

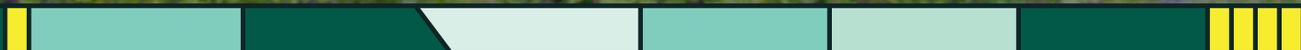
SEPTEMBER 2018



PROTECTING GROWING PROSPERITY



AGRICULTURAL INSURANCE IN THE DEVELOPING WORLD



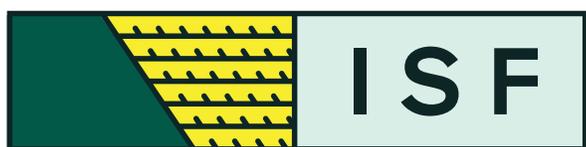


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FOREWORD



In the past ten years, the field of smallholder finance has grown in both size and complexity. As new players and products have entered the market around the world, there is an ever-present need to understand the many innovative business models and product classes that are developing to support smallholder farmers in their quest for economic advancement.

One of these emerging product classes is agricultural insurance in developing nations. Historically, smallholders have had limited access to risk-management options, but increasingly, formalized agricultural insurance is offering them a chance to avoid devastating financial losses and securely invest in their own productive capacity. This report focuses on the current status and future development of agricultural insurance for smallholder farmers around the world.

Different countries and regions have had vastly divergent experiences and approaches to developing this crucial suite of formal risk-management products. With the support of the Syngenta Foundation for Sustainable Agriculture, ISF is committed to shining light on this emerging marketplace.

Our investigation focused on micro- and meso-level crop and livestock insurance schemes that address ‘occasional events with large economic impact’ on smallholder farmers in Latin America, sub-Saharan Africa, and South and Southeast Asia. We begin by providing a snapshot of the market’s existing scale and dynamics, then move to a discussion of key market constraints and ‘leverage points’ that can support the development of agricultural insurance for smallholder farmers around the world. The hope is that future action by donors, practitioners, governments, and consumers can be informed by the experiences and insights of the market pioneers.

Matt Shakovskoy
Senior Advisor
ISF Advisors



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PROTECTING GROWING PROSPERITY

AGRICULTURAL INSURANCE IN THE DEVELOPING WORLD



Formalized agricultural insurance offers a valuable tool to help smallholder farmers avoid devastating financial losses and limit downside risk associated with smallholders investing in their own productive capacity. Smallholders regularly face ‘occasional events with large economic impacts’ to their crops and livestock, such as severe weather or pest activity.

ISF estimates that globally less than 20% of smallholder farmers currently have agricultural insurance coverage, a number that is less than 3% in sub-Saharan Africa. Further, we estimate that ~270 million smallholder farmers in developing countries require USD 60–80 billion in agricultural insured value coverage. This amount of coverage represents an annual premium value of roughly USD 8–15 billion.

This coverage gap results from both low demand for and low supply of, agricultural insurance products in developing nations. Smallholder farmers generally have low levels of understanding and trust in complex financial products. This is often well-founded, as the costs can be high and the payout mechanisms can be convoluted, slow, and divorced from the reality of a farmer’s individual losses. Meanwhile, developing, distributing, and servicing agricultural insurance policies in developing countries is complex and expensive for financial service providers.

In the past ten years, advances in weather stations, satellite imagery, and risk modelling have driven the emergence of parametric product designs. Traditional indemnity-based products are difficult to scale in developing countries, which has led to a rise in index-based products, especially in Africa and South and Southeast Asia. These new products do away with cumbersome claim assessment, thus lowering costs, but have higher basis risk and can be limited by their reliance on technology and skills that are difficult or impossible to access in some geographies.

ISF’s agricultural insurance landscape assessment paints a picture of an industry that shows great potential but is struggling to achieve the required scale and product-level refinements to graduate from the donor funding that has carried it to this point. The industry ‘ecosystem’ is complex, with many different actors facing systemic challenges. Moreover, while there is an emerging global agenda to develop this market, the solutions are highly dependent on national, or even sub-national, context.

Within this ecosystem we believe there are four primary ‘leverage points’ that can accelerate the development of this crucial market:

- **Leverage Point 1:** Governments engaged and equipped to drive the agenda
- **Leverage Point 2:** A new step change in product effectiveness

- **Leverage Point 3:** Product linkages that change the distribution and adoption game
- **Leverage Point 4:** Coordinated global action

Agricultural insurance for smallholder farmers is a complex market, and no single actor will be able to ‘solve’ the market constraints. Rather, we believe a more coordinated global agenda has strong potential to build momentum around early successes and innovate new approaches.

SECTION 1: THE ROLE OF AGRICULTURAL INSURANCE FOR SMALLHOLDER FARMERS

Smallholder farmers around the world face a large number of challenges beyond their control that can impact their income, often drastically. These challenges come from different sources—health shocks, market fluctuations, severe weather, and pests are only some of the unforeseen events that can hamper a farmer’s ability to earn enough to support their household. Within this range of potential risks, ‘occasional events with large economic impacts’ to crops and livestock are garnering increased attention within developing markets as a target for formalized risk-management products.

Research conducted by CGAP across Mozambique, Tanzania, and Pakistan revealed that 61%, 36%, and 72% of farmers respectively indicated that their crops had been destroyed by weather at least once in the past five years.¹ Furthermore, 32%, 26%, and 38% of farmers respectively saw their crops destroyed by pests in the field at least once during that same period.

Not only do these events severely depress farmers’ income when they occur, but they also inhibit farmers’ economic advancement over time.

¹ Source: Anderson, J and Ahmed, W, Smallholder Diaries, 2016, CGAP.

To increase their productivity and incomes, smallholder farmers must invest in farm professionalization and modern technologies such as improved seeds, mechanization, irrigation, etc. But the high prevalence of these ‘occasional’ but disruptive agricultural shocks presents a serious risk of these costly investments going to waste. Without adequate access to financial services—both credit and risk-management options—farmers simply do not make these investments.

Thus, formalized agricultural insurance is not only a valuable tool to help smallholders avoid devastating financial losses, but also acts as a major potential enabler of progress by limiting farmers’ downside risk from investing in their productive capacity.

However, formal agricultural insurance in the developing world faces the same challenges as many other financial products—the need for niche smallholder-friendly products, high costs to acquire and serve smallholder customers, and low coverage/premium values that make profitability difficult to sustain. To increase the availability of these valuable services, we must first understand where and how the market has developed to date.

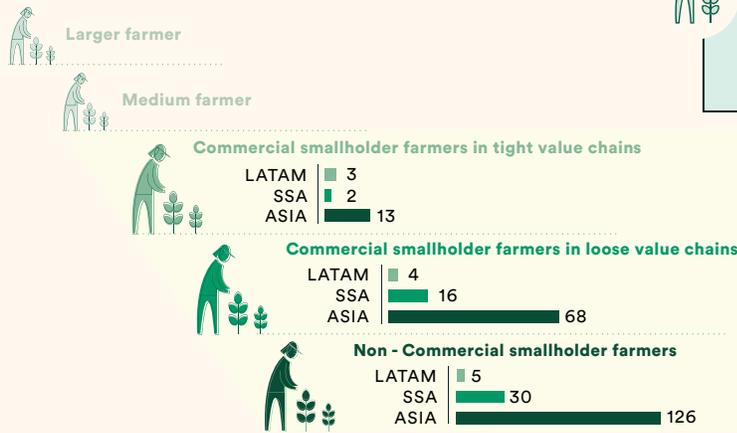
SECTION 2: CURRENT STATE OF THE MARKET

After decades of relative financial exclusion and on-farm management of agricultural risk, smallholder farmers’ need for formal agricultural insurance solutions is easy to define at a household level, and at face value represents a large potential market for the insurance industry. ISF’s analysis estimates that globally ~270 million smallholder farmers in developing countries require USD 60-

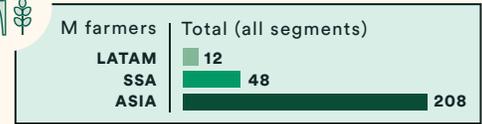
SMALLHOLDER FARMER NUMBERS

There are a total of ~270 M smallholder farmers across Latin America, sub-Saharan Africa, and South and Southeast Asia that need agriculture insurance

Breakup of farmer by type (M)



Regional breakup of focus farmers

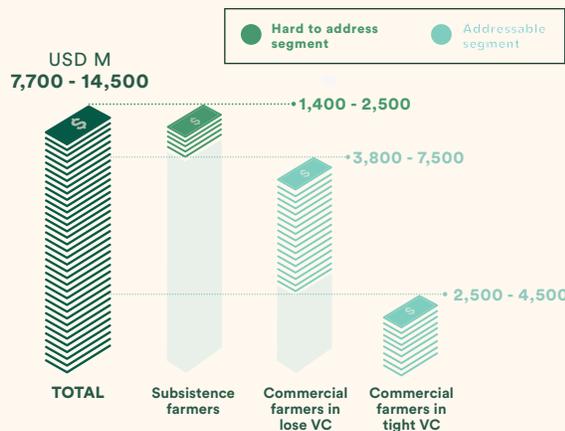


Note: China excluded from projections.

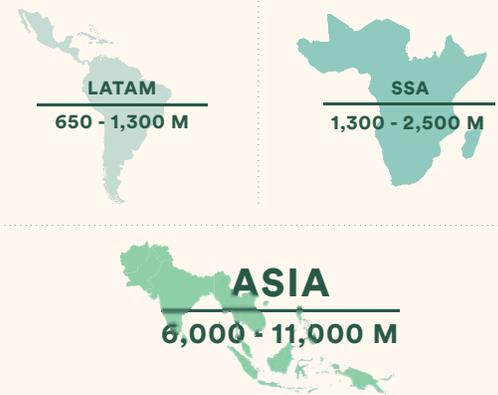
PROJECTED NEED

It is estimated that smallholders in developing countries require between 60-80B USD in insured value coverage, a premium value of ~8-15B USD

Premium volumes by farmer type



Regional breakdown of total premium volumes



CURRENT SUPPLY

Globally in developing markets, less than 70 million farmers are estimated to have access to insurance, ~30 million of these are in India

Estimated farmers with access to insurance by region



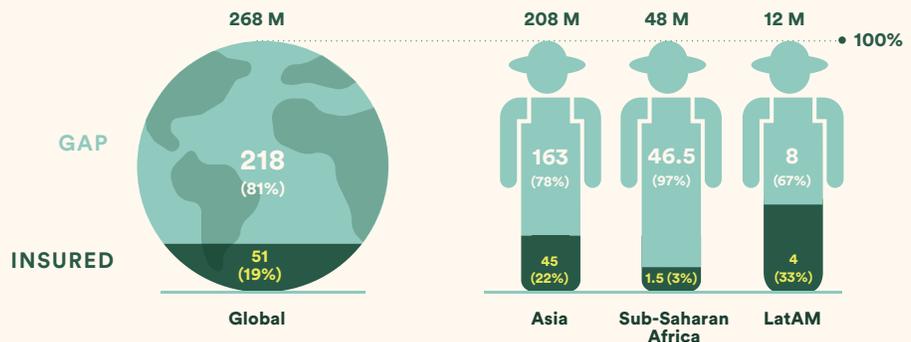
Observations

- India has ~40 M farmers registered in 2017-2018 for the national insurance scheme
- While other countries have tried using the India model to make insurance compulsory for farmers taking loans from state lending institutions, low penetration levels have been experienced
- LatAM with a strong history of social welfare has certain insurance schemes at scale, for example, Mexico's CADENA which insures against catastrophic risks, covers ~2.5 million farmers

COVERAGE GAP

Globally less than 20% of the estimated need is being provided for in the area of agricultural insurance for smallholder farmers

Total and regional gaps in smallholder insurance coverage across regions



Globally, ~4 out of 5 farmers do not have access to insurance with less than 3% penetration in Sub-Saharan Africa

80 billion in agricultural insured value coverage.² This amount of coverage represents an annual premium value of roughly USD 8–15 billion.

However, USD 1.4–2.5 billion of that sum derives from subsistence farmers (~60% of smallholders), which interviews suggest are unlikely to be an addressable market segment without further innovation in distribution models. While the majority of smallholder farmers are currently categorized as primarily non-commercial subsistence farmers, there are a number of major efforts underway to graduate these farmers to commercial farming activity, for example work being done under the auspices of the Syngenta Foundation for Sustainable Agriculture and One Acre Fund.

Geographically, these potential premium values are heavily concentrated in Asia, which represents over two-thirds of the estimated agricultural insurance need.

Globally, less than 20% of smallholder farmers currently have any coverage at all, a number that is less than 3% in sub-Saharan Africa.

² This calculation is based on coverage required for the value of smallholder farmers' inputs, as quantifying labor and harvest value at this level of aggregation is too imprecise. As such, this represents a conservative estimate of the required cover value.

³ Number of SHF in commercial, semi-commercial value chains and subsistence was taken from FAO. Their annual agri-finance need was estimated through secondary research and ISF's analysis. Insurance coverage was estimated to be between 50% to 90% of the agri-finance need. Insurance premium was taken as between 5% to 20% of the sum insured. For the total need, insurance need was summed for all three categories of farmers. For the addressable market, subsistence farmers were assumed to be not-serviceable given the small ticket size of insurance.

⁴ Indemnity-based insurance refers to a direct contractual arrangement between the insurer and policyholder based on damages assessed on a case-by-case basis.

SECTION 3: THE RISE OF TAILORED SMALLHOLDER INSURANCE PRODUCTS

While indemnity-based insurance has been the traditional model in developed countries, experience has shown that these products are generally difficult to scale in developing nations.⁴ Within the past ten years, we've seen the market move beyond indemnity-based products to parametric products--'area yield index', 'weather index', and 'satellite-based index' (e.g., NDVI) – and approaches that blend them.

BOX 1: BASIS RISK

Basis risk describes misalignment between the farmer's actual experience and the insurance policy payout. Products with high basis risk could have no payout even if the farmer has suffered devastating losses or, alternatively, a payout even in the event of no losses at all. This reduces farmers' trust in, and consequently demand for, a given insurance product, as it cannot be relied upon to cover actual losses incurred.

Index-based products that use proxy data, rather than individually assessing a farmer's damage, will have higher basis risk than traditional indemnity-based insurance products. However, basis risk can be reduced by developing fine-tuned products that rely on granular, accurate, local data. As we see additional product innovation and investment in operational infrastructure, such as weather stations and remote sensors, we fully expect a reduction in overall basis risk for smallholder agricultural insurance products.

FIGURE 2: AGRICULTURAL INSURANCE PRODUCT PROFILES

	BASIS RISK	COST EFFECTIVENESS	EASE OF DESIGN	EASE OF SETTLEMENT
 INDEMNITY	 Individual claim assessment results in pay-outs directly related to on-farm conditions. Policies can cover multiple types of peril	 Development costs are low. Operational costs very high given individual nature of customer engagement	 If historical risk data is available, it is relatively easy to design	 Very slow settlement due to individual claim assessment in rural areas with loose infrastructure
 AREA YIELD INDEX	 Dependent on the area that a sample/reference yield covers. Can be reduced by taking multiple samples	 Development costs are comparatively lower, however, operational costs are high due to crop cutting experiments	 If the reference yield data is available, it is relatively easy to design	 Slow settlement, since crop cutting experiments need to be undertaken, which takes time
 WEATHER INDEX	 Basis risk can be high if there are few weather stations. Also, since it covers only weather related risks, farmers do not get covered if they face non-weather risks	 Development costs can be high if weather stations need to be installed, however, operational costs are low	 Relatively easy to design if the historical weather data exists	 Fast settlement, since rainfall, temperatures etc. can trigger the pay-outs automatically
 SATELLITE INDEX NDVI	 Satellites offer a more granular profile than weather stations, but it is hard to get plot level view and non-weather risks are not completely mitigated	 Need trained manpower, however open source data and low operational cost make it cost effective	 Relatively harder to design, due to the need to get correlations between satellite readings and impact on the crops	 Fast settlement, since readings from the satellites can trigger pay-outs automatically

Source: ISF analysis



These newer index-based products eliminate the need for individual claim assessments, addressing one of the key constraints to scaling agricultural insurance for smallholder farmers. However, they are not without often significant downsides, as they have high basis risk and rely on technology, data, and skills that can be difficult or impossible to access in many geographies.

It is important to note that while these product types can be used to broadly define activity within the agricultural insurance market, there are a number

of additional dimensions that determine how an individual ‘scheme’ attempts to meet smallholder farmer needs. These include the distribution approach, target farmer segment, and types of risk that are covered by the policy. In conjunction with the local regulations and dynamics, all of these factors combine to create an enormous number of potential agricultural insurance schemes.

To create a starting point for understanding how these products are being deployed around the world, ISF conducted a global inventory

of agricultural insurance schemes targeting smallholder farmers, with a focus on the primary product type and distribution model. The inventory exercise captured the initial industry response that has emerged over the past 10 years, with ~100 micro-level⁵ schemes targeting occasional risks related to smallholder agricultural activity.

⁵ Note: Micro-level products target individual insurance customers. Meso-level agricultural insurance products play an important role in agricultural value chains by helping organizations that serve smallholder farmers to reduce their own risks resulting from agricultural shocks. However, the rarity of established meso-level schemes resulted in our inventory results and insights being focused on micro-level products.

Review of the industry data, coupled with extensive stakeholder interviews, allows us to draw high-level conclusions regarding the development of smallholder insurance schemes around the world.

TYPES OF SCHEMES

ISF found that indemnity-based insurance schemes are much more prevalent in regions that have had strong public welfare systems and more mature agricultural markets—specifically in Latin American, East Europe, and Central Asia.

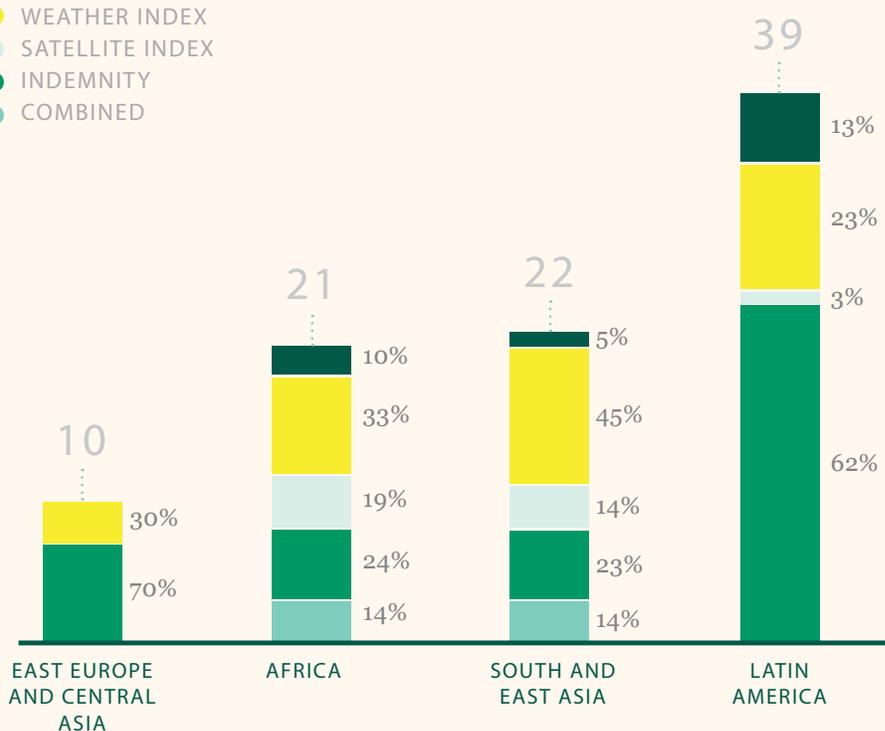
Meanwhile, the challenge of extending these types of schemes to Africa and South and East Asia has

FIGURE 3: AGRICULTURAL INSURANCE INVENTORY RESULTS

IT IS ESTIMATED THAT THERE ARE ~100+ AGRICULTURE INSURANCE SCHEMES THAT ARE BEING TRIED ACROSS THE DEVELOPING WORLD

PROFILED AGRICULTURE INSURANCE SCHEMES BY REGION

- AREA YIELD
- WEATHER INDEX
- SATELLITE INDEX
- INDEMNITY
- COMBINED



INSIGHTS

- Regions with a strong background in public welfare have seen multiple indemnity backed insurance schemes such as in Latin America, Europe and Central Asia
- Lack of suitability of indemnity-based insurance schemes in countries in Asia and Africa has led to pilots of weather and satellite index being tried
- Area yield, has generally been an expensive product and has seen limited global uptake

Source: ISF and VUNA database of agriculture insurance schemes. Vuna database catalogues 100+ schemes as of 2010, ISF database was added on top of that and relevant schemes (Agri indemnity and index insurance) were counted and classified, Not all schemes were detailed, hence the bars total up to ~90

resulted in the development of new parametric products, typically using weather and satellite indices. These products need to be considered as an evolving product class with new indexing and distribution approaches continually being tried across different commodity markets and types of customers. Recent schemes have included the use of hybrid indices (generally combinations of data derived from weather stations and satellites) and meso-level portfolio protection for financial institutions.

Experience shows that area yield index is generally an expensive product, based on the need to maintain and assess localized reference plots, which has resulted in limited global uptake.

DISTRIBUTION APPROACHES

Up to this point, there are no index insurance products that have successfully deployed directly to smallholder farmers at meaningful scale without leveraging pre-existing farmer aggregation and services. In this context it is not surprising that over 90% of the catalogued index insurance solutions were bundled with, or offered alongside, credit, inputs, or information services by aggregators. This bundling is designed to offset the high underlying costs of smallholder aggregation and distribution. For example, India's National Crop Insurance Program makes agricultural insurance compulsory for farmers taking out loans from state lending agencies. In East Africa, ACRE and SeedCo. offer a 'replanting guarantee' in which drought conditions will trigger a payout that covers the cost of the farmer's seeds.

It is important to note that offering agricultural insurance alongside other supporting products and services can take a number of forms. The most tightly integrated form of distribution is for insurance to be offered as part of a mandatory bundle with other products (often without full

transparency to the farmer). However, insurance can also be offered alongside other products as part of a menu of options or as a voluntary add-on. Finally, in many programs there are more loosely coordinated associations between services that are mutually reinforcing. There is limited structured research available, that assess the relative merits and challenges, but all options are being used in different ways within the inventory of schemes studied.

VARIATION IN UPTAKE AND DEMAND

At the most foundational level, 80% of smallholder farmers in developing countries still do not have access to agricultural insurance, and likely are not even aware it exists. Of those that do, evidence from our global review of schemes suggests that the vast majority of smallholders still don't understand, trust, or see sufficient value in the products that are available. This is often well-founded, as the products are complex, costs can be high, and the payout mechanisms can be convoluted, slow, and divorced from the reality of a farmer's individual losses.

Where insurance schemes have seen uptake beyond initial pilot programs, the agricultural insurance is typically bundled with other products as a compulsory addition and/or is heavily subsidized. For example, in the largest deployment in the study—the Indian Government's weather index and MPCl insurance programs—the farmers only pay 1.5% to 5% of the annual premium⁶ and the government subsidizes the remainder. The program currently has ~40 million registered farmers and is scaling up rapidly.

Another key driver to uptake in many programs is payouts to early adopters in the first few seasons of the program.

⁶ Note: There is a uniform percentage of 2% to be paid by farmers for all Kharif crops and 1.5% for all Rabi crops. In case of annual commercial and horticultural crops, the premium to be paid by farmers is 5%.

This sort of social proofing of the reliability and value of the product typically creates a strong local referral effect and stimulates stronger interest and uptake in later seasons.

A more expansive exploration of some of the major challenges facing the market is detailed in the following sections, but it is useful to consider the experience of one of the earlier market innovators to understand how these products and approaches have evolved over the past ten years.



CASE STUDY 1: ACRE AFRICA



ACRE Africa provides agricultural insurance product design, risk assessment, and customer interface services. They work in conjunction with insurers and distribution partners in East Africa to extend insurance coverage to smallholder farmers.

As an early innovator of agricultural solutions for smallholder farmers, ACRE Africa's solutions have evolved significantly as technology has advanced and learnings have informed on-going product design. An early experiment in 2009—a retail weather index insurance product under the preceding Kilimo Salama project—was quickly reoriented to be offered through aggregator partners, including One Acre Fund, in 2010. Over the following ten years, solutions began to integrate satellite data, area yield techniques, and mobile-payments through M-Pesa.

One of ACRE Africa's products, the 'replanting guarantee,' is a strong example of how technology was used to innovate a new solution for seed germination failure due to drought. When a farmer buys a packet of SeedCo. seed, they receive a scratch-off card. At the farm, the farmer submits the code from the card via SMS. This registers the farmer in the insurance program and establishes the location of the farm via the phone's USSD location-based service. ACRE Africa has constructed specialized hybrid vegetation indices from weather stations and satellite data to track rainfall and moisture conditions. If drought conditions are present in the area of the farm for twenty-one days after the date of planting, the farmer automatically receives a refund for their seed via M-Pesa. The policies are underwritten by UAP, which transfers the money automatically when payout conditions are triggered. SeedCo. pays the full cost of the premiums to attract and retain input customers, effectively treating the insurance policies as a customer acquisition and loyalty investment.

While the replanting guarantee is a strong example of product innovation, low farmer registration rates are leading ACRE Africa to remodel the product in 2018. As many early innovations in this space have demonstrated, these kinds of experiments take time with no guarantee of success. In the absence of a clearly profitable micro-insurance model that has reached scale, intermediaries such as ACRE Africa are challenged to both continue to innovate and consolidate a sustainable business model at the same time. In large part due to their ability to manage these two imperatives simultaneously, ACRE Africa continues to be at the forefront of this industry. They have branched out to offer weather insurance through additional distribution channels, and as of 2017 had cumulatively insured over USD 75 million for more than 1 million farmers in Kenya, Tanzania, and Rwanda.

Alongside these innovative solutions, ACRE Africa's success was heavily supported by their ongoing and extensive engagement with the government of Kenya, which introduced changes to reduce the operational burden of offering agricultural insurance to smallholder farmers. For example, regulations were updated to accept electronic messages as evidence of policy coverage, rather than requiring policyholders to have a physical document, which helped reduce ACRE's costs. However, the support of the government was not instantaneous, but rather developed slowly over time and was proactively pursued by both ACRE Africa and the Syngenta Foundation. This method of engagement with the public sector is a blueprint for other ecosystem players looking to further the development of their business and overall market.

BOX 2: EVIDENCE BASE

As is often the case in the early stages of market development, much of the discussion around evidence and impact of agricultural insurance for smallholder farmers is currently anecdotal and intended to solicit additional support for existing solutions. However, there are early signs that access to insurance can increase farmer investments in farm productivity tools. One of the only Randomized Controlled Trials (RCTs) was conducted in Ghana⁷ and demonstrated that access to drought index insurance resulted in a significant increase in the demand for supplemental irrigation (SI). In the study, farmers perceived drought index insurance as a tool to hedge the high cost of irrigation in drought years. To build on this, robust impact evaluations and systematic product-level efficacy analysis should be prioritized over the next few years to better assess what is and is not working. A stronger evidence base benefits all participants seeking to improve the functioning of this market.

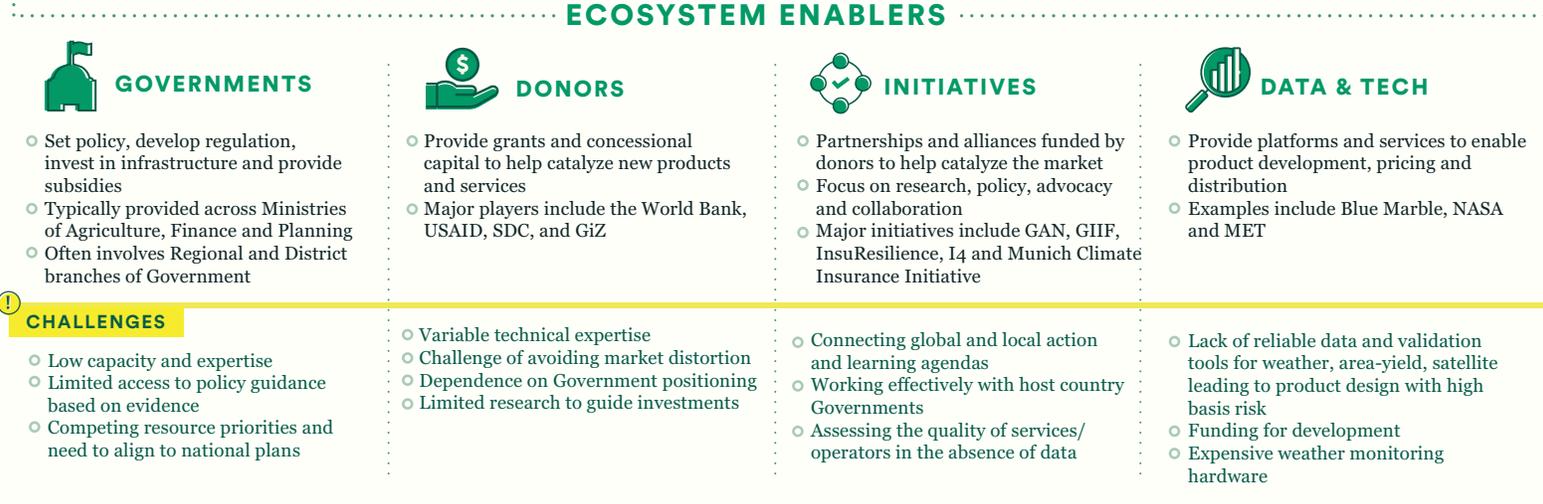
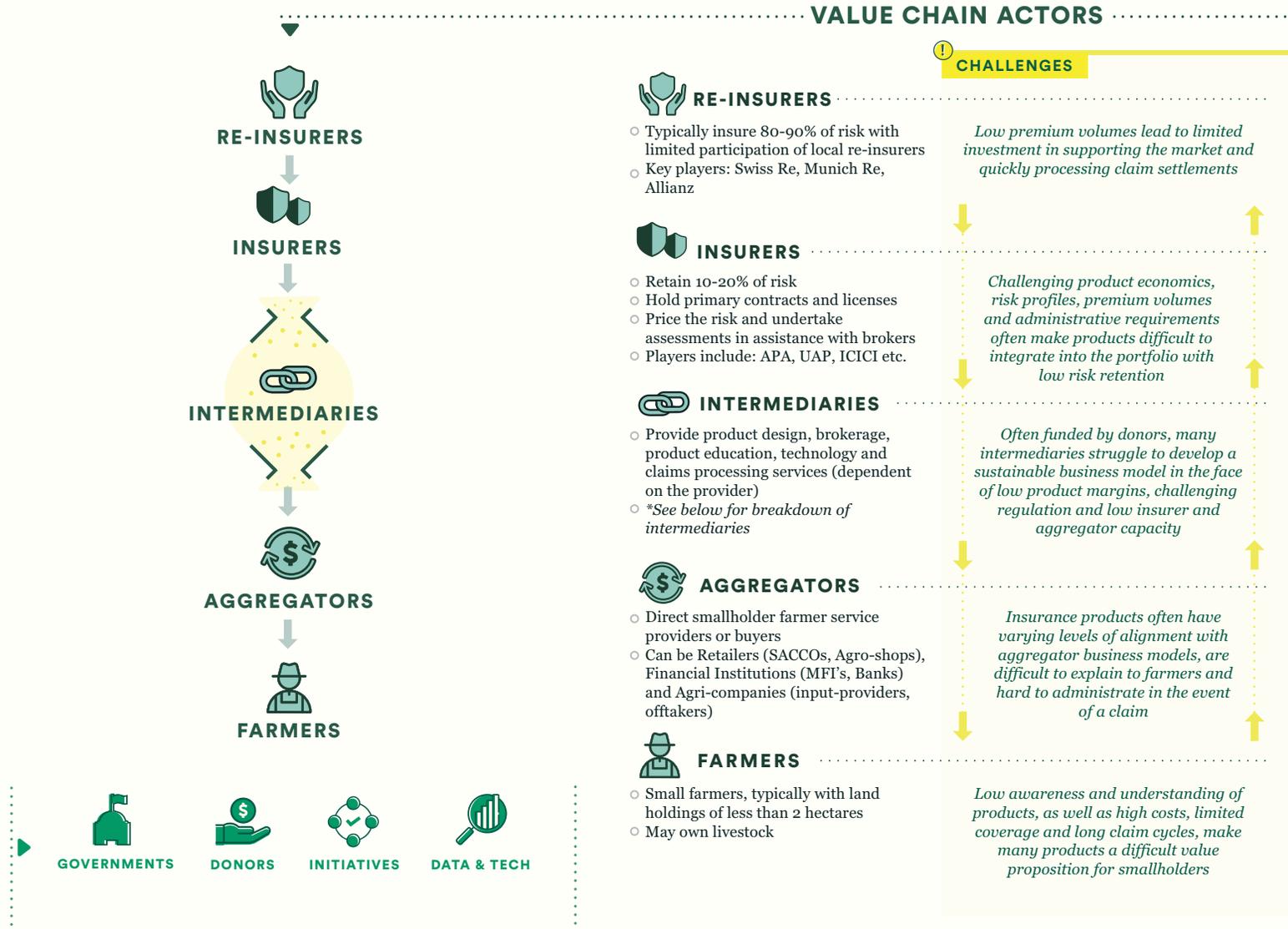
⁷ Kemeze F.H. (2018) The Impact of Agricultural Insurance on the Demand for Supplemental Irrigation: A Randomized Controlled Trial Experimental Evidence in Northern Ghana. In: Shimeles A., Verdier-Chouchane A., Boly A. (eds) Building a Resilient and Sustainable Agriculture in sub-Saharan Africa. Palgrave Macmillan, Cham.

SECTION 4: THE ECOSYSTEM VIEW

The motivations behind designing smallholder insurance products vary and can include climate resilience, investment protection for lenders, disaster protection, general social protection, or a combination of different objectives. As such, for donors and governments supporting these solutions, insurance for rural households is an agenda that crosses divisions, departments, and ministries. The fact that smallholder insurance can contribute to so many different agendas is a unique aspect of the sector and opens the door to collaboration between traditionally siloed organizations. It also creates a highly diverse ecosystem of actors that come together in different ways to design, regulate, support, fund, and understand the provision of insurance solutions for smallholder farmers.

While previous reports in this area have focused primarily on the emerging solutions and models being used, we step back to look at the ecosystem as a whole to understand the challenges between types of actors that are constraining the ongoing development of the market. While these ecosystems emerge in unique ways in each country, we observed strong consistency in both the types of actors and their key challenges in participating in their market, which are summarized in figure 4.

FIGURE 4: Global Smallholder Farmer Agricultural Insurance Ecosystem Model



KEY ECOSYSTEM CONSTRAINTS

Overall, our analysis paints a picture of an industry that shows great potential but is struggling to achieve the required scale and product-level refinements to graduate from the donor funding that has carried it to this point.

In this ecosystem, each actor has a unique but inter-related set of challenges to achieve the scale and product-level efficiency that creates a tipping point for service provision.

- At the end of the value chain, smallholder farmers struggle to access, understand, trust, or see sufficient value in the products that are available
- Aggregators, including financial institutions and offtakers, are often interested in the solutions but have to invest heavily in farmer education, complex claims processing, and settlement processes
- Intermediaries, which typically have a donor mandate to design and support the delivery of micro-insurance products, are punching above their weight, but are under-resourced compared to the size and complexity of the task at hand. Positioned in the middle of the market, these players are likely to continue anchoring this industry until country-level frameworks and the requisite scale emerges to support a traditional insurance market structure
- Local insurers are often eager to engage but lack the experience or capacity to support the level of sales customization and claims processing required in the absence of a well-established brokerage market
- Global re-insurers, even with the benefit of large portfolios to diversify risk, struggle with the small volumes and complex nature of claims

Governments around the world are also struggling with how these solutions fit neatly into national plans and how to set policy, oversee licensing, structure appropriate subsidies, and develop data infrastructure in a cohesive way across ministries and levels of government. As the key regulator and enabler in the market, this is incredibly challenging for governments, which often lack the expertise, evidence, capacity, and/or resources to drive necessary changes.

Finally, within this ecosystem there is a global innovation agenda that is being championed by a small set of donors and their partner intermediaries. To date, the support of a core group of ~20 donors (see Annex B) has helped seed the market with a new set of parametric products and an emerging set of initiatives (see Annex C) that provide policy, research, and advocacy support in different countries.

As the agenda has increasingly transitioned from innovating a new product class to achieving minimum viable scale, the global agenda has taken on a uniquely national dimension. Many donors and funders are now struggling with how to continue to provide catalytic support in an increasingly fragmented and complex ecosystem. At this point the World Bank, SFSA, GIZ, InsuResilience, the Global Index Insurance Facility, Global Action Network, and the Munich Climate Insurance Innovation Initiative have all developed significant experience, research, and learnings in a number of areas (see Annex D for Bibliography). However, this research and knowledge base tends to be siloed and not strongly linked to a shared learning agenda across major funding organizations.



CASE STUDY 2: ILRI'S INDEX-BASED LIVESTOCK INSURANCE



The ILRI-designed satellite-index livelihood insurance solution is a strong illustrative example of how a cohesive ecosystem of partners, including the government, collaborate to bring a solution to market.

ILRI works with insurers in Ethiopia and Kenya to offer satellite-index livestock insurance and partners with NGOs to distribute and build awareness of the products. Piloted in Kenya in 2010, their first payouts were issued in 2011. In 2012, ILRI began developing their payout criteria based on a satellite-based index (NDVI) that compares available vegetation during the season to historical availability in the same regions. The program (IBLI) leverages publicly available data to create an easy-to-understand and inexpensive index, with a level of complexity appropriate to the product and geographic area of coverage.

Learnings from early years prompted ILRI to invest in their Market and Capacity Development Team in order to deploy training programs to pastoralists to increase “informed demand” for insurance products. The program’s investment in pastoralist education is a supportive mechanism to address the demand-side constraints to closing the pastoral insurance coverage gap. Moreover, regular payouts have helped in winning the confidence of pastoralists. For example, in 2017, ~2,250 pastoralists in Ethiopia received cumulative payouts of ~USD 220,000 (average of USD 96/pastoralist).

In 2015, the success of the model led to a partnership with the World Bank and the government of Kenya to launch the Kenya Livestock Insurance Program—which offers limited livestock insurance contracts to targeted individuals in Northern Kenya—with possible subsidies to the general public in later years.

IBLI’s success is driven by the strong and cohesive ecosystem of partners that the project has brought together. Donors (AusAid, DFID, USAID, EU, GIIF, etc.) have provided the program with patient funding, while commercial partners such as Swiss Re and Africa Re (re-insurance), and Oromiya insurance and APA insurance (local insurance) have provided commercial products. These contributions are stitched together by the expertise of technical partners (Cornell University, I4, Australia National University, University of Wisconsin, Maxwell School, etc.), which have helped document and refine the model and the product. ILRI has also partnered with various implementing partners (Mercy Crops, World Vision) along with government agencies (MET departments, etc.) to provide insurance at scale. The careful creation and coordination of this ecosystem, including the government, is a crucial aspect to success in the provision of agricultural insurance.

ECOSYSTEM ASPIRATIONS

In contrast to the current ecosystem, a mature, well-functioning market would likely have a range of features, including:

- Stronger and more defined enabling environments that facilitate the participation of private sector players
- A broader variety of both meso- and micro-insurance products that are sufficiently profitable and valuable to support the engagement of all actors—aggregators, insurers, re-insurers, intermediaries and farmers
- Sufficient volume to allow insurers and re-insurers to structure portfolio-level coverage that dramatically lowers transaction costs and opens further possibilities for risk retention within countries of deployment
- A more traditional brokerage market that is able to effectively match the needs of aggregators with insurers, clarifying coverage differences and establishing customer feedback loops to inform future product development

With such high variation in the incentives and needs across so many actors within this market, there is a definite tension between quickly getting to premium volumes that keep insurers investing in the products vs. making the necessary optimizations to the underlying products to reduce their need for operating subsidy at scale. Simply put, there is a constant tug-of-war between the need to scale quickly and the need to optimize products.

Regardless of where individual practitioners land on this debate, we offer a series of foundational actions we believe are necessary to move the market forward in the section below.

SECTION 5: FOUR LEVERAGE POINTS TO MOVE THE MARKET FORWARD

With over 80% of smallholder farmers in developing countries lacking agricultural insurance, there is both a clear need and a market for agricultural insurance in the developing world. However, developing this inclusive market will involve a number of actors with very different incentives and agendas. As discussed earlier, agricultural insurance for smallholder farmers exists at the intersection of:

- Many major global agendas, including livelihood resilience, rural development, and climate adaptation/disaster preparedness
- The public and private sectors
- Global and national markets

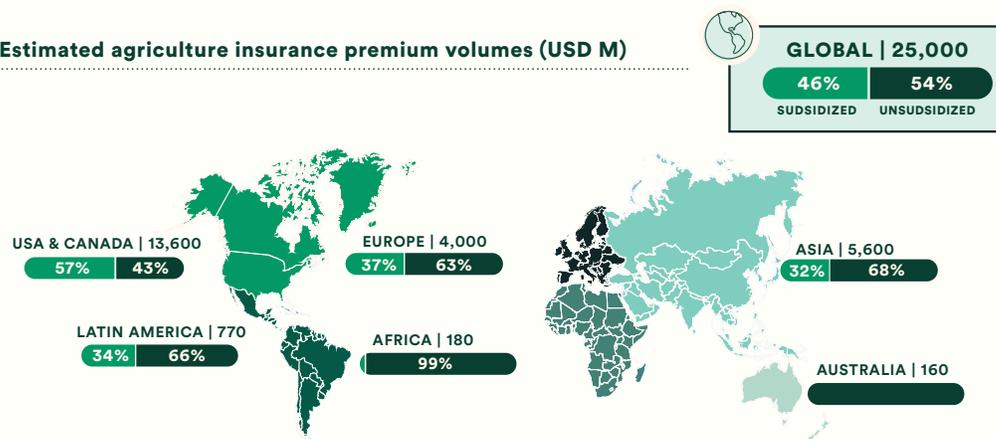
Moreover, many of the solutions are bundled with other products and services delivered by a broad spectrum of actors, including input companies, financial institutions, NGOs, social enterprises, government agencies, and major buyers. What this creates is a complex web of relationships that need to come together around the central market and social impact agenda: *Creating a socially impactful and profitable insurance market for the 270 million smallholder farmers who need risk protection.*

Here we present four “leverage points” we believe are critical to moving the market forward. “Leverage point” is a term from systems analysis, which refers to places within a complex system where a small shift in one thing can produce big changes in everything. Each of these leverage points will require ‘smart’ and ‘connected’ capital to implement the action described.

FIGURE 5: GLOBAL AGRICULTURAL INSURANCE PREMIUMS

Globally, agricultural insurance premiums amount to ~USD 25 B, which is dominated by developed countries with heavily subsidized premiums

Estimated agriculture insurance premium volumes (USD M)



LEVERAGE POINT 1: GOVERNMENTS ENGAGED AND EQUIPPED TO DRIVE THE AGENDA

Experience in developed countries strongly indicates that governments are the most critical actor in shaping a national market for agricultural insurance

To illustrate how strongly involved most governments are in this process, it is useful to look at the level of direct support provided. Globally, over 45% of the estimated USD 25 billion in agricultural insurance premiums are government subsidized, a figure that is as high as 70%+ in Spain and Italy.⁸ Moreover, the only solutions with any significant scale in the middle- and low-income countries—including China (160 million insured), India (40 million insured) and Kenya IBLI program (~20K insured)—have premium subsidies of over 50% built into the models.⁹

While evidence strongly suggests that public-sector premium subsidies are a key part of catalyzing the market, they only come as part of

⁸ Source: Thérèse Sandmark, Jean-Christophe Debar, and Clémence Tatin-Jaleran, ‘The emergence and development of Agriculture Microinsurance’. Data by Mahul and Stutly, ‘Government support to agricultural insurance,’ Data as of 2012.

⁹ Source: ISF Research (India, China). Numbers for IBLI from interviews

an overall approach to strategy, policy, regulation, and supportive infrastructure development that varies dramatically between countries.

Getting engaged is the first, most important thing any government can do. This typically requires a senior sponsor in the Ministry of Agriculture, Finance, or Planning who can develop a mandate and the resources to start a pilot and integrate agricultural insurance into the established strategies and priorities of the government. This senior sponsor will typically need to build alignment around an insurance agenda across key ministries that links to a broader government priority around agricultural development, resilience planning, or rural banking.

Typically, government engagement has come through a collaboration with a donor-funded pilot program. However, with the increasing strength of engagement platforms, such as AGRA, AfDB, the Global Index Insurance Facility and the AFRACA, there are opportunities to engage governments more actively and specifically around this agenda without engaging on a purely bilateral basis.

- **OPPORTUNITY:** Build strong senior sponsorship within governments’ Ministries of Agriculture, Finance, and Planning that align around an insurance agenda

- **OPPORTUNITY:** Increase country-level donor coordination and industry involvement to present a stronger, unified point of engagement with governments around agricultural insurance
- **OPPORTUNITY:** Increase engagement with governments through established global and regional platforms

After the initial engagement, governments need ways of breaking down the complexity associated with their role and the decisions they need to make. Ultimately, while the global evidence suggests that government support is crucial for scaling solutions, there remains an outstanding question regarding what specific role any given government should play. In some countries, such as Spain, India, and China, agricultural insurance markets are developed primarily as a public-sector market, with a small set of parastatal agencies or private sector providers acting as implementers of government programs. In other markets, such as Kenya, the government is setting up an enabling environment for a more diverse private-sector-driven market. This ideological positioning tends to drive decisions around licensing, consumer protection, premium subsidies, the involvement of the state as a direct insurer or reinsurer, and investments in crucial technological and data infrastructure, just to name a few.

While there are some broad principles that can be applied to this decision making, the reality is that government decisions on these key issues typically build on each other over a long period of time as they are progressively aligned with broader strategies. Building on the research that has been conducted to this point, more can be done to codify this experience and put in place the structures to support governments over time.

- **OPPORTUNITY:** Further develop a government agricultural insurance playbook to include a primer on solutions, case studies, policy analysis and other resources to guide decision making
- **OPPORTUNITY:** Expand historical research into the experiences with and evolution of agricultural insurance in developed markets
- **OPPORTUNITY:** Integrate knowledge and best practice into established platforms for government learning and policy development, such as AFRACA, ADB, AfDB, GIIF and AGRA



THE SUPPORTING CAPITAL NEEDED

To achieve these goals, more funding is needed to support work with governments, including from within government budgets. This could come in the form of targeted programmatic funding for organizations established specifically to work with governments, such as SFSA, GIIF, or the ILO, or through the inclusion of insurance in platforms, such as IFAD or AGRA, that work more broadly with governments on integrated agricultural finance agendas.

‘Smart’ and ‘connected’ capital would be grant-based, have clear criteria to select countries for support, have a strong implementing partner, and be associated with capital that can support key pilots and government investments where appropriate. Supporting implementation capital that is accessible to governments could take the form of sovereign loans (e.g. World Bank, IFAD, regional development banks) or new funds and facilities that are established to support implementation work in a specific region or set of countries.



LEVERAGE POINT 2: A NEW STEP CHANGE IN PRODUCT EFFECTIVENESS

The evolution of parametric product design in the past ten years has been driven by innovations in weather stations, satellites, and risk modelling. However, the current cost-to-serve and scale of existing solutions has remained commercially unviable for most solutions. We believe that insurance for smallholder farmers likely requires another five to ten years of product, process, and technology innovation to break down complexities and continue to expand the realm of the possible.

REFINING COVERAGE

From a product perspective, smallholder farmers do not currently have the level of risk coverage or tailoring of product features that is needed to make solutions a sufficiently valuable proposition. A core part of this process is refining an approach to segment smallholder farmers and target them with tailored products. To date, providers typically approach the challenge through the lens of the value chain or aggregator network that is being used to distribute the products. Similarly, financial literacy programs are often used to educate farmers on how to consider different forms of finance, including insurance. In the future, more sophisticated approaches to understanding smallholder needs, attitudes, and beliefs could be used to tailor products and supporting programs to specific smallholder segments. This agenda is likely going to be best driven by donors, intermediaries, and Human-Centered Design (HCD) firms that value the potential of this approach.

- **OPPORTUNITY:** Utilize behavioral and HCD research methods to further tailor solutions and support programs for smallholder farmers

REDUCING COMPLEXITY AND COST

Underpinning both product and process innovation is a strong need for continued technological innovation to reduce complexity and cost. The development and deployment of enabling technology is fundamental to overcoming the physical and economic barriers to agricultural insurance uptake by smallholder farmers. A core part of these technology improvements relates to the collection, transfer, and analysis of data to support product design, pricing, and claims processing.

In the area of data collection, advances in satellite data and remote weather monitoring are likely to continue to drive incremental improvements in the data available. New momentum around the precision agriculture agenda is also driving new data collection experiments involving remote sensors, drones, and geo-tagged field photography, which are bringing long-established technologies from the developed world into a smallholder context.

The efficient processing and transfer of information is also a critical enabling technology. Applications such as blockchain, mobile money, and other digital platforms to support farmer contracts and claims settlement hold great promise for driving down transaction costs.

Data analysis is a crucial part of the design, pricing, and claims administration of any insurance product. Assembling integrated datasets that can support more sophisticated data analytics is a technical area that can greatly facilitate risk profiling, pricing, and the reduction of basis risk through the claims process.

- **OPPORTUNITY:** Continue to develop enabling technologies and approaches to drive down complexity and cost, working in collaboration with other digital finance and precision agriculture initiatives when appropriate

EXPANDING THE RANGE OF SOLUTIONS

The range of risks that smallholder farmers and aggregators face in operating their businesses is substantial. Over the past ten years there has been a significant increase in the variety of products available, but most insurance policies available to smallholder farmers are still related to only weather and/or pest activity. To be of more value to farmers and the organizations that support them, there are a number of additional solutions that should be explored for feasibility. These solutions will likely be driven by the intermediaries in the market that are actively seeking the next set of opportunities to innovate.

ILLUSTRATIVE PRODUCT OPPORTUNITIES

- **A smallholder revenue protection product:** Smallholder farmers regularly express interest in coverage that extends beyond just planting, germination, or harvest to include the final revenue they receive for their produce. Revenue insurance, while very complex to accurately price, covers not only yield loss due to weather, pests, and other production risks, but also price fluctuations that result in lower-than-expected income
- **Meso-level insurance cover:** Organizations that serve smallholder farmers, such as banks, microfinance institutions, agribusinesses, or export companies, all face business risk associated with agricultural shocks. If a farmer loses their crops, their ability to pay off debts is severely limited and any company relying on their production may face serious sourcing

short-falls. Meso-level insurance coverage offers risk-management for these types of organizations in order to maintain healthy agricultural markets and value chains overall

- **Direct-to-farmer digital opt-in insurance:** The strength of mobile money in many countries provides a powerful platform on which to include value-added services for specific segments of the market. In the past, micro-health insurance has been provided direct-to-consumer on mobile money platforms in countries such as Ghana and Kenya. Meanwhile, Thailand and the Philippines have life insurance and personal accident insurance options offered via SMS registration, with airtime-based premium payments. As MNOs and other fintech companies such as Safaricom, Econet, and Juhudi Kilimo continue to develop their agricultural service offerings there are increasing opportunities to structure direct-to-farmer insurance products for smallholder farmers (may be bundled or unbundled).

REFINING PRODUCT POSITIONING

Smallholder farmers live in households with a range of risk-management needs that extend beyond crop and livestock-related risks. Adjacent products, such as health insurance, life insurance, and property insurance, can provide an opportunity for farmers to more fully engage with formal risk and financial management products over time, creating a pathway to adoption of agricultural coverage (or vice-versa). As farmers become increasingly informed about and comfortable with the original product, they have the option to access further services with minimal additional effort.

- **OPPORTUNITY:** Traditional insurance companies and product innovators can create more active alignment with other types of insurance at the level of the smallholder household to create natural pathways of understanding and adoption



THE SUPPORTING CAPITAL NEEDED

Innovation inherently involves risk and uncertain returns. This activity typically requires flexible grant support that is administrated in such a way as to carefully identify high-potential innovations and double-down on promising early results. To date, individual donors such as the World Bank, SDC, GiZ, the Gates Foundation, and USAID (among others) have supported individual pilots, while more wholesale funding mechanisms are structured through Insuresillience. Going forward, we believe there is danger that this funding could become fragmented and disconnected within an increasingly complex innovation frontier.

For those intermediaries that have developed products or supporting services that can be commercialized, there is also a need for patient debt or equity investment. To date, impact investors such as Foundation Grameen Credit Agricol, AHL Venture Partners, Omidiyar, and Mulago Foundation have provided this early support to leading innovators such as ACRE, Pula, and Planet Guarantee as they transition to more commercial operations. However, we anticipate more of this type of financing will be needed over time.

***‘Smart’ and ‘connected’** capital would be flexible, responsive to innovation opportunities, and administrated by an organization with a strong technical understanding. It would also likely be aggregated into a multi-donor/investor fund or facility that can be more efficiently deployed and more connected to a broader learning agenda that pools the collective wisdom of key practitioners. The innovations described in the leverage point above are multi-faceted and will require different types of funding to support:*

- *Specific product innovation and prototyping of new solutions*
- *Intermediary growth and risk-taking as they develop their business models within the emerging ecosystem*
- *First loss type underwriting support for specific solutions*
- *Risk pools for specific aggregators to develop specific funds*
- *Risk pools that can be available within regions to reduce the amount of risk that needs to be transferred to international re-insurers*

Existing platforms such as SFSA, Insuresillience, and GIIF exist as potential hosting agencies for this sort of an innovation fund, but they may need additional technical staff to develop and support the right portfolio of investments.



LEVERAGE POINT 3: PRODUCT LINKAGES THAT CHANGE THE DISTRIBUTION AND ADOPTION GAME

MORE EFFECTIVE BUNDLING AND POSITIONING WITHIN AGGREGATOR DISTRIBUTION MODELS

Over 90% of the index-based agricultural insurance schemes catalogued by ISF were bundled with other services. These bundles take two forms:

- Those where the insurance product is compulsory for the smallholders when using a complementary product or service, such as inputs or credit (note: the insurance component may be invisible to the farmer)
- Those where the insurance product is voluntary and presented as part of a menu or set of solution options

The rationale for bundling is intuitive. Agricultural insurance naturally complements a number of other products and services, including input loans, asset loans, seed sales, extension services, and forward contracts. When used together, these products and services can increase the chance of a smallholder farmer having a financially successful season and reduce their overall risk. Additionally, by leveraging existing distribution networks for multiple products and services, bundling helps providers to reduce costs and expand reach. Given the added value created for both the providers of these products and services (aggregators) and the smallholder farmers, it is natural to bundle these together when possible. Over time, the combination of services can help modernize smallholder production in a way that reduces overall risk, cost-to-serve, and risk-pricing of insurance. This virtuous cycle creates value for all involved and should be the aspirational trajectory of any set of smallholder services.

However, while bundling holds great promise, our study revealed that often these bundling approaches are not tailored enough to overcome smallholders' limited awareness, understanding, and acceptance of agricultural insurance. This is a common experience across countries, products, and types of providers, and highlights the need for more innovation around how bundled products are effectively developed, marketed, and administered.

- **OPPORTUNITY:** Targeted innovation agenda around how insurance bundling is positioned, marketed, sold, and administered with different types of products and aggregators

MORE EFFECTIVE LINKING OF SUPPORTING SERVICES AND PRODUCTS

It is well understood that to progress, smallholders need integrated access to finance, technical

assistance, new technologies, and access to markets. Linking insurance products (bundled and unbundled) to these supporting products and services is often the key to making the whole package work. Financial literacy and product education are of particular importance to smallholder farmers' awareness and understanding of agricultural insurance. However, these types of programs are often outside of the realm of providers' expertise and resources, which reduces the likelihood of the product being adopted. And yet, particularly for semi-commercial and subsistence farmers, a broader range of support is necessary to increase their likelihood of success and reduce their risk profile, which supports the success of the insurance providers as well.

The relative success of One Acre Fund's insurance offering can in large part be attributed to the integrated system of support that exists around a smallholder farmer's participation in the program. This includes finance, insurance, an input package, training, and post-harvest storage solutions to help farmers time crop sales to maximize profits. While few service providers will provide such a holistic set of services, there is the opportunity for all insurance providers to align with other supporting service providers and programs to increase their chances of success.

Creating these linkages in practice is a local coordination challenge for donors and implementing partners working with smallholder farmers. In many countries, Donor Coordination Groups have helped facilitate this kind of alignment and can be complemented by the brokering functions of groups such as AGRA and Financial Sector Development Africa (and their country affiliate programs).

- **OPPORTUNITY:** Align insurance products with supporting services for smallholder farmer customers to reduce risk and increase likelihood of insurance uptake



THE SUPPORTING CAPITAL NEEDED

The innovation required around insurance bundling and product linkages will likely be anchored by the providers of the complementary services themselves. As such, funding will need to be integrated into support for broader smallholder development, resilience, and/or financial inclusion programs. This is an important distinction as, while there will be some requirements to adapt the insurance product design (typically by the insurance intermediaries), the majority of the effort will be focused on how the service provider (e.g., financial institutions, input companies, etc.) integrates products and services at the level of the smallholder farmer. Funding for innovations around distribution should then come in the form of an addition to broader programs and agendas or brokered collaborations with insurance intermediaries who can work within specific distribution models.

Deployment of this type of funding does not naturally lend itself to aggregated grant funds, but should instead build on and influence existing mainstream funding for smallholder development to incorporate insurance and adapt service delivery models. GAFSP and AATIF are examples of existing major funds that could be influenced to more strongly include an insurance focus. Natural implementation partners to help facilitate the inclusion of this funding could be Mercy Corps, through their Agrifin Accelerate Platform, IDH, through their Service Delivery Model agenda, or ISF, through their portfolio of work with specific providers. To effectively influence the design of these types of funds, more evidence incorporating scientifically valid comparative research around the potential efficacy of insurance will be needed.

‘Smart’ and ‘connected’ capital would look for the leading aggregators willing to adapt their service delivery models to include tightly integrated insurance. This would be led by technical experts who can develop the business models and approaches (supported by technology) and may be in the form of a funded program of work or within existing aggregator funding models.



LEVERAGE POINT 4: COORDINATED GLOBAL ACTION

Sitting at the intersection of so many agendas, distribution models, and individually unique markets makes the agricultural insurance agenda a complex and continually evolving issue. In this context, no single actor could possibly stay at the forefront of innovation. As experience from a number of other complex product markets demonstrates, without the constant consistent distillation of what has been tried, key learnings, and the activity shaping the current “innovation frontier,” there is a strong danger of replicating failures rather than building on incremental success/learning.

From experience in other, similar product markets, we put forward two institutional structures that could be considered going forward.

Facilitated “Co-opetition”: Innovations in many of the areas listed above will largely be driven by the leading insurers and intermediaries in the market that are at the forefront of designing solutions. Amongst these organizations, a healthy degree of “co-opetition” will likely speed the evolution of the market. In similar markets that sit at the intersection of commercial and social interests, facilitated data and knowledge sharing between providers is balanced against competition for key contracts and markets.

One example of this kind of structure that has emerged in the area of agricultural finance is the Council on Smallholder Agricultural Finance (CSAF). As a global industry alliance of twelve leading providers in the small but growing agricultural business finance market, CSAF members meet regularly to collaborate and learn from each other, as well as define shared needs to communicate to donors and other funders. The CSAF annual report provides a clear, aggregated picture of portfolio-level lending activity across the alliance and details key challenges and opportunities identified by members. For many practitioners, this kind of co-competition has brought more clarity, sophistication, product innovation, and capital efficiency to agri-business financing across the sector.

- **OPPORTUNITY:** Develop an industry alliance of leading insurance innovators that are willing to engage in active co-competition, including sharing knowledge, data, and learning to advance the broader market

A global learning agenda: This is an area in which donors are typically reticent to invest given the less tangible, direct benefit to a specific set of beneficiaries and accountable implementing partners. However, in this industry segment in particular, there is a need for the development of a strong industry-wide learning agenda and framework to guide the investments in the three leverage points above over the coming five to ten years. A strong example of this approach is the Mastercard Foundation Rural and Agricultural Finance Learning Lab, which covers the thirteen current Mastercard Foundation grantees (with over USD 181 million in funding) and is committed to a six-year learning and industry coordination agenda. Within this program, targeted deep dives are complemented by regular “state of the sector” reports that provide an important clearinghouse process for learnings across the entire portfolio.

This learning program has become a powerful catalyst for collaboration and debate across the digital finance ecosystem, with major events becoming a key part of a multi-year conversation that is richly informed by current insights and data.

- **OPPORTUNITY:** The development of a multi-donor-funded global learning agenda for smallholder agricultural insurance that is linked to the funding strategies of individual donors and investors



THE SUPPORTING CAPITAL NEEDED

Targeted grant capital for a multi-year, global learning and research agenda.

‘Smart’ and ‘connected’ capital would be multi-year, implemented by an independent industry thought leader and connected to the granting and investment strategies of key capital providers who are actively engaged in shaping the research agenda.



SECTION 6: TIME TO LEAN FORWARD

While much has been achieved in the past ten years to support smallholder farmers as they face risks to their income and quality of life, we believe that agricultural insurance for this market likely requires another five to ten years of product, process, and technology innovation to break down complexity and continue to expand the realm of the possible.

However, we believe the foundation is now in place to create a more connected, sophisticated, and visionary global agenda. Formal insurance can truly become a shared-value market where millions of smallholder farmers benefit from a

multi-sector collaboration that brings the best of our global financial system to bear on some of the most complex development agendas facing our world.

With an eye towards meeting the 2030 Sustainable Development Goals, as an industry, it is now time to lean forward.



ABOUT ISF ADVISORS

ISF is an advisory group committed to transforming rural economies by delivering investment structures and partnerships that promote financial inclusion for rural enterprises and smallholder farmers. Combining industry-leading research with hands-on technical expertise, ISF develops practical, profitable, and sustainable financial solutions. The ISF’s primary role is to act as a “design catalyst.” The emphasis is on mobilizing additional financing for rural enterprises and seeding replication of innovative models. ISF works with public and private investors to develop new financial and partnership structures that can drive capital to rural clients and transform their economies.

Explore more research at www.isfadvisors.org



ABOUT THE SYNGENTA FOUNDATION FOR SUSTAINABLE AGRICULTURE

The Syngenta Foundation for Sustainable Agriculture (SFSA) is an independent Swiss non-profit organization that works with smallholder farmers in developing countries, often in semi-arid regions, to help improve smallholder productivity and livelihoods through innovation in sustainable agriculture and the activation of remunerative value chains. SFSA is focused on smallholders, productivity, and markets, collaborating with the public, private and social sector within a multisector partnership framework to engage smallholder farmers, including women and youth, in order to address their specific needs and deliver the appropriate solutions within the context of the local environment. SFSA is headquartered in Basel, Switzerland, and is present in Africa and Asia.





ANNEX



ANNEX A: METHODOLOGY AND SCOPE OF STUDY

The foundation of this Landscape Report is an inventory exercise of agricultural insurance schemes in developing nations completed by ISF Advisors, with support by the Syngenta Foundation. The exercise was focused on the ~270 million smallholder farmers in Latin America, sub-Saharan Africa, and South and Southeast Asia. Investigation was restricted to micro- and meso-level insurance products that covered ‘occasional events with large economic impacts’ targeting crop-related and livestock-related agricultural risks.

The inventory is based on the combination of the VUNA database of agricultural insurance schemes (as of 2010) and ISF’s in-house compilation of applicable schemes. Industry context was provided via extensive literature review and forty-five interviews with key stakeholders, including capital providers, financial service providers, market enablers, and industry experts. Many of these stakeholders also provided valuable support by reviewing and vetting preliminary findings.

ANNEX B: KEY DONORS AND FUNDERS									
Organization	Geographic Focus	Type	Scale of Funding	R&D of Products and Models	Pre-competitive Market Development	Policy and Advocacy	Advancing High Potential Models	Major Initiatives / Partnerships Funded	
World Bank	Global	Multilateral						GIIF, AIDP, DFRI	
USAID	Global	Bilateral						AMA Lab (UC Davis), ILRI in Ethiopia	
GiZ	Global	Bilateral						A2II, MIN, MEFIN, RIICE	
DFID	Global	Bilateral						Global Parametrics, MiCRO, VUNA	
Dutch Development Cooperation	Africa	Bilateral						Geodata for Innovative; Agricultural Credit Insurance Schemes in Ethiopia	
SDC	Africa	Bilateral						CCFAS, RIICE	
Bill and Melinda Gates Foundation	Global	Foundation						ILO Impact Insurance Network, WRMF (with WFP and IFAD)	
MasterCard Foundation	Africa	Foundation						APA insurance	
Rockefeller Foundation	Africa	Foundation						Africa Risk Capacity, R4, Livestock and crop insurance in Kenya	
World Food Program	Africa	Multilateral						WRMF, R4 initiative	
Syngenta Foundation	Africa and Asia	Foundation						ACRE	
Grameen Crédit Agricole	Africa	Impact investor						ACRE, Planet Guarantee, PPP in research on Index insurance	
Mulago Foundation	Africa	Foundation						Pula	
Omidyar Network	Africa	Impact investor						Pula	
Accion Venture Lab	Africa	Impact investor						Pula	
Mercy Corps' Social Venture Fund	Africa	Impact investor						Pula and Farmdrive	
Skoll Foundation	Africa	Foundation						One Acre Fund	
Jasmine Social Investments	Africa	Impact investor						One Acre Fund	
Source: ISF research			Low	Medium	High				
							Low	Medium	High

ANNEX C: GLOBAL INSURANCE INITIATIVES								
INITIATIVE	PARTICIPANTS	LEVEL OF AG FOCUS	GEOGRAPHY	DESCRIPTION	RESEARCH	TA	PILOTS	ADVOCACY
Climate Risk Insurance Initiative (InsuResilience)	GiZ with 40+ stakeholders from government, civil society, international organizations, academia and industry	High	Global	Supports development of insurance markets, insurance schemes and provides funding to insurers, re-insurers, offers capacity building and provides TA to increase number of people covered by insurance	Low	High	Medium	High
Global Index Insurance Facility	World Bank and IFC	High	Global	Facilitates access to finance through the provisions of catastrophic risk transfer solutions and index-based insurance in developing countries by building capacity and providing funding	High	High	Medium	High
Global Action Network	ILO, USAID, BASIS - University of California Davis/I4 imitative	High	Global	Raises awareness about index insurance by engaging stakeholders and funders through strategy reviews, and sharing insights drawing from the work done by I4	Low	High	Low	High
Index Insurance Innovation Initiative (I4)	USAID, UC Davis, FAO, ILO and Oxfam	High	Global	Strengthens knowledge in index insurance by rolling out up to 10 pilot projects across Africa, Asia and Latin America	High	Low	High	Medium
Munich Climate Insurance Initiative	Led by Munich Re, housed in United Nations university in Bonn	High	Global	Brings stakeholders together and provides a forum for insurance-related expertise, provides technical assistance, helps design pilots in partnership with other organizations	High	Low	High	Medium
Remote sensing-based Information and Insurance for Crops in Emerging economies (RIICE)	GiZ, Allianz, IRRI, Swiss Development Agency and Sarmap	High	Asia	Uses remote sensing technology to map rice growth and damage caused by droughts and floods. This information is processed into useful maps for partners who can use this for product development	Low	High	Low	High
Enhancing National Climate Services Initiative (ENACTS)	IRI in partnership with CCAFS, WMO, USAID, UNDP	Medium	Africa	Brings climate knowledge into national decision making by improving availability, access to and use of climate information	Medium	High	Low	Medium
Microinsurance Network	Govt of Luxemburg, Munich Re Foundation, A2II, International Association of Insurance Supervisors, UNEP Sustainable Insurance Initiative	Medium	Global	Works to advance the cause of microinsurance for underserved through knowledge sharing events and publications, advocacy and training	High	Medium	Low	High
Access to insurance Initiative (A2II)	BMZ, CGAP, IAIS, Fin mark Trust, ILO	Medium	Global	Implementation arm of IAIS on inclusive insurance. Focuses on capacity development of regulators, generation of knowledge, contribution to IAIS standards, peer to peer dialogue, and advocacy	High	Medium	Low	High
<i>Source: ISF research</i>		 Medium High	 Low Medium High					

ANNEX D: BIBLIOGRAPHY

#	REPORT NAME	ORGANIZATION	YEAR OF PUBLICATION
1	Scaling up index insurance for smallholder farmers - recent evidence and insights	CGIAR - Research Program on Climate Change, Agriculture and Food Security	2015
2	Index insurance and climate risk: Prospects for development and disaster management	IRI - Columbia	2009
3	Disaster risk financing and insurance concept note	World Bank	2012
4	Yield Index insurance - a cover that pays out	Munich Re	2015
5	Agriculture, Microinsurance and Rural Development	Microinsurance Network	2014
6	The emergence and development of Agriculture Microinsurance	Microinsurance Network	2013
7	How to provide sustainable insurance for low-income farmers	Munich Re	2013
8	The potential of agriculture microinsurance	World Bank	2014
9	Assessing value from index insurance products	Global Action Network and Global Index Insurance Facility	2014
10	The state of microinsurance in Africa	Microinsurance Network and Munich Re	2015
11	The state of microinsurance - insider's guide to understanding the sector	Microinsurance Network	2017
12	Access to insurance diagnostic in Tanzania	FSDT, TIRA, Finmark Trust	2012
13	Agricultural decisions after relaxing credit and risk constraints	Microinsurance innovation facility, ILO	2012
14	Agricultural insurance in sub-Saharan Africa: can it work?	COMSEA	2010
15	Climate risk insurance for the poor and vulnerable	Munich Climate Insurance Initiative (MCII)	2016
16	Evidence based insurance development for Nigeria's farmers	CCFAS	2015
17	Financial inclusion in Africa	African Development Bank	2013
18	Inclusive insurance: Closing the protection gap for emerging customers	Institute of international finance and Center for Financial Inclusion Action	2017
19	Index insurance for Agricultural Transformation in Africa	Africa center for economic transformation and JICA	2016
20	Protecting the poor: A microinsurance compendium	Munich Re, ILO and CGAP group on microinsurance	2015
21	Digital tools to expand access to agricultural insurance	USAID	2018