a pilot / state base
- **In 1999 National Agriculture Insurance Scheme (NAIS) was established**
  - Area yield index
  - Crop Cutting Experiments (“CCE” - Yield Sampling Methodology) – introduced decades ago by the Government of India to receive information about available food for human consumption – no specific insurance loss adjustment - State Governments responsible for execution of CCEs
  - Farmers paying about 2% premium of sum insured
  - Not actuarially priced (actual rate should be double digit to cover the losses)
  - Equal loss sharing between Government of India and State Governments
  - Loss ratios up to 600% (not actuarially correct premium charged)
  - 25mio farmers insured
  - Oilseeds-food crops-selected commercial crops
  - Administered by Agriculture Insurance Company of India since 2003 and no involvement of private insurance capital

# India Crop Insurance – Historical Development (2)

- **Weather Based Crop Insurance Scheme (WBCIS) 2007**
  - Weather index structure (e.g. dry spell, humidity trigger exceeded, rainfall both low and/or excess)
  - Running parallel mainly for crops for which area yield index is not compatible
  - Actuarially priced – available for private insurers to participate
- **2010-11 Introduction of Modified NAIS (mNAIS)**
  - On pilot stage only
  - Similar to NAIS (Area Yield Index)
  - Actuarial premium is calculated and the gap to the farmers' premium share is funded by the Government of India and the respective State Governments
  - Private Insurers are allowed to participate
- **2016 Pradhan Mantri Fasal Bima Yojana (PMFBY)**
  - Replacing NAIS and mNAIS - WBCIS continues for special crops – now relabeled as RWBCIS
  - Actuarially priced – 80% of the premium funded by Government of India and State Governments

# India Crop Insurance – Historical Performance



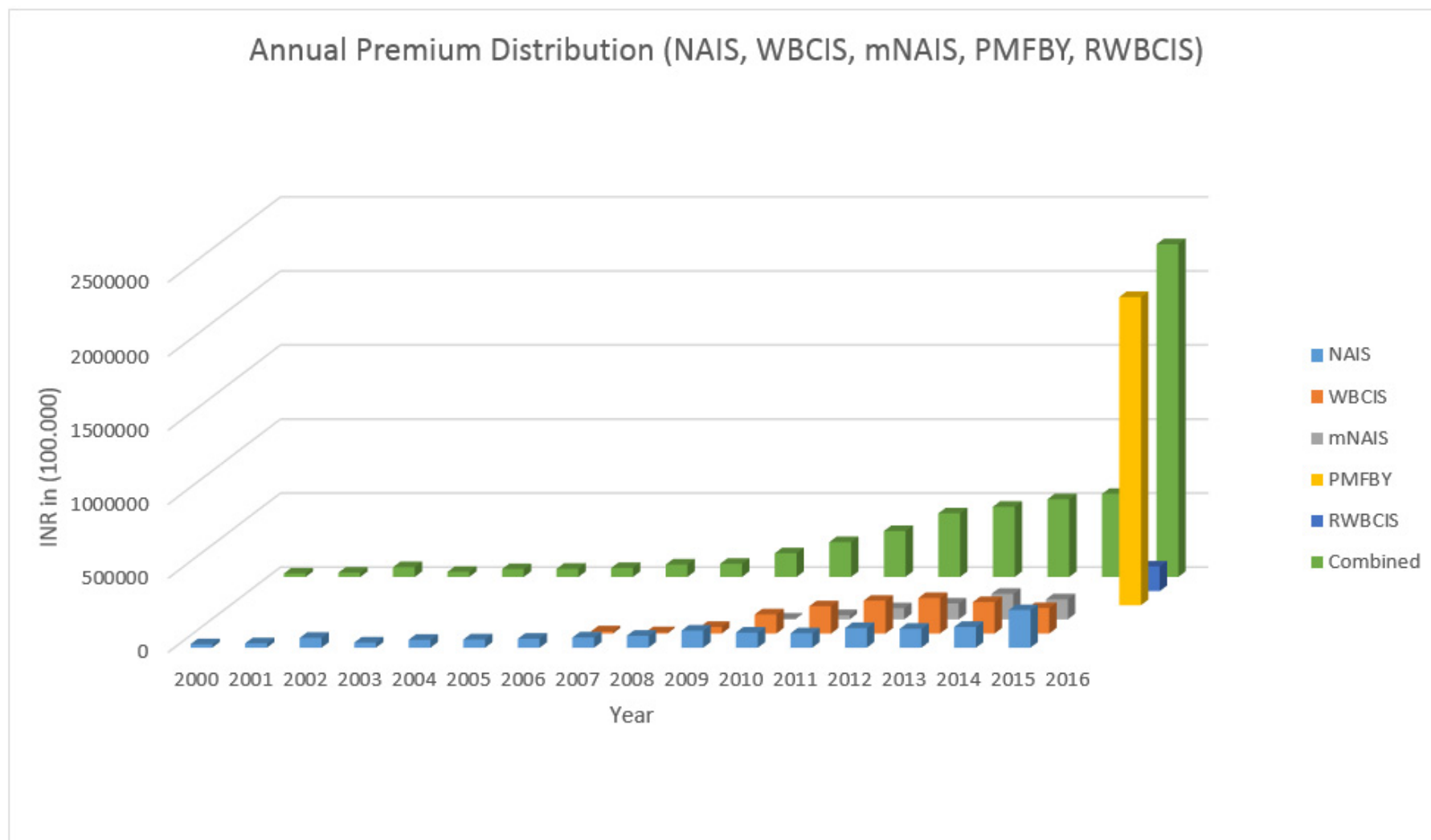
- 2017: 87% LR at around USD 3.5 bio premium (PMFBY + RWBCIS)
- 2018: estimated 95% LR at around USD 3.8bio premium (PMFBY + RWBCIS)

Taken from «Agriculture at a Glance 2017»

- The focus of the Government of India moved from a mainly social oriented crop insurance scheme (NAIS) to a more **market-based crop insurance scheme (PMFBY/RWBCIS)** allowing now private insurance companies to participate and to bring innovation and jobs to the rural areas and communities
- **Competition between insurance companies via tender process**
  - State Governments are allocating several districts to clusters – insurers are asked to quote one insurance rate for each cluster – the cheapest insurer wins the business and is allowed to implement PMFBY/RWBCIS
  - Guarantees objective pricing

Under PMFBY Insurance Companies are asked to attend the Crop Cutting Experiments in the fields and to report discrepancies/challenges in the application of the CCE methodology

# India Crop Insurance - Historical Premiums



Taken from «Agriculture at a Glance 2017»

- General Elections in India taking place in April/May 2019
- Crop Insurance in India is high on the agenda of all parties as crop insurance premium funding is a huge position in the Central and State Governments' budgets
- Government of India is pushing all stakeholders to increase crop insurance penetration beyond 30%
- For PMFBY the area yield index structure already enhanced with individual loss covers (e.g. preemptive sowing, post-harvest losses) - more expected to move towards a per-farmer-insurance cover to avoid base risk
- Innovation and technology in crop insurance in India has to continue to follow the challenging development of PMFBY