MicroInsurance Centre at Milliman

Making Climate Risk Microinsurance Work

CASE STUDY

Philippine Crop Insurance Corporation (PCIC), Philippines

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Abbreviations

ADB	Asian Development Bank
CLTIP	Credit & Life Term Insurance Programme
FIES	Family Income and Expenditure Survey
GDP	Gross domestic product
ha	Hectares
HVC	High-value crops
LBP	Land Bank of the Philippines
LFS	Labour Force Survey
LGU	Local government units
MFI	Microfinance institution
NCI	Non-Crop Agricultural Asset Insurance
PCIC	Philippine Crop Insurance Corporation
RSBSA	Registry System for Basic Sectors in Agriculture
TSPI	Tulay sa Pag-Unlad Inc. (an MFI)
USD	United States Dollars

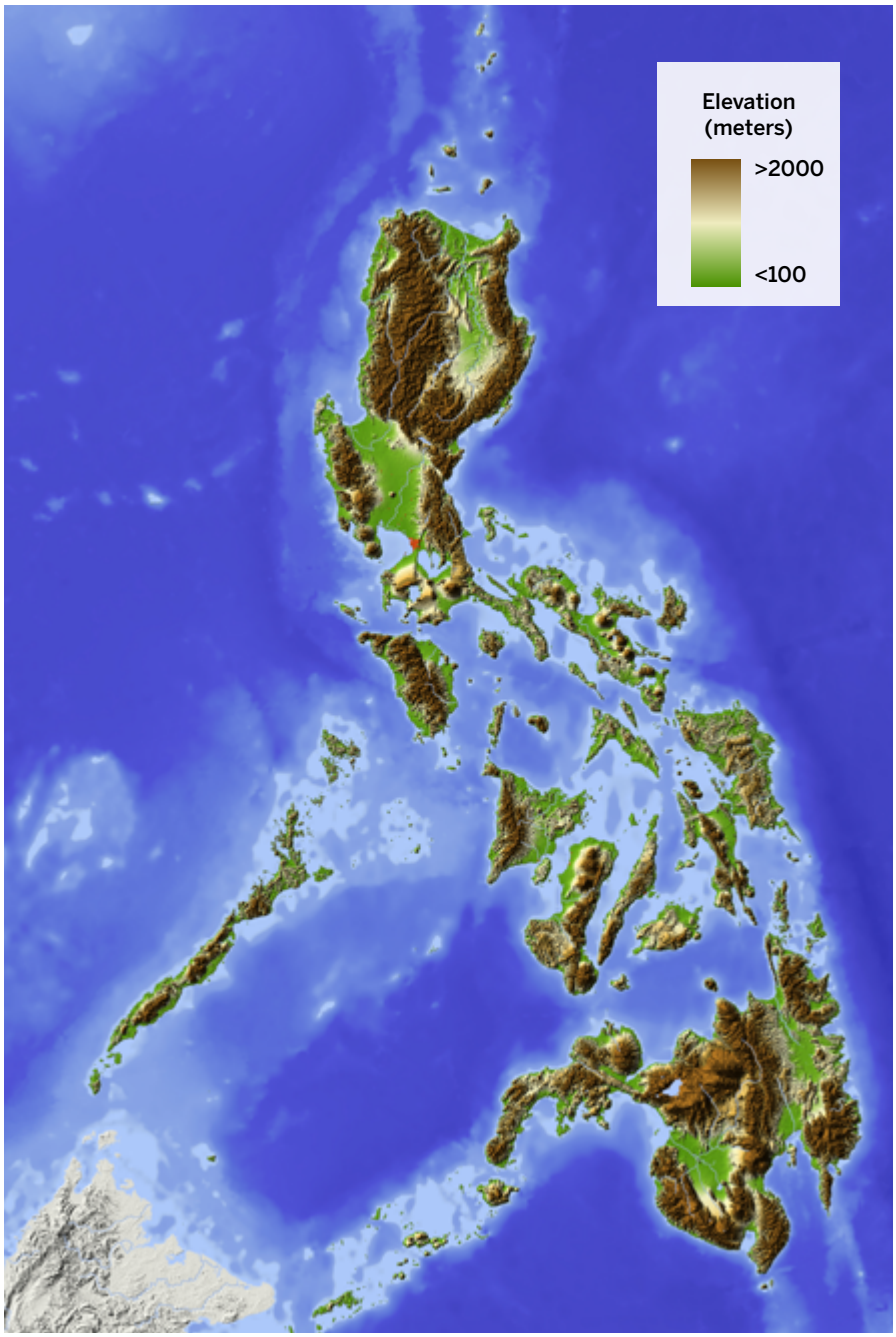
In 2019 the World Risk Index ranked the Philippines number 9 among the most at-risk countries.

Strategic Need

The Philippines is extremely vulnerable to the effects of climate change. Indeed, in 2019, the World Risk Index ranked it number 9 among the most at-risk countries worldwide.[1]

Contributing to this vulnerability is the Philippines' high exposure to natural hazards, especially cyclones. Its 7,641 islands[2] lie in the world's most cyclone-prone region, "averaging 19 to 20 typhoons each year, of which seven to nine make landfall."[3] In addition, storm surges and floods create an imminent threat to the low-lying nation (the vast majority of the country is less than 100 meters above sea level – see *Figure 1*[4]) stemming from rising sea levels and the fact that all major cities and the majority of the population live on the coastlines.[5]

Figure 1: Topographic Map of the Philippines



[1] The WorldRiskIndex calculates the risk of disasters arising from earthquakes, cyclones, floods, droughts or sea level rise, based on a model that considers 27 indicators measuring a country's exposure and vulnerability (level of susceptibility, coping, adaptation). See http://weltrisikobericht.de/english/#data

[2] National Mapping and Resource Information Authority (10 January 2017). Administrator Tiangco welcomes 2017. Retrieved 13 July 2021 from https://www.namria.gov.ph/list.php?id=1032&alias=administrator-tiangco-welcomes-2017&Archive=1

[3] USAID. Climate Change Risk Profile: Philippines. Fact Sheet. Retrieved 13 July 2021 from https://www.climatelinks.org/sites/default/files/asset/document/2017_Climate%20Change%20Risk%20Profile_Philippines.pdf

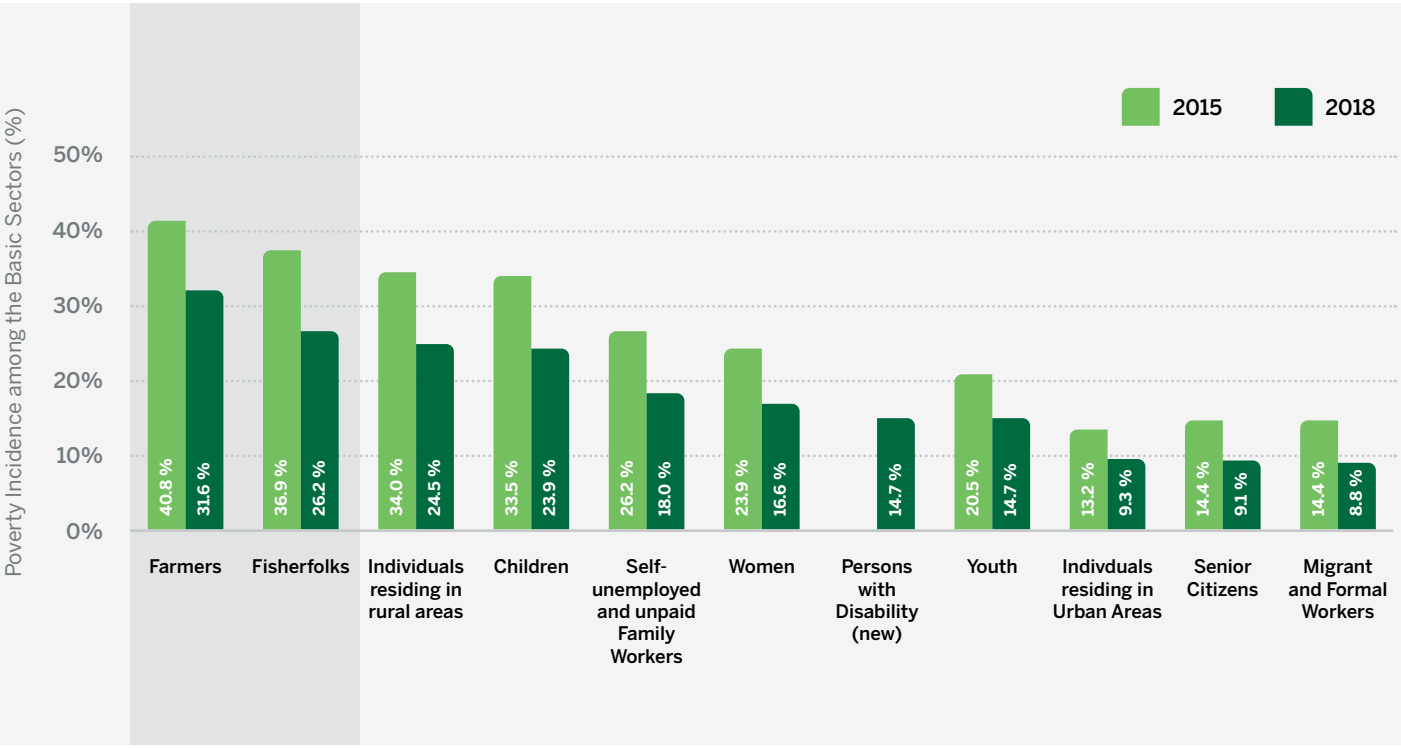
[4] ResearchGate (November 2018). New genus and two new species of Hyaliodini from the Philippines (Miridae, Deraeocorinae). Retrieved 13 July 2021 from https://www.researchgate.net/figure/Topographic-map-of-the-Philippine-archipelago-with-island-names-provided-for-larger_fig1_328966685

[5] USAID. Climate Change Risk Profile: Philippines. Fact Sheet. Retrieved 13 July 2021 from https://www.climatelinks.org/sites/default/files/asset/document/2017_Climate%20Change%20Risk%20Profile_Philippines.pdf

These events impact the agricultural sector in the Philippines, which is dependent on several climate-sensitive natural resources. The Philippines is the eighth largest rice-growing country in the world and though agriculture's contribution to gross domestic product (GDP) has been falling steadily from 25% in 1980, it is still a crucial sector, accounting for 9% of GDP in 20196. Despite the importance of the sector, poverty among farmers and fisherfolk is nearly three times greater than poverty among urban households, as shown in ***Figure 2.***

This combination of the country's vulnerability to natural hazards, the importance of the agriculture sector, and associated poverty levels of farmers explains the need for insurance protection to smallholder farmers against natural calamities and other perils.

Figure 2: Poverty Incidence by Sector[7]



Poverty among farmers and fisherfolk is nearly three times greater than poverty among urban households in the Philippines.

Origin, Objectives & Overview of PCIC

The Philippine Crop Insurance Corporation (PCIC) started operations in May 1981, with the following mandate: **"To provide insurance protection to agricultural producers in the Philippines, particularly subsistence farmers, against loss of their crops and/or non-crop agricultural assets due to natural calamities such as typhoons, floods, droughts, earthquakes and volcanic eruptions, plant pests and diseases and/or other perils."**[8] PCIC operates as a government-owned and controlled corporation under the auspices of the Department of Agriculture, with its operations decentralised to the regional level.

Insurance coverage began with rice in 1981 and has since been expanded to other crops and risk categories. As of 2020, PCIC covered the following product lines:

- Rice, starting 1981
- Corn, starting 1982
- Livestock, starting 1988
- High-value crops (HVC), starting 1991
- Non-Crop Agricultural Asset Insurance (NCI), starting 1996
- Credit & Life Term Insurance Programme (CLTIP, credit-life, term life, accident), starting 2005
- Fisheries, starting 2011

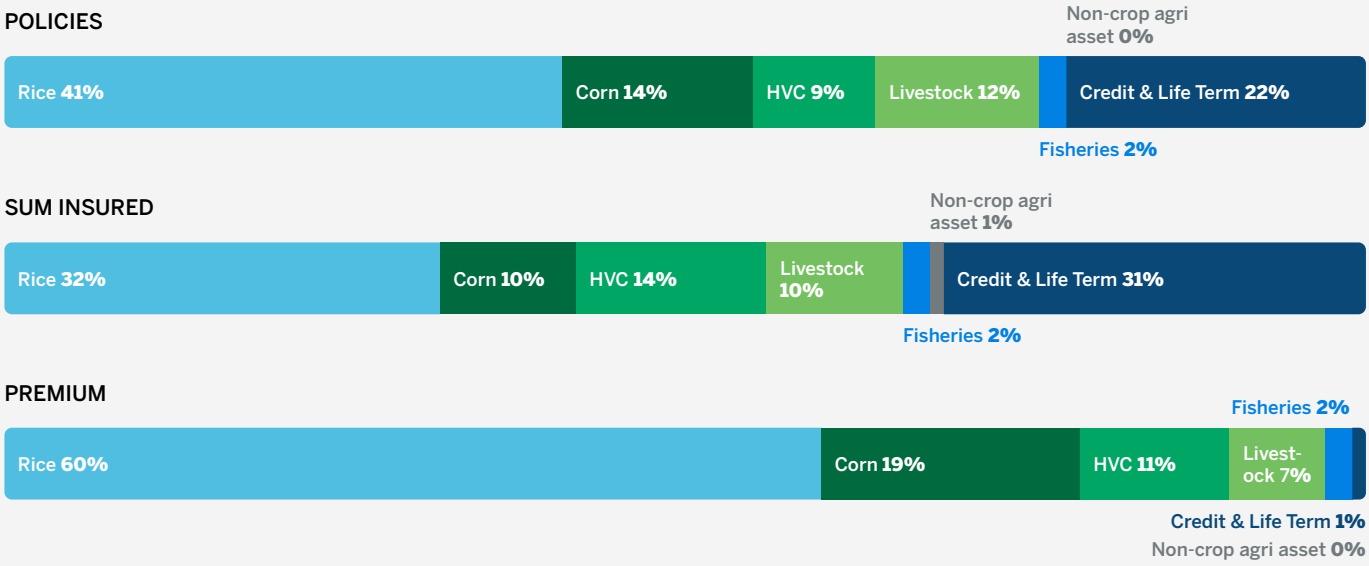
[6] World Bank (2020). Agriculture, forestry, and fishing, value added (% of GDP) – Philippines. Retrieved 13 July 2021 from https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=PH

[7] Merged datafile of the 2015 Family Income and Expenditure Survey (FIES) and January 2016 Labour Force Survey (LFS) and preliminary merged datafile of the 2018 FIES and January 2019 LFS. See Philippine Statistics Authority (3 June 2020). Farmers, Fisherfolks, Individuals Residing in Rural Areas and Children Posted the Highest Poverty Incidences Among the Basic Sectors in 2018. Retrieved 13 July 2021 from https://psa.gov.ph/poverty-press-releases/nid/162541

[8] Philippine Institute for Development Studies. Crop Insurance Program of the Philippine Crop Insurance Corporation. Retrieved 13 July 2021 from https://www.pids.gov.ph/publications/5878

Figure 3 shows the distribution of the various lines of business in 2020.

Figure 3: Distribution by line of business 2020



Source: Author, with data provided by PCIC

Indemnity-based (physically loss-adjusted) insurance for rice and corn remain the most significant products in the portfolio by almost any measure, and the rest of the case study focuses on these lines of business. PCIC offers rice and corn farmers a multi-risk cover to protect their crops against natural calamities, pests and diseases.

The table in ***Figure 4*** provides an overview of the rice and corn insurance programmes of PCIC.

Figure 4: Overview – Rice and Corn

Policy Terms	1981-89	1990-99	2000-09	2010-20
Risk Premium Rate (% of sum insured)				
Rice	7.04%	8.66%	10.42%	10.90%
Corn	11.52%	22.58%	17.80%	17.40%
Subsidy (as a % of risk premium)				
Rice	56.25%	56.25%	55.00%	2 levels each - 55% & 100%
Corn	55.00%	55.00%	55.00%	
Risks covered	Multi-Risk Cover (natural calamities, pests and diseases)			
Seasons covered				
Rice	Wet season (from May to October), dry season (from November to April)			
Corn	Phase A (from January to June), Phase B (from July to December)			
Voluntary/mandatory	Voluntary for self-financed farmers Mandatory for borrowing farmers of Land Bank of Philippines			

Pricing

Premium rates shown in ***Figure 4*** reflect pure risk with no loading for costs and profits. This is as per PCIC's mandate for rice and corn because they are staple crops in the Philippines. Premium for corn is almost twice that of rice because corn is more prone to damage by natural calamities.

INSIGHT: DIVERSIFICATION FOR SUSTENANCE AND GROWTH

When it started offering rice insurance in 1981, PCIC was meant to sustain its operations through earnings from investment income on the premiums. In 1988, to generate more revenues, PCIC started offering other product lines like livestock, HVC, CLTIP etc., which could be loaded for costs and profits. These diversifications helped improve PCIC's earnings.

Subsidy

PCIC has offered partial premium subsidies since the inception of the scheme in 1981. In 2013, PCIC started offering 100% subsidised premiums for covers to farmers and fisherfolk listed in the Registry System for Basic Sectors in Agriculture (RSBSA).[9] This registry provides a basis for identifying beneficiaries of various government support programmes.

As of 2020, there were 10.9 million farmers and fisherfolk registered with the RSBSA. Considering the large number eligible for the 100% premium subsidies, and the limited amount of premium subsidy budget available, the government has issued guidelines to maximise utilisation of the full subsidy. They include:[10]

- **Full subsidy is available to self-financed and borrowing farmers listed under RSBSA for all product lines except CLTIP.**
- **Cover is capped at the loan amount for borrowing farmers and a fixed amount per hectare for self-financed farmers.**
- **Priority of funding is based on the area of a farmer's landholdings, with those tilling:**
    - **Up to 1.50 hectares (ha), given highest preference**
    - **1.51 to 2.00 ha, in the second priority if there is money left over from the first group**
    - **2.01 to 3.00 ha, in the third priority if there is money left over from the second group**
    - **Tilling beyond 3.00 ha, must pay the full premium**

Each year, the government allocates a budget for full subsidy and partial subsidy. In 2020, this was approximately USD 79.5 million in total. PCIC first allocates the full subsidy budget to eligible farmers and fisherfolk (anyone listed on the RSBSA). Once the full subsidy budget is utilised, PCIC offers partial subsidy to eligible farmers and fisherfolk until that budget runs out. Following this, customers can get insurance by paying full price.

In 2020, a budget of about USD 72 million was given by the government to offer 100% subsidy to 1.8 million farmers and fisherfolk. Of them, 1.2 million were rice farmers and 0.4 million were corn farmers (the rest were for other product lines).

Once the budget allocated for full subsidy is utilised, the budget for partial subsidy (55%) kicks in only for borrowing farmers who are not listed under RSBSA and who till less than 7 hectares of land. In 2020, a budget of about USD 7.5 million was used to offer partial subsidy to around 61,000 rice farmers and 21,000 corn farmers, among others.

CHALLENGE:
LIMITED COVERAGE

The available subsidy budget limits PCIC's reach. Of the 10.9 million farmers and fisherfolk in the Philippines, PCIC was able to insure around 2.6 million in 2020, across all product lines and subsidy programmes. That corresponds to less than 30% coverage, which is low given that this is the only crop insurance available to Filipino farmers. PCIC sources noted that the premium subsidy budget is expected to increase by 1 billion pesos (about USD 21 million) per annum starting in 2022. These annual increments are expected to help increase outreach.

The main objectives of PCIC is to make the government's post-disaster response fairer and more efficient. Instead of providing post-disaster cash support to affected areas without evaluating the actual damages, a subsidised crop insurance scheme allows the government to provide relief to farmers based on damages incurred.

Delivery Model

Multi-peril Crop Insurance Programme

PCIC offers rice and corn farmers a multi-risk cover to protect their crops against natural calamities, pests and diseases. Over the years, the PCIC has been encouraging the private sector to participate in the crop insurance programme. In the past, the private sector was providing livestock insurance, and a pool of private insurers joined the crop insurance programme briefly. While there is an ongoing public-private partnership between PCIC and Pioneer for high-value commercial crop insurance facilitated by ADB,[11] the private sector has not sustained its interest in offering rice and corn insurance. The table in ***Figure 5*** provides details about the partners involved in PCIC's rice and corn insurance programme.

Figure 5: Partners

Partners	1981-2019
Distribution Channels	1. Land Bank of the Philippines (LBP) 2. PCIC underwriters, regional offices, extension offices and services desks 3. Local Government Units (LGU) 4. Microfinance Institutions (MFIs) such as Tulay sa Pag-Unlad Inc. (TSPI)
Reinsurers	Not reinsured since 2010

[9] See https://pcic.gov.ph/rsbsa/

[10] PCIC. RSBSA Insurance Program: Guidelines for the Implementation of the "Agriculture Insurance for Farmers and Fisherfolk under the RSBSA" as Provided for Under Republic Act 11518, or the General Appropriations Act, FY 2021. Retrieved 13 July 2021 from https://pcic.gov.ph/elementor-14244/

[11] This partnership takes the form of a coinsurance arrangement in which Pioneer and PCIC each carry a share of the risk for the HVC product line.

Distribution Channels

When it was set up, aside from protecting farmers, crop insurance was also seen as a confidence-building instrument that could be offered as collateral to banks and other financial institutions to encourage them to lend to smallholder farmers and support government credit programmes. Since the inception of the programme, crop insurance has been mandatory for farmers who borrow from the Land Bank of Philippines, a bank owned by the Philippine government with a special focus on serving the needs of farmers. An estimated 8% of farmers insured under PCIC are borrowers.

Regional and extension offices of PCIC, local government units[12] and MFIs serve as the distribution points for self-financed customers, who can opt in for crop insurance. These partners assist PCIC in the marketing and distribution of agriculture insurance and receive service fees as incentive. In some cases, they also form part of the team of adjusters prior to claims payment.

Reinsurer(s)

According to PCIC, it has not availed of any reinsurance coverage for crops and livestock since 2010, because based on its actuarial studies, it is thought to be less costly, and within risk tolerances, for PCIC to self-reinsure.

The dramatic increase in outreach after the introduction of the full subsidy indicates that willingness and ability to pay were big issues for this target market.

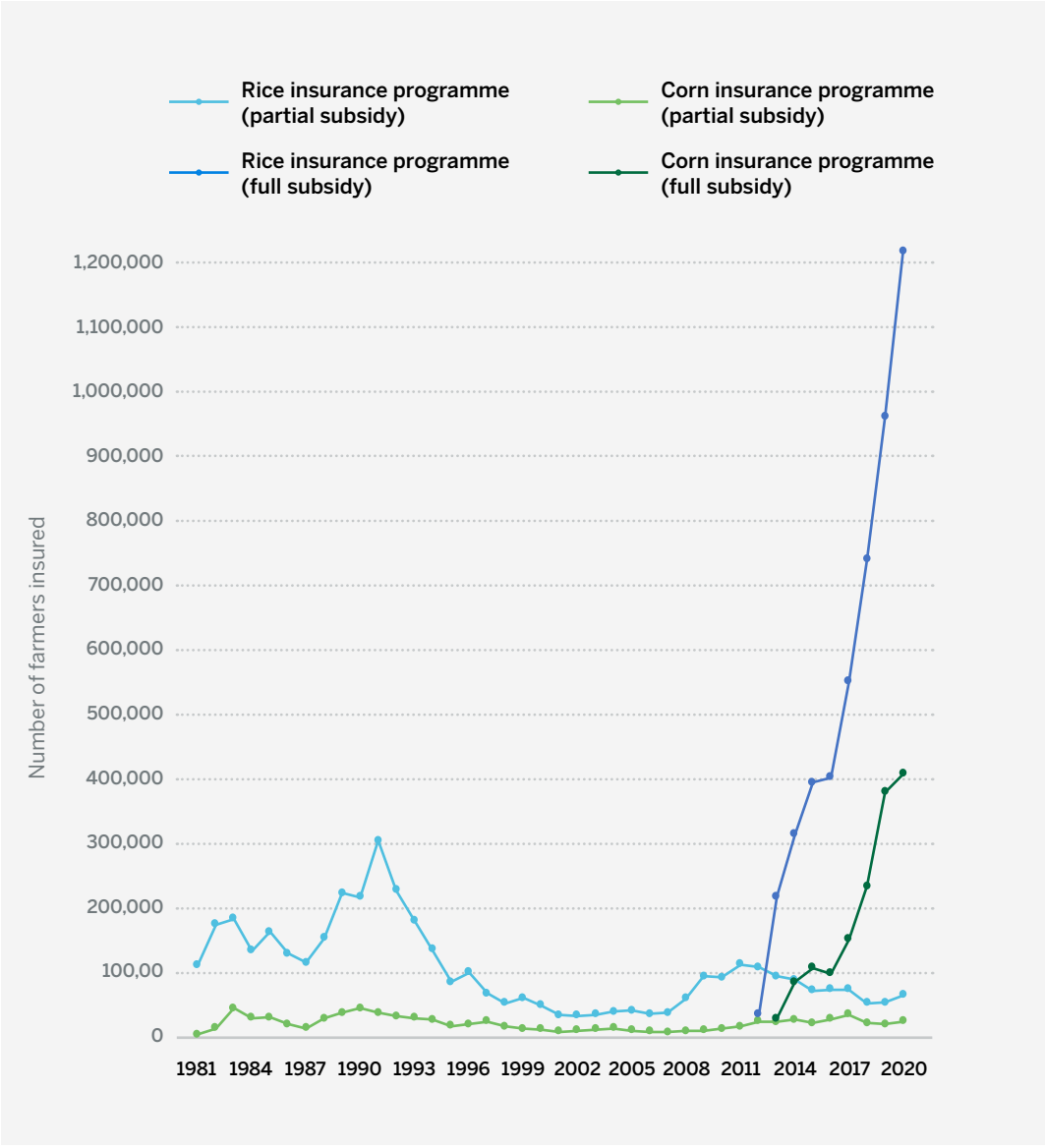
Performance

The efficacy of a crop insurance programme can be measured using three parameters: coverage, client value and sustainability.[13]

Coverage

Since inception of the rice insurance programme in 1981 and corn insurance programme in 1982, PCIC has insured more than 4.7 million farmers during the past 40 years under a partial subsidy scheme and almost 6.3 million farmers during the past nine years under a full subsidy scheme, as shown in ***Figure 6.*** The dramatic increase in outreach after the introduction of the full subsidy indicates that willingness and ability to pay were big issues for this target market. Coupled with the lack of financial literacy, farmers didn't see enough value in the product given other opportunity costs, thus preferring to spend money on inputs rather than on insurance.

Figure 6: Year-on-year Coverage since Inception (number insured)



[12] A local government unit (LGU) can take the form of a province, a city, a municipality or a barangay, according to the Local Government Code of 1991

[13] Arman Oza. The Insurance Times (December 2020)

The table in ***Figure 7*** shows the performance of rice and crop insurance programmes in the last five years.

Figure 7: Portfolio Details

Partial Subsidy – Rice and Corn	2016	2017	2018	2019	2020
Total number of clients covered	94,372	100,990	66,887	65,374	82,055
Total annualised gross collected premiums (USD millions)[14]	8	6	6	5	6
Average premium (USD)	88	61	84	80	69
Total annualised sum insured (USD millions)	67	67	46	45	49
Average sum insured (USD)	705	666	684	694	599
Average area insured (hectare)	1.5	1.4	1.4	1.5	1.4

Full Subsidy – Rice and Corn	2016	2017	2018	2019	2020
Total number of clients covered	494,870	697,080	969,664	1,337,177	1,622,786
Total amount allocated from govt subsidy (USD millions)[15]	36	40	56	74	74[16]
Average premium (USD)	73	58	57	56	46
Total annualised sum insured (USD millions)	271	400	555	744	744[17]
Average sum insured (USD)	547	574	573	556	458
Average area insured (hectare)	1.3	1.4	1.4	1.3	1.1

In 2020:

82,055 farmers
were covered by the rice & corn partial subsidy insurance programme, and

1,622,786 farmers
were covered by the full subsidy programme.

Client Value

The intrinsic value of a crop insurance product lies in the extent, spread and efficiency of financial protection it offers to farmers from the pool of funds created through the collection of premiums. These elements of client value can be assessed through proxies of claims ratio (ratio of claims paid to premiums collected) as well as the claims incidence (proportion of farmers receiving payouts compared to the total number of farmers insured).[18]

Figure 8 shows the claims ratio and incidence rate of the partial subsidy programme for the last five years. The 5-year aggregate claims ratio is at 104% for rice and 52% for corn, with an overall claims incidence of 45% for rice and 27% for corn.

[14] Amount shown is 100% of premium including farmer share and subsidy

[15] Around 60% of the total subsidy is allocated to rice and corn

[16] In 2020, while the government allocated about USD 72 million for full subsidy, PCIC overshot the amount by about USD 2 million. PCIC sources mentioned that this happens occasionally because it is tough to tally information across their regional offices in real time. In such cases, PCIC funds the excess from their reserves or past earnings

[17] The derived premium rate (premium / sum insured) for full subsidy lines is lower than that for partial subsidy. This can be explained by the higher scale of the full subsidy product

[18] Arman Oza, op cit

Figure 8: Claims Ratio and Incidence Rate for Partial Subsidy Programme

Partial Subsidy Program

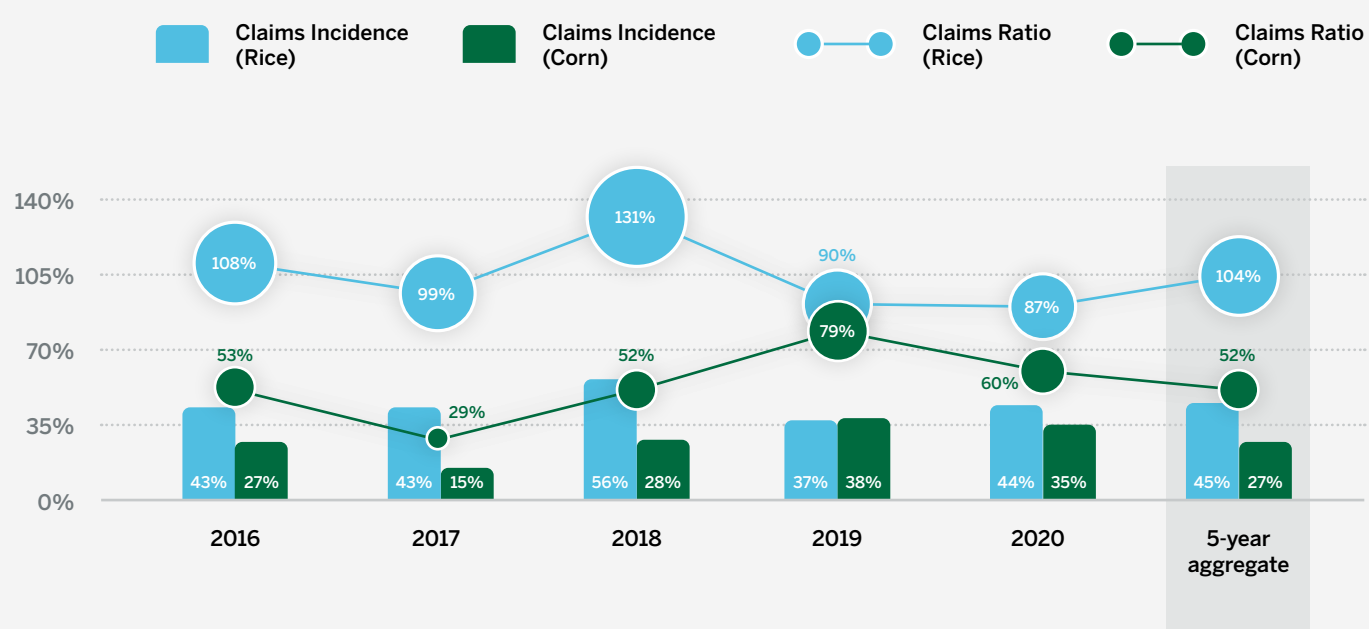
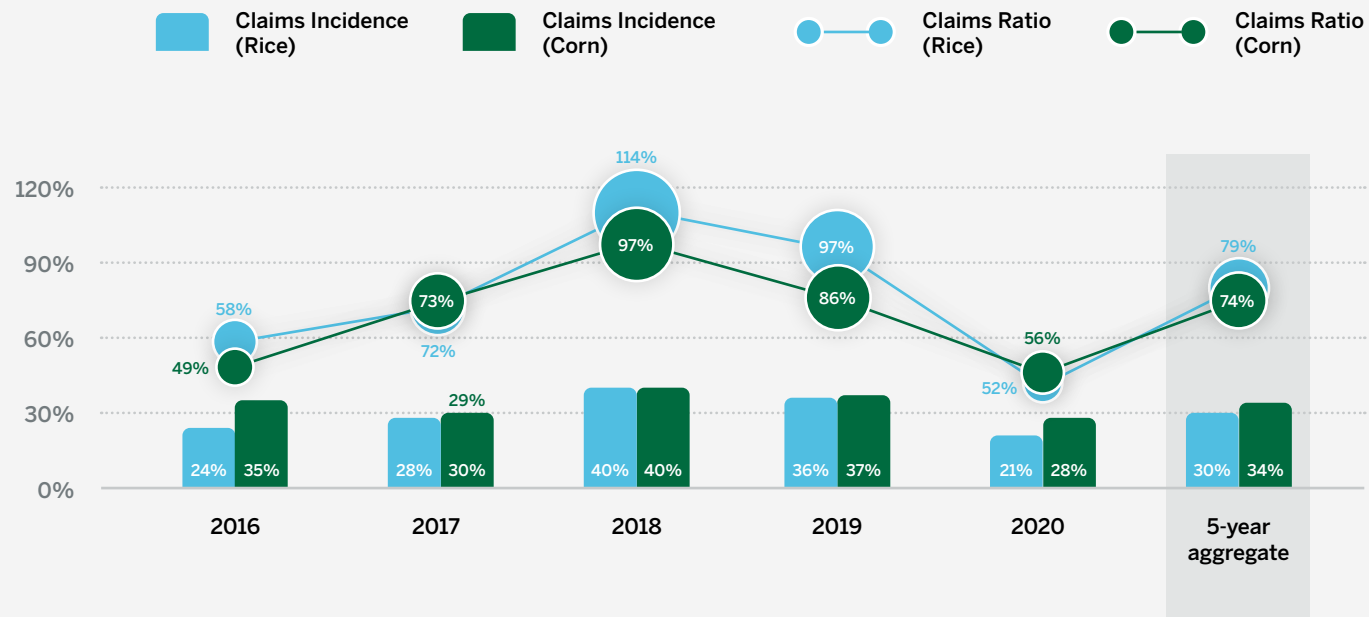


Figure 9 shows the claims ratio and incidence rate of the full subsidy programme for the last five years. The 5-year average claims ratio is 79% for rice and 74% for corn, with a claims incidence of 30% for rice and 34% for corn.

Figure 9: Claims Ratio and Incidence Rate for Full Subsidy Programme

Full Subsidy Program



The table in ***Figure 10*** shows details of PCIC's claims experience under the rice and corn portfolio.

Figure 10: Claims Experience

Partial Subsidy – Rice and Corn	2016	2017	2018	2019	2020
Number of paid claims	37,049	34,825	32,413	24,379	34,358
Average claim amount (USD)	212.4	193.4	195.2	187.1	131.5
Total amount of claims paid (USD millions)	7.9	6.7	6.3	4.6	4.5

Full Subsidy – Rice and Corn	2016	2017	2018	2019	2020
Number of paid claims	128,172	197,213	391,040	489,904	362,655
Average claim amount (USD)	158.0	147.6	155.5	142.3	108.2
Total amount of claims paid (USD millions)	20.2	29.1	60.8	69.7	39.2

Sustainability

A crop insurance programme's sustainability depends on whether there is reasonable profit for insurers and distributors on one end, and clear value for farmers on the other. Combined ratios of a scheme are a good measure of profitability because they consider all the outflows (expenses and claims) and inflows (premium). While we don't have the combined ratio for PCIC's crop programmes, we have been told that the average distribution expense plus administration expense is 11% to 20% of premium. Based on that range of expense ratios we calculated the average combined ratios for the last five years for the various portfolios in the table in ***Figure 11.*** The combined ratios for three of the four lines of business are below 100%, which suggests sustainability of the schemes.

Figure 11: Estimated Combined Ratios, 2016 – 2020 Aggregate

	Claims Ratio (claims/premium)	Average Distribution and Administration Expense (expenses/premium)	Estimated Combined Ratio (claims + expenses/premiums)
Rice, partial subsidy	104%	11% - 20%	115% - 124%
Corn, partial subsidy	52%		63% - 72%
Rice, full subsidy	79%		90% - 99%
Corn, full subsidy	74%		85% - 94%

The estimated combined ratios for three of the four lines of business are below 100%, which suggests sustainability of the schemes.

Key Learnings

As mentioned above, the main objectives of PCIC is to make the government's post-disaster response fairer and more efficient. Here are some learnings based on its four decades of operation:

01

Subsidies are crucial

PCIC believes that crop insurance should be provided to farmers for free or at extremely subsidised rates in order to help protect the investments made by subsistence farmers in agricultural production.

02

Post-disaster relief linked to damages

Based on experience, PCIC observed that it is fairer and more efficient to provide payouts linked to actual damages. Higher suffering = higher payout.

03

Public-Private Partnerships (PPP)

PCIC believes that PPPs would help improve coverage of crop insurance. It believes that private insurers can play a role in covering the higher-end commercial farmers, while PCIC focuses on subsistence farmers.

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Mr Renato R. Viado - Department Manager, Actuarial Research and Product Valuation

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