

Scoping Meso-Level Insurance in Agriculture in India



Sabina Yasmin | Vinith Kurian

Bharat Inclusion Research Fellowship

About the authors



Sabina Yasmin

Sabina is a Research Fellow in the Financial Inclusion vertical at LEAD at Krea University. Her research interest includes agricultural economics, rural finance, risk and resilience in agriculture and gender issues in agriculture. Prior to joining LEAD she was a faculty in the Department of economics at SRM university-Amravati where she taught economics to engineering and social science students. At LEAD, she also teaches a course on Financial Inclusion to the undergraduate students. Along with a doctorate degree in agricultural insurance from Gauhati university, her passion for experimental economics led her to complete a course on Experimental economics from Tinbergen Institute-University of Amsterdam, where she conducted an experiment in The CREED Lab to answer questions on gender issues. Over the years she has conducted many evaluations of agricultural interventions/programs and policies by the World Bank, Deshpande Foundation, Government of Andhra Pradesh and has received the SANDEE research grant to evaluate Climate smart agricultural practices in India and Nepal. She has also compiled the evidence gap map for gender in agriculture and food systems for CGIAR-GENDER Platform.



Vinith Kurian

Vinith Kurian is a Research Manager with LEAD at Krea University. He has worked in the areas of financial inclusion, women's economic empowerment, analysis of social networks and migration. He is passionate about identifying and evaluating actionable solutions in inclusive financing for poor and vulnerable population groups. Prior to joining LEAD, Vinith has worked with Indicus Analytics in the area of geospatial analytics to estimate socioeconomic variables at micro-geographies. Vinith holds a Master's Degree in Applied Economics from the Centre for Development Studies, Jawaharlal Nehru University (JNU).

Research Support:

Prachi Chavda

Editing Support:

Nandkumar K

Marketing Support:

Niraj Mulani,
Varunika Lalchandani

Design Support:

Saman Arora

Table of Contents

1.	Introduction: Background and Context	08
	1.1 Background: Persistence of Informal Channels of Risk Mitigation in Indian Agriculture	
	1.2 Setting the Context: Agriculture Insurance as a Risk Mitigation Mechanism in India	
	1.3 Study Rationale	
	1.4 Study Objectives	
2.	Study Design	20
3.	Global Experiences with Meso-Level Insurance in Agriculture	23
	3.1 The Risk-Mitigating Potential for Meso-Level Insurance	
	3.2 Meso-level Insurance for Intermediaries in the Agricultural Value Chain	
4.	Stakeholder Identification and Mapping	33
	4.1 Stakeholder Identification	
	4.2 Stakeholder Mapping	
5.	Findings and Discussion	37
6.	Use Case Development: Applications for Meso-Level Insurance in Indian Agriculture	51
	6.1 A General Model of Meso-level Insurance for Risk Aggregators in Agriculture	
	6.2 Empowering Farmer Producer Organizations Through Meso-level Insurance	
	6.3 Protecting the Operations of NGOs	
7.	References	61

LIST OF FIGURES

Figure 1: SWOT Analysis of the current agricultural insurance schemes in India.	16
Figure 2: Pyramid for different levels of insurance arrangement based on the policy holders.	17
Figure 3: Stakeholder Interest-Influence matrix.	35
Figure 4: Profile of FPOs Interviewed.	47
Figure 5a: Perceived Impact of Risks faced by FPOs.	48
Figure 5b: Perceive Chance of Occurrence of Risks faced by FPOs.	49
Figure 6: Awareness and usage of insurance products among FPOs.	51
Figure 7: A generalised model for meso-level insurance - the ecosystem for the beneficiary institution ABC.	55
Figure 8: Meso-Insurance Payout: A Multi-tiered-compensation payment system.	57

LIST OF TABLES

Table 1: Types of Insurance Products in Indian Agriculture.	10
Table 2: List of Stakeholders Interviewed.	22
Table 3: Identification of stakeholders into primary and secondary stakeholders.	34
Table 4: Recent Meso-Insurance Pilot Projects in India.	42

LIST OF ACRONYMS

ADB	Asian Development Bank
AICL	Agriculture Insurance Company of India Limited
AIDIS	The All-India Debt and. Investment survey
APSERP	Andhra Pradesh Society for Elimination of Rural Poverty
ASA	Action for Social Advancement
BAAC	Bank for Agriculture and Agricultural Cooperatives Thailand
BIMTECH	Birla Institute of Management Technology
CCE	Insurance Regulatory and Development Authority
COPEME	Private Consortium for the Promotion and Development of Microenterprises
CRMG	Commodity Risk Management Group
FPC	Farmer Producer Company

FPO	Farmer Producer Organization
GIIF	The Global Index Insurance Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GST	Goods and Services Tax
HDFC	Housing Development Finance Corporation Ltd
ICICI	Industrial Credit and Investment Corporation of India Bank
ICRISAT	The International Crops Research Institute for the Semi-Arid Tropics
IFMR	Institute of Financial Management and Research
IFPRI	The International Food Policy Research Institute
IRDAI	Insurance Regulatory and Development Authority
KCC	Kisan Credit Card
LLC	Limited liability company
MFI	Microfinance Institution
MMS	Manab Mukti Sangstha
MNAIS	Modified National Agricultural Insurance Scheme
MSP	Minimum Support Price
NABARD	National Bank for Agriculture and Rural Development
NAIS	National Agricultural Insurance Scheme
NCIP	National Crop Insurance Programme
NGO	Non-Governmental Organization
PIS	Palm Insurance Scheme
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMJDY	Pradhan Mantri Jan Dhan Yojana
PMJJBY	Pradhan Mantri Jeevan Jyoti Bima Yojana
PMSBY	Pradhan Mantri Suraksha Bima Yojana
PRAN	Programme for Rural Advancement Nationally
RISPC	Revenue Insurance Scheme for Plantation Crops
RST	Remote Sensing Technologies
RWBCIS	Restructured Weather Based Crop Insurance Scheme
SBI	State Bank of India
SDC	Swiss Agency for Cooperation and Development
SERP	Society for Elimination of Rural Poverty
SHG	Self-Help Group
TSP	Technology Service Provider
UNFCCC	The United Nations Framework Convention on Climate Change
UNU	United Nations University
UPIS	Unified Package Insurance Scheme
WBCIS	Weather Based Crop Insurance Scheme
WRMS	Weather Risk Management Services

EXECUTIVE SUMMARY

Farmers in India suffer high variability in yields, as a result of uncertainty due to numerous natural and manmade factors such as rainfall (drought or excess), temperature, hail, pest infestation, livestock diseases, spurious seeds, price risk etc. The farmers with low average incomes, especially marginal and small, are left with very little room for investment in formal risk-mitigating technologies or mechanisms. They have to often resort to informal risk mitigation mechanisms though they fail to help them tide over the losses. In this context, insurance appears to be a particularly effective means to reduce the losses to individuals and communities. It also enables farmers to obtain credit and financing for investment in new technologies and better inputs to enhance/sustain their productive capacity.

In India, the government plays a proactive role in providing insurance cover to the agricultural sector through highly subsidized micro-insurance schemes—Pradhan Mantri Fasal Bima Yojana (PMFBY) (2016); National Crop Insurance Programme (NCIP) (2015); Livestock insurance Scheme (2006). While these schemes are improved versions of their predecessors, and have taken advantage of various innovations in technology, including increased smartphone penetration, the use of satellite imagery and other big data sources, and the manifold increase in accessibility of app-based platforms, they still face various structural, logistical and financial obstacles. The agricultural insurance sector in India has largely focused at the level of micro insurance (where the individual farmer is the policy holder). This study seeks to explore the potential of agricultural insurance at the meso-level, which covers “risk-aggregators” such as banks, microfinance institutions, or agribusinesses.

The first section discusses the **short-comings of the currently available micro-insurance programs through a SWOT analysis and the potential of meso-level insurance to overcome these shortcomings**. Meso-level insurance can help overcome the problems such as lack of awareness, efficient distribution and loss assessment with improved risk cover to the institutions in agriculture that will indirectly result in benefits to the last-mile beneficiaries i.e., the farmers. For example, financial institutions can purchase policies to cover default risks arising from major agricultural shocks; agri-processors can purchase policies to cover the risk of non-recovery of inputs advanced to farmers or insufficient supplies of raw materials due to agricultural shocks and can pass on some of these benefits to the individual farmers as well.

The second section discusses the study design. Policy document review and review of existing literature on meso-level insurance were undertaken and summarized in this section. The **key stakeholders were identified and classified as primary or**

secondary stakeholders. Their interest and influence were gauged through ‘**Key Informant Interviews**’ and semi-structured questionnaires. The information and data was thus collected from various stakeholders, i.e., government officials from agricultural departments, private and government insurers, farmer producer organisations (FPOs), risk-modellers, academicians and industry experts. The key informant interviews also guided the formulation of use cases for the meso-level insurance in agriculture

The third section **outlines the global experience with meso-level insurance.** Some of the key factors that impede the development of a robust agriculture insurance market in developing countries are lack of experience with insurance products, absence of data, lack of robust institutions and unaffordable products, which the meso-level insurance has the potential to overcome. Drawing upon **experiences from countries such as Thailand, Peru, Jamaica, and Bangladesh** that have implemented meso-level insurance across the value chain in agriculture, we highlight that providing insurance coverage to individual farmers (micro-level) poses a number of demand-side constraints (trust and awareness) and supply-side constraints (design of contracts that are sufficiently reliable to protect individual farmers). Offering insurance to a meso-level institution—such as a financial intermediary, an administrative entity (local self-governments), or a producer organization (viz., FPOs)—is a potentially attractive option. The insurance was offered to cover damages/losses due to floods, hailstorms, etc., that may adversely impact the overall borrowing, lending, provision of inputs and contract farming adversities affecting yield, as covered by ‘PRAN foods’ for the food processing industry in Bangladesh.

The fourth section lays out the **interest-influence matrix that identifies the stakeholders into two categories, i.e., primary and secondary stakeholders and maps them in four quadrants representing their interest and influence.** We identify FPOs(Food Produce Organisation), NGOs(Non-Government Organisation), MFIs(Micro Finance Institution), SHG(Self Help group) etc. as primary stakeholders (who are the direct beneficiaries of the product) and the insurance providers, re-insurers, risk modellers as secondary stakeholders (who are the supporting institutions and suppliers of the product). Through our interviews we were able to conclude that our primary stakeholders had high interest as well as high influence in meso-level insurance, whereas it was a mixed response from the secondary stakeholders with stakeholders like private and government insurers and risk modellers having high interest but moderate influence for meso-level insurance.

The fifth section discusses the **findings from the key informant interviews on the current experience with agricultural insurance in India.** Besides highlighting the inadequacy of the current insurance products with respect to the numbers of risk covered, loss assessment and claim settlement procedures the stakeholders thrust upon potential solution with products like meso-level insurance that can overcome the issues with lack of data, lack of awareness, lack of trust among farmers and improve the market demand for insurance. We also discuss some snapshots from the past experience in

implementation of meso-level insurance through pilot products in India and neighbouring countries. We thus highlight some key aspects with regards to product design. Rebranding insurance to appeal to intermediaries who work with farmers is important. Bundling insurance products along with other products seems to be the best way to facilitate rapid take-up. Similarly, representatives from product design and advisory agencies suggested that a meso-insurance product cannot be perfectly designed at a more aggregated level covering risk besides weather related risk such as risk associated with transportation of products, sale of products, lending operations of the intermediaries etc. that may not be covered by the existing insurance products. Likewise, the role of government is paramount in provisioning meso-level insurance. It was suggested that the state governments be more involved in the discussion of such products as they have a better understanding of localized risks within their states.

In the final section we **highlight use-cases by first illustrating a general model with multiple stakeholders that can be adapted and customised as per the beneficiaries, the risks covered and the claim settlement examples.** To illustrate the meso-level insurance product, we demonstrate a multi-stakeholder model with a multi-tiered payout system for claim settlement in case of occurrence of an adverse situation. Our first use case is for the FPOs where several residual risks remain for smallholder farmers such as problems with storage and transportation of produce after harvesting and indebtedness due to previous borrowings for agricultural purposes. These residual risks provide a potential avenue for testing meso-level insurance products. Almost all states and union territories in India have nearly 10,000 registered producer organizations.

The Government of India has also approved a dedicated central sector scheme – ‘Formation and Promotion of Farmer Producer Organizations (FPOs)’ – for formation of 10,000 new FPOs in order to provide adequate handholding and professional support to develop economically sustainable FPOs while facilitating adequate market and credit linkages. This would provide a sizable scale for implementing a new meso-level product by leveraging the relationship with FPOs and their member farmers. Similarly NGOs work with the most vulnerable populations that are often inadequately covered under large-scale government interventions that incorporate broader average risks affecting diverse geographies across the country. Meso-level insurance can act as a risk management mechanism for NGOs for the populations they serve. A meso-level product is better suited to cover large correlated risks, for instance, severe drought situations in parts of Andhra Pradesh where a large number of NGOs and government-backed development societies (e.g., SERP) operate. A policy can be purchased that covers the portfolio of all members who avail of services from the NGO (e.g. MFI borrowings). The underlying product is linked to an index and payouts are triggered when the underlying index hits a particular predetermined value. The payouts can then be used by the NGO in facilitating rehabilitation and relief efforts for the farmers affected by the calamity

1. Introduction: Background and Context



1.1 Background: Persistence of Informal Channels of Risk Mitigation in Indian Agriculture

Farmers in India suffer high variability in yields, resulting from uncertainty due to numerous natural factors such as rainfall (drought or excess), temperature, hail, pest infestation, livestock diseases etc.

Shrinking farm landholding size & its consequences: Data from the last agriculture census of 2015-16 saw the continuation of a decades-long trend of reduced size of land holdings, leading to a further rise in the proportion of small and marginal farmers in the country [1]. Over 86 per cent of cultivated land holdings are held by small and marginal farmers who own less than two hectares of land while only 0.57 per cent of farmers hold 10 hectares or more land. This has meant that farmers have been largely consigned to subsistence farming. A vast majority of them are **unable to generate enough surplus for investments in improving productivity as well as building resilience towards multiple risks**.

In addition, farmers are also prone to **post-production price risks**. Low-average income leaves farmers, especially the marginal and small farmers, with very little room for investment in formal risk mitigating technologies or mechanisms. This, in turn, leads them to adopt **informal risk management approaches like crop diversification, and reliance on family/social networks to tide over adverse events**. These are, however, likely to fail in the face of severe shocks or particularly extreme events (Rao 2008, ICRISAT 1979).

The aforementioned strategies are often perceived as being ‘low-risk/low-yield production’ (Jensen and Barrett, 2017), thus likely to have ‘negative livelihood consequences’ over a longer term (Rosenzweig and Binswanger 1993; Carter 1997; Morduch 1995). This is because they effectively ensure that farmers cannot invest in productivity enhancing technology/other inputs (Rosenzweig and Wolpin, 2003), and may also potentially be locked out of credit markets as a result (Hazell and Skees, 2006). It has been observed that in the **face of adverse shocks, coping strategies in the absence of formal risk management lead to reduced consumption** (reduction in number of meals), **and sale of productive capital** (like cattle, other assets) (Jensen and Barrett, 2017). In this context, insurance appears to be a particularly effective means to reduce the losses that the individuals and communities suffer due to natural calamities such as floods, droughts, and outbreaks of pests and diseases that affect crop output, or livestock. It also enables farmers to obtain credit and financing for investment in new technologies and better inputs to enhance and sustain their productive capacity.

With the Indian Parliament passing **three agriculture Acts** in 2020—**Farmers’ Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, Farmers (Empowerment and Protection) Agreement of Price Assurance, Farm Services Act, 2020, and the Essential Commodities (Amendment) Act, 2020**, that focuses on aligning agriculture in India with market forces, there arises a significant need for formal risk management mechanisms such as insurance. Greater commercialization of agriculture (through specialized crop and livestock production systems) will invariably lead to an increase in credit needs of rural households (e.g. Investments in productive technologies and high productivity inputs in the form of fertilizers, pesticides and seed variants), but most small

report,[2] the Reserve Bank's Internal Working Group to Review Agricultural Credit estimated that despite numerous existing initiatives, at most, **only 40 per cent of India's small and marginal farmers are covered by formal credit**. According to the All India Debt and Investment Survey (AIDIS) 2013–14, **indebtedness is more widespread amongst agricultural households than their non-agricultural counterparts**. The burden is even higher for landless farmers.

More frequent incidences of extreme weather events have also added to agrarian risks. Unpredictable periods of floods and droughts leave farmers in a period of strife. A lack of preparedness makes them vulnerable to harvest losses, especially given the money already paid for procuring inputs such as seeds and fertilizers. This results in fluctuating incomes of farming households and unstable livelihoods.

1.2. Setting the Context: Agriculture Insurance as a risk mitigation mechanism in India

Agricultural insurance has long been perceived as an important risk mitigation tool. Agricultural insurance in India has always been disseminated in India as a micro-level insurance scheme, largely administered by the government with limited involvement from the private sector. Broadly, agriculture insurance in India can be divided into the following groups.

Table 1: Types of Insurance Products in Indian Agriculture.

S. No.	Type of Insurance	Description	Major Stakeholders offering solutions	Key Schemes/ Products	Features
1	Yield Based Crop Insurance	The indemnity is based on the realized (harvested) average yield of a predefined area. An indemnity is paid if the realized average yield for the area is less than the insured yield.	Central and State Governments Banking institutions are an important channel for distribution. Private Sector Insurers limited to distribution of schemes & pilot interventions (e.g., picture-based crop insurance product pioneered by IFPRI in collaboration with private insurance companies)	Pradhan Mantri Fasal Bima Yojana (PMJDY)	<ul style="list-style-type: none"> Implemented across all states Multi-peril coverage Highly subsidized premiums Index linked to Crop Cutting Experiments (CCEs) Accounts for over 90 per cent[1] of all crop insurance coverage Formerly mandatory for loanee farmers receiving loans through the KCC Channel

S. No.	Type of Insurance	Description	Major Stakeholders offering solutions	Key Schemes/ Products	Features
2	Weather Based Crop Insurance	The indemnity is based on realizations of a specific weather parameter measured over a pre-specified period of time. The insurance is structured to protect against index deviations that are expected to cause crop losses.	Central and State Governments Private Sector limited to distribution & pilot interventions (e.g. index flood modelling in Bihar by Indian Water Management Institute)	Restructured Weather Based Crop Insurance (RWBCIS)	<ul style="list-style-type: none"> · Implemented across multiple states · Multi-weather perils covered · Highly subsidized premiums · Index linked to local weather station measurements · Accounts for less than 10 per cent of all crop insurance coverage. · Private product offerings limited to large holding farmers.

Livestock Insurance: cover schemes and product offerings that insure against risks to livestock and other animal groups.

1	Indemnity Based Insurance	The most basic kind of livestock insurance product seen in India which covers (the persons owning) cows, bullocks or buffaloes, that have been certified as being in good health at the time of policy purchase	Central Government sponsored schemes Product offerings through Private general insurance companies limited to specific animal groups (primarily cover milch cows and buffaloes). Some insurers offer covers for fisheries, poultry and other livestock species.	Livestock Insurance by Department of Animal Husbandry, Dairying & Fisheries	<ul style="list-style-type: none"> · Implemented across all districts in India but performance varies significantly across states · Subsidy (50 per cent of premium) for government schemes is restricted to a limited number of animals. Scheme is voluntary for all farmers. · Premiums for non-subsidized offerings remain high on account of high individual loss assessment costs and lack of scale.
---	---------------------------	---	--	---	--

S. No.	Type of Insurance	Description	Major Stakeholders offering solutions	Key Schemes/ Products	Features
2	Community /Mutual Insurance	Individual risk is mitigated through collective contribution to a corpus within a community similar to a mutual model.	Community led insurance model	Goat Insurance by The Goat Trust. Community Livestock Insurance in Andhra Pradesh by United India Insurance.	<ul style="list-style-type: none"> · Limited to a few states and localized communities. · Scalability limited by access to external capital. · Limited use of complex loss estimation models (to keep premiums low)

Miscellaneous Agri-Insurance Products: These products cover Agri-related and Agri-allied activities, which are not usually covered by mainstream crop and livestock insurance schemes.

1	Unified Package Insurance Scheme (UPIS)	Aims at financial protection & comprehensive risk coverage under seven categories including crop Insurance, loss of life, Accidental Death & Disability, Student Safety, Household, Agriculture implements & Tractor. Crop insurance is compulsory, with the option to choose at least two other schemes.	Central and State Government sponsored Schemes	Unified cover under: PMFBY/WBCIS, Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojna (PMJJBY).	<ul style="list-style-type: none"> · Implemented in over 45 districts in India · Linked to multiple state insurance schemes. · Offers comprehensive risk cover for agriculture and non-agriculture domains of a rural household.
2	Agro-Machinery Insurance	Providers cover for the machinery which are used in day-to-day agricultural activities like pump sets, tractors, carts, cycle etc. Losses covered include theft, accident, floods, mechanical/technical breakdown, fire, strike, malicious damage.	Primarily offered through Private General Insurance Companies	Agricultural Pumpset Insurance, Tractor Insurance	<ul style="list-style-type: none"> · Limited in access to large holding farmers primarily in higher income states such as Punjab, Haryana, Tamil Nadu, and Karnataka. · Lack of suitability and affordability for small and marginal farmers' needs.

S. No.	Type of Insurance	Description	Major Stakeholders offering solutions	Key Schemes/ Products	Features
3	Plantation Insurance	Protecting growers of tea, coffee, rubber, cardamom and tobacco from the twin risks of weather and price arising from yield loss due to adverse weather parameters, pest attacks etc. and from income loss caused by fall in international/domestic prices	Central & State government Schemes Private Insurance Companies provide products for specific product groups to cover multi-peril outcomes.	Revenue Insurance scheme for Plantation Crops (RISPC), Bio-Fuel Tree Insurance, Rubber Plantation Insurance (RPI), Pulpwood Insurance Scheme (PIS).	<ul style="list-style-type: none"> · Limited to fewer states such as Kerala, Karnataka, and West Bengal. · Product offerings suitable for large farmers.

Within the contours of agriculture insurance, the various forms of crop insurance emerges as the most suited to the needs of small and marginal farmers who are characterized by little or no landholdings, lack of supplementary income-generating activities (less than 20 per cent of small and marginal farmers own livestock[3]) and inadequate financial means to afford productive inputs such as agricultural machinery. With 86 per cent of Indian farmers falling within this category, the policy relevance and approach over the decades has been focused significantly around crop insurance which will be the focus of this study as well.

The crop insurance schemes are formulated to tackle the twin objectives of risk mitigation as well improving productivity in agriculture. In India, the government plays a proactive role in providing insurance cover to the agricultural sector through highly subsidized micro-level insurance schemes such as **Pradhan Mantri Fasal Bima Yojana (PMFBY)** since 2016, the **National Crop Insurance Programme (NCIP)** since 2015, Modified National Agricultural Insurance Scheme (MNAIS) since 2011, **Livestock insurance scheme** since 2006 and the National Agricultural Insurance Scheme (NAIS) since 1999. While these schemes have improved upon their predecessors, and have taken advantage of various innovations in technology, including increased smartphone penetration, the use of satellite imagery and other big data sources, and the manifold increase in accessibility of app-based platforms, they still face various structural, logistical and financial obstacles. The latest scheme, PMFBY – which is the largest agricultural insurance scheme not only in India but also in Asia, aims to cover risks ranging from weather-based as well as natural disasters to insure farmers from pre-sowing to post-harvest stages. Furthermore, private insurance companies and cooperatives/mutuals also offer their micro-level insurance products to the agriculture sector (such as agro-machinery insurance, goat/cattle insurance).

The PMFBY was created with the objective of providing insurance to at least 50 per cent of all farmers, with the promise of compensation in case of crop loss. The previous schemes saw low enrolment rates due to a lack of trust as well as a lack of awareness of insurance products in general. The private sector was roped in to augment financial resources and induce competition in bringing down premium rates. Overall, since its inception, the scheme has achieved a coverage of 41 per cent of farmers but a majority of farmers continue to remain outside the ambit of the PMFBY. Despite the great ambitions of the government in promoting this scheme, some of the issues that plagued its predecessors have persisted as with other micro-level insurance schemes. Below are list of drawbacks & challenges of PMFBY:

- Given the high cost of distribution particularly in rural areas, bundling of insurance schemes with credit was seen as an efficient channel to reach farmers. With banking channels being the most prominent, the **emphasis has been disproportionately on loanee farmers** who have been compulsorily been enrolled into the scheme and premiums deducted (often without a clear understanding of what they have signed up for) until very recently. While the take-up of non-loanee farmers (hampered by the lack of a similar institutional channel for distribution) has gradually increased over the years, their numbers remain extremely low in the bigger picture. Non-loanee farmers are perhaps at a greater risk of compounding their losses, given that in many cases, they are unable to access credit from formal financial sources and thereby are more vulnerable to adverse events in agriculture.

- **Farmers are apprehensive about insurance products because of a trust deficit.** Insurers still face problems in reaching farmers to convey to them the benefits of insurance, due to the lack of rural infrastructure. There is a lack of awareness about the workings of an insurance model and the value proposition that it offers to the farmer. **Moreover, the claims settlement process continues to be very complex and entails huge opportunity costs of time and other resources for the farmers.**
- While the scheme has evolved significantly in terms of using newer technologies such as remote sensing, human intervention in the loss assessment process continues to affect the performance of the scheme. **There is a lack of trained professionals to handle the Crop Cutting Experiments (CCEs)** and the current technology is not reliable. This has led to delays in assessment and settlement of claims as well as tampering with the yield estimates in some cases, further eroding trust in the scheme. The lack of an efficient grievance redressal mechanism exacerbates this.
- **PMFBY is a yield-based insurance scheme and it fails to consider losses in revenue.** Without revenue protection, farmers do not benefit from the insurance scheme since, irrespective of the harvest at the end of the season, low prices for primary food articles leaves farmers facing financial losses. While insuring price risk has been admittedly hard even in the context of more developed countries, there remain several insurable residual risks such as losses during storage and transportation that are not yet covered by the scheme adequately.
- Finally, while the scheme was received with significant enthusiasm, the interest among both state governments and the private sector insurance companies seem to be waning. The burgeoning amounts of subsidy payments owed by the states and the delays in receiving this by private insurers have meant that the **scheme is perceived to be unsustainable in the longer term.**

To summarize, **the high amount of premium subsidy paid by the government, coupled with lack of solutions to improve take-up makes it difficult for private insurers to sell stand-alone crop/livestock insurance products.** Alternate models and levels of providing agricultural insurance needs to be explored.

The discussion above brings to light the strengths as well as the weaknesses of the largest existing micro-level insurance programme in the agricultural sector. Nevertheless, the agricultural sector in its current state has a lot of potential to explore and introduce products and channels that are well suited to the needs of the stakeholders and help overcome the shortcomings of the micro-level insurance products.

We undertook a SWOT analysis (refer Fig.1) of micro insurance programs in general to evaluate their potential for farmers in India. As identified, one of the strengths of the present insurance programmes such as PMFBY, RWBCIS etc., is the huge government support in its provision of the products, implementation, and monitoring. The subsidized insurance premium in the scheme has positively affected the enrolment into the scheme. The scheme also covers most of the pre-harvest losses and even local risk like hail storms. The strong collaboration between government and private insurance and reinsurance

suppliers, risk and loss assessment has worked successfully and attracted interest within the private insurers to increase insurance penetration. However, a large number of institutions and various risks along the agricultural value chain still remain outside the umbrella of risk protection.

One major obstacle in agricultural insurance is the very low awareness about insurance as a risk mitigation tool among the target group, often resulting in very less voluntary take-up of these schemes. Nevertheless, there is a huge opportunity to further scale up the product and increase the coverage, both in terms of the beneficiaries and the portfolio of the type of the risk covered. A possible threat is that agriculture as an activity is prone to a lot of natural and climatic risk and as such private insurance providers may be reluctant to offer insurance products in areas where the occurrence of natural calamities is high. Besides the natural events, legal and political climate with conflicts between farmers and institutions may not be a conducive environment for product implementation. The major identified threat would be removal of subsidies from the programme that may make the product more expensive for the farmers and impact the take up of the agricultural-insurance. The mounting distributional cost is also one of the identified threats to the agricultural-insurance product.

FIGURE 1: SWOT ANALYSIS OF THE CURRENT AGRICULTURAL INSURANCE SCHEMES IN INDIA.

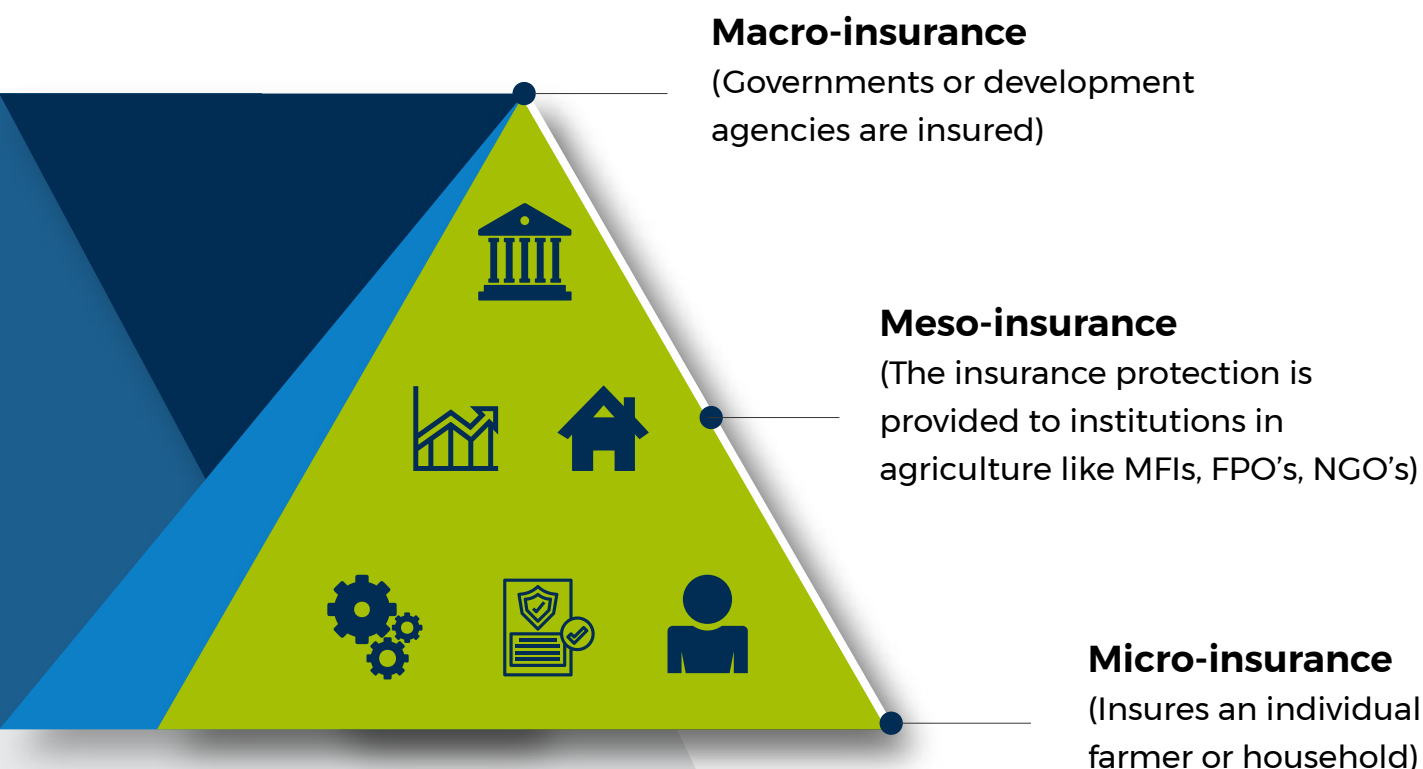


1.3. Study Rationale: Understanding the potential for alternative levels of insurance in Indian Agriculture

Insurance can be classified as micro-level insurance, meso-level insurance or macro-level insurance depending on who the policyholder is.

- Micro-level insurance schemes insure an individual farmer or household.
- In meso-level insurance, the insurance protection is provided to institutions in agriculture like the Microfinance Institutions (MFIs), Farmer Producer Organisations, etc.
- In macro-level insurance, the governments or development agencies are insured. The macro-insurance policies are designed for these actors in protecting their development indicators and in disaster management during widespread catastrophe.

FIGURE 2: PYRAMID FOR DIFFERENT LEVELS OF INSURANCE ARRANGEMENT BASED ON THE POLICY HOLDERS.



The agricultural insurance sector in India has largely focused at the **micro-level (where the individual farmer is the policy holder)**. In some countries, there has been a growing need for alternate forms of insurance after observing a decline or stagnation in the uptake of the traditional micro-level insurance product despite the huge subsidies targeting the farmers of the low and middle income strata to benefit from the schemes and mitigate the associated risk arising in agriculture. The indemnity-based micro-insurance products have not been able to support the farmers due to high product design costs and marketing costs for the insurer.

Meso-insurance could avoid some of the pitfalls of micro-level insurance that arise from high levels of information asymmetry between the insurer and the farmer. Individual farmers would benefit from meso-insurance directly, for example, if they get insurance attached to an agricultural loan or other agricultural input product. There can also be indirect benefits, as it could **allow lenders (such as MFIs) to increase their exposure to the agricultural sector without being too exposed to large agricultural shocks**. In turn, this could support farmer investments (fertilizer, improved seeds, and machinery, etc.) in agricultural productivity.

This study seeks to explore the potential of agricultural insurance at the meso level, which covers ‘risk-aggregators’ such as banks, microfinance institutions, or agribusinesses to name a few. Meso-level insurance provides portfolio or group insurance to organizations such as MFIs, banks, agribusinesses, FPOs, for risk management purposes. In meso-insurance, the aggregator is the policy holder, insured party and direct client of the insurer. For example, financial institutions can purchase policies to cover default risks arising from major agricultural shocks; agri-processors can purchase policies to cover the risk of non-recovery of inputs advanced to farmers or insufficient supplies of raw materials due to agricultural shocks. In turn, the aggregator retails its benefits to farmers through a variety of services.

Meso-level insurance also has the potential to overcome many of the limitations of micro-level insurance including poor distribution (especially among non-loanee farmers), low levels of awareness of insurance schemes and low overall trust in insurance by farmer groups by engaging insurers with institutions that represent farmers (thereby increasing bargaining power) rather than the farmers directly.

¹ Indemnity insurance refers to an insurance policy that compensates an insured party for certain unexpected damages or losses up to a certain limit—usually the amount of the loss itself.

1.4. Study Objectives:

The key objective of this study is to understand the feasibility for a meso-level product in the agricultural insurance sector in India. The key research questions are:

- Summarize and update the global experience in implementing meso-level insurance in agriculture.
- Summarize current experiments around meso-level insurance in agriculture in India.
- Analyse the attitude and scope of governmental authorities and insurance companies towards meso-level crop, livestock and other agricultural insurance policy and schemes
- Analyse the attitude and demand of aggregators such as financial institutions, FPOs, NGOs, cooperatives towards meso level insurance in the agricultural sector
- Identifying key design components and delivery mechanisms for a meso-level insurance product in the Indian context
- Develop Use Cases for the application of meso-level insurance in Indian agriculture

2. Study Design



Policy document review and review of existing literature on meso-level insurance was thoroughly undertaken as summarized in the next section of the report. We **identified the key stakeholders and classified them as primary or secondary stakeholders**. Their interest and influence were gauged through '**Key Informant Interviews**'. The key informant interviews were conducted with the stakeholders with a semi structured questionnaire. The questionnaire had questions on Product Offering, Product Take-up, Coverage, Pricing, Long-term Effectiveness, Value Proposition to meso-level institutions and other relevant information on perceptions, attitudes, challenges and barriers to effective meso product implementation.

These queries were organized into three sections:

Part 1: General questions on the agricultural insurance sector and the stakeholders' experience.

- In your observation of the agri-insurance sector, how do you think that the agri-insurance programme in India has evolved?

Part 2: Specific questions on the current insurance products and deeper understanding of the stakeholder's engagement in agricultural insurance in India.

- What is your opinion about meso-level insurance in agriculture? Are you aware of any meso-level insurance products (agricultural or non-agricultural sectors)?
- Have any of your products in the past had a meso-level design? If yes, could you please share the experience?

Part 3: Questions on the concept of meso-level insurance and its relevance to the agricultural sector. The interest and attitude towards introducing meso-level insurance in agriculture. Understanding the role of the stakeholders in meso-level insurance products. Discovering potential areas of introducing meso-level insurance in agriculture.

- Do you think Meso-level insurance will be able to fill the gap or address the issues/complement micro- level insurance?
- What should be some of the product design principles to be kept in mind for meso-level insurance? What would be the efficient delivery mechanisms/channels for distribution of meso-level insurance?

Post the interviews, a questionnaire was sent to the respondent to quantify their responses, based on which we have mapped the stakeholder's analysis with the help of the interest and influence matrix.

We were able to successfully conduct interviews with a range of stakeholders listed in table 1.

TABLE 2: LIST OF STAKEHOLDERS INTERVIEWED

Stakeholder	Number of Interviews	Details
FPO Members	12	<p>5 -Andhra Pradesh (Gudaluru, Donakonda, Anantapura, Gudibanda and Gooty); All 5 FPOs managed by APSERP</p> <p>3 - Tamil Nadu (Tuticorin) Pulses Producer Company Limited, Dryland Farmer Producer Company, Ramanar Millets Farmer Producer Company</p> <p>4 - Karnataka Kalmeshwara Farmer Producer Company Ltd., Kayakayogi HFPC, Puttarajagavayi HFPC, Uluvayogi HFPC</p>
Government Departments	1	Andhra Pradesh Society for Elimination of Rural Poverty
Government Insurance Company	1	Agricultural Insurance Company Ltd. (AICL)
Private Insurance Companies	2	Royal Sundaram, SBI General
Reinsurance Company	1	Swiss RE
Donor/ Promoter Agency	1	Oxfam
Sector Experts/ Academia	3	<p>N. Srinivasan (Director, Samunnati Financial Intermediation and Services; Former Chief General Manager NABARD)</p> <p>Pratik Priyadarshi (Associate Professor BIMTECH)</p> <p>Dr George E. Thomas (Professor, Insurance Institute of India)</p>
NGOs/ CBOs	1	Action for Social Advancement (ASA)
Product Design & Advisory/ TSP	2	WRMS, Digital Green

The stakeholders were then identified and mapped in an interest -influence matrix. The key informant interviews also guided the formulation of use cases for the meso-level insurance in agriculture.

3. Global Experiences with Meso-Level Insurance in Agriculture



In order to stabilize farm incomes and provide a formal risk management mechanism for rural households, international development agencies and governments globally have tried to implement various types of crop insurance models from developed countries to compensate farmers for crop losses. However, models adopted in the West are often not affordable for developing countries such as India on account of high transaction costs for providing financial services to low income households, inferior technologies that generate inaccurate data and inadequate rural infrastructure to make these products accessible for the most vulnerable households. **Given the nature of small land holdings in most developing country contexts, estimating losses at the individual farm level becomes highly impractical and costly.** In addition to these, the issues of moral hazard, and adverse selection are common in traditional crop insurance products and schemes. Literature on agriculture insurance globally also indicates that even in North America and Western Europe, the role of the state has been immense in financing and scaling up crop insurance products. This suggests that **the requirement for governmental support is likely to be significantly higher for insurance markets in a developing country context.**

Several factors impede the development of a robust agriculture insurance market in developing countries. The key challenges can be summarized as follows:

1. Affordability for rural households

- Large financial losses for insurers due to correlated risks that affect entire communities.
- Difficulty in addressing moral hazard and adverse selection.³
- Cost of delivering services to remote rural households is high.

2. Lack of experience with insurance products

- Lack of awareness among potential users about formal risk management mechanisms.
- Underdeveloped financial and insurance sectors with low penetration rates.

3. Lack of robust institutional structures

- Low access to international reinsurance markets
- Difficulties in enforcing contracts
- Lack of a strong regulatory environment

4. Lack of sufficient data

The agricultural sector in India suffers from lack of adequate and long-term data on yield, price, etc. that makes it difficult to expand the insurance products (issues with loss assessment) and their market.

² Moral hazard is a lack of incentive to guard against risk where one is protected (through insurance) from its consequences.

³ Adverse selection occurs when the insurer is confronted with the probability of loss due to risk not factored in at the time of sale. This occurs in the event of an asymmetrical flow of information between the insurer and the insured

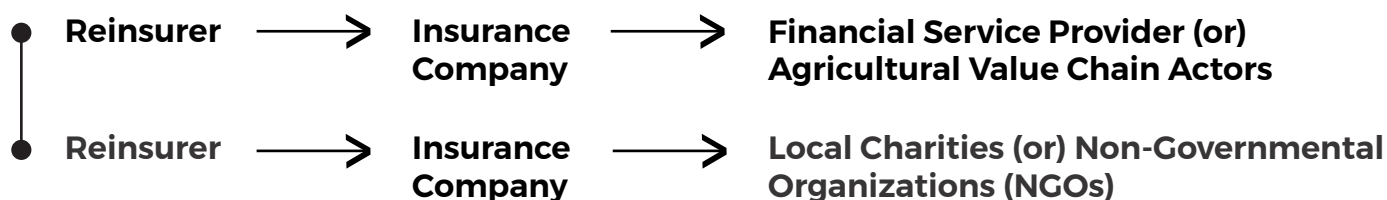
A lack of integrated data structures also creates inefficiencies in underwriting and risk pricing.

In order to address these challenges in providing agricultural insurance to developing households, the emphasis has been on testing and implementing index-based insurance products as they have the potential to reduce transaction costs and address correlated risks that affect large populations such as in the case of floods or droughts. The index insurance is sold to the low-income such as smallholder farmers often in the form of micro-insurance with business models explicitly targeting the low-income population as beneficiaries.

While product design has focussed on index-based measurement, there have been differences in the channels of distribution that have been implemented globally. While distribution at a micro-level is most commonly understood, there have been significant efforts at testing meso-level products particularly in parts of Central and Latin America, Africa and South-East Asia.

Meso-level insurance is sold to intermediaries who cover the aggregated risk exposure faced by their clients. This form of insurance builds resilience of the intermediaries in coping with financial losses that may occur if many of their members or clients face large losses.

Broadly, there are two types of delivery models that have been implemented predominantly in developing countries globally:



Index insurance can be used to protect rural financial service providers or various actors in the agricultural value chain that have exposure to risks such as those related to adverse weather. Experiences of meso insurance in agriculture from around the world have been summarized in the following sections of this chapter.

3.1. THE RISK-MITIGATING POTENTIAL FOR MESO-LEVEL INSURANCE

Providing insurance coverage to individual farmers (micro-level) poses a number of demand-side constraints (trust and awareness) and supply-side constraints (design of contracts that are sufficiently reliable to protect individual farmers). Offering insurance to a meso-level institution – such as a financial intermediary, an administrative entity (local self-governments), or a producer organization (FPOs – is a potentially attractive option. Findings from Carter et al. (2016) identify that financial intermediaries are worried about

⁴ Index insurance is an innovative approach to insurance provision that pays out benefits on the basis of a predetermined index (e.g. rainfall level) for loss of assets and investments, primarily working capital, resulting from weather and catastrophic events

large correlated shocks, which affect the performance of their entire portfolio of agricultural loans in a given region and not individual losses. This implies that basis risk is less of a problem for such a meso-level institution. An index with regional coverage is likely more correlated with an average production outcome for the region, compared with individual producer outcomes and thereby a more useful risk⁵ mitigation mechanism for such intermediaries.

The paper goes on to identify two problems faced by farmers. First, what happens when the intermediary receives the payout? Second, how will the payout be shared with the individual farmers? The question arises about how the payout will benefit the farmer (e.g. Will their loan liability be reduced?). These raise concerns about the right choice of intermediary as well as the trust that they enjoy with the farmers. These issues would be tackled through effective contract design (which includes outlining scenarios in which farmers are eligible for payouts) as part of the overall product design. Findings emerge from multiple pilot meso-level insurance programs in Jamaica, Bangladesh, Tajikistan, and Thailand to support that an effective contract design can ensure coverage adequacy and benefits to smallholder farmers through a meso-level cover. Moreover, literature suggests that there is indeed a demand for such products but a lack of awareness about their availability.



Tajikistan

In Tajikistan, a study focusing on assessing the risk reduction potential of meso-level insurance at various aggregating levels using a weather based index approach was implemented in 2015. Comparing the risk reduction potential at various aggregating levels – subnational and national regions, it was found that **designing a meso-level insurance product is feasible against weather-induced revenue losses in cotton production.** As the Tajik economy is primarily dependent on agriculture with irrigation capacity of only 60 per cent, the meso-level insurance can insure the aggregator against possible droughts with indemnity payments.

Meso-level Insurance for Financial Service Providers

⁵ The difference between an index or benchmark and actual losses incurred (relying upon that index)

In Thailand: To insure farmers against flood risk, the Commodity Risk Management Group (CRMG) in 2006 of the World Bank's Agriculture and Rural development started to explore various products to transfer flood risk for agriculture. CRMG undertook several pilot studies and modelled different products to **assess the feasibility of expanding index-based risk from drought to flood** in Thailand and Vietnam. The project assessed flood risk by exploring the relationship between flood events and rice production losses. The results pointed to a need for an insurance scheme at an aggregate level as the Bank of Agriculture and Agricultural Cooperatives (BAAC) lack village level data on location of farmers and flood-prone areas making access to micro-level insurance nearly impossible. The area under study was exposed to frequent localized flooding, causing risk concentration. This further posed the problem of anti-selection as only farmers with high risk would be willing to take the insurance product. Also, the frequent flooding would require higher premiums making the insurance scheme unsustainable.



Thailand

Vietnam



In Vietnam, (also part of CRMG study) a project was undertaken by ADB in collaboration with the World Bank. They designed a meso-level flood insurance product using technical inputs of remote sensing-based analysis from CRMG. This was purchased by the Vietnam Bank for Agriculture and Rural Development which lent to rice farmers against a predetermined early-season flooding event. This protected the bank's portfolio from business interruption costs arising from early flooding. This, in turn, reduced the cost of lending to farmers. As a flood insurance product is dependent on its resolution, the study concluded that a micro-level insurance scheme carried the challenge of anti-selection against the insurer. Therefore, **a meso-level or a macro-level insurance would be more suitable to capture the risk at an aggregate level.**

Philippines



In the Philippines, Munich Re offered parametric insurance to protect loan portfolios of cooperatives from events such as hurricanes and typhoons. Currently, this product is offered through CLIMBS Life and General Insurance Cooperative. The CLIMBS Weather Protect product operates at a national level in the Philippines, with CLIMBS acting as primary insurer for the local cooperatives and Munich Re reinsuring the product. The cooperatives receive a predefined percentage of their loan portfolio as payout if a parametric trigger for rainfall or wind speed is reached. The cooperatives then use these insurance payouts for rebuilding work or replacing livestock or other assets.

A **few African countries** have also experimented with meso insurance for financial institutions lending to rural households. A pilot experiment in **Ethiopia** (Ahmed et al. 2016) revealed the institutional and coordination difficulties of introducing credit interlinked with insurance. However, it also demonstrated that there is considerable demand for such products at the farm level, despite their costs. A more optimistic outlook from Mishra et al. (2017) report that interlinking insurance with loans significantly increased supply of loans to smallholder farmers in **Ghana**, and that the insured loans met with high demand from farmers themselves.

Practical experiences particularly from Latin America and South Asia provide important learnings in design and delivery of insurance products in similar developing country contexts. In Peru, Global-Ag-Risk, in partnership with COPEME – an association of microfinance institutions, hedged the portfolio risk of member MFIs on agricultural loans using weather index insurance. A primary weather risk in areas of Peru was extreme rainfall and flooding from El Niño. In 2009, a meso-level index insurance product for risk aggregators approved by the Peruvian regulator was offered by the Peruvian insurance company La Positiva, with reinsurance from PartnerRE. By insuring the aggregator, i.e., microfinance institutions and reducing their portfolio risk, a meso-level approach enabled the rural poor in the flood areas of Piura, Peru to gain increased access to financial services and credit.

The Loan Portfolio Cover (LPC) offered policies to financial institutions in the **Caribbean**, more specifically **Jamaica, St. Lucia** and **Grenada**—to protect their loan portfolios from extreme climate events and subsequent loan default. Payouts were made if previously specified values for wind speed and/or rainfall were exceeded. Multiple local insurance companies served as the insurers for the policy while the reinsurance facility was provided by Munich Re. As loans were insured against extreme weather events, the experience highlighted that investment was able to reach areas previously considered too risky for traditional lending.

3.2. Meso-level Insurance for Intermediaries in the Agricultural Value Chain

Bangladesh: One of the success stories of meso-level insurance is PRAN Foods, the largest agro-processing firm in Bangladesh. PRAN Foods encourages the local supply of cassava (a non-traditional crop in Bangladesh) through contract farming schemes. It employs small and marginal farmers by leasing out approximately 7,000 acres of land. It purchased meso-level index insurance from Green Delta Insurance Company in 2016. The Global Index Insurance Facility (GIIF) supported Green Delta in development of the product, which protects the Cassava crops from cold spell and excess rain at critical stages of the crop cycle. PRAN purchased the insurance product to cover the value of deliveries expected at harvest for the 100 acres selected for pilot (approx. \$13 per acre for a total of \$13,000). The company then used these payouts to help cover the liquidity needs in case of insufficient local supply due to major weather shock. In case of less-severe shocks, PRAN provided the funds from the payments to farmers as a bonus and to sensitize them about the benefits of insurance.

Bangladesh



A project initiated by Oxfam in Bangladesh in 2013, insured local NGO Manab Mukti Sangstha (MMS), working with community-based organizations and individual households through an index-based flood insurance scheme. The policyholder was MMS, insured by Pragati General Insurance (a local insurer in Bangladesh) and Swiss Re as the reinsurer for this model. The product was designed to protect the low income, vulnerable char communities by improving their ability to cope with flood risks. The total sum insured was approximately BDT 1,328,800 (\$15,677), covering 1,661 poor households. The premium per household was approximately BDT 824 (\$9.72), which was attached to various services availed by the households from the NGO. Findings from recent research suggest that in addition to risk mitigation, the introduction of the flood insurance programme has resulted in an increase in agricultural productivity among households in the areas covered by the programme.

Uruguay

Uruguay: Another arrangement of meso-level insurance is to be found in Uruguay where an electricity company serving rural geographies, acting as the aggregator, was covered by an index-based weather insurance product. Uruguay is strongly dependent on its hydroelectric plants to supply the country with electricity, making it vulnerable to droughts. Therefore, the state-owned electric company entered into a weather insurance contract with Allianz acting as the insurer and Swiss Re acting as the reinsurance company. Payments are triggered when water levels fall below a critical value. The compensation payments were to be used for purchasing oil as an alternate source of energy to provide the country's inhabitants with electricity.

Kenya



Kenya: There is some evidence that meso-level insurance can also be integrated as interlinked transactions in value chains from Africa as well. The Syngenta Foundation demonstrated interlinking input sales (seeds and fertilizer) with a form of index insurance. In Kenya, under the 'Safe Farming' scheme, index insurance was offered at a 5 per cent premium over the seed price. A smartphone was used to scan barcode symbols on labels attached to bags of inputs sold to farmers. Weather events were measured through automated weather stations, and payouts were made using mobile wallet payments. In case of weather shocks in excess of predetermined thresholds, the cost of purchases is refunded to farmers. In cases where there are contract farming arrangements, such as with seed farmers or with members of dairy cooperatives, the cost of premiums is deducted from payments for product deliveries. In these cases, it is the agro-input company or the producer organization that insures its interlinked transactions in the value chain, providing indirect cover for its member farmers.

3.3. A Graduated Approach to Developing the Agriculture Insurance Market

Skees et al. (2007) highlights a graduated stage-wise approach in developing agricultural insurance markets in developing country contexts.

Stage 1: As part of the first stage, meso-level intermediaries such as financial service providers, value-chain actors, and NGOs present a viable alternative to households for enabling agricultural resilience. These institutions provide essential services to poor households but are also exposed to correlated risks affecting a whole community. Correlated risk exposure affects the intermediaries' ability to provide services. For instance, lenders often restrict access to credit when exposed to large defaults on account of events such as floods. Addressing the risk exposure of meso-level intermediaries will likely bring significant economic

improvements that affect many households in rural communities. Also, stakeholders at the meso-level are more likely to have familiarity with insurance instruments than smallholders, thus requiring less education on the benefits and design of the insurance product, while on-boarding them. This process will not only build resilience of these institutions but also help in building human capacity and familiarity with agri-insurance products. Providing poor with access to essential services that will allow them to more efficiently and effectively manage risk thus creating possibilities for smallholders to choose higher-risk, higher-return strategies that increase opportunities for future wealth.

Stage 2: By removing catastrophic weather risk from local markets, new opportunities for insurance products will develop along with greater demand for insuring idiosyncratic risks at the individual farm level. This stage more directly confronts the household-level factors contributing to agricultural risk by linking insurance to individual farmers. The benefit could extend beyond credit-linked insurance that has been the focus of large government schemes in developing countries such as India to cover other types of risks including cover for agro-machinery and other allied agricultural activities (which currently remain limited to large holding farmers). By building familiarity with insurance products in the earlier stage, this is likely to create a more demand-driven approach towards agri-insurance.

In the Indian context however, there has not been a significant focus on this aspect of building resilience of intermediaries (stage 1) as a risk management mechanism for the agricultural populations they serve. There have been limited policies formally targeting this channel of risk management thereby skipping this stage of providing meso-level protection. While significant resources have been put into developing micro-level insurance, a lack of resources, awareness and readiness on the part of smallholder farmers has meant that a majority of farmers remain without any kind of formal risk management strategies.

The overall experiences highlight that meso-level distribution of insurance relies extensively on networks with pre-existing connections to rural households that local aggregators already have access to. These networks provide a comparative advantage for delivering insurance products more efficiently and with greater outreach in low-income and low-literacy contexts.

4. Stakeholder Identification and Mapping



4.1. Stakeholder Identification

The stakeholders for meso-level insurance in agriculture were categorized as primary and secondary stakeholders. The primary stakeholders are the ones that hold a direct interest in the product or organization and its dealings. These stakeholders usually invest their financial capital directly into the business. Stakeholders that do not hold direct interests in a business or product but can have a reasonable influence over the product and can be a strong support system for various aspects of the product (i.e., design, delivery, pricing etc.) are known as secondary stakeholders. The stakeholders identified thus, are illustrated in table 2:

Table 3: Identification of stakeholders into primary and secondary stakeholder

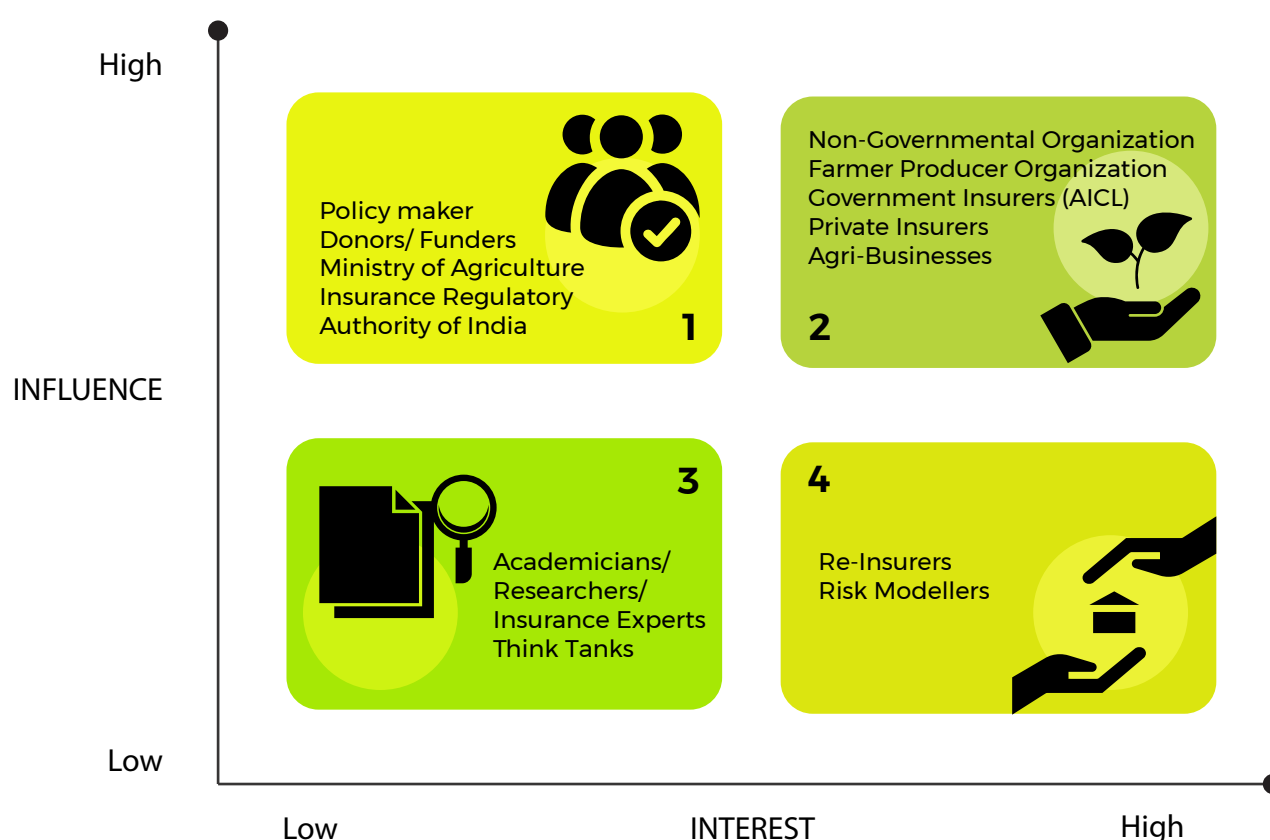
Primary stakeholders	Secondary stakeholders
<ul style="list-style-type: none">• Farmer Producer Groups/Organisations• Non-Governmental Organisations• Agro-processing firms• Micro-finance organisations• Self-Help Groups• Insurers	<ul style="list-style-type: none">• Insurance Intermediaries• Re-insurance• Insurance Regulatory Authority of India• Sector-expert• Risk Modellers

The primary stakeholders in the context of the agricultural sector in India would be the farmer producer organisations working in different geographies – some of which have been interviewed in the study from Tamil Nadu, Andhra Pradesh and Karnataka. These FPOs can be both government and non-government sponsored. Similarly, there are various NGOs and organisations that work with the farmers like Oxfam, TATA Trust, Haritika, Centre for Sustainable Agriculture (CSA) etc. that extend support and initiate interventions that help farmers enhance and sustain their agricultural activities.

4.2 Stakeholder Mapping

The stakeholders thus identified were mapped using the interest and influence matrix. The interest influence matrix helps identify the potential stakeholders based on their interest level and their influence over the potential product. It addresses whose needs, interests and expectations will be met most by the meso-level insurance. The horizontal axis represents the level of interest in the product and the vertical axis represents the influence one can have over the product. It must be noted here that the interest-influence matrix is a dynamic matrix and each player can switch positions over time in the matrix. One can say target the stakeholders in quadrant 1 understand their potential issues and concerns over the product and address them to bring them to quadrant 2. In this study, we gauged the interest and influence of the stakeholders through the interviews and post interview questionnaires and assigned scores that helped us map the stakeholder in one of the quadrants with the given interest and influence. Accordingly, the interest-influence matrix maps the stakeholders into four quadrants as discussed:

FIGURE 3: THE INTEREST-INFLUENCE MATRIX



Quadrant 1: This quadrant includes the policy makers, donors, IRDA and the Ministry of agriculture and farmers welfare. The stakeholders identified in this quadrant have high influence but low interest and awareness on meso-level insurance. These stakeholders need to be kept informed so that they can be moved to the second quadrant, with invoked interest in product implementation.

Quadrant 2: The second quadrant is of prime importance to the sector and are either the direct beneficiaries or the direct suppliers of insurance. It is important to keep them engaged and informed as they are the primary stakeholders influencing the demand and supply of meso-level insurance. Through our interactions with all of the mentioned stakeholders, they have exhibited high interest and influence over introducing a meso-level insurance product. Agricultural Insurance Company Limited (AICL) has expressed plans of diversifying its portfolio from micro-level insurance to meso-level insurance providers as well. Through our interviews AICL expressed the on-going efforts to expand on their insurance product portfolio by introducing a meso-level insurance product in 2021.

Quadrant 3: The academicians, think-tanks and insurance sector experts are in the third quadrant with low interest and influence. However, they need to be kept engaged and informed as they may directly contribute to raising awareness.

Quadrant 4: The fourth quadrant has stakeholders who have low influence but high interest. The risk-modellers and re-insurers though have low direct influence but can be helpful in supporting meso-level insurance.

5. Findings and Discussion



This section covers information & analysis from key Informant Interviews conducted. Insurance was envisaged as a mechanism that would insulate a large section of India's farmers against the vagaries of agriculture. The Pradhan Mantri Fasal Bima Yojana (PMFBY) has been one such risk-mitigation scheme by the Indian government in creating a robust risk mitigating mechanism for the masses. Over 6.06 crore farmers had been insured under the scheme in 2020. In terms of sheer scale, crop insurance post the inception of the PMFBY is now the third largest portfolio in the non-life insurance sector. Despite this, nearly 60 per cent of India's farmers, majorly landless farmers and small and marginal farmers, continue to remain outside the coverage of any formal risk mitigation mechanism. To this end, our study tries to capture the perspectives of multiple stakeholders in agriculture to understand the potential for alternate forms of agriculture insurance that could complement existing efforts in the sector and make the process more inclusive. One such approach is focusing on the meso-level where the key beneficiaries are intermediaries that offer key services and work very closely with farmers. Meso-level products are aimed at improving the resilience of these intermediaries which in turn has knock-on effects on the resilience of farming households they serve.

The thematic analysis identified and validated seven broad themes that incorporated all the data recorded from the key informant Interviews. These are as follows:

- **The current experience of agriculture insurance in India** including the performance of the current agricultural insurance products, issues with the underlying product design, delivery mechanisms and business viability of the model and the roles of the private sector and the government in this regard.
- **Inadequacies of the current offering of agriculture insurance products** in terms of the key insurable risks that remain for farmers and potential improvements that could address these shortcomings.
- **Issues around the lack of awareness on insurance and the consequent lack of demand among farmers** including the perception of what an insurance product is as well as a lack of understanding of current product offerings.
- **Experiences in implementing meso-level insurance in India** providing a snapshot of the sector's experiments in the recent past on meso-level offering and their awareness of such products and the hesitancy to introduce meso-level insurance in the past.

- **Potential scenarios where meso-level insurance could work** in the agricultural value chain and identifying intermediaries that can benefit the most from such arrangements.
- **Identifying key product design principles and delivery channels** for implementing a meso-level insurance product including creating sustainable business models.
- **Highlighting the challenges of scaling up meso-level insurance** including the role of the government, the regulator and the private sector in enabling scale.

5.1. The current experience with agriculture insurance in India

All insurers covered in the study acknowledged that agricultural insurance could be a profitable business despite one of the insurers interviewed pulling out of the scheme by Kharif 2020. However, the reasons cited for the withdrawal were related more to implementation issues and administrative delays and not the profitability of the model itself.

Feedback on government led schemes: A majority of stakeholders feel that there has been a significant amount of consultation during the course of the PMFBY scheme unlike in the case of its predecessors, the NAIS and MNIS. However, respondents representing NGOs and product design and advisories feel that the Government has had insufficient interactions with the farming community at large or with community-based organizations and structures that have the best interests of the farmers at heart. This has led to more supply-side push in designing and implementing the product.

The key informants felt that the emphasis of the PMFBY scheme was always on increasing coverage of land and farmers insured rather than focusing on the quality of coverage. They also acknowledged that given the scale of agriculture in India, this was a daunting task.

While the Government's push was crucial to sustaining the crop insurance schemes, the usual challenges in government implementation have plagued the whole process. With the PMFBY premiums being financed through central and state-level subsidies, significant delays in the payment of these outlays has crippled the functioning of insurance providers. Several insurance company representatives and sector experts highlighted this as being the most prominent factor in private insurers losing interest in the scheme. On the other hand, the large financial tab of

subsidies has impacted the financial resources of several states, who have also opted out of the scheme.

- Views on **the role of the private sector**: In recent years it has been viewed differently by various stakeholders. Inclusion of the private sector introduced the possibility of agricultural insurance being a profitable product line for private insurers. Representatives from Government institutions particularly feel that the private sector has profited from the scheme especially in the early years of its implementation. They feel that by bidding for relatively low risk areas and the prevalence of relatively stable climatic conditions, the insurers benefitted from favourable loss ratios in their balance sheets. This has created mistrust in the sector on the lack of social responsibilities for the private insurance companies. On the other hand, the private insurance company representatives and some sector experts have refuted this claim by suggesting that there is an inherent lack of understanding of how an insurance model works, even by people at higher positions within the government. This has led to many in the sector viewing this product as a type of investment product rather than a mechanism for risk-pooling.

5.2. Inadequacies in current micro-level product offerings and risks that are still not covered

Product offerings: Our key informants acknowledged that the increased role of technology has been a step in the right direction. With the PMFBY being a yield-based insurance product, several issues raised have been on inaccurate and unreliable crop yield estimates from Crop Cutting Experiments (CCE) on account of human intervention. Some key informants also highlighted that yield data tampering was often motivated by political involvement. The increased capability and application of Remote Sensing Technologies (RST) have significantly improved the transparency of the loss estimation process even though its application is not yet widespread. The availability of such data and technologies has enabled the creation of more complex indices for insurance products devoid of human tampering. This could also result in reducing the unit of insurance even further and mitigating the problem of basis risk that the current schemes suffer from.

A limitation highlighted by stakeholders representing product design and advisories is that there are a limited number of crops that are notified by the states under PMFBY. Only those crops can avail of insurance. Some feel that this can act as an impediment to crop diversification as well in the long run. PMFBY will have to make insurance relevant to farmers by

including more and more crops under notification and by allowing insurance for mixed cropping. Given the challenges with yield-based products, the emphasis for such crops can be through weather-based index products.

Inadequate risk cover: Several stakeholders feel that a more significant peril for farmers compared to loss of yield is due to price risk, i.e., not realizing the revenue that was expected as earnings for a season. Admittedly, stakeholders acknowledged that this is a hard risk to cover given that the price discovery mechanism in India is not directly a function of market forces with provisions such as the MSP in place. However, respondents believe that **compensations for revenue losses will be a more meaningful and digestible product for farmers.**

Other types of residual risks that have significant impact for individual farmers are in the form of post-production losses in storage and transportation of produce as highlighted by representatives of NGOs working with farmers. With several post-production services offered by agricultural intermediaries such as FPOs, there is a significant scope for complementary insurance covering such risks through the intermediary act as a policy holder (in a meso-level product) or even as a delivery channel (in a micro-level product).

5.3. Low take-up of Insurance among farmers: A case of the lack of demand or the lack of insurance education

A representative from Oxfam Bangladesh revealed how farmers have been made to believe that insurance is some form of an investment or savings mechanism with a return at the end of their contributions. It is not explained as being a completely different type of product that primarily hedges risk.

With the banking system acting as the most important channel for distributing agri-insurance schemes (often bundled with credit), over 60 per cent of farmers who do not have access to institutional credit are often not aware about what they are eligible for. The role of community-based organizations and intermediaries such as agri-processors and agri-input companies that aggregate farmers and work in their interest was highlighted as a channel for dissemination of information more effectively to farmers.

5.4. Experimenting with meso-level insurance in India: Experiences of stakeholders

Stakeholders’ experience with meso level insurance: Most stakeholders that we interviewed for the study had a good understanding of what a meso-level insurance product was but very few had actually implemented or worked with a meso-level product in agriculture. Among the key informants, only the government insurance company, reinsurers (with global experience) and donor agencies (with global experience) had experience of working on meso-level products in agriculture.

Table 4: Recent Meso-Insurance Pilot Projects in India.

The government insurance company representative revealed that several **small pilot projects are being tested** by them in various parts of the country. Several of these projects are **demand driven** from the farming community. For instance, grape and mango producers had brought up the need for a meso-level cover for all fruit growers under their association. Similarly, an NGO in Gujarat had requested for a meso-level weather-index product covering their farmer members. Another unique meso-insurance product, Consequential Crop Loss (CCL) that was being experimented with agri-intermediaries such as warehouses that face losses on account of loss of rent during crop failure.

When asked about why meso-insurance had never really been carried out on a larger scale in the past, several key informants revealed that agriculture intermediaries were not as well-defined ten years ago as they are now. Policy push towards increasing the number of FPOs would mean that aggregation of farmers is more structured now as compared to before. With growing number of FPOs this is expected to be resolved.

5.5. Potential applications for meso-level insurance in Indian agriculture

Several key informants identified FPOs & FPCs as potential beneficiaries for a meso-level insurance product. The key areas of application that were highlighted were:

- In terms of risk protection for collective input procurement (e.g. fertilizers or seeds) for farmer groups and the loss of income due to crop failure.
- Another area of application was for losses incurred during the procurement of produce from the farmer and marketing services offered post-harvest. Market volatility or contractual issues with buyers may result in financial losses for the FPO or FPC and could potentially be offset by a meso-level insurance mechanism.
- Several key informants also cautioned against the choice of FPO/ FPCs to target such products. Mature entities that have some level of financial independence and backed by supporting agencies/ institutions were suggested as being the initial target groups for such products as they are more structured and have some leeway in exploring a potential new risk mitigation product.

Non-Government Organizations (NGOs) that offer financial services to rural agricultural households were suggested as being other potential beneficiaries of a meso-level product. The interests of NGOs as intermediaries are aligned closely with the well-being of farming households they serve. They are also often the first responders in case of rehabilitation and relief efforts during any calamities such as floods. The most prominent area of application of a meso-level insurance product is in covering the financial portfolios advanced to poor rural households by **these NGOs as credit. Representatives from insurance companies however cautioned that NGOs that are geographical spread across multiple states and geographies might be best suited for such products as they have a greater ability to spread their risk.**

With regard to **MFIs**, compared to the other stakeholders, our key informants were **less enthusiastic about the applicability of meso-level insurance.** While from a product design perspective, creating an index product to cover portfolio risks for MFIs is not very complicated, the nature of the institution and the realities of the microfinance industry make it not very feasible to implement. For MFIs, the market is very competitive in terms of borrowing rates and undercutting its competitors. The appetite of MFIs to fund such a product remains uncertain. Since, adding a premium on top of the existing high interest rates, if the premium is distributed in the customer base, can potentially raise the price of loan for the borrowers. Some other aggregators that were identified by our key informants were **contract-farming arrangements** where the agri-business company entering into the agreement can insure its output to reduce supply-chain related risks. Another arrangement suggested was for **Agri-input companies** (e.g. seed suppliers) offering new varieties of seeds. The new product entails risk

for the farmers such as failure in germination. The agri-input company can provide a meso cover for such losses in the form of some financial compensation. In both these arrangements, however, the power dynamic between the aggregator and the farmers will determine the benefits from the product that will accrue to the last-mile beneficiary, i.e., the farmers.

A unique arrangement proposed by a representative of an international donor agency was to have **local-self-government structures (e.g. panchayats)** to act as the intermediary on behalf of farmers under their jurisdiction. Such arrangements could be beneficial as panchayat like structures may be better suited to understanding and advocating needs of the farmer groups that they represent.

5.6. Making meso insurance work: Key product design principles and delivery mechanisms

Stakeholders acknowledged that irrespective of the level at which insurance was being provided, some of the inherent product design issues had to be improved upon and resolved. Removing human intervention and arbitrariness in the loss assessment process was highlighted as a crucial challenge. The rapid push towards replacing human intervention with technological applications is a key step. Rapid advances in Remote Sensing Technologies (RST) are crucial for this.

Rebranding: It is to be highlighted that anything with linkages to 'insurance' is perceived negatively as it involves potential sunk costs in the form of premium payments. Rebranding insurance to appeal to intermediaries who work with farmers is important. Bundling insurance products along with other products seems to be the best way to facilitate rapid take up. Bundling insurance with efforts at promoting best practices and more agronomical practices can be a useful channel. In the context of Indian farmers, who are beneficiaries of the huge subsidized policies and schemes by the government, initial subsidy to the product (either through a Govt. allocated fund or through private grants) would be a potential route to take.

Cover most prominent risk: Representatives from product design and advisory agencies suggested that a meso-insurance product cannot be

perfectly designed at a more aggregated level. The aim needs to be on tackling the most prominent/peak risks through such a product. The stakeholder highlighted that an Index-based product such as for weather-related risks would be more suitable for such arrangements than a yield-based product as it would be easier to design, administer and have accurate estimations for.

Collaborations: Farmers' perspective and interest and the benefits of insurance to the intermediaries, one needs to well document and disseminate the meso-level insurances' potential very effectively. Current experiments in this space often operate in silos and do not get significant traction outside of the stakeholder implementing it. There is very little scope for cross-learning among stakeholders working for the same underlying populations.

5.7. Scaling Up meso-insurance: The role of key stakeholders in overcoming potential challenges

Role of Government: As evident from past experiences, the role of the government in agriculture insurance is paramount in India. While the participation of the private sector will supplement resources and efforts, reaching the most vulnerable pockets of agriculture in India still requires the intervention of the state building interest within the targeted populations. It was also suggested that state governments be more involved in the discussion for designing such products as they have a better understanding of localized risks within their states.

Business model challenges: The most highlighted challenge across stakeholders is the **lack of a successful working model for meso-level insurance in Indian agriculture**. While both public and private insurers are open to experimenting with newer arrangements of insurance, a **lack of a demonstrable model particularly on how payouts will work** and how the end beneficiary (i.e., farmer) will benefit from such arrangements, inhibits the interest of several key stakeholders.

Funding premium payments: One stakeholder suggested that the **Government could undertake part of the premium** with the rest paid by the aggregator on a tapering basis. If the products prove to be good for them, the aggregators will be interested to continue. It will be a good test

for the value proposition offered by the product. A dedicated fund through an agency such as **NABARD** was suggested **for its implementation**. Another stakeholder suggested that offering **GST tax waivers** on some of the activities undertaken by intermediaries such as FPCs can **free up financial resources to purchase a meso-level insurance product**.

Regulatory support: Easing of regulatory hurdles and delays was highlighted as another roadblock in expediting innovations in the insurance sector. Two of our key informants revealed that the IRDA **guidelines on implementing meso-level insurance is still not very clear**. Hence there is a hesitancy in testing new products. One stakeholder suggested that the IRDA should invite/encourage/accept **meso-level insurance products in a regulatory sandbox** with minimal rules, maybe even allow stakeholders to experiment with leeway in 100-150 locations. The experiences can be reviewed before putting in a set of proper regulations since this is uncharted territory.

Availability of data: Lack of granular data has been a significant impediment in underwriting insurance and effective pricing of risks particularly in offering insurance at the micro-level where assessment is required for each individual. The government has been pushing for a tech-based solution in the form of an 'Agri-stack' data repository for agriculture where each individual farmer will be provided a unique identifier. A similar approach, if implemented for meso-level institutions such as the network of farmer producer organizations will substantially reduce informational gaps between the insurer and the institution in designing and providing insurance products at the meso-level.^[5]

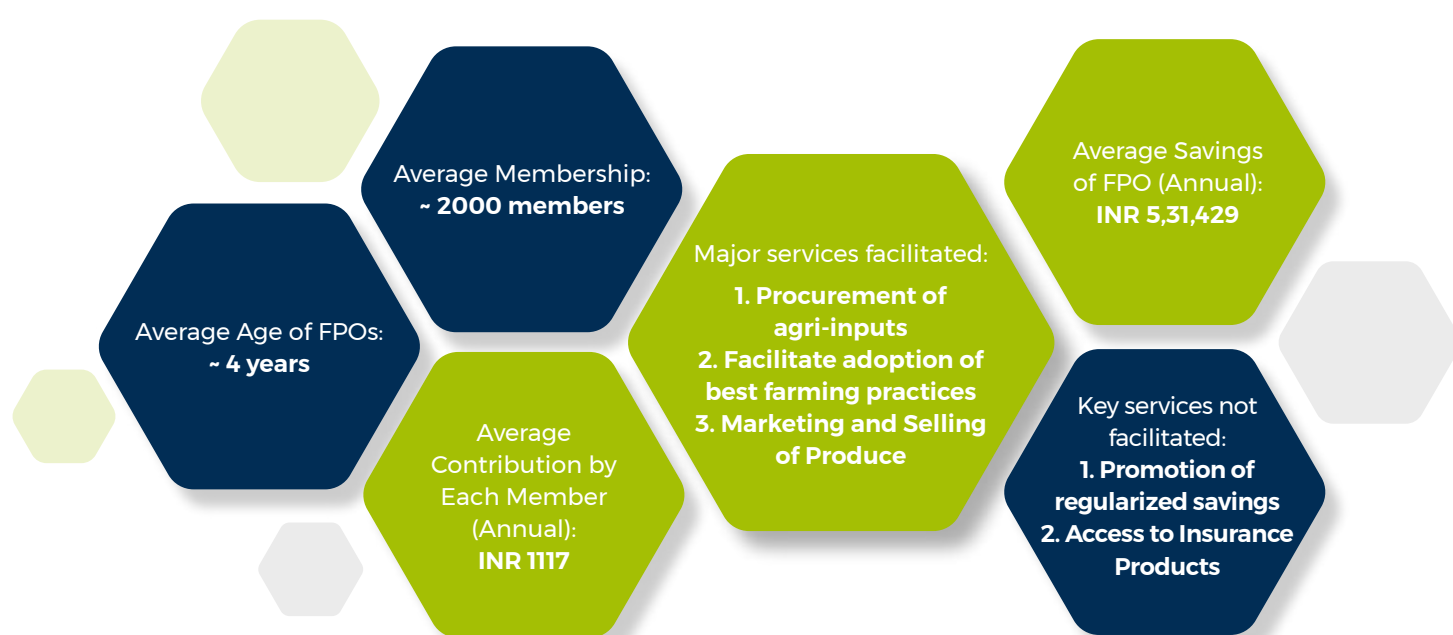
5.8. Demand-Side Perspectives: A Case Study of FPOs

As we identify potential use-cases for meso-level insurance, we discuss the perspectives of one of the potential beneficiaries of meso-insurance. Farmer Producer Organizations (FPOs) are one of the primary stakeholders of meso-level insurance. The insights presented here are derived from a series of semi-structured interviews with board members of FPOs located in Andhra Pradesh, Tamil Nadu and Karnataka.

About the FPOs in study: We interacted with FPOs (13 FPOs with an average of 2000 members per FPO) that receive support, in the form of

improved access to investments, technologies, knowledge support, inputs and markets that have been operational, on average, for about 4 years and that are **made of ~2000 farmers each**. These FPOs engage in groundnut, red gram, paddy and horticultural cultivation. The FPOs provide numerous services to their members, for a minimal contribution per year, in the form of promotion of agronomical practices, assistance with marketing and selling of produce, mobilisation of savings and provision of internal credit. As illustrated in the table below, all the interviewed FPOs provide access to and help in procurement of inputs. While only 2 out of the 13 FPOs we interviewed facilitated savings, nearly three-fourth of the FPOs provided access to internal credit to the members. More than half of the FPOs' promoted adoption of best farming practices.

FIGURE 4: PROFILE OF THE FPOs



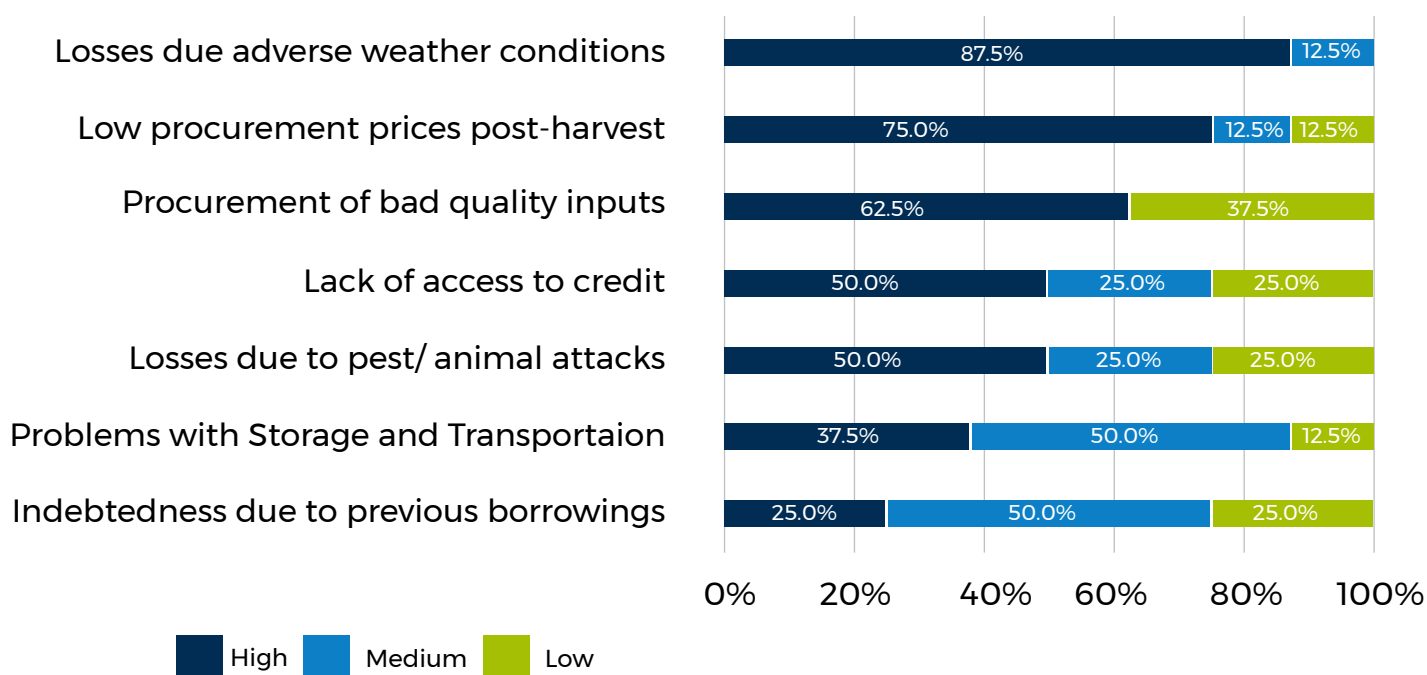
5.8.1. Understanding the Risk Profile of Farmer Producer Organizations

In order to understand the relevance of meso-level insurance, it was important to map out the risk profile of each of these FPOs in order to understand the **most common and significant risks** they face, the potential impact on agricultural activities for farmer members and the

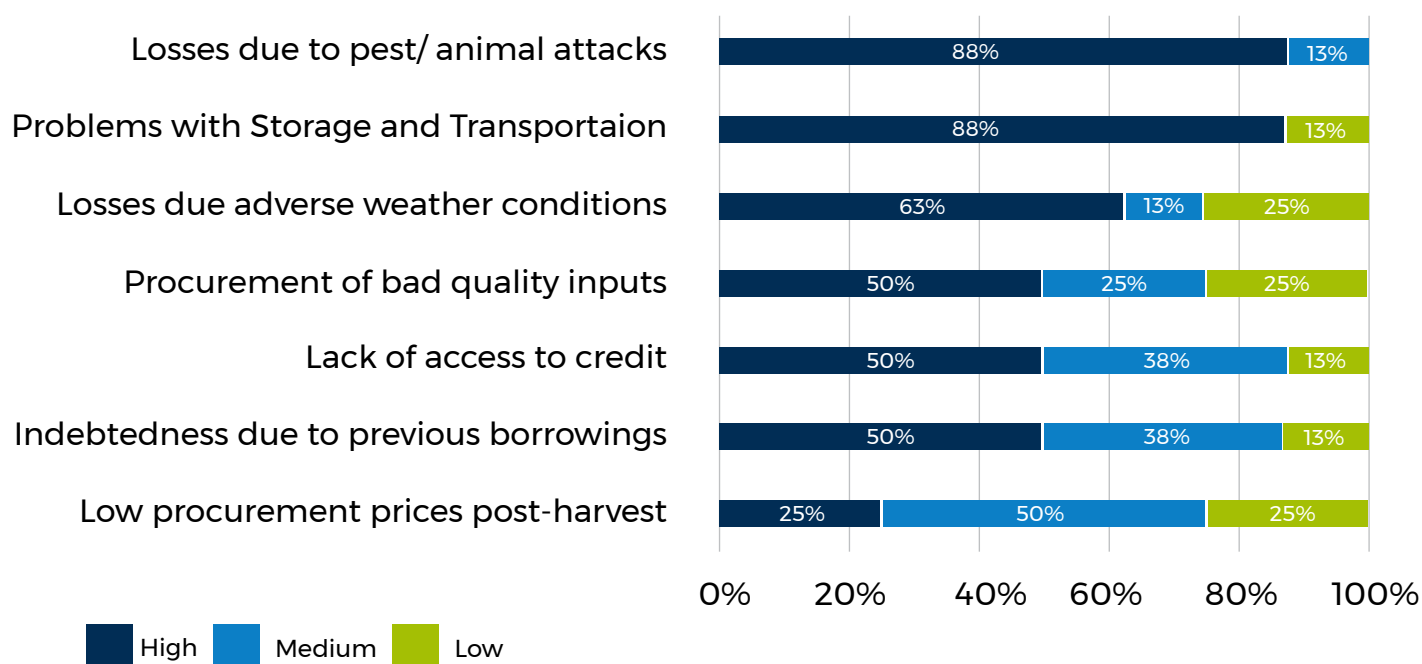
current risk mitigation measures in place. Production losses due to **adverse weather conditions remain a high risk** for most farmers in the region with several areas still dependent on rain-fed irrigation practices. The intermittent cycles of drought-like conditions and heavy rainfall leading to flooding has meant that the occurrence of such losses has been all too frequent. Not only does this lead to production losses but such losses also impact all other aspects of life in farming households. Production **losses due to pest/animal attacks**, especially by wild pigs, were also highlighted as a risk that the farmers from these regions faced during a particular period within the cropping cycle. Farmers often set up makeshift perimeters around their landholdings to mitigate this risk, however, these measures often prove to be ineffective. The losses can be particularly high for farmers with very small holdings as highlighted by one of the FPO leaders. These events that affect the farmers directly also have a negative impact on the health of the FPOs and disrupt its proper functioning as there may be cases of inability to pay their contributions for the FPOs' services and in other cases, an inability to pay back loans taken from the FPO.

FIGURE 5A: PERCEIVED IMPACT OF RISKS FACED BY FPOS.
FIGURE 5B: PERCEIVE CHANCE OF OCCURENCE OF RISKS FACED BY FPOS.

Perceived Chance of Occurence of Risks by FPO Members



Perceived Impact of Risks on FPO Members



Procurement of bad quality inputs (e.g. cases of spurious seeds, fertilizers, pesticides, farm equipment) was highlighted as a risk that could potentially have a high impact on agricultural outputs. However, with the active involvement of FPOs, the occurrence of such risks have been minimized according to our respondents. Though FPOs have been proactive in procurement of output directly from farmers, they have highlighted that they face high fluctuation in price levels when they are unable to find enough buyers or have to deal with middlemen. Finally, the FPOs highlighted that production losses that occur during storage and transportation of produce after harvesting is a major concern for them. Nearly all the FPOs agreed that having insurance is beneficial to cover some of the risks that they face in agriculture. The FPO leaders were aware of the concept of insurance with the Pradhan Mantri Fasal Bima Yojana (PMFBY) being the primary source of information on such products. However, there was no voluntary enrolment of the farmers under the scheme with a few farmers being enrolled by default through the Kisan Credit Card (KCC) channel.

While the FPOs agreed that insurance would be beneficial for them if it can cover losses that the farmers face, they feel that most among them are unaware of the claims process. The experience of some farmers also suggests significant delays in receiving payments. Therefore, insuring the FPOs would be helpful to bring the farmers largely under the umbrella of insurance.

Potential areas of risk cover through meso-level insurance

Several residual risks remain for smallholder farmers such as problems with storage and transportation of produce after harvesting and indebtedness due to previous borrowings for agricultural purposes. These residual risks provide a potential avenue for testing meso-level insurance products.

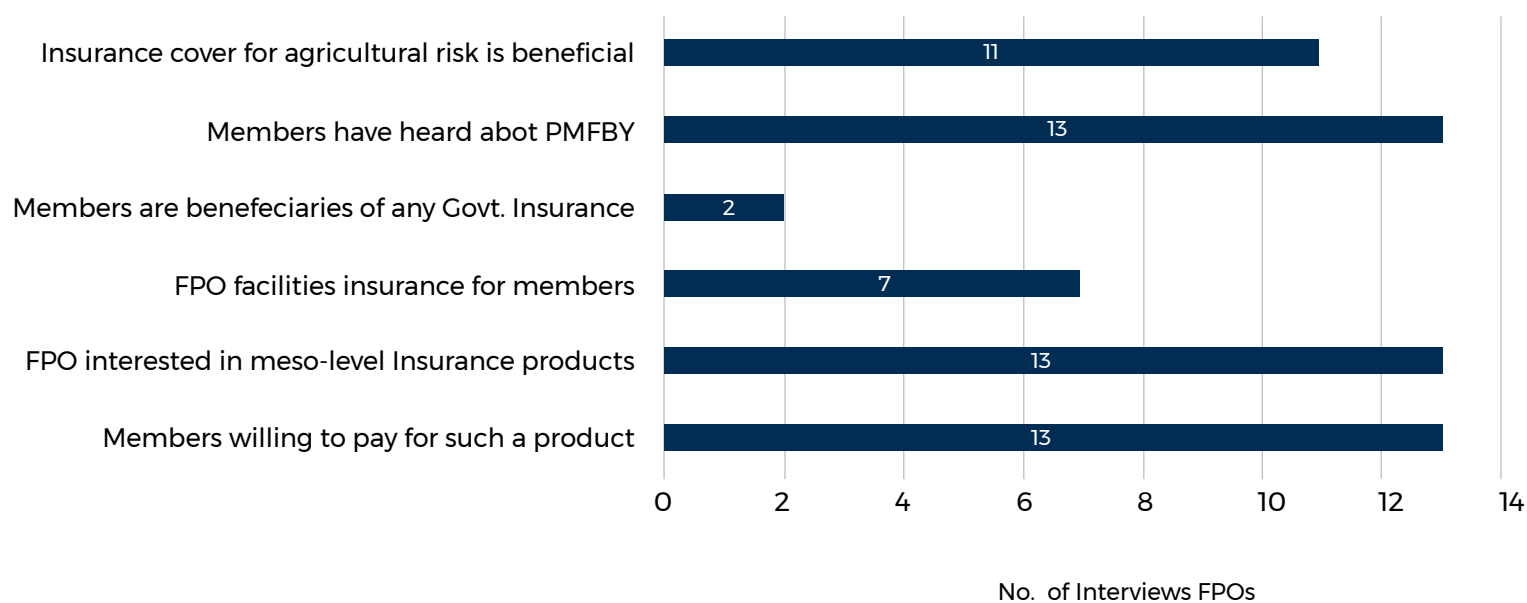
Almost all states and union territories in India have altogether nearly 10,000 registered producer organizations. The Government of India has also approved a dedicated central sector scheme – ‘Formation and Promotion of Farmer Producer Organizations (FPOs)’ – for formation of 10,000 new FPOs in order to provide adequate handholding and professional support to develop economically sustainable FPOs while facilitating adequate market and credit linkages. This would provide a sizable scale for implementing a new meso-level product by leveraging the relationship with FPOs and their member farmers.

This can overcome issues of low awareness, knowledge and trust of agricultural insurance among farmer groups. Distribution can also be easier and more cost-effective as awareness of the policy has only to reach the risk-aggregating intermediary (i.e., FPOs). FPOs can overcome distribution challenges especially among non-loanee farmers who are present with the current product. Consultative engagements with FPOs to understand localized and specific risks faced by its farmer members can be beneficial in developing customized insurance products relevant to the risks faced by the farming members, e.g., losses due to a lack of storage and transportation facilities, with the FPO acting as the policyholder on behalf of the interests of the farmer.

Our interactions with the FPOs demonstrated that there is widespread interest in taking up an insurance product if the compensation would be received in a timely manner, especially if it helped to cover some of the unexpected residual risks—such as when there are losses in storage and transportation of the produce before selling it. This would also help them in instances where they wanted to diversify their crop production, introduce new and improved methods of cultivation, and promotion of best practices among member farmers.

FIGURE 6: AWARENESS AND USAGE OF INSURANCE PRODUCTS AMONG FPOs.

Awareness/ Usage of insurance Products by FPOs



6. Use Case Development: Applications for Meso-Level Insurance in Indian Agriculture



From our discussions with various stakeholders, the application of meso-level insurance was identified as most relevant for FPOs and NGOs, particularly those offering financial services to agricultural households. Detailed use cases for these applications have been provided in the second half of this chapter. We begin by illustrating a general model for introducing a meso-level insurance product across aggregators:

6.1. A General Model of Meso-Level Insurance for risk aggregators in agriculture

Suppose ABC is any institution (say an NGO/FPO) in agriculture with the following portfolio engagements with farmers:

- Agri-services (procurement of seeds and other inputs, dissemination of new agricultural methods, financial assistance for agricultural activities etc.)
- Financial Inclusion for smallholder farmers, e.g., access to credit
- Implementation and scaling up affordable agricultural products (such as promotion and uptake of a cost-effective agricultural method, uptake of climate smart agricultural practices etc.)
- Access to seeds which include investment in plant breeding and technology transfer of new varieties to small holders

Let FH represent the farming households in an area that avail these services on a small payment bundled with these services. Let us assume flood, for instance, is a recurring problem in that particular region that affects the farmers that have lands near the river basin.

Our findings from interactions with FPOs also suggest that production losses arising out of adverse weather conditions are the most commonly occurring risks that farmers face every agricultural season. With this in mind, we propose an index-based insurance approach to be the most suitable in the Indian context on two counts:

- Index insurance calculates payouts on an easy-to-measure index of factors, such as water-levels or average yields that predict individual losses. This makes it attractive as a risk-management tool in developing countries such as India (particularly for broader community-level risks) where the fixed costs of verifying claims for a high number of small and marginal landholdings make conventional insurance too expensive and hinder scalability.

- Index insurance addresses two key problems with conventional insurance besides high cost: adverse selection (when farmers who are more likely to face losses are the ones who buy insurance) and moral hazard (where beneficiary farmers cut back on effort or compromise yields for the specific purpose of receiving an insurance payment). Index insurance, particularly at the meso-level, overcomes both adverse selection and moral hazard because the index is based on factors that cannot be influenced by one entity.

We do recognize the limitations of an index-based approach in handling more specific risks such as losses due to attacks by wild animals. However, a few individual insurance products do exist for such losses, their demand remains highly scattered and limited to achieve scale. Further, while basis risk remains an evident limitation of an index-based product, implementation at a meso-level has the potential for minimizing these risks as the intermediary institution has greater flexibility in determining the actual payout (where applicable) to individual farmers that they cover.

A multi-stakeholder approach can enable covering large risks that affect the resilience of aggregators in agriculture. This provides both direct and indirect benefits for the underlying farming households that these aggregators serve. Figure 4 illustrates a multi-stakeholder engagement model for meso-level insurance. The identified stakeholders are:

- **The policyholder:** The policyholder are the direct beneficiaries of meso-level insurance. They are often the risk aggregators like the FPOs, NGOs Co-operatives, SHGs etc.

- **Insurance company:** The insurance companies are the providers of meso-level insurance products to the agricultural intermediaries. They can be both government and private insurance providers in the Indian agricultural sector, say AICL, Reliance Religare, ICICI Lombard etc.

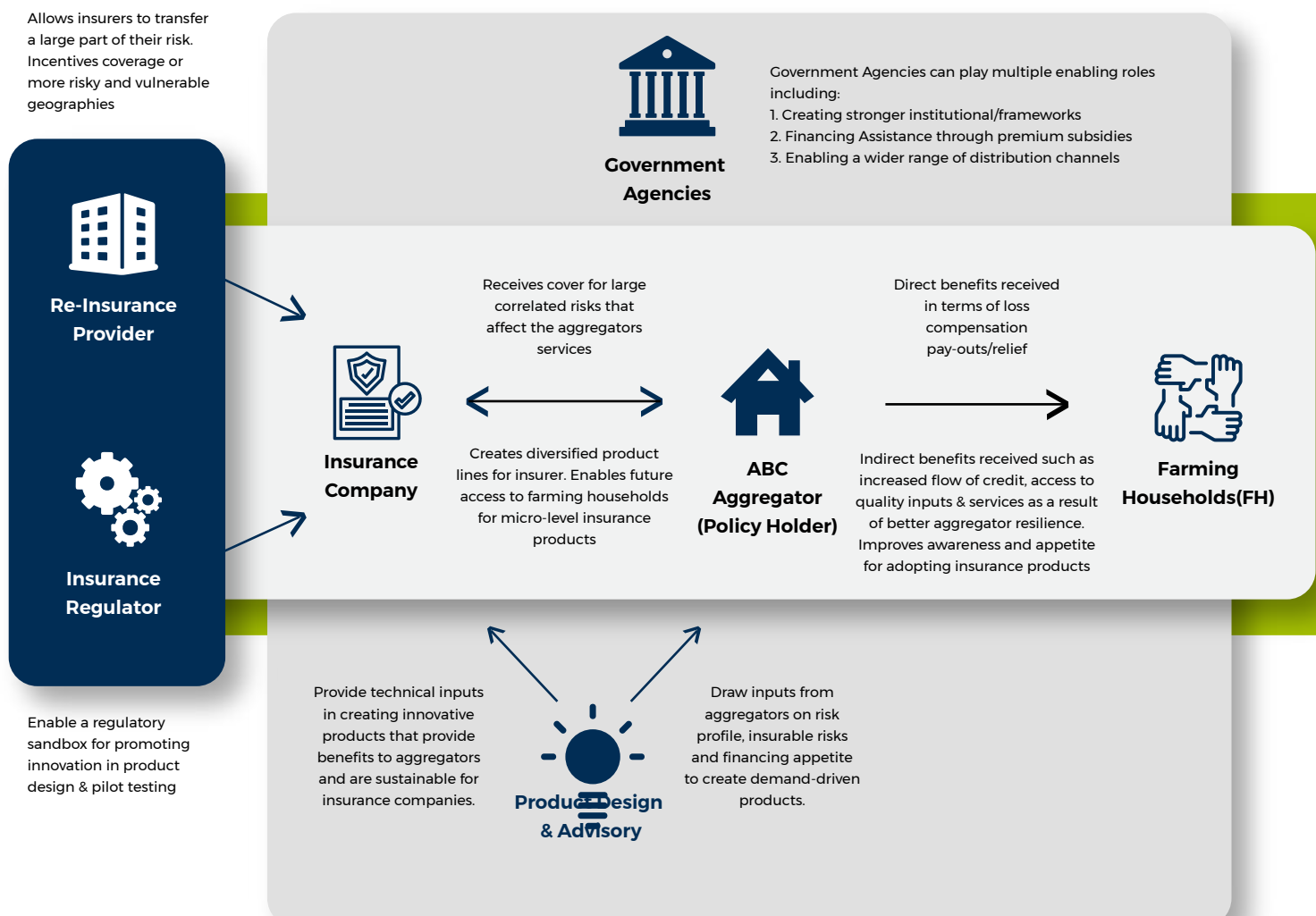
- **Re-Insurers:** The reinsurers provide financial protection to the insurance companies and share the burden of the risk so that the insurers can reach out to larger and riskier geographies too. Swiss Re is one such example of re-insurer.

Re-Insurers: The reinsurers provide financial protection to the insurance companies and share the burden of the risk so that the insurers can reach out to larger and riskier geographies too. Swiss Re is one such example of re-insurer. Product design and advisory: The product design and advisories develop and design the insurance product. Some examples of product advisory are Weather Risk Management Services (WRMS), Risk Management Solutions India Private limited (RMS) etc.

Insurance regulator: In India, the regulator, Insurance Regulatory and Development Authority of India (IRDA) is a body under the jurisdiction of Ministry of Finance, Government of India and is tasked with regulating and promoting the insurance and reinsurance industries in India

Government agencies: The governmental agencies and government bodies that promote, support and nurture the agricultural sector, such as the state and central agricultural departments, the extension service providers (Krishi Vigyan Kendras – KVKs), etc.

FIGURE 7: A GENERALISED MODEL FOR MESO-LEVEL INSURANCE - THE ECOSYSTEM FOR THE BENEFICIARY INSTITUTION ABC



6.2. Empowering Farmer Producer Organizations through meso-level insurance

Problem Statement

FPOs are a legalized form of farmer-owned institutions, formed by primary producers, such as farmers, milk producers, fishermen etc. It can be established in the form of a producer company, a cooperative society or any other legal form which provides systems for sharing of profits/benefits among the members. These institutions are often subject to large correlated risks that affect entire communities that they represent.

As one FPO representative from Andhra Pradesh mentioned, 'Due to the heavy rains last year during harvesting, many farmers suffered high losses to the paddy crop. Since they did not make any money, a lot of members are having to borrow.'

- FPOs offer a large number of value chain services to its members right from collective procurement of inputs, enabling adoption of the best agronomical practices to post harvest services including direct procurement from farmers, storage and transportation of produce and the marketing and sale of the procured output. Our discussions with FPO members revealed that often payments to the FPO for these services are contingent on the farmers' earnings at the end of the season. However, in the event of crop failure as a result of a catastrophic event such as a flood, farmers are often unable to pay back what they owe to the FPO. Nearly all (12 out of 13) FPOs that we interviewed stated that there has been a high occurrence of catastrophic weather events (mostly unseasonal rains and drought like conditions) in the past three years that have partially destroyed their production output. Half of the FPOs interviewees also said that this has a cascading effect on the following season as the FPOs are not in a position to provide adequate access to credit to farmers to start the sowing activities on time,
- Some FPOs also enter into contracts with buyers for the sale of the season's produce that they procure from their member farmers. In the event of not being able to fulfil the quality control and quantity requirements of the contract, there can be significant losses for the FPO which would translate into lower procurement payments for its member farmers.

Losses from such risks could potentially have a negative impact on its ability to provide services to farmers during the subsequent cropping

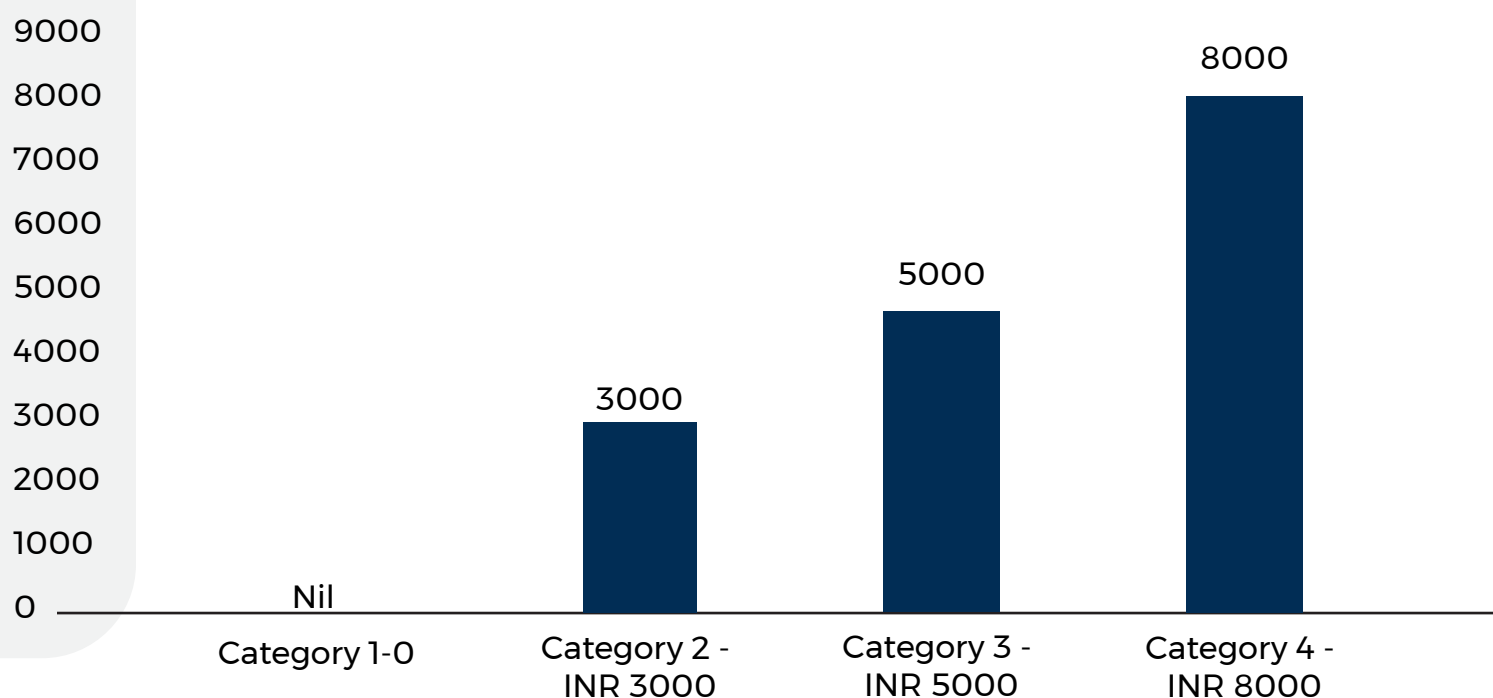
seasons. Additionally, dis-savings during the previous seasons also reduces the internal lending operations that are an important function of FPOs. This has a direct bearing on the resilience of its members who are often small and marginal farmers.

The benefits of FPOs as aggregators

Leveraging the FPO as an aggregator can overcome issues of low awareness, knowledge and trust of agricultural insurance among farmer groups. Distribution can be easier and more cost-effective, as awareness of the policy only has to reach the aggregator. Further, FPOs present an opportunity to offer an indirect form of formal risk management to non-loanee farmers who have been largely underrepresented in successive government backed micro-level insurance schemes over the years.

The Proposed Solution

The FPOs with an average membership of 1,500-2,000 members are large enough to aggregate risks and the geographical continuity of its operations means that the risk profiles are broadly homogenous for its farmers. The scale and operations of FPOs makes covering for major correlated risks (such as floods, droughts or unseasonal rainfall) a more suitable option rather than a multi-peril cover (as is the case with the PMFBY). The cover provided can be for the financial outlays provided by the FPO to its members as part of collective input procurement (of seeds, fertilizers or small farm machinery). The underlying product can have index-based triggers (e.g., a flood index), as it is easier to administer. Payouts will be made to the FPO if the index is triggered. The payouts can be used by the FPO to forego liabilities of the farmers. As an illustration a meso-level index based flood insurance for low income communities affected by floods can be designed for an FPO that has members from the vulnerable community by improving their ability to cope with floods. The local authorities and members can be engaged in monitoring and loss assessment. A multi-tiered compensation payment schedule can be designed depending on the loss incurred and payments can be paid as per the compensation caps to the per farmer member of the FPO, as illustrated in the figure below:

FIGURE 8: MULTITIERED COMPENSATION PAYMENT SYSTEM

Opportunities for Multi-stakeholder engagements

The government has increasingly been acknowledging the relevance and importance of collectivizing farmers under FPO-like institutions. The current policy push can be a key enabler in promoting innovations in agriculture insurance at the meso-level. NABARD is a key stakeholder that already has established linkages with networks of FPOs around the country. Leveraging the support of institutions such as NABARD not only enables access to larger financial resources but also acts as a channel for disseminating learnings from early adopters to other FPOs and farmer groups.

Potential for Scale

As of 31 March 2019, a total of 7,374 farmer producer companies have been registered in the country. Almost all states and union territories have registered producer organizations. These registered entities have a paid-up capital (PUC) of over Rs 860 crores in total with an estimated 4.6 million shareholders (mostly small and marginal farmers). With nearly 14.5 crores operational agricultural landholdings, several farmers also form informal farmer producer groups (FPGs). On the policy front too, there is significant interest as the government plans to set up and support 10,000 new FPOs over the next 5-year period.

6.3. Protecting the operations of NGOs

Problem Statement

The role of the Government in India has predominantly been in offering Programmes and interventions related to financial inclusion, livelihood promotion and social security at scale for the large rural population. The most vulnerable and poorest of poor rural households often fall through the cracks due to several factors such as a lack of awareness and accessibility. NGOs play a crucial role in ensuring a more inclusive form of development for these households.

- **Vulnerability of financial operations of NGOs:** While several NGOs originally started operations through external funding and donor agencies, they transitioned to a more sustainable model through offering a number of financial services such as microfinance. NGO backed financial services offer an ease of access to formal finance for several households who would otherwise have to rely on informal channels. In the event of a catastrophic event, there are high rates of default or delayed payments. This affects the financial operations of the NGO and can have an impact on its sustainability. The net result is a lack of resources as well as lower confidence in lending to low income rural households.

- A key focus area for NGOs working with agriculture revolves around **improving productivity**. Interventions to this end are in the form of usage of technology, adoption of best production practices and the use of newer inputs such as hybrid varieties of seeds. Even with the best intentions of the NGO, the farmers are exposed to several risks such as seed germination failure or spurious seed quality. In the absence of a loss compensation mechanism of risk management, farmers will not be motivated to test new varieties of seeds and continue adopting a 'low risk - low productivity' approach. The NGO on the other hand loses the trust and influence over the community. This limits the operation of the NGOs by limiting their activities and discourages them to expand their horizon of services like testing and promoting adoption of new seed varieties, or other inputs, hence indirectly affecting the farmers' growth and sustainability in agriculture.

Potential Solution

Meso-level insurance can act as a risk management mechanism for NGOs for the populations they serve. A meso-level product is better suited to covering large correlated risks for instance, severe drought situations in

parts of Andhra Pradesh where a large number of NGOs and government-backed development societies (e.g. SERP) operate. A policy can be purchased that covers the portfolio of all members who avail services from the NGO (e.g. MFI borrowings). The underlying product is linked to an index and payouts are triggered when the underlying index hits a particular predetermined value. The payouts can then be used by the NGO in facilitating rehabilitation and relief efforts for the farmers affected by the calamity. The experience of Manab Mukti Sangh, an NGO based in Bangladesh provides a working model for implementing a meso-level cover for NGOs working with populations most vulnerable to adverse weather conditions. Payouts were triggered through a flood-linked index and the NGO distributed the money to households covered under the scheme.

Benefits of NGOs as aggregators

NGOs work with the most vulnerable populations that are often inadequately covered under large scale government interventions that incorporate broader average risks affecting diverse geographies across the country. Often, NGOs act as the first line of responders for these households in the event of localized calamities or adverse events. They are best equipped in distributing benefits in the form of relief. Moreover, the interests of NGOs are often closely aligned with the well-being of the underlying populations they serve.

Opportunities for Multi-stakeholder engagements

NGOs backed by external funding or large donor agencies often have access to the international reinsurance markets and large international grants. These resources can be tapped into developing and backing suitable products that can provide a meso-level cover for NGO operations. Additionally, existing partnerships with technology service providers and agro-advisory agencies can be utilized for developing efficient delivery mechanisms in passing on the benefits to last-mile small and marginal farmers.

Potential for Scale

As of 2016, an estimated 31 lakh NGOs, across all sectors are registered under the Societies Registration Act, out of which 2.9 Lakh have complied

with the requirement of submitting balance sheets and income-expenditure statements with the Registrar of Societies in 2017. Going by even a conservative estimate, this would suggest that a sizable number of NGOs work with rural households predominantly engaged in agriculture. Moreover, in the wake of COVID-19, the Government leveraged networks of NGOs working across rural geographies as channels for delivering essential services during the lockdown, underlining their importance in accessibility to poor rural households.

In conclusion, it is important to highlight that one advantage of the proposed model is its widespread applicability, which has implications for the insurance providers as well in terms of diversifying their own portfolio risks. The underlying product for both the FPO and NGO use cases are very similar. The differences are primarily in terms of the risk profiles and objectives that each intermediary tries to protect its beneficiaries from. In the case of FPOs, the objective is largely production losses and associated economic losses that affect operations of farmer collectives that have implications in terms of forward and backward value chain linkages. On the other hand, NGOs, with potentially more altruistic motivations, can effectively function in the event of devastating calamities that are increasingly affecting vulnerable farming communities.

REFERENCES

- [1] 10th Agriculture Census 2015-16, Department of Agriculture, Cooperation and Farmers Welfare, GoI Indian Agricultural Outlook Forum 2019
- [2] Reserve Bank of India (2019), Report of Internal Working Group to Review Agricultural Credit,
<https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/WGREPORT101A17FBDC144237BD114BF2D01FF9C9.PDF>
- [3] Bhanwala. H,(2018, March 09), The Hindu, Livestock- a lifeline for small farmers,
<https://www.thehindubusinessline.com/opinion/livestock-a-lifeline-for-small-farmers/article21328347.ece1>
- [4] Department of Agriculture & Farmer Welfare, AgriCoop, Department of Agriculture, Cooperation & Farmers Welfare's Dashboard
- [5] Haq. Z, (2021, March 09), Hindustan Times, Govt building 'agri stack' to give unique ID to every Indian farmer.
<https://www.hindustantimes.com/india-news/national-farmers-database-on-anvil-101615237499226.html>
- [6] Smith et al (2019). A study of macro-, meso- and micro-barriers and enablers affecting extended scopes of practice: the case of rural nurse practitioners in Australia. BMC Nursing.
- [7] Alexandra Hermann, D. P. (2016). Climate Risk Insurance: New Approaches and Schemes. Economic Research Working Paper.
- [8] Anne Murphy, B. B. (2011). State of Knowledge Report – Market Development for Weather Index Insurance Key Considerations for Sustainability and Scale Up. Global-Ag-Risk.
- [9] P. Hazell, J. A. (2010). The Potential for Scale and Sustainability in weather index insurance for Agriculture and Rural Livelihoods. U. Quintily, Rome.
- [10] Chloe Dugger, R. S.-K. (2016). Experiences in index-based insurance for farmers: lessons learnt from Senegal and Bangladesh. Proparco.
- [11] Department of Agriculture Cooperation and Farmers Welfare. (2015-16). 10th Agriculture Census report. Government of India.
- [12] Farrin, M. J. (2012). Index Insurance for Developing Countries. Applied Economic Perspectives and Policy, Vol 34, 391-427.
- [13] Farzana Ismail, N. S. (2020). Asia Microinsurance Supply-Side Study. Millian Research Report.
- [14] Felicity Le Quesne, J. T. (2017). The role of insurance in integrated disaster and climate risk management: Evidence and lessons learned. UNU-EHS PUBLICATION SERIES.

- [15] Jan Kerer, C. T.-J. (2016). The potential of meso-level climate risk insurance as a risk management tool for agricultural intermediaries. KfW.
- [16] Jerry R. Skees, J. H. (2007). Using Index-Based risk transfer products to facilitate micro-lending in Peru and Vietnam. Global-Ag-Risk.
- [17] Jerry Skees, A. M. (2007). Scaling Up Index Insurance: What is needed for the next big step forward? MICROINSURANCE CENTRE, LLC WITH GLOBALAGRISK, INC.
- [18] Jithin Jose, K. G. (2018). Landscape of Crop and Livestock Insurance in India. IFMR LEAD.
- [19] Levitan, B. (2014). Stakeholder analysis toolkit. University of Manchester.
- [20] Mebada, O. (2018). Impact of Flood Meso-Insurance on Agricultural Productivity: Evidence from Bangladesh. Ottawa, Ontario.
- [21] Michael Carter, A. d. (2017). Index Insurance for Developing Country Agriculture: A Reassessment. *Annual Review of Resource Economics*, 9:421–38.
- [22] Mommens, X. (2006). Microfinance and agriculture. Could an insurance scheme fill the gap between the need of access to credit for small farmers and a better security of being reimbursed for the MFI?
- [23] Ornsaran Pomme Manuamorn, O. A. (2009). Flood risk management: Feasibility research on index-based Flood products in Thailand and Vietnam. *Commodity Risk Management*.
- [24] Padmaja Pancharatnam, S. M. (2020). Understanding the potential of crop insurance in India: A study of the Prime Minister's Crop Insurance Scheme. 3ie.
- [25] Raju KV, N. G. (2016). Transforming Weather Index-Based Crop Insurance in India: Protecting Small Farmers from Distress, Status and Way Forward. Telangana: India: International Crops Research Institute for the Semi-Arid Tropics.
- [26] Rinehart-Smit, K. (2020). Insurance in the Age of COVID-19: The Pandemic Highlights the Need for a New Approach.
- [27] Ron Weber, W. F. (2015). Meso-Level weather index insurance: Overcoming low risk reduction potential for micro-level approaches. *Agricultural Finance Review*, 31-46.
- [28] Ruchismita, R. (2016). Comprehensive Climate Risk Management Not without climate insurance. Insights from an on-ground pro-poor pilot. Bonn Climate Conference, MCII @ UNFCCC-2016. Bonn.
- [29] Shah Nur Quayyum, D. C.-K. (2018). Bangladesh: Agriculture Insurance Situation Analysis.
- [30] Simon Winter, M. B. (2017). The role of Multi-stakeholder Initiatives in promoting the resilience of smallholder agriculture to climate change in Africa. CR Initiative at the Harvard Kennedy School.

- [31] Swiss Agency for Development and Cooperation SDC. (2014). Insurance for smallholder farmers and vulnerable households against catastrophic events. Guiding principles for donors and governments. Berne.
- [32] Sarthak Gaurav, S. C. (2011). Marketing Complex Financial Products in Emerging Markets: Evidence from Rainfall Insurance in India. Marketing Complex Financial Products in Emerging Markets: Evidence from Rainfall Insurance in India, S150-S162.
- [33] Thérèse Sandmark, J.-C. D.-J. (2013). The Emergence and Development of Agriculture Microinsurance. Microinsurance Network.
- [34] Tony Smith, K. M. (2019). A study of macro-, meso- and micro-barriers and enablers affecting extended scopes of practice: the case of rural nurse practitioners in Australia. BMC Nursing.
- [35] Ulrich Hess, P. H. (2016). How can we transfer natural risks out of rural livelihoods to empower and protect people? Eschborn: GIZ.
- [36] William Dick, P. V. (2011). Jamaica: Weather Insurance for the Coffee Sector feasibility.
- [37] World Health Organization. (n.d.). Stakeholder Analysis Guidelines. In K. Schmeer, Stakeholder Analysis Guidelines
- [38] IRDA annual report 2019
- [39] NABARD press release, 2017
-



Bharat Inclusion Initiative (BII)

is pushing the boundaries of financial inclusion and livelihood for the underserved in India through a continuum of inputs ranging across research and fostering innovation & entrepreneurial activity.

The Bharat Inclusion Research Fellowship

is an initiative of BII towards identifying novel use cases for enhancing the financial inclusion and generating actionable knowledge of the needs, habits, preferences and constraints of the financially underserved in India.

contact us

bharatinclusion.ciie.co

ciie@iima.ac.in

+91-79-71524201

CIIE.CO, IIMA New Campus, Ahmedabad-15