SCBF
SWISS CAPACITY BUILDING FACILITY
for Income and Employment Generation

syngenta foundation for sustainable agriculture

Feasibility Study with Dry Runs for Agricultural Insurance in Myanmar

---

FS-15 conducted by
Syngenta Foundation for Sustainable Agriculture (SFSA)

Co-funded by
Swiss Capacity Building Facility (SCBF)

Project Title	Feasibility Study with Dry Runs for Agricultural Insurance in Myanmar
Contract Duration	April 2015 – June 2017
Type of Project	Contributory
Total Budget	CHF 213,780 (SFSA: CHF 87,080 and SCBF: CHF 126,700)
Main Activities	Feasibility Study, Dry Run Data Collection

Table of Contents

List of Abbreviations

AIS	Agricultural Insurance Solutions
AWS	Automatic Weather Station
BIC	Burma Insurance Company
BNIC	Burma National Insurance Company
DMH	Department of Meteorology and Hydrology
DoA	Department of Agriculture
GDP	Gross Domestic Product
GWP	Gross Written Premiums
IBRB	Insurance Business Regulatory Board
MADB	Myanmar Agricultural Development Bank
MFI	Micro-Finance Institutions
MIE	Myanma Insurance Enterprise
MMM	Myanmar Mobile Money
MNO	Mobile Network Operator
MOALI	Ministry of Agriculture Livestock and Irrigation
MOPF	Ministry of Planning and Finance
OTC	Over-the-Counter
SCBF	Swiss Capacity Building Facility
SDC	Swiss Agency for Development and Cooperation
SFSA	Syngenta Foundation for Sustainable Agriculture
SIC	State Insurance Corporation
UCSB	University of California Santa Barbara
WII	Weather Index Insurance

1 Introduction

Agricultural sector is the backbone for Myanmar economy. Since the transition to a civilian government in 2011, Myanmar has begun an economic overhaul aimed at attracting foreign investment and reintegrating into the global economy. It is a key focus for the government to not only attain food security for all its citizens, but also to double the income of farmers and to improve the quality and standard of agricultural products *(Ministry of Agriculture Livestock and Irrigation (MOALI), 2015)*. A variety of factors influence the success of agricultural production, including access to quality inputs, credit, and markets as well as farmers' agronomic practices. Weather and environmental conditions also play a significant role, which generally growers have very little control over. This is where the development of agricultural insurance becomes critical.

The new government of Myanmar is taking a number of steps to develop the agricultural sector and stimulate investment. As it stands, there are few yield insurance pilots being tested recently for paddy crop; otherwise, there are no formal risk management tools available on the market for farmers. Without risk management tools, formal financing, and increased investment by farmers, the gains made from the government's efforts will be limited. One potential risk mitigation tool is agricultural micro insurance. Agricultural micro insurance creates a safety net for farmers to enable them to invest in their farms and raise productivity and incomes, increase food security, and reduce the risks financial institutions face when lending in agriculture. The Myanmar government hopes that agriculture insurance will also help unlock the potential of the sector as in other countries.

1.1 SFSA Mission

The mission of SFSA's Agricultural Insurance Solutions (AIS) stream is to develop, implement, scale and spread smallholder insurance across Asia, Africa and Latin America – using insurance to transform agriculture. We want farmers to see agricultural insurance as a vital input for better harvests. The aim is to take insurance innovation to the very last mile, providing opportunities and new tools for smallholder farmers to enhance their development, recovery and resilience. Climate Insurance, microfinance and agricultural development come together to form a holistic support system by:

- Enhancing the resilience of smallholders through climate insurance
- Enabling farmers to graduate from poverty by reducing the risk of investments to confidently develop their farms
- Expanding financial inclusion by encouraging lenders such as micro-finance institutions (MFIs) to increase agricultural lending to smallholders by enhancing their credit worthiness
- Ensuring business continuity of farmers and lenders such as MFIs through major natural disasters with recovery lending programs

SFSA began a program in Kenya in 2009 to develop and market agricultural risk mitigation products. In 2014 SFSA began testing the insurance products developed in East Africa in the Asian market, with the goal of introducing these products commercially in the coming years. These insurance products protect smallholders' investment in quality inputs, so they can pay off agricultural loans, and start afresh at the next season even if there is a drought. Through indices based on data from weather stations and satellite, objective and low-cost monitoring enables an affordable risk mitigation solution for previously uninsurable farmers. To distribute the insurance, the team leverages agricultural value chains and mobile networks to support access to credits, inputs, and markets.

1.2 Overview of SFSA's Business Approach

SFSA's AIS progress to date in Myanmar has been largely made on developing and validating new products and building the capacity of local partners to enable them to be able to disseminate AIS products to farmers. In order to ascertain validity of new products, a feasibility study is taken up on-ground.

The four stages to our market development approach are outlined in figure 1**Error! Reference source not found.**. This approach is based on findings from needs assessments of stakeholders. Annex 2 provides more information about SFSA's business approach.

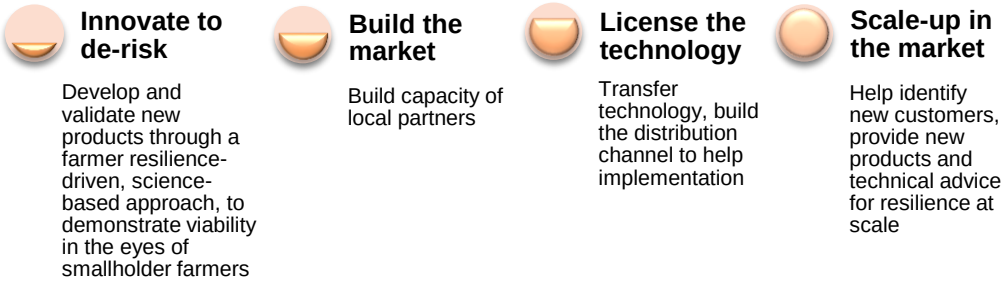

Figure 1: The four stages to our approach

1.3 Objectives of Feasibility Study

1. Investigate the current agricultural insurance landscape
2. Identify the most important agricultural value chains and associated risk profiles
3. Understand the state of the enabling ecosystem and regulatory environment
4. Identify data sources for risks that farmers face
5. Make recommendations for dry run testing of indices and pilots

The findings of this study will serve as a roadmap for SFSA's entry into Myanmar's agricultural insurance sector.

2 Overview of Agriculture Sector in Myanmar

Myanmar is a South East Asian country with a population of 53 million and a national Gross Domestic Product (GDP) of USD 44.28 billion. The agriculture sector is crucial to the economy, contributing to 38% of the GDP, and employing 61.2% of the labor force *(MOALI, 2015)*. The majority of the population, about 70%, lives in the rural areas where their livelihoods depend on agriculture either directly or indirectly. According to the Global Climate Risk Index 2017, Myanmar is also ranked second highest among nations most likely to be impacted by climate change – floods, storms, droughts, and cyclones are likely to rise in the coming decades.

Myanmar's topography is diverse. Bangladesh and India lie to the north; China, Laos, and Thailand to the east; and the Indian Ocean to the west and south. The Irrawaddy River runs through the middle of the country and creates a delta in the south. It is the second largest country in South East Asia. North of the delta lies the Irrawaddy basin and the arid plains of central Myanmar, which are protected by a horseshoe of mountains rising to over 3,000 meters. Most of Myanmar has a tropical monsoon climate with three seasons: winter from November to February is warm to hot during the day and the air is relatively dry; summer from March to May is hot in most of the country; and the monsoon, from June to October brings the high rainfall necessary for the agricultural season.

The country experiences two main types of monsoon rainfall regimes. A unimodal regime occurs between May to October in the Irrawaddy delta region. A bimodal regime begins in June with two peaks in rainfall in July and September and a dip in the middle around August and tapering off in October. Much of the Central Dry Zone experiences this bimodal pattern of rainfall. From June to August, monsoon rainfall can be constant for long periods of time, particularly on the Bay of Bengal coast, in Yangon, and the Irrawaddy Delta. In September and October, the rain is less intense and with more sunshine. In the winter and summer seasons on the other hand, there is very little rain; thus, any agriculture during this period is either irrigated or the chosen crops only grow with residual soil moisture (i.e. black gram).

The insurance sector in Myanmar is still in its infancy, with less than 0.01% of the population accessing any type of formal insurance. As of July 2016, there were 12 local private insurers registered with the insurance regulator housed within the Ministry of Planning and Finance (MOPF), offering coverage for primarily health, life, and property. In August 2018, representatives of the Insurance Business Regulatory Board (IBRB) announced that overseas insurance companies would be allowed to formally enter the Myanmar market at some point during fiscal year 2018/2019, which begins on October 1st. Currently there are 11 classes of insurance in Myanmar, and agriculture is not one of them. The MOPF has developed and passed the regulations for agricultural insurance and is currently in the process of bringing the regulation into effect.

In the past few years, Myanmar has also been significantly affected by extreme weather. Monsoon flooding and cyclone risk have caused significant casualties and damage. In 2015, about 1.4 million acres of farmland were reportedly affected by flooding with 520,000 acres of the 1.4 million completely damaged *(IMF, 2015).* In 2016, 100,000 people across five regions were relocated due to floods, with over 400,000 acres of farmland flooded and 60,000 acres completely damaged *(IFRC, 2016).*

3 Methodology

The goal of the Feasibility Study was to estimate the potential for developing commercially viable crop insurance in Myanmar and to identify implementing partners. Recognizing the diversity of the agricultural sector, the team conducting the study investigated the viability of three major value chains, establishing for each whether it would be beneficial for the farmers and stakeholders to insure the crop. Analysis was done on rice, maize, pulses, and oilseeds. The study was conducted in four phases. An overview of our methodology is illustrated in figure 2 and described in table 1.

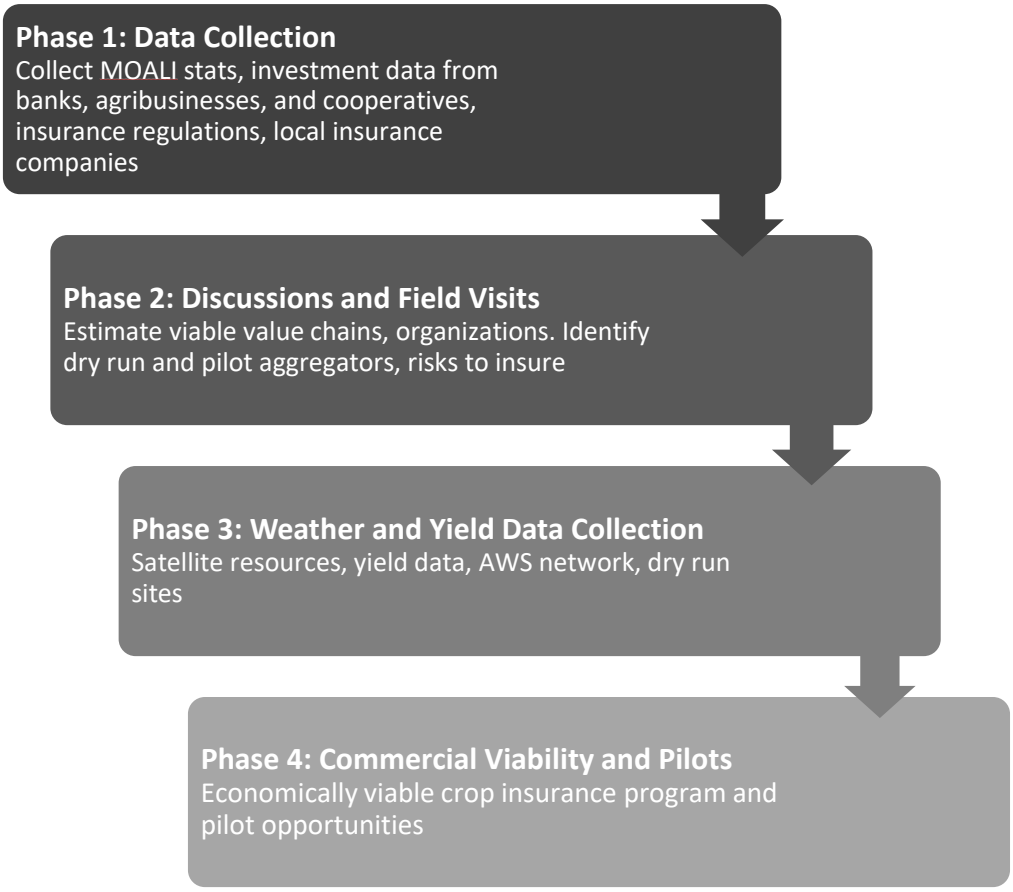

Figure 2: Phases of executing Feasibility Study

Table 1: Description about Feasibility Study

Phase 1 ***Data Collection***	Methodology	• Group Discussions and Personal Interviews
	Stakeholders	• Government Ministries and Agencies • Development Partners • Private Lenders • Agribusinesses • Processors • Input Companies • Agronomists • Agricultural Institutions
	Output	• Data Collection on agricultural practices, crop information, weather information, sector overview and in-depth discussions, challenges and potential
Phase 2 ***Discussions and Field Visits***	Methodology	• Field Visits, Group Discussions and Personal Interviews
	Stakeholders	• Farmers • Farmer Groups and Organizations • Agribusinesses • Local members of the agricultural value chain
	Output	• Assessing Risks • Understanding the Use of Inputs • Validation of the Market Research Data • Detailed understanding of agronomic practices
Phase 3 ***Weather and yield data collection***	Methodology	• Field Visits, Group Discussions and Personal Interviews
	Stakeholders	• Ministry of Agriculture and Irrigation • Department of Meteorology and Hydrology (DMH) • Sources of reliable daily weather data • Local Administrative units
	Output	• Weather Data • Data with adequate historical time series • Crop Yield Data • Identification of data sources (rain gauges or automated weather stations)
Phase 4 ***Identification of commercially viable products and pilots***	Methodology	• Referring to existing products and creating new customized products
	Stakeholders	• Stakeholders for Pilots • SFSA Global Team
	Output	• SFSA Product Portfolio (details provided in the table 2)

After considering the data collected in the first three phases, value chains and specific aggregators were identified to distribute crop insurance policies.

Dry run for the following crops was carried out in the given areas:

1. Sesame, Groundnuts and Green grams in the 2015 monsoon and winter seasons in the Central Dry Zone covering Pakkoku, Myingyan and Magwe Minbu townships
2. Commercial Rice in the 2015 monsoon in the Delta Zone covering Yangon South, Pharpon and Myoungmya townships
3. Maize, Commercial and Hybrid Rice in the 2016 monsoon and 2016/2017 summer seasons in the Central parts of Myanmar covering the townships Danubyu, Yandoon, Prome, Shwedaung, Ayadaw, Shwebo, and Pyay

The rationale behind the selection of products and areas is given below:

1. To cover the main agricultural townships after conducting an agro-ecological zoning exercise
2. To develop products in townships that can easily be replicated in other townships and geographies
3. The areas cover partner aggregators' current reach

Based on the dry runs, some prototype products were developed and are proposed for testing during pilot program. The products are given below in table 2.

Table 2: Overview on SFSA Weather Index Insurance Product Portfolio

Product	Type of Farmer	Risks Covered	Value Chains	Data Necessary
Precipitation index	Small to Large	Drought, excess rain	Rice, Maize, Pulses, Oilseeds	Rainfall data (min 15 years) from both satellite and AWS
Transplanting index	Small to Large	Low temperature	Rice	Temperature data (min 15 years) both satellite and AWS
Flood index	Small to Large	River flooding	Rice, Maize	River gauge data (min 5 to 10 years), spatial analysis of farm proximity to river
Index-indemnity hybrid	Mid to Large	Weather, disease, and pests	Rice, Maize	Weather data (min 15 years) from both satellite and AWS, sampling from independent crop assessor
Area yield	Small and Large	All risks that cause a shortfall in yield that would reflect in at the sub-district level	Rice, Maize, Pulses, Oilseeds	Yield data (min 7 to 10 years) from independent source

4 Data Availability for Product Design and Monitoring

4.1 Overview

Traditional crop insurance, based on farm visits and assessments, has posed many challenges in most developing countries as it faces the double jeopardy of moral hazard and adverse selection. Index insurance, either through area yield or weather indices, has proven to be a successful alternative. Since it employs an objective third party data source, index insurance does not have the same drawbacks as traditional insurance.

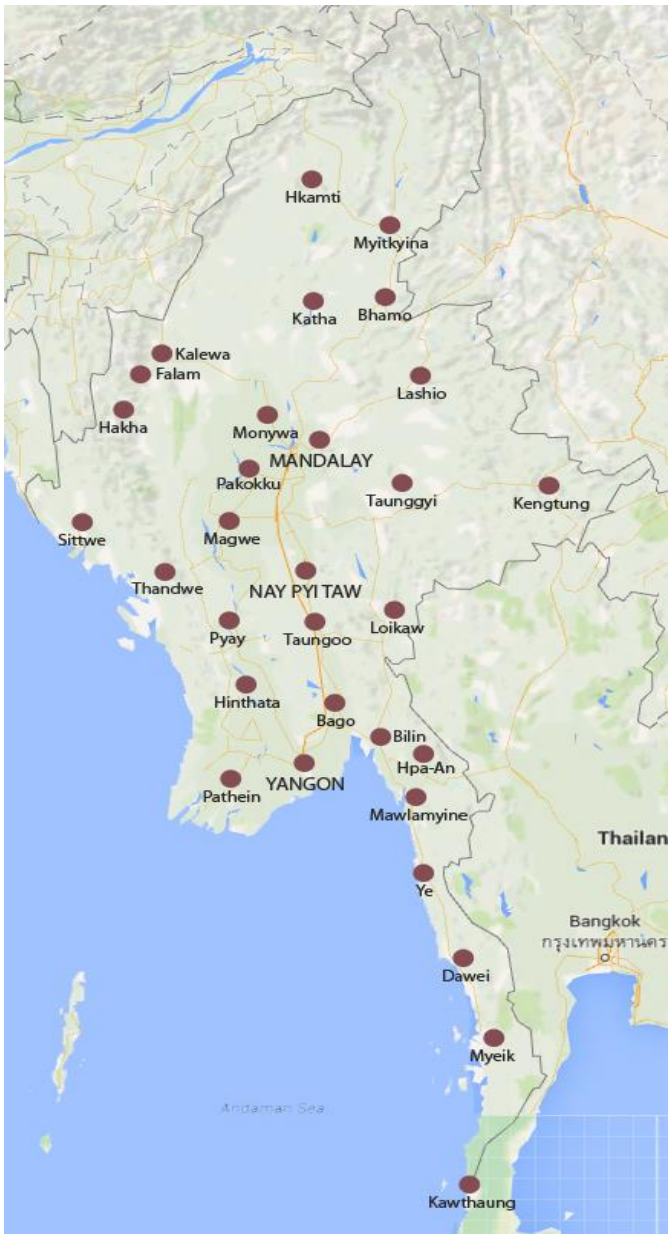

Figure 3: Locations of Observatories currently operated by DMH

Index based products cover specific risks and therefore need to "fit" the crop. For instance, if the crop does not suffer from drought risk, drought index insurance is not a relevant product and farmers will not be interested in paying for the cover.

4.2 Available Systems

For the historical weather data, daily rainfall and temperature satellite data is available from several sources including the University of California Santa Barbara (UCSB), the United States' National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA), and several European and Asian sources, among others. The UCSB historical precipitation dataset has a 30+ year time series and is available on a 5x5 km grid. Data is published every five days on the UCSB website.

The satellite data is ground-proofed by measurements from weather stations and rain gauges, as well as by field verification. Field verification is done in two phases:

1. During a dry run with a farmer aggregator partner
2. During the pilot and commercial stages through ongoing contract monitoring

This aids the team that is verifying the accuracy of the satellite readings, and in correlating the readings to the losses in yield from drought and other weather risks at each stage of the growing season. This is critical for crops for which SFSA is building new indices with limited experience.

As of June 2017, the DMH runs a network of 160 manual observatories and 17 Automatic Weather Stations (AWS) collecting daily rainfall, temperature, relative humidity, atmospheric pressure, wind speed and direction (table 3). In addition, there are 192 AWS under installation by various national and international agencies. These ground stations are useful to verify the accuracy of the satellite data sources, but given that the data is collected manually, it would not be possible to run insurance contracts using this source alone. In addition, Hydrology Division monitors river water levels and sediment discharge at 71 locations covering 27 rivers.

Table 3: List of AWS currently under operation in Myanmar

No	State/Division	Location area name	Latitude		Longitude	
1	Yangon	Kabaraye	16	46	97	45
2	Yangon	Hmubi	17	06	96	04
3	Mandalay	Takontaing	18	00	95	00
4	Ayeyawaddy	MyaungMya	16	44	95	05
5	Karen	Pa han	16	45	97	40
6	Mon	Mudon	16	14	97	42
7	Taninnary	Dawei	14	06	98	13
8		Lonkyaw	21	45	96	15
9	Rakhine	Tavoy	20	08	92	53
10	Mandalay	Tetkone	20	07	96	12
11	Sagaing	Kyaemone	22	15	95	15
12	Bago (West)	Thayawaddy	17	38	95	48
13	Shan (Southern)	Heho	20	45	96	50
14	Kayar	Loikaw	19	41	97	13
15	Shan (Eastern)	Kyaitone	21	18	99	37
16	Shan (Northern)	Lashio	22	56	97	45
17	Chin	Phalann	22	55	93	41

From discussions with the Ministry of Agriculture and Irrigation and partners in the field, it was understood that dependable and accurate nationwide historical yield data per crop is not available on a regular basis at a village or township level. However, the pricing for an insurance

product requires a minimum of five-year time series data. Appropriate data is available for important cash crops only at the townships, where the government is active in extension and procuring the final harvest for international sale (paddy, cotton, coffee, tea, oilseeds, and cashew). There may be some location specific yield data at local Department of Agriculture (DoA) offices. The DoA's Shwebo Division for example has a record of historical paddy yield statistics for ten years.

4.3 Opportunity

Timely and accurate data is available for cash crops, where the Government involvement is high, such as cotton, coffee, tea, oilseeds and cashew. There are also progressive steps being taken by the DoA for data availability and monitoring at certain selected local offices specifically for paddy.

5 Insurance Sector

5.1 Overview

The insurance sector in Myanmar dates back to before Burma's independence from the British Rule in 1948 (UNCDF, 2016). Under the British colonial rule, the number of companies increased to nearly 110 and these companies were generating different classes of insurance business. The foreign insurers have dominated the industry for a period of 100 years before the independence; during this time, it was noticed that only two insurance companies owned by Burmese citizens were operating, viz., Burma National Insurance Company (BNIC) and Burma Insurance Company (BIC). After the independence, there were several changes in the insurance industry. A major change in the insurance sector took place in 1952 when the BNIC was nationalized and its name was changed to State Insurance Corporation (SIC). Rather than operate as an independent entity, SIC became a division of the People's Bank of the Union of Burma to conduct life and general insurance business in the country. The second major change was the creation of a monopoly of life insurance business – all the private insurance companies were prohibited to transact life insurance business in 1959.

- Agency network expanded to 30,000
- In the year 1964 all the private insurance companies were abolished by military junta and the monopoly had been given to the state-owned enterprise
- All the agency networks were abolished by the government in 1969
- Previously the Myanmar Socialist government introduced some insurance products focusing on the farmers. It was observed that during 1980 there were special products for Peasant Life insurance, Cattle, and Livestock Insurance that were abolished again in the year 1988. The details for the same are not available.

Insurance providers in Myanmar can expect a more competitive and promising landscape on which to do business in the near future. With market liberalization, which will enable firms to offer a wider variety of insurance products, on the government's agenda, local and foreign providers alike have already started training staff and building management and IT systems to prepare for growth. However, regulations paving the way for the needed range of products and to end state-controlled pricing over existing ones are still lacking. Meanwhile, a timeline on when an approved regulatory framework addressing how local insurance providers can work with foreign firms has so far been elusive.

Liberalizing the insurance sector is important not just because penetration rates in Myanmar remain the lowest in the region. Enabling global insurance providers to operate here will help the country develop a deeper bond market, enabling the government to raise sovereign debt

to plug the budget deficit. The government currently relies heavily on central bank borrowing to fund the deficit, which leads to high inflation. Insurance firms are among the biggest investors in sovereign bonds.

There are now 12 private insurance firms with licenses to operate in Myanmar (viz., Grand Guardian Insurance Public, IKBZ Insurance, First National Young, Apex, Capital Life, Global World, Excellent Fortune, Pillar of Truth, Ayeyar Myanma, Aung Myint Moe Min, Citizen Business, and Aung Thitsar Oo) with premium income reaching more than 72 billion Kyats (USD 65.45 million) annually. Of these, three are life only, while the remaining nine firms are combined providers covering life and non-life (Annex 1). Insurance companies have to deposit 60% of their capital at a state-owned bank and can withdraw this money only after one year; whilst, 10% of the firms' paid-up capital has to be deposited in the state-owned Myanmar Economic Bank, with no interest earned. Another 30% of paid-up capital must be invested in government Treasury bonds.

As of early 2018, 24 foreign insurance firms had representative offices in Myanmar in addition to the 12 local private firms. Most recently, Muang Thai Life Assurance received permission from Myanmar Insurance Business and Supervisory Board to establish a representative office, joining AIA, ACE, MetLife, Mitsui Sumitomo, Prudential Plc., Sompo Japan, Tokio Marine & Nichido Fire and United Overseas Insurance. Out of 40 types of insurance, the government's Myanma Insurance Enterprise (MIE) has so far allowed licenses for only 12 types of them with private companies. Of them, traveling insurance, total vehicle insurance, fire insurance and life insurance are the best sellers. According to the Central Bank of Myanmar, total Gross Written Premiums (GWP) amounted to approximately MMK 33.9 billion in the first quarter of 2017, with Myanmar Insurance accounting for 45.5% of the total. Total GWP for the private sector equaled MMK 41.8 billion (USD 31.9 million) for fiscal year 2015/2016 and MMK 61.4 billion (USD 46.9 million) for fiscal year 2016/2017. This equates to 46.8% growth, albeit from a low base. The rise of GWP has been substantial in the public sector as well, with MIE's GWP increasing by some 40.3% from a total of MMK 27.8 billion (USD 21.2 million) in 2015 to reach MMK 39 billion (USD 29.8 million) in 2016. At present total agriculture contribution towards country's GDP is about 38%; while it is 0.03% from the insurance sector; economists forecast that Myanmar's insurance penetration rate would reach 1.4% by 2030. While, International Monetary Fund has estimated GDP growth rose to 7.2% in 2017 and will reach 7.6% in 2018.

5.2 Crop Insurance Initiatives in the Country

The Government is taking steps towards enabling agricultural insurance to protect farmers. The Ministries MOALI and MOPF are putting in plans to trial both yield-based and weather-based index insurance pilot programs through the public sector insurance company MIE to help guide

in drafting policy and regulation around that would guide the rest of the private sector insurance companies in the country.

Government recently approved a two-year pilot crop insurance project with Global World Insurance Company, aiming to cover damages to rice crop as a result of erratic weather conditions in Myanmar. Policyholders are entitled to a one-time insurance pay-out if their crops are damaged because of bad weather within the one year-insurance period, which includes the summer and rainy seasons in Yangon, Ayeyawady, Magwe, and Mandalay regions. Compensation amounts will be verified by Global World Insurance and a farmland management committee. Myanmar government is also exploring to pilot Weather Index Insurance (WII) with SFSA during 2019 summer season.

6 Regulatory Environment in Myanmar

6.1 Overview

The wave of economic reforms that are currently overhauling the Myanmar economy make for a great opportunity to be present in the economy and add considerable value to all stakeholders.

While most foreign entities are barred from offering insurance in Myanmar, the operations of domestic players are heavily managed. The ruling that premiums over a certain level be ceded to an insurance pool is one of the most notable restrictions, as it effectively redirects this business to the state provider. Private players are also limited in the type of coverage they can provide and at what premiums. Private insurers are currently allowed to offer nine lines: fire, comprehensive motor, cash-in-transit, cash-in-safe, life, fidelity, marine, travel, and health. The coverage for all is standardized and the premiums set by the regulator. Though the first rule ensures companies do not take on risks they cannot cover, the second means underwriters are unable to price risk according to their own evaluation. This may be largely precautionary, given a widespread suspicion of financial sector institutions among many ordinary citizens. The externally set prices could also be partly a reflection of capacity constraints within the sector, as some domestic companies likely lack sufficient expertise in actuarial sciences.

Another constraint on the growth of private companies is the lack of a developed domestic capital market. This means insurers have a limited number of places to invest their premiums and cover risks. The existing bonds tend to be limited to the short term, while insurers need long-term options, particularly in a youthful market like Myanmar's. Thiri Thant Mon (Managing Director of investment banking firm Sandanila) pointed-out that life insurance premiums need to be invested in matching assets in order for insurers to be able to make payouts. In Myanmar, the only available financial assets are short-term bank deposits. This situation leaves insurers bearing a lot more of the risk in underwriting.

It is likely that this will change over time as capital markets continue to develop. Moreover, foreign players, once they are able to join the market, will be able to take advantage of their diverse portfolio as well as higher volumes to help spread risk. This offers foreign insurers considerable advantages, on top of their expertise with a wider range of products in more developed insurance markets. Collaboration in the form of partnerships and joint ventures may be a positive way forward for some, but the openness of foreign outfits to this remains to be seen. As of early 2018 the future of the sector remained unclear, as the market continues to await the blueprint for insurance reform, though it is expected to open the sector to foreign players, setting their operating parameters. New rules on brokerages and reinsurers were also

pending, with no timeframe provided (https://oxfordbusinessgroup.com/overview/poised-expansion-insurers-prepare-opening-market).

6.2 Available Systems

The insurance industry regulator, the IBRB, which is overseen by the MOPF, is housed within the state-owned insurer MIE. It is responsible for licensing insurance and reinsurance companies, underwriters, and insurance brokers. MIE was the only insurer in the country until 2013, when the government granted 12 new licenses to domestic insurers, underwriting a smaller range of insurance classes than the state-owned insurer (see Annex 1 for a list of registered local insurers). These classes primarily include health, life, and property. A key challenge to doing business with the local insurers due to the fear of sanctions by the USA, as a majority of them are on the U.S. specially designated nationals list. Two local private insurers who have expressed interest in the agricultural sector and are looking to grow their expertise are Grand Guardian and IKBZ Insurance. These companies both show good potential as local private partners. In addition to the 12 local insurers, the regulator has also permitted the participation of foreign insurers in special economic zones, with 21 companies opening representative offices in Myanmar. These include three Japanese insurers who offer four classes of coverage, including fire insurance.

6.3 Opportunity

As seen and experienced in other geographies, this presents an opportunity for SFSA to be active in policy dialogue and advocacy by bringing the learnings from or global operations. Involving the regulators and the government from the outset is a strategy that SFSA is adopting to help create an enabling environment for more private players to jump in and facilitate regulation.

Further, working with both the public and private sector insurers has recently been adopted to help push scale and ease the discussions with the governments. Thus far, SFSA has been able to engage the ministries MOPF and MOALI, the public sector insurer MIE, the private sector insurer Grand Guardian Insurance, the Myanmar Insurance Association as well as the IBRB. We believe that this strategy will help in developing better policy frameworks for agriculture insurance.

7 Viable Distribution Channels

There is a lot of interest on index insurance among insurance companies, lending agencies like MFIs and Banks, farmers and the government; however, there is very limited knowledge about index insurance in the country. Private insurance industry and other agriculture lending and input sector organizations are looking for clear regulations and guidelines from the Government to move forward on implementing agriculture insurance in Myanmar.

MOPF is now working on drafting guidelines and advised MIE, the public sector insurer, to conduct pilot WII programs in the country. There are clear and significant untapped opportunities in the insurance market, as there is next to no existing expertise in agriculture in the local insurance sector.

With regards to distribution channels for the introduction of index insurance, there are some interesting avenues to market: agricultural lenders, input suppliers, and contract growers. Table 4 given below describes these channels.

Table 4: Summary of the Distribution Channels in Myanmar

Channel	Strengths	Existing Organizations	Potential
Financial Institutions	• Offer a viable way to bundle insurance with agricultural credit • Public Sector Banks and MFIs are major lenders	• Myanmar Agriculture Development Bank • Department of Cooperatives • Banks, MFIs	Vision Fund, PACT, Maha, BRAC, Alliance, Yoma Bank, Proximity
Agricultural value chains	• Input Supplier Networks, Cooperatives, Contract Growers and Processors are well established in the agricultural landscape • For Export Crops the high scale of production, organization of the sector, makes it an efficient choice for a distribution channel	• 31 private seed companies • Myanmar Rice Producers Exporters Association • Myanmar Pulse Producers Association • Myanmar Oil Seed Crop Producers Association • Private Agri-businesses pre-financing inputs	MAPCO, Awba, East West Seeds
Mobile Money providers	• There are a number of proprietary mobile money platforms offered by individual banks, as well as those offered through mobile networks	• Telenor • Ooredoo • Wave Money	Wave Money, Impact Terra

7.1 Financial Institutions

Financial institutions like banks and MFIs offer a viable way to bundle insurance with agricultural credit. However, with the interest rate cap, these institutions are particularly reluctant to lend to smallholders as they regard it as risky. According to regulation, MFIs cannot charge over 30% effective annual interest on the loan. Therefore, lending linked insurance could be one way of improving farmers' access to credit as the lenders will stand to benefit from greater security making this an ideal distribution channel.

The private banking sector in Myanmar has a very limited portfolio in agriculture. The majority of agricultural lending comes from MFIs and the state-owned agricultural bank.

Within the past three years, several major NGO lending programs have converted or are in the process of converting to commercial MFIs in Myanmar. The state-owned Myanmar Agricultural Development Bank (MADB) and the Department of Cooperatives are also major players in agricultural lending. The MADB, which loaned just over USD 80 million in 2016, however has decreased its portfolio from the previous year and has been struggling to stay profitable. In October 2016 the Central Bank announced plans to privatize MADB.

Aside from these programs, a few private agribusinesses have also set up pre-financing schemes for farmers. A few other seed multiplier and contract growing schemes are also providing farmers with loans or inputs on credit. There are some major challenges that MFIs face in rural lending. The key challenge that would impact an insurance product that is bundled with a loan is the rate cap that makes it especially difficult to reach small or remote borrowers, particularly because the nation does not have a network of rural banks or a widely used mobile money platform. The previously mentioned state-owned lenders provide microcredit at even lower interest rates: the Department of Cooperatives offers 15% per annum and MADB offers 5% per annum, though they are generally reaching the more connected or larger scale borrowers. There has been pressure for the Ministry of Finance to revise this cap, however for the time being the government has indicated that the cap will likely remain. The interest rate cap makes borrowers somewhat sensitive to even small increases in the rates offered by lenders. If the insurance premium is bundled with the loan, farmers should require some explanation for the increase.

There is also a requirement that MFIs must lend a minimum of 50% of their portfolio to rural areas, although enforcement of this rule is somewhat lax. It is an attempt of the government to encourage MFIs to serve the rural market, which makes up 70% of the population. Due to the interest rate cap, however, most MFIs in Myanmar target the urban market. Lastly, the weather risks that affect the rural economy also impact rural lenders. Institutions extending credit in the areas that have seen drought, extreme flooding and cyclones in the past few years in particular have experienced negative consequences, with some lenders having to restructure loan terms

and absorb borrower defaults. In other cases, borrowers have had to sell off other assets to be able to repay the loans and secure future lending for future agricultural seasons. This is one of the key reasons why agricultural lenders, such as Proximity Finance, PACT, and Maha, would make suitable implementing partners.

7.2 Distribution through Agricultural Value Chains

Distribution through agricultural value chains like processors, contract growing schemes, input supplier networks, and agricultural cooperatives taps into an existing network. The agricultural value chain in Myanmar is generally fragmented and is underdeveloped both in capacity and scale. However, there are some notable exceptions, which are described below.

Myanmar is a major producer and exporter of paddy, pulses, and oilseeds to neighboring countries in Asia (namely China and India). Because of the resulting sector organization, the scale of the production, and the relevant risk profile of the crops these value chains present the most viable opportunities to explore the feasibility of index insurance, via seed multipliers and contract growers.

By end of 2017, there are 31 private seed companies, with 26 being local or regional, and six global companies working in the country. These organizations mainly supply hybrid field crop seeds for corn and rice, as well as hybrid vegetable seeds. In addition, sector associations include the Myanmar Rice Producers and Exporters Association, Myanmar Pulse Producers Association, and Myanmar Oil Seed Crop Producers Association. In addition to the seed sector, there are a few other input companies offering fertilizer and crop protection. These companies also show good potential and interest in offering insurance bundled with input loans.

7.3 Mobile Money Providers

Mobile money providers in Myanmar are leading the financial inclusion of its people. Market potential for Myanmar is high given low levels of bank account penetration, high levels of mobile penetration, especially smartphones (80% of the country's phones are smartphones mostly from neighboring China), and a young population. Mobile money industry is at a very nascent stage and is fragmented, with around 20 players (Table 5). Wave Money backed by Telenor, developed customer base of 1.3 million, or about 2.5% of the country's entire adult population at the start of February 2018.

Table 5: Details of Digital Finance Service Providers in Myanmar (Source: IFC Report, 2018)

Name of Service Provider	Details
Wave Money	Wave Money is a joint venture between Telenor (51%) and Yoma Bank (49%) and it is the first player to get a license to offer mobile financial services in the country. Currently, Wave money is only available to Telenor SIM card holders, but it is planning to open up to other Mobile Network Operators (MNO). The main services offered by Wave Money are cash in and out, airtime top-up, and money transfer, which currently happens Over-the-Counter (OTC) mainly.
M-Pitesan	M-Pitesan is Ooredoo's mobile money service provider. It is owned by Ooredoo (90%) and CB-Bank (10%). Launched in 2017, it is currently available to Ooredoo customers only. All transactions to M-Pitesan registered customers are free of charge (for the moment).
OK$	OK$, the oldest mobile money service in Myanmar, was launched in 2012 under old regulation, and obtained a Mobile Financial Services license in 2017. OK$ is a subsidiary of Consumer Goods Myanmar, a 22-year old Fast-Moving Consumer Goods and billboards advertising agency with 44 products in the local market. OK$ currently offers airtime top-up (Telenor, Ooredoo, Myanma Posts and Telecommunications), P2P, B2B transfers, bill pay, payment of public transport, travel tickets, and salary transfers.
Myanmar Mobile Money/EasyPay	Myanmar Mobile Money (MMM) launched in 2013 under MEC-Tel, which was a joint venture with Viettel (Vietnamese MNO) to be the fourth MNO of Myanmar in 2018. MMM offers mobile based cash-in and cash-out services and salary disbursements using MEC-Tel agents. MMM is now partnering with EasyPay to launch an e-wallet/OTC/e-commerce solution together with Innwa Bank. As a standalone entity, EasyPay, which is owned by MiTel and Creative Web Solutions, offers bill pay, B2B transfers, e-commerce payment and it authorizes settles and manages Direct Debit Bank Accounts for Asia Green Development Bank clients.
TrueMoney Myanmar	TrueMoney Myanmar was launched in 2012 as a branch of TrueMoney, a subsidiary under Ascent Group, a Thai company, sponsored by AliPay. TrueMoney operates in other ASEAN countries, like Thailand, Cambodia, Indonesia, and the Philippines. TrueMoney Myanmar offers domestic and international remittances, bill pay and airtime top-up. In October 2016 TrueMoney is operating a remittances corridor from 250 sites in Thailand to 681 sites in Myanmar. TrueMoney Myanmar works with a biometric ID system that uses fingerprints for recognition.

Myantel (now Mingalabar Holdings) and Wing	Myantel (a Singapore-registered Myanmar company) and Wing Cambodia entered a joint venture in April 2017 to provide remittance services for Myanmar migrant workers in Thailand. The transfer fees are competitive: ~USD 1, which is less than TrueMoney's fees (USD 1.4) and Western Union fees (USD 5.6). Myantel recently rebranded as Mingalabar Holdings.
2C2P	Payment service provider operating in Myanmar since 2013, with operations also in Thailand, Singapore (HQ), Malaysia, Indonesia, Laos, Hong Kong, Philippines, Cambodia, Vietnam, and the US. 2C2P provides payment processing technology (called Payment Gateway) for Visa, MasterCard, AMEX, JCB, UnionPay, Diners Club, Discover; MCB, KBZ, and all Myanmar airlines; ABC and 1-Stop convenience stores' e-wallets; and enables MPU's e-commerce switch.
Everex	Everex is a block chain credit and money transfer platform. The first pilot began in September 2016 with over 100 migrant Myanmar workers transferring wages from Thailand to Myanmar using Everex. The total amount transferred was THB 850,000. In August 2017, Everex partnered with Singapore-based microlender Micro Money to digitize Micro Money's 400,000 customers' loan repayments.
MyPay	MyPay is a social media-based payment service. Users can cash-in and cash-out at agent points. MyPay partnered with the mobile wallet provider Cellum, as well as MySquar (a mobile app company). Through MyPay, users can send money via WeChat, Facebook and Viber. MyPay allows also payments via NFC and QR codes, and represents a potential payment platform for Myanmar users to Western Union, MoneyGram, and Xpress Money. Products that will be offered include: P2P transfer to registered MYPAY users, e-commerce, bill pay, cash-in and cash-out.
Connect'n'Pay	Connect'n'pay is a joint venture between Myanmar's MCC Group and Singapore's LeoTech, launched in February 2014 and offers bill pay and tax payment services. Launched MyWallet PLUS, an app-based payment service for bill payment. Digitizes government databases for Myanma Electric Power Enterprise, Myanma Posts and Telecommunications, and the local government entity Yangon City Development Committee. They partner with CB to access mobile banking customers and with AYA to integrate its online, phone, and OTC services with Connect'n'Pay network.
Red Dot	Red Dot is an agent network offering airtime top-up and bill pay using a POS, as well as services such as stock management and store operations former chants. Retailer shave virtual balances of top-up, which deplete as customers buy credit. The terminals print receipts with instructions on how to top-up. Partnering with Ooredoo to expand their M-Pitesan network of agents. Partnering with AYA Bank.

While it is expensive for banking institutions to increase their penetration, money mobile providers are able to achieve this feat with more agility. There are a number of proprietary mobile money platforms offered by individual banks, as well as those offered through MNOs Telenor and Ooredoo. Wave Money, a joint venture between Telenor and Yoma Bank, appears to have the edge. With a mobile penetration of 90%, and more people are ready to bank via their mobiles as they are looking at carrying out instant transactions for receiving and paying money (medium.com, 2017). Wave Money is also looking at entering areas of the financial system that are still dominated by traditional lenders, offering insurance and micro-insurance, and providing loans and other suitable products to individuals and small businesses. The mobile money providers are taking quick and promising strides to increase reach to the unbanked and underserved population.

8 Dry Run Findings and Strategic Crop Recommendations

For the study, crop value chains were analyzed for feasibility for insurance, and then grouped by potential; the following sections include the findings. The priorities for selection of a target crop, include:

- Significant acreage
- High potential market value
- Insurable value and farmer investment
- Indexable risk profile
- Existing value chains for distribution

Table 6: Potential Value Chain and Distribution Channels

Crop	Distribution Channel
Rice Paddy	MFIs, Seed Multipliers, Contract Growers
Pulses (Green gram, Black gram, and Chickpea)	MFIs, Contract Growers
Oilseeds (Sesame and Groundnut)	MFIs, Contract Growers

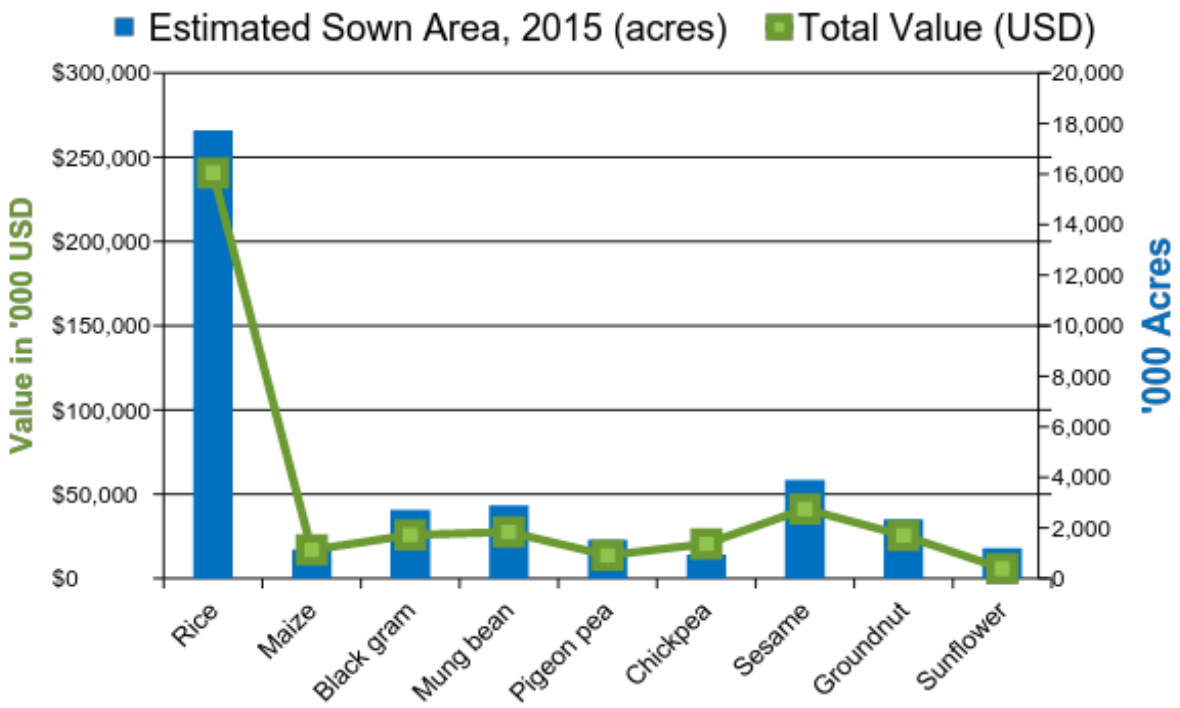

Figure 4: Field Crops Estimated Sown Area and Market Value, 2015. (Source: Reproduced from SFSA's report Opportunities in the Myanmar Seed Sector produced for the Asian Development Bank, 2016. Source: Trade sources, interview respondents, MOALI data).

8.1 Rice

Myanmar is the sixth-largest producer of rice in the world. Rice is the country's most important crop, and is cultivated on over 19.7 million acres, or more than half of its arable land. Myanmar is also a major rice exporter, exporting a total of about 28 million MT in the 2014/2015 season. The average yield was about 1.59 MT per acre.

Rice is grown in differing agro-ecological zones. Nearly 60% of the delta, including the Irrawaddy, Bago, and Yangon region of lower Myanmar, is cultivated with rainfed rice. The key risks of rice farmers in this area tend to be flooding, salinity, and pests and disease due to lack of proper spacing and drainage. The central dry zone on the other hand is drier and experiences less rainfall, so irrigation is critical. Access to water for irrigation varies considerably. The upland area where rice is often cultivated includes Mandalay, Sagaing, and Shan states.

8.1.1 Sector Organization

The rice sector is one of the more organized value chains in Myanmar, with most smallholders at least selling their harvest to a miller. Some farmers are a part of contract growing schemes usually connected to a trader and often receiving some input loans; a few others are seed multipliers for larger firms. A variety of players exist in the rice sector, including state enterprises, private traders, millers, farmer cooperatives, and certified seed multipliers.

8.1.2 Farm Investment per Acre

Investment in rice seed varies across Myanmar, with some farmers investing into certified seeds and many planting a mix of grain from the past season. For this reason, the quality also varies considerably. There are a number of who invest heavily into rice production, Shwebo in particular.

A typical contract rice farmer growing the popular Shwebo *Pawsan* variety generally invests the following per acre: USD 7 in seed, USD 76 in fertilizer, USD 7 on crop protection, and USD 135 in labor (for land preparation, nursery management, transplanting, crop management, and harvesting). Total production cost for inputs and activities comes in at about USD 270 per acre. For the average non-contract farmer on the other hand, fertilizer use in Myanmar is actually decreasing and notably very low. In 2009 farmers on average used only 12 kg NPK per acre, which was about a quarter of the amount applied in 1995. Farmers use bio-fertilizers to make up for this gap.

8.1.3 Sector Risks

The risk profile of rice farmers across Myanmar varies considerably by location, variety of rice planted, proximity to water sources, and available labor. Based on discussions during field visits with Myanmar farmers in 2015, 2016, and 2017, the most common risks farmers cited include:

- Drought at transplanting, germination, and flowering stages
- Excess rain at dry down and harvest stage
- Flooding in certain regions in close proximity to a river
- Labor shortage
- Market price risk
- Pests, in particular brown plant hopper
- Post-harvest losses

8.1.4 Data Availability

A weather index for rice would be based on satellite data and ground-proofed by the manual weather station network run by the meteorological department and rain gauges. There is potential for a flood index using river gauge data from the hydrology department, though this would require significant product development and testing. Additionally, the DoA's Shwebo Division has a historical record of paddy yield statistics.

8.1.5 Pilot and Immediate Potential

There are a number of good potential pilot opportunities in rice. Many lenders extend input loans to rice growers, and there are also a number of contract growing schemes across all of the key rice growing zones. Rice seed multipliers present an ideal target market because they often access input loans, as well as because of high investment levels and weather risks.

Table 7: Potential Insurance Products for Rice in Myanmar

Product	**Risk Covered**	**Comments**
Satellite weather index	Drought and excess rain	Any scale farmer. Requires ground-proofing by weather stations and rain gauges in each location
River gauge flood index	Flooding	Any scale farmer. Requires product development and testing, and spatial analysis (component of proximity farm to river).
Index indemnity hybrid	Drought, excess rain, and pests	For professional farmers. Requires ground-proofing by weather stations and rain gauges in each location. Indemnity component requires agronomist for random sampling

8.1.6 Conclusions

Dry runs with two MFIs lending to rice farmers and a contract grower and seed multiplier were conducted in 2015, 2016, and 2017 monsoon season. 2017 and 2018 summer season rice data collection is ongoing to further calibrate the indices developed and findings of the previous seasons. With active interest from potential partners, the first operational pilot can be launched

in the upcoming season during 2019. Once the agro-insurance regulation comes into force, a commercial pilot can follow.

8.1.7 Way Forward

Starting with a rainfall index to cover the drought and excess rain risks would be the easiest to start with. The indices would be based on the CHIRPS satellite data as provided by the UCSB ground proofed by a network of AWS run by SFSA and complemented by the Manual Rain gauges run by the Department of Meteorology. Flooding and indemnity products can continue being tested in the near term with a view to implement in the medium term. In partnership with the Columbia University, SFSA will be borrowing on research being conducted in other countries in the region (Bangladesh and Indonesia) around satellites that estimate soil moisture and tailor potential solutions to the characteristics of Myanmar. More investment into automatic river water level gauges is required for scale of the flooding river index products. As for indemnity, a network of regulated independent crop loss assessors will be required for scaling of such a product.

8.2 Pulses

Myanmar is the leading producer of beans and pulses among ASEAN nations. Pulses occupy the second largest sown area after rice, at 27 million acres, occupying 21 percent of total crop sown area with yields averaging 0.53 MT per acre. Pulses alone also contribute over 40% of export earnings from agricultural commodities, with the majority of black gram and green gram being exported. The decreased water requirement makes many pulses the ideal crop to rotate with rice in the drier months *(MOALI, 2015)*. Pulses require only 20 percent of the water required by paddy, which also makes them a good option for areas with limited water resources. Target pulses with insurable risk include black gram, green gram (also known as mung bean), and chickpea. The market for pulses tends to fluctuate based on weather conditions and demand in importing countries, although it has steadily increased every year. The demand from India in 2016 was very high due to weather related domestic crop failure. India is the largest importer of Myanmar's pulses, followed by Singapore and China.

8.2.1 Sector Organization

The pulses sector is made up of state economic enterprises, farmers' cooperatives, joint ventures, and private traders. The state enterprises purchase pulses from all sources including farmers, traders, coops, and middlemen. The other players have agents and brokers or buy from traders. Farmers generally sell their harvest to farm-gate buyers or go to the nearest town to sell their products.

Black gram and green gram are generally double cropped following monsoon rice in lower Myanmar near the Irrawaddy delta. There are also a significant number of green gram farmers

in the central dry zone. They are usually grown between March and November, with traders purchasing most of the harvest for export. Green grams are consumed directly and as bean sprouts. Chickpea, which is the most popularly consumed pulse in Myanmar, is processed in mills located in Sagaing, Mandalay, Bago, and Yangon. It is mostly grown sequentially with rice between October and January. Chickpea is used to make a variation of tofu and is a main ingredient in popular dishes. The majority of the production is consumed locally, with 10 to 20 percent being exported (SFSA, 2016). Chickpea exporters are required to sell a portion of the export volume to the government at a fixed price.

8.2.2 Farm Investment per Acre

Investment varies widely, with many farmers planting kept seeds from the previous harvest. The majority of the investment tends to come from labor cost. However, some farmers do invest in registered seeds. On average farmers investing in registered seeds spend between USD 5.40 to USD 11.25 per acre, roughly USD 60 per acre on compound NPK fertilizer, and about USD 30 per acre on crop protection (fungicides in particular). Labor costs varied from USD 78 to USD 100 per acre, with green gram taking the most labor at harvest. Total production cost tends to range generally between USD 200 and USD 230 per acre.

8.2.3 Sector Risks

The risk profile of pulses farmers across Myanmar varies slightly by location. Based on discussions during field visits with Myanmar farmers in 2015 and 2016, the most common risks farmers cited include:

- Drought at germination and flowering
- Pests
- Post-harvest losses
- Market price risk

8.2.4 Data Availability

A weather index for pulses would be based on satellite data and ground-proofed by the manual weather station network run by the meteorological department and rain gauges.

8.2.5 Pilot and Immediate Potential

Some interesting potential opportunities exist in pulses. Several MFIs lend to pulse farmers, who also grow rice during the monsoon season. Pulses tend to be far more drought tolerant than paddy, but still face some weather-related risks mainly due to extended drought during germination or the reproductive stage of the crop cycle. Contract growers selling to traders also present a good potential entryway.

Table 8: Potential Insurance Product for Pulses in Myanmar

Product	Risk Covered	Comments
Satellite weather index	Drought and excess rain	Any scale farmer. Requires ground-proofing by weather stations and rain gauges in each location

8.2.6 Conclusions

Dry runs with two MFIs lending to pulse farmers and a contract grower were conducted in 2015, 2016 and 2017. The first operational pilot could be launched in the upcoming season, starting May 2018. Once the agro-insurance regulation comes into force, a commercial pilot can follow.

8.2.7 Way Forward

The product for introduction is a straightforward input linked rainfall index insurance for drought and excess rainfall. This will be tested in the 2018 Monsoon season using satellite data ground proofed by AWS.

8.3 Oilseeds

Target oilseeds with insurable risk include sesame and groundnut. Myanmar is the leading global producer of sesame, exporting over USD 100 million annually. Sesame is grown on over 3.8 million acres, with an average yield of about 0.23 MT per acre *(SFSA, 2016).* Groundnut on the other hand is grown on nearly 2.5 million acres *(MOALI, 2015),* with average yields of 0.6 MT to 0.65 MT per acre *(SFSA, 2016).* Myanmar's groundnut production ranks 6th globally, however most is kept for domestic consumption due to quality issues-- aflatoxin remains a major concern.

8.3.1 Sector Organization

Sesame is grown mostly from May to August, and September to January. A variety of traders purchase sesame for export and for domestic oil production. Sesame grown is either black or white, with black oilseeds garnering a premium price (generally 16% more than white). The quality of the sesame produced in Myanmar varies widely due to impure seed, as does the market price, especially with several global competitors. Many farmers treat sesame as a gambling crop as a result *(SFSA, 2016).* The key sesame export markets for Myanmar are China and Korea.

Groundnut cultivars grown in Myanmar are of two types: a smaller kernel size with a shorter maturity period (ca. 3 to 4 months), mostly grown in the monsoon season from May to August; and a larger kernel size with a longer maturity period (ca. 6 months), usually planted at the end of the monsoon season from August to January. Both types are grown generally profitable for both growers and traders. Groundnuts are primarily processed into oil and snack foods, with the majority of production being purchased by domestic traders *(SFSA, 2016).*

8.3.2 Farm Investment per Acre

Investment varies widely, with many farmers planting with seeds kept from the previous harvest. On average farmers investing in registered sesame seed spend USD 5.70 per acre, while groundnut seed comes in significantly more at USD 52 per acre. Both sesame and groundnut farmers spend roughly USD 60 per acre on compound NPK fertilizer, and about USD 30 per acre on crop protection (fungicides in particular). Labor costs for sesame were around USD 134 per acre, and for groundnut USD 85 per acre, the biggest expense coming at harvest time. Total production cost for sesame and groundnut tends to be similar, about USD 260 per acre.

8.3.3 Sector Risks

The risk profile of oilseeds farmers across Myanmar varies slightly by location. Based on discussions during field visits with Myanmar farmers in 2015 and 2016, the most common risks farmers cited include:

- Drought at germination and flowering
- Excess rain at harvest (particularly leading to aflatoxin in groundnut)
- Labor shortage
- Pests and disease
- Post-harvest losses

8.3.4 Data Availability

A weather index for oilseeds would be based on satellite data and ground-proofed by the manual weather station network run by the meteorological department and rain gauges.

8.3.5 Pilot and Immediate Potential

Several MFIs lend to oilseed producers, with sesame in particular being a key export crop. Both sesame and groundnut are major crops for domestic consumption as well and hold good promise in the future, especially as the value chains mature and good quality seed becomes the standard.

Table 9: Potential Insurance Product for Oilseeds in Myanmar

Product	**Risk Covered**	**Comments**
Satellite weather index	Drought and excess rain	Any scale farmer. Requires ground-proofing by weather stations and rain gauges in each location

8.3.6 Conclusions

Dry runs with two MFIs lending to oilseeds farmers were conducted in 2015, 2016 and 2017. With active interest from potential partners, the first operational pilot can be launched during

the crop season of 2018. Once the agri-insurance regulation comes into force, a commercial pilot can follow.

8.3.7 Way Forward

Similar to pulses, the product for introduction is straightforward input linked rainfall index insurance for drought and excess rainfall. This will be tested during 2018 crop season as well, using satellite data ground proofed by surface data.

9 Progress Made on Product Development

A number of products from SFSA's portfolio were assessed for developing affordable products in Myanmar. They broadly fall under the categories flexible season cover, replanting or transplanting guarantee, indemnity product, hail damage, windstorm or cyclone, uncontrollable pests and diseases, and area yield index.

9.1 Flexible Season Cover

This represents the standard model that is built phase wise depending on the crop. Each phase has its own risks and index is prepared to assess the risk. The clients have the flexibility to choose the cropping phases and risks that they would like covered across the cropping season. Some approaches of flexible season cover are explained in the table below:

Table 10: Approach for Flexible Season Cover

Technique	**Risk assessed**
Absolute Total Rainfall	Checks the total amount of rainfall received over a period against the recommended
Consecutive Day Count	Checks for spells of certain events such as dry days, rain days, cold days, hot days, river water level above, river water level below. With these we are able to tell if and when the crop was affected. It helps check for distribution of the parameter in consideration
Overlapping Block of Days	Under this we check for both the distribution and total amount of the parameter in consideration (e.g. rainfall) over a given number of days

9.2 Replanting/Transplanting Guarantee

This is a short-term type of cover that looks to cover losses in the early part of the season that would necessitate replanting for oilseeds, pulses, and broadcast rice and transplanting again for rice from a nursery. This will enable farmers to save the season.

9.3 Indemnity Product

This is the traditional multi-peril crop insurance that covers physical loss of or damage to a crop from a named peril.

9.4 Hail Damage

Manifestation of damage resulting in a loss of production indirectly caused as a result of a hail strike. This loss is minutely localized and such a product would only be practical at the meso level (e.g. an aggregator working with thousands of farmers in a township).

9.5 Windstorm/Cyclone

An event where mechanical damage is evident to such an extent that the plant is permanently damaged or the harvest severely lodged. This product is also meso and macro level e.g., losses from cyclone that hit the delta region in 2008.

9.6 Uncontrollable Pests and Diseases

Manifestation of damage resulting in a loss of production directly caused by widespread infestation of disease or pest that is practically impossible to control under current recommended Crop Husbandry Practice.

9.7 Area Yield Index

This product is based on government statistics on an administrative level. The loss is measured by comparing the current year government published production against the preceding five-year average to check if there was a shortfall in production. This index looks to cover catastrophic events that would happen over an entire administrative level that would not be captured by an index. SFSA's product portfolio is focused on these types of index. Most of the products are developed and some are in developing stage. The WII products that have been developed are for rice, maize, pulses, and oilseeds based on the data collected since 2015 with support from MAPCO, Maha Awba Microfinance, and Proximity Designs in different parts of Central Dry Zone and Delta.

Table 11: SFSA Product Portfolio (both in Development and Previously Developed)

Product	Type of Farmer	Risks Covered	Value Chains	Data Necessary	Status of product Development
Precipitation index	Small to Large	Drought, excess rain	Rice, Maize, Pulses, Oilseeds	Rainfall data (min 15 years) from both satellite and AWS	Developed and available for testing
Transplanting index	Small to Large	Low temperature	Rice	Temperature data (min 15 years) both satellite and AWS	Developed and available for testing
Flood index	Small to Large	River flooding	Rice, Maize	River gauge data (min 5 to 10 years), spatial analysis of farm proximity to river	Under development
Index-indemnity hybrid	Medium to Large	Weather, disease, and pests	Rice, Maize	Weather data (min 15 years) from both satellite and AWS, sampling from independent crop assessor	Under development
Area yield	Small and Large	All risks that cause a shortfall in yield that would reflect in at the sub-district level	Rice, Maize, Pulses, Oilseeds	Yield data (min 7 to 10 years) from independent source	Under development

10 Key Strategic Challenges and Coping Strategies

As has been detailed out in the report, the Feasibility Study indicates significant opportunities for SFSA to build an ecosystem for agricultural insurance. However, it also brings out risks that are posed by the current environment. The table below highlights the foreseeable challenges and also the associated mitigation strategy:

Table 12: Challenges and Mitigation Strategy

No.	Challenges	Envisioned Mitigation Steps
1.	Manual data collection for verifying the accuracy of satellite data collection	Installation of limited number of AWS and automatic river water level gauges as well digitizing the collection of field data via mobile apps
2.	Non-availability of accurate and regular historical data for most of the crops	Data is available for focus crops. Cash crops is easily available and thus the implementation will begin with cash crops
3.	Lack of existing insurance policy framework	As mentioned in Chapter 2, progressive steps are being taken up by the government in terms of regulations being passed to promote agricultural insurance in the country
4.	Early stages of market creation	Capacity Building for value chain partners through regular workshops by SFSA
5.	MADB, a significant player in agricultural lending, has been struggling to stay profitable	One way that they could protect their portfolio with the existing interest cap rate is to embed insurance and tech to reduce non-performing loans and transactional costs respectively
6.	Limited Rural reach of MFIs due to interest rate caps	Distribution through agricultural value chains
7.	No widely used mobile money platform	Working closely with telephone companies to accelerate the uptake of mobile money in the rural areas
8.	Low adoption for insurance	Farmer awareness campaigns and financial education workshops will be facilitated under the program

11 Going Forward: Implementation Approach

This section provides an overview of the market development approach and the proposed roadmap over the short, medium and long term.

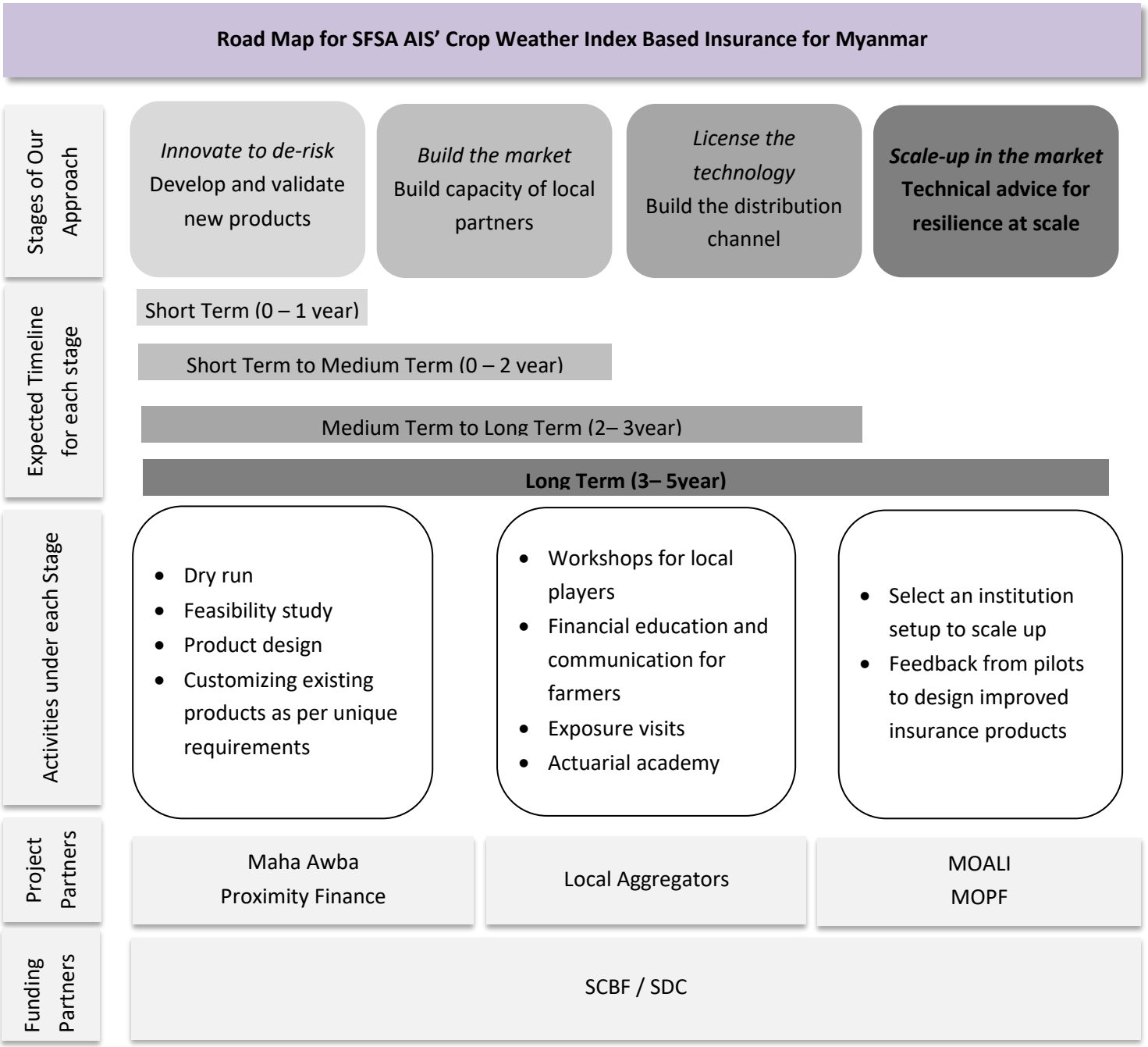

Figure 5: Road Map for SFSA's Weather Index Based Insurance in Myanmar

SFSA have completed the two-year preparatory phase with the findings and conclusions outlined in the previous chapters and are now prepared to launch "Dummy Pilot" with MIE and Maha Awba during crop seasons of 2018 and 2019. Successful demonstration of dummy pilots

will help us to showcase the program to the government and other stakeholders. This will enable us to plan and implement commercial WII products in the future.

Market development involves various stages. When we go to a new market, we follow four stage approach to develop market environment in the country. The four stages to our market development approach is explained in table 13 below. This approach is based on findings from needs and assessments of stakeholders. Annex 2 provides more detailed information about SFSA's business approach.

Figure 6: Capacity Building Efforts by SFSA AIS – Trainings and Workshops are Carried Out for Loan Officers.

As part of our implementation strategy SFSA is committed to continue to refine the products developed (which are our R&D product pipeline) and focus on building capacity of local partners to 'ready' the market. In the short to medium term, SFSA seeks to transfer the technology and build the distribution channel. In the long term, scaling up in the market will be possible, thanks to progress achieved in the earlier stages. There are various institutions that need to be engaged to build a vibrant index insurance ecosystem in the country.

Table 13: Market Development Approach

Innovate to de-risk Develop and validate new products	**Aim of this stage:** To (a) improve the agricultural insurance products that were developed over the course of the feasibility phase, as well as to (b) develop new products for new townships and crops in Myanmar. These products are fine-tuned, based on the specific client risk profile and according to the distribution channel to fit local conditions. **Track record elsewhere:** In Africa and India, SFSA developed a mobile based agricultural insurance product that enables farmers who are not organized into groups to access drought insurance. Agricultural input companies put a registration card with a unique code in each bag of seed or fertlilizer. When a farmer plants, he finds the card and follows its instructions on sending an SMS. From this SMS, SFSA knows the farmer's location and can monitor the rainfall using satellites. Payouts to the farmer are done via mobile money transfer. The premiums are paid by the input company. We propose to develop a similar program in Myanmar also. **Progress to date in Myanmar:** Following a Feasibility Study in 2016, SFSA started a dry run project with an aim to develop location-specific and crop-specific insurance products for Myanmar farmers. In 2016 and 2017, SFSA collected crop and weather data at various locations in Delta and Dry Zones. Crops chosen were rice, pulses, groundnut and sesame. Various temperature and rainfall related products were developed for both the regions. **Intended outputs of proposal:** These products would be tested in the same villages and would be extended to new villages for same crops in both the regions to verify their accuracy and test basis risk. **Key partners:** Farmer aggregators
Build the Market Build capacity of local partners	**Aim of this stage:** To increase the uptake of agricultural insurance products by farmers, SFSA has undertaken a financial education exercise for stakeholders in the supply and demand side of agriculture insurance to enhance farmers' basic financial literacy. **Track record elsewhere:** In February 2017 SFSA had a workshop with the Indonesia Regulator (OJK) along with a public insurer (JASINDO) and a private insurer (ACA) after which SFSA launched two pilots as Proof of Concept before further adoption and scale up **Progress to date in Myanmar:** Two workshops, one for Proximity and the other for all stakeholders have already been conducted in 2017. **Intended outputs of proposal:** A series of workshops to be held to improve understanding of the technical aspects and value that agricultural insurance can bring to agricultural value chains. A dual approach is to be applied for the financial education training to cover both the demand and supply sector. Trainings will take either a direct or indirect approach. The direct approach will target the supply

	sector while for the demand sector we will apply both a direct and indirect approach. Trainings for the supply sector will focus on banks and microfinance while the demand sector will focus on farmer cooperatives, aggregators, farmers, input companies and other stakeholders vital in the agricultural insurance value chain in Myanmar. **Key partners:** Farmer aggregators, Insurers, Reinsurers
License the Technology Build the distribution channel	**Aim of this stage:** The aim of this stage to license the developed products and build the distribution channels. **Track record elsewhere:** The Village Champion Selection Criteria developed under Alliance for a Green Revolution in Africa (AGRA) project in Kenya would be tested to adopt in the future. The findings of this study show that since the main challenge for uptake is based on farmer perceptions, it is critical to have a peer training and a trusted person. This approach is able to wither negative perception and influence farmer decision making. **Intended outputs of proposal:** The peer to peer distribution model will be adapted to the Myanmar conditions based on the insights gathered from the two season dry run and pilot period. Linking microinsurance to microcredit will also be prioritised. Based on the documented experience, there were three main personas identified and these were rattler, daring and experienced. Best performing profile were the learners because of their level of commitment and motivation. Other qualifying factors include their readiness to learn, ability to create new relations and employed new approaches to reach farmers. **Key partners:** Insurers, Reinsurers, Telcos, Regulators
Scale up Technical advice for resilience at scale	**Aim of this stage:** Aim is to reach as many farmers as possible using the successful products and distribution channels from above. **Track record elsewhere:** In East Africa, SFSA has managed to serve over 1.5 million farmers cumulatively with drought and excess rain products distributed via MFIs, banks, farmer aggregators and mobile phones **Intended outputs of proposal:** Taking insurance innovation to the very last mile by providing the choices, new tools for all smallholder farmers in Myanmar to enhance their development, recovery and resilience. **Key partners:** Insurers, Reinsurers, Telcos, Farmer Aggregators

11.1 Key Stakeholders

WII is a relatively new concept in Myanmar. Whilst there has been no previous formal implementation experience, many potential stakeholders have shown considerable interest in creating a WII market to protect rainfall dependent farmers. This section identifies and categorizes the organizations and groups that would manage the implementation of WII in the country. In addition, it sets out various roles and responsibilities of each stakeholder. The following stakeholder map (figure 7) illustrates various stakeholders and their respective relationships in a WII market.

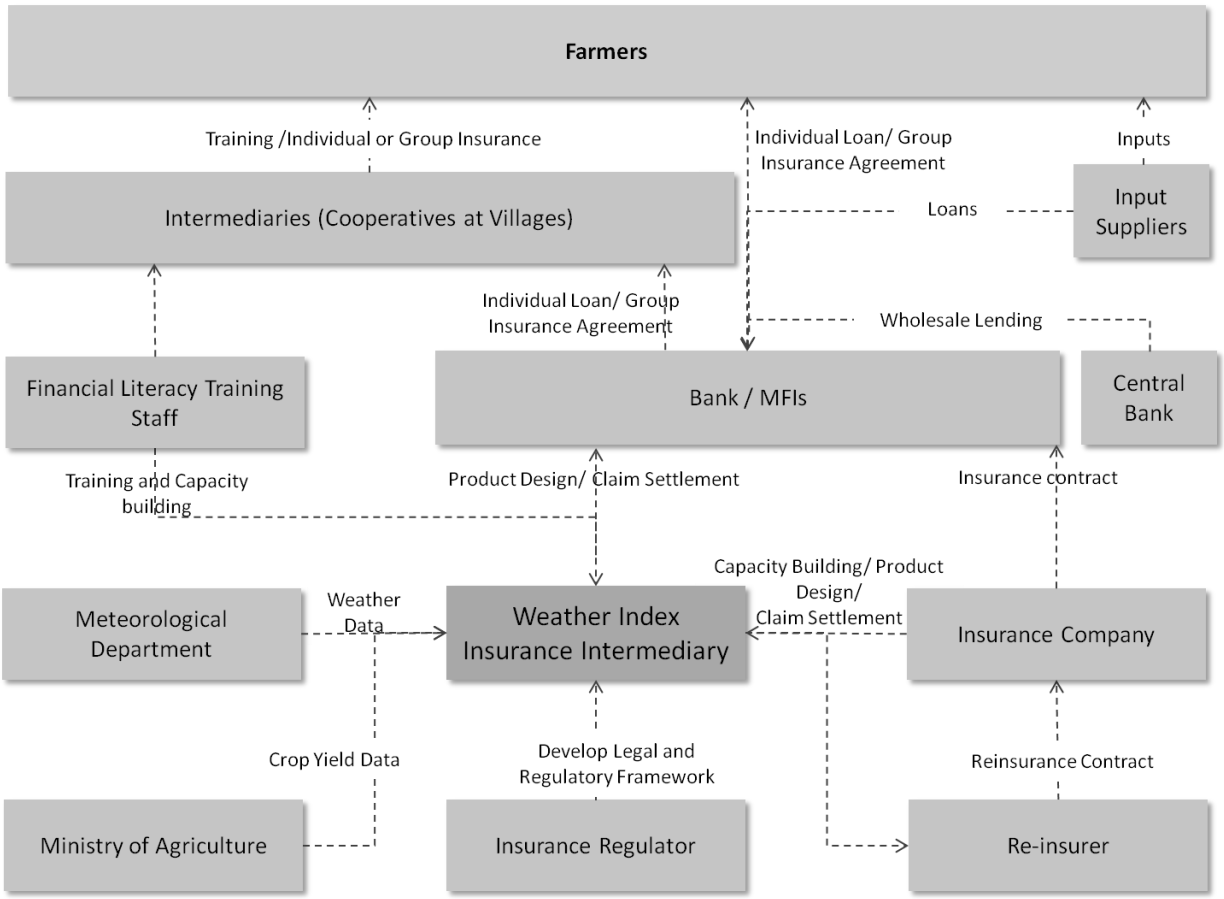

Figure 7: Stakeholder Map

In this approach the WII is linked to loans provided by banks and/or MFIs. This model is variable. Contract-farming organizations or input suppliers could also be integrated in the lending process. In Myanmar, SFSA implemented the dry runs in cooperation with MAPCO, Awba and Proximity Finance.

Table 14 explains an outline of role and responsibilities of different stakeholders involved in development of weather-based index insurance ecosystem in Myanmar.

Table 14: Roles and Responsibilities of Different Stakeholders

Partner	Proposed role	Proposed responsibility	Potential Partners
Insurance and Reinsurance Companies	**Carries risk:** One key task in developing WII is to provide a suitable risk-transfer mechanism. Our experience in other countries shows that existing insurance companies are best placed to carry the risk, in partnership with regional and/or global reinsurance companies. The companies also significantly benefit from the scale that is provided to their operations from the large number of users or their products.	▪ Pricing ▪ Reinsurance ▪ Policy documentation ▪ Claim pay-out	SwissRe, MIE, GGI, CB Insurance
Weather Data Provider	**Regularly provides data:** The role of a weather data provider is critical for the success of any WII program. The DMH is the authorized agency for recording and providing the meteorological data in the country. They have a network of 76 Observatories in the country. Distribution of weather stations and rain-gauges is not sufficient for successful implementation of WII in the country. Hence, it is very important to increase the network of observatories.	▪ Increasing the number of observatories ▪ Collecting and disseminating accurate data	DMH
Distribution Partners	**Acts as intermediary between local insurance provider and beneficiaries:** Whilst insurance companies may interact directly with the target beneficiaries, it was observed that there is no existing direct relationship between the two, which can result in low up-take of WII. It was also observed that the most effective distribution channels are those that have a working relationship with a large proportion of the target market, the ability to transact cash, and are trusted by the target beneficiaries. These may be contract-farming organizations, financial institutions such as banks and MFIs, cooperatives, NGOs, and input suppliers. In some cases, writing an insurance contract directly between the distribution channel and the insurer can reduce transaction costs. Establishing long-term relationships with farmers also adds more stability to the partners' long-term business.	▪ Leverage existing working relationships with beneficiaries for easier adoption ▪ Carry out cash transaction as and when required ▪ Building a trusted relationship with target beneficiaries ▪ Information transfer to beneficiaries	Maha Awba, BRAC, One Acre Fund

Mobile Network Partners	**Facilitates ease of transaction and information flow:** Given that index insurance targets millions of smallholder farmers, it is paramount that operational and transactional cost at a minimum. Reliance on mobile technology and platform to identify farmer locations, process registration, and mobile e-wallets for premium payment and claim settlement are essential to keeping the costs marginal. This also provides an opportunity for the mobile network partners to leverage the created opportunities, develop their own market and revenue; increased number of users, short message service business and commissions on mobile money payments.	▪ Identifying farmer location ▪ Registration ▪ E-wallets for premium payments and claim settlement	Wave Money, M-Pitesan, OK$, EasyPay, TrueMoney
Input Suppliers	**Provides high quality inputs:** Whilst not direct project participants, it is important that there is a functioning market for the supply of inputs to ensure that farmers are able to purchase high quality farm inputs. For implementation of the project, it should be established that the Banks and MFIs have a good working relationship with input suppliers. This could be in the form of creating farm input packages, where the farmers receive their loan in the form of seeds, fertilizers and pesticides.	▪ Creating Input Packages with MFIs and Bank so as to create innovative ways for farmers to receive the loan in terms of seeds fertilizers or pesticides	Awba, East West Seed
Policy-makers	**Creating/supporting a conducive ecosystem for project implementation:** Collaboration with MOALI is essential to the success of a WII project. Designing accurate WII contracts also requires accurate agricultural data, especially yields which would require a strong working relationship to develop an efficient data sharing mechanism. In addition, the Ministry's agri-extension officers' key relationship with farmers necessitates the patronage of the Ministry to conduct effective marketing and training programs to farmers. The Ministry of Agriculture could become a key implementing partner and also a recipient of the benefits provided by the implementation project. These are in terms of:	▪ Developing an efficient and accurate data sharing mechanism ▪ Providing on-ground assistance from Ministry's on-ground agri extension officers to help foster trust and stronger working relationships with farmers ▪ Defining the role of WII ▪ Developing Macro Policies	MOALI

	▪ Policy work (defining the role of WII): the Ministry could assist drafting policy wordings and papers to define the role of the instrument in agri-financing and development, ▪ Developing a regulatory framework: the Ministry could assist in defining the role of WII and necessary amendments for subsidies, ▪ Macro Policy: where Ministry of Agriculture would become client and purchase WII as a food security policy, which would guarantee a pay-out as measured by a composite index and give early warning.	▪ Developing Regulatory Framework	
	Enhances the regulatory environment: Insurance is a heavily regulated industry and close contact with the IBRB is necessary. WII is a complex product and the approval authority ideally should be involved from the development stage. Further, enhancement of the regulatory environment to facilitate index insurance activities would be required such as use of mobile phone technology in delivering insurance to farmers, electronic messages acting as policy documents and claim pay-outs via mobile money discharging insurers' liability. Finally, some potential regulation such as making it mandatory for all agriculture loans to be accompanied by insurance could spur lending.	▪ Creating regulatory environment to facilitate index insurance activities ▪ Designing and exploring new regulations to facilitate increase in lending	MOPF
Insurance Market Enabler/ Facilitator	**Acts as an insurance surveyor:** We monitor and assess risks and develop insurance products specifically for smallholders. These products typically cover variety of crops against weather risks like drought, storms, flood and erratic rains. Other examples include yield cover.	▪ Product development ▪ Coordination with international and national partners ▪ Fund mobilization ▪ Marketing and distribution ▪ Business development	SFSA

		▪ Capacity building for demand and supply side ▪ Data collection ▪ Contract monitoring ▪ Dry runs ▪ Product improvement ▪ Advocacy and policy dialogues	
Farmers	**Uses insured products and services:** Along with usage of the final products and services, farmers play a critical role in product development; the dry runs and feasibility studies conducted study various farmers for their challenges and strengths. Additionally, they also serve as a critical target audience for capacity building that is taken up to ensure high uptakes of the product.	▪ Use insured products and services ▪ Provide feedback to help contract design ▪ Participation in feedback sessions and interviews	

11.2 Planned Insurance Pilots

SFSA is exploring various options to conduct "Dummy Pilots" during 2018 and 2019 crop season with MIE and Maha Awba at following locations for successful demonstration of crop insurance program to the government:

- Magway Region – Pakkoku District
- Sagaing Region – Shwebo District
- West Bago Region – Pyay District
- Mandalay Region – Myingyan District
- Ayeryarwady Region – Ma-bin District

During this pilot program, SFSA will organize various training programs and capacity building activities for all stakeholders in Myanmar. SFSA is also planning to install few AWS near the dummy pilot areas for successful demonstration of data collection, data processing, and quality control mechanisms and gain confidence among all stakeholders.

Annex 1: Private Insurance Companies Registered in Myanmar

	Company Name	Classes
1	First National Insurance Public Co., Ltd.	General and Life Insurance
2	IKBZ Insurance (Public) Co., Ltd.	General and Life Insurance
3	Young Insurance Global Co., Ltd.	General and Life Insurance
4	Grand Guardian Insurance Public Co., Ltd.	General and Life Insurance
5	Global World Insurance Co., Ltd.	General and Life Insurance
6	Excellent Fortune Insurance Co., Ltd.	General and Life Insurance
7	Aung Thitsar Oo Insurance Co., Ltd.	General and Life Insurance
8	Pillar of Truth Insurance Co., Ltd.	General and Life Insurance
9	Ayeyar Myanmar Insurance Co., Ltd.	General and Life Insurance
10	Capital Life Insurance Co., Ltd.	Life Insurance
11	Citizen Business Insurance Public Ltd.	Life Insurance
12	Aung Myint Moh Min Insurance Co., Ltd.	Life Insurance

Annex 2: About Index Insurance

Appropriate role of index insurance: WII has greater potential to help reduce weather risks in an agricultural system where financing, production, processing and marketing are well functioning and integrated. Insurance can be a suitable risk management option, but it cannot solve problems related to agricultural production inefficiencies. In most cases, having insurance means little to farmers if they still do not have financing or cannot get crops to markets. To represent the best value proposition, insurance should therefore be grafted onto a system where other vital economic parts are already functioning reasonably well, but where the insurance improves efficiency or further unlocks the economic potential in agricultural production.

Ideally, index insurance should be integrated into coordinated supply chain relationships with linkages between input provision, commodity sales, and additional flows of resources, extension services, technical advices, and production oversight. Contract-farming is an example of this kind of arrangement. At the very least, insurance should be complemented with a broader offering of products and services. A key linkage that should be particularly emphasized is with agricultural finance. Without bundling insurance with credit, many farmers will lack both the capital to pay the insurance premium and sufficient incentive to use scarce resources to buy risk coverage. Placing insurance products within complementary systems with broader linkages can also facilitate simpler contract design, as other mechanisms can deal more efficiently with the subtle aspects of risk and crop losses that cannot be indexed.

Where weather index is inappropriate? Index insurance contracts will not work well for all agricultural producers. Many agricultural commodities are grown in microclimates. Coffee grows on certain mountainsides in various continents and countries, for example, and fruits such as apples and cherries also commonly grow in areas with very large differences in weather patterns within only a few miles. In highly spatially heterogeneous production areas, basis risk will likely be so high as to make index insurance problematic. Under these conditions, index insurance will work only if it is highly localized and/or can be written to protect only against the most extreme loss events. Even in these cases, it may be critical to tie index insurance to lending, since loans are one method of mitigating basis risk.

Over-fitting the data is another concern with index insurance. If one has a limited amount of crop yield data, fitting the statistical relationship between the index and that limited data can become problematic. Small sample sizes and fitting regressions within the sample can lead to complex contract designs that may or may not be effective hedging mechanisms for individual farmers. While scientists are tempted to fit complex relationships to crop patterns, interviews with farmers may reveal more about the types of weather events of most concern. When designing a weather index contract, one may be tempted to focus on the relationship between

weather events and a single crop. When it fails to rain for an extended period of time, however, many crops will be adversely affected. Likewise, when it rains for an extended period of time, resulting in significant cloud cover during critical photosynthesis periods, a number of crops may suffer (UNDP, 2016).

Over the last few months, the idea of crop insurance has gained momentum in Myanmar, especially for rice, pulses, sesame and groundnut. We already collected data through dry run projects. Now, it is the time for testing the contracts and organizing trainings for all stakeholders in the value-chain through dummy pilots. SFSA already conducted one big training program for Proximity Finance team of about 52 field officers during May 2017 and planning to organize similar training workshops for other stakeholders in coming months.

Consultant Contact:

Syngenta Foundation for Sustainable Agriculture (SFSA)

Website www.syngentafoundation.org
Email syngenta.foundation@syngenta.com
Phone +41 61 323 5634