PROMOTING RISK FINANCING IN THE ASIA PACIFIC REGION: *LESSONS FROM AGRICULTURE INSURANCE IN MALAYSIA, PHILIPPINES AND VIETNAM*

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EXECUTIVE SUMMARY

There is a growing consensus among development community that the risk insurance can provide an effective risk management tool for mitigating the impacts of climatic and non-climatic disasters. Several risk insurance initiatives have been implemented at grassroots level for reducing the vulnerability of communities to disasters in most of the countries in Asia and the Pacific over the years. Despite these grassroots efforts, the penetration of risk insurance is poor in the developing Asia Pacific compared to many developed countries in the region due to several barriers that this sector is facing. Keeping this in view, this reconnaissance study was carried out to assess the benefits accrued through community level risk insurance experiences in some of the developing countries, evaluate barriers limiting the penetration of crop insurance, and identify interventions for greater risk insurance penetration leading to climate change adaptation and disaster risk reduction.

It is evident from the study that the countries are at different levels of developing agriculture insurance programs and institutional mechanisms with Philippines at the fore front followed by Vietnam and Malaysia. The growing disaster losses and related burden on government has been the clear driver of insurance in all the study countries. Though Malaysia has long experience of implementing insurance for industrial crops, the insurance has entered into agriculture only very recently with the promulgation of the new government crop insurance program. Being an early bird, one could find a diverse insurance approaches in Philippines mostly spearheaded by the public insurance institutions with strong public-private partnership. The government of Vietnam showed a constant spirit of making insurance work in the country with one of the longest unsuccessful history with agriculture insurance.

Structured questionnaire surveys with farmers have revealed several important insights into the effectiveness of crop insurance on the ground. Government compensation has still been an important means of relief and recovery from natural disasters in areas without insurance and to certain extent in areas with insurance mostly due to limited coverage of perils or limited damage coverage by the current insurance products. Responses did reflected the presence of mismatch between compensations, insurance pay outs and farmers expectations and it has an interesting linkage with the way the insurance products are understood by farmers; a clear indication for the need to strengthen the public awareness programs before enrolling into insurance schemes. In areas with insurance, the farmers have reported the presence of grievance redress mechanisms but the response on these mechanisms was mixed with most rating it as unsatisfactory in Philippines. Cost of insurance appeared to be the single most important determinant of buying insurance. Irrespective of whether the insurance is completely subsidized or not, majority of respondents, whether currently participating in insurance or not, have preferred that the insurance be fully subsidized. High proportion of currently enrolled beneficiaries preferred full subsidization of insurance compared to the non-beneficiaries in Vietnam. The insurance payments were mostly either timely or timely enough to recover. Most farmers were not sure about the damage assessment procedures adopted by the insurance companies and were overwhelmed by the claim procedures. In areas where insurance is present, insurance did helped farmers to recover but the respondents felt that the insurance did not completely compensate their loss. Insurance did not completely stop most farmers borrowing from a formal lending institution or from family and friends after a disaster.

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ABBREVIATIONS

AGFP	Agricultural Guaranty Fund Pool
ARB-AIP	Agrarian Reform Beneficiaries Agriculture Insurance Program
ARBs	Agrarian reform beneficiaries
ARBY	Area-based yield index insurance
CCC	Climate Change Commission
CLIMBS	Philippines Cooperative Life Insurance and Mutual Benefit Services
DBP	Development Bank of the Philippines
FAO	Food and Agriculture Organization
GDP	Gross domestic product
GFIs	Government financial institutions
GIZ	Gesellschaft für Internationale
GOCCs	Government owned and controlled corporations
IC	Insurance Commission
LBP	Land Bank of the Philippines
LGU	Local government units
MADA	Muda Agricultural Development Authority
MIPSS	Micro-insurance Program for Social Security
NGOs	Non-governmental organizations
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PCIC	Philippines Crop Insurance Corporation
UNISDR	United Nations International Strategy for Disaster Reduction
WII	Weather index insurance

1. INTRODUCTION

The agriculture sector in Asia and the Pacific is vulnerable to natural hazards such as droughts, floods, temperature changes and insect pest infestations. Vulnerability factors include high dependence on seasonal rainfall, seasonal and erratic irrigation systems, relatively low acreage of drought and pest resistant crop varieties, primitive agronomic practices, and poorly developed extension systems. As a result, farmers in the region are prone to repeated crop losses and loss of livelihoods. The response and relief oriented approach of governments have further perpetuated the situation.

Often, farmers borrow loans from banks prior to the cropping season. However, farmers, banks, and governments are exposed to higher financial risks due to increasing frequency of crop failures, and in many cases the governments are forced to waive the loans. For example, in case of India, estimates suggest that the government waived crop loans totaling USD 14.4 billion in 2008 alone (Kanz and Robert, 2011). Though political interests behind these waivers cannot be ruled out, the repeating crop losses did contribute significantly to the perpetuation of the loan waiver policies. Similar incidences could be observed across other countries in Asia and the Pacific region (FAO, 2011). Such waiver of crop loans is loss to the government exchequer as well as promotes the culture of 'relief dependence' on farmers which further perpetuates the problem.

Climate change is projected to exacerbate the impacts of natural hazards in the future (Field et al., 2012) and it necessitates reassessing and reframing the current risk reduction strategies in the farming sector in the Asia and the Pacific region. One particular risk reduction strategy this reconnaissance study dwells into is related to crop insurance for the advantages it provides (Arnold, 2008; Swiss Re, 2010a): It promotes emphasis on risk mitigation compared to the current response-driven mechanisms, provides a cost-effective way of coping financial impacts of climate- and weather-induced hazards, supports the climate change adaptation by covering the residual risks not covered by other risk reduction mechanisms such as irrigation systems and best management practices, stabilizes rural incomes and hence reduces the adverse effects on income fluctuation and socio-economic development, provides opportunities for public-private partnerships, reduces burden on government resources for post-disaster relief and reconstruction, helps communities and individuals to quickly renew and restore the livelihood activity, and addresses a wide variety of risks emanating from climatic and non-climatic origin, depending on the way the insurance products are designed.

Despite the known advantages of insurance, the spread of insurance in general and crop insurance in particular is poor in Asia and the Pacific region. Statistics available from Swiss Re suggest that South and East Asia stands third in world regions in terms of non-life insurance premiums (Swiss Re, 2010b). Within Asia, the non-life insurance penetration is highest in Japan followed by China, South Korea, Taiwan, and India. In general, the spread of health insurance in the region is much higher than that of the non-health insurance, though the magnitude varies between developed and emerging economies. Car insurances and insurances for

industrial and commercial establishments are among the dominant forms of non-life insurances in the region. The agriculture crop and livestock insurance forms only a fraction of the total premiums issued despite the majority of population occupied in agriculture sector in the region. Hence, promoting crop insurance by understanding factors limiting its spread in Asia and the Pacific region is an important policy research imperative.

2. OBJECTIVES AND METHODOLOGY

In view of the background discussed in the introduction, the current reconnaissance study was carried out with the objective of understanding factors limiting the spread of insurance in agriculture sector with case studies in Malaysia, Philippines and Vietnam. There are three reasons for selecting these countries. Malaysia is an economy in transition and does not have a government driven crop insurance program for arable crops such as paddy. Philippines represent one of the most innovative forms of crop insurance in this region both at the national and local levels. Vietnam stands in between these two countries in terms of advances made in crop insurance both in policy and institutional processes.

For understanding the enabling environment for crop insurance, the methodology included literature reviews and interviews with national level institutions such as government ministries, financial agencies (both government and private), and non-governmental agencies. While national level interviews were aimed at understanding the policy environment in these countries, detailed structured questionnaire surveys were implemented at the community level to understand needs and perception issues to be considered for formulating effective insurance programs at local level. The structured questionnaires consisted of questions on the demographic background of the respondent, the past crop loss experience, opinion on the crop insurance currently enrolled (in case of insured) and on the available insurance options (in case of non-insured and in Malaysia where there is no crop insurance in place).

A generic questionnaire was developed based on the literature review (Prabhakar et al., 2013) and expert consultations by the authors (Annexure 1). This questionnaire was further modified before implementing the survey by the respective country partners taking into consideration the individual country contexts. For example, the questionnaire surveys in Vietnam and Philippines was targeted to obtain opinions on the ongoing crop insurance programs while in Malaysia the survey was prospective seeking opinions on the newly announced crop insurance policy by the Malaysian government. The questions slightly differed for both beneficiary and non-beneficiary categories where the emphasis for the beneficiary category was to obtain insights on their insurance experience while the non-beneficiary was to know barriers in enrolling into an insurance program and what they think about the value of insurance. The questionnaires also obtained a comparison of advantages between traditional crop loss compensation (relief) schemes and insurance. The elicited responses were analyzed for specific preferences among

communities for certain form of risk reduction based on self-evaluation of their experience in crop insurance and presented as % of responses.

3. THE INSTITUTIONAL AND POLICY ENVIRONMENT

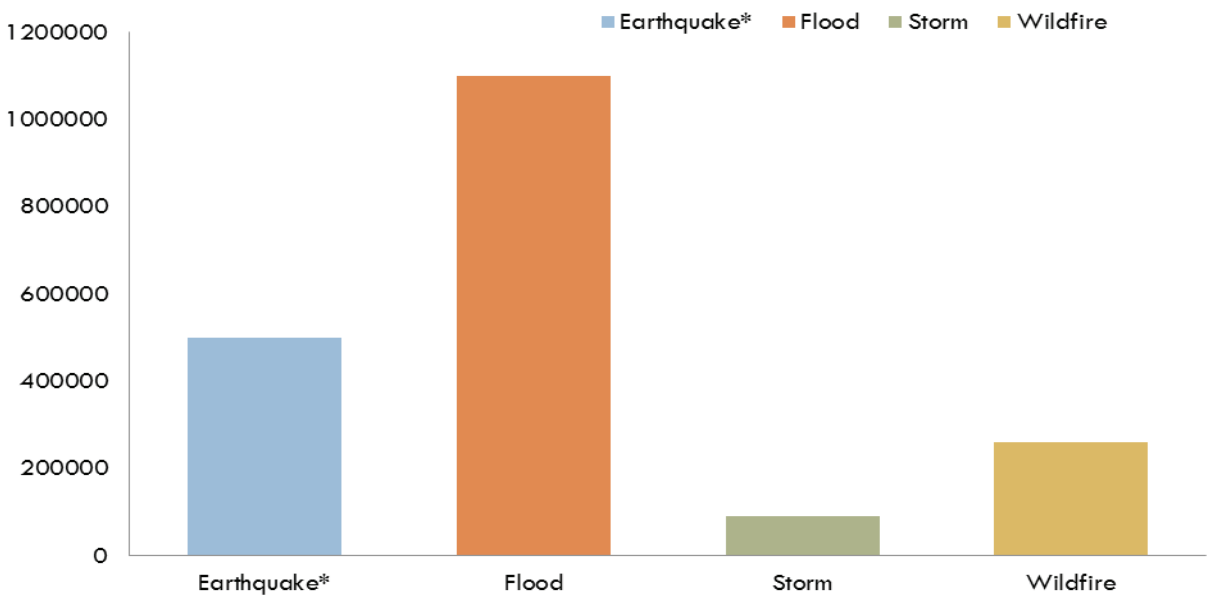
3.1 Malaysia

Malaysia being an economy in transition represents unique position for crop insurance among the study countries. Malaysia has large proportion of plantation crops, one of the highest in Asia, and most of these plantation crops have sufficient crop insurance coverage for major natural hazards. Most of this support comes from private insurance companies. Due to competition among private insurance companies, there is a certain price advantage given to plantation owners. However, the same doesn't hold good for agriculture insurance (arable crops and animal husbandry). Though major proportion of land and people are occupied in agriculture, the access to arable crop insurance is non-existent in Malaysia and hence is the focus of this case study. The impact of natural disaster to Malaysian farmers calls for some practical financing support in particular to the food and cash crops.

Currently, the plantation crop insurance in Malaysia is offered by the private insurance sector. However, the plantation crop insurance policy or better known as the insurance for growing trees is only an extension of a fire insurance policy and it mainly covers the industrial crops such as rubber and palm oil. Thus, majority of the policyholders are large-scale plantation companies. Among the insurance companies that offer the plantation crop insurance are Lonpac Insurance and Syarikat Takaful Malaysia Berhad. The coverage provided by the private insurance sector is not sufficient as Malaysian farmers face various loss exposures associated with natural perils such as drought, crop disease, floods, hails, changes in weather, pest outbreak and windstorm (Zuriah and Heizal, 2002). The United Nations International Strategy for Disaster Reduction (UNISDR) confirms that Malaysia is exposed to natural perils such as storms, landslides, tsunamis and floods (UNISDR, 2011). In the past 30 years, floods have caused the worst damage to Malaysian economy. In 2007, the economic damage caused by floods amounted to 0.1% of the country's Gross Domestic Products (GDP) (Figure 1).

The Malaysian agricultural sector has incurred huge losses due to floods. In the flood of December 2006, losses in agricultural sector were estimated to amount to USD 18.8 million involving 6,797 farmers and 8,322 ha of arable lands (Table 1). For these losses, government spent USD 2.6 million in financial aid to farmers. In December 2007 floods, the estimated losses were nearly USD 18.5 million out of which 46% of the losses were covered by the government. The trend shows that the Malaysian government spent higher in terms of the dollar amount in year 2007 compared to year 2006, a growing burden on the government revenues that otherwise could have been well invested in other development sectors.

Figure 1. Estimated economic damages by peril type (000 USD) (UNISDR, 2011)



* including tsunami

In particular, damages incurred by the paddy producing farmers in the Muda Agricultural Development Authority (MADA) area was estimated at 76,287 ton (on an average 5.5 ton per hectare) valued USD 13.8 million. The losses were due to the worst flood in 2005 in which 19,185 ha (20% of the MADA's area) were affected. The MADA area which is in the north of Peninsular Malaysia is the main producer of paddy in Malaysia, accounting 40% of the Malaysia's total production of paddy (MADA, 2009). According to MADA Report (2009), since 1988, MADA areas have experienced six major floods and five of them have occurred between 2003 and 2008 showing an increasing trend in floods during recent years.

Currently, paddy producing farmers in Malaysia have access to bank loans offered by Agro Bank whose focus is financing the agricultural sector. A product called 'Paddy Scheme', allow paddy producing farmers to borrow money with a low interest rate. The total loan amount depends on the size of land and its location. Normally, farmers can get up to around USD 692 per hectare and repayment period is per season. The payment can be made through deduction of the government subsidy or farmers can pay directly to Agro Bank by cash. If the farmers incur losses, the payment period will be extended. The availability of bank loan for paddy farmers provided a minimum financing support as the farmers have the obligation to repay the loan. In case of consecutive loss incidents, farmers may face serious debt. Under these circumstances, crop insurance can provide a better risk financing mechanism to paddy producing farmers.

Table 1. Estimated damages and losses in agricultural sector due to floods during 2006-2007 (National Security Council, 2009)

State	Size of land (ha)		No of affected farmers		Estimated losses (USD million)		Compensation paid (USD million)		Coverage of the compensation paid to the losses (%)	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
Johor	4,544	2,791	3,360	1,843	14.8	2.5	1.2	0.7	8%	28%
Kedah	---	5,621	---	4,099	---	6.4	---	4.1	---	63%
Pahang	2,728	5,034	2,445	5,362	2.2	5.4	0.8	2.2	34%	41%
Melaka	930	---	790	---	1.7	---	0.5	---	29%	---
Negeri Sembilan	120	271	202	516	0.2	2.1	0.1	0.3	33%	14%
Kelantan	---	3,791	---	4,228	---	1.8	---	1.2	---	65%
Terengganu	---	41	---	47	---	0.1	---	0.02	---	17%
Perlis	---	8	---	25	---	0.01	---	0.01	---	97%
Total	8,322	17,556	6,797	16,075	18.9	18.4	2.5	8.5	13%	46%

Interviews with national level institutions including with the Ministry of Agriculture has revealed that the growing burden on the government revenues, impacts on rural livelihoods and the unavailability of private insurance coverage for arable crops has led to several efforts by the Malaysian government to offer agriculture crop insurance. Several exploratory studies were carried out by the Ministry of Agriculture by recruiting consultants to assess the feasibility of insurance coverage for farmers in Malaysia and these studies were known to have proposed several recommendations for the consideration of the central agency Economic Planning Unit (these studies were not published and hence are not available in public domain). Our interviews indicated that most studies have reported high cost of implementing crop insurance (as much as approx. USD 275 million per annum) which was one of the major causes for the government not being able to introduce crop insurance program for farmers in Malaysia.

The Ministry of Agriculture has recently recruited consultants to help plan and implement crop insurance in Malaysia according to whom the best crop insurance policy for Malaysia will be the one which integrates crops, livestock and other agriculture livelihoods under the same program in an integrated manner. As a result of these efforts, in the latest budget report (Belanjawan Malaysia, 2013), the government has allocated USD 0.99 billion for the implementation of the Project Initiation, of which USD 0.49 billion is allocated for agricultural projects such as palms oil, rubber, high-value herbs and paddy. In addition, USD 1.9 billion was allocated to the Ministry of Agriculture and Agro-based industry in order to boost national income and to ensure the sustainability of food security (The Star, 29th Sept. 2012). A further USD 16.5 million was dedicated for the development of agricultural programmes which include the application of technology, increase

the supply of quality seeds, ensure price stability and to create and improve agricultural training institutions. Under the Third National Agricultural policy, the agriculture ministry worked closely with Bank Negara Malaysia and the insurance industry to detail out a National Agricultural Insurance scheme (Ministry of Agriculture, 2010). This proposed scheme is designed to protect farmers in the event of losses due to natural, economic, man-made disasters. The proposed crop insurance policy would increase chances to raise capital as financial institutions will be more confident in dealing with insured farmers.

The proposal to introduce crop insurance coverage for agriculture farmers has been submitted to the Cabinet for approval (The Star, 26th June 2012). The basis of this scheme is to provide insurance coverage for farmers whose crops were destroyed by natural perils such as floods and droughts. In the early phase, the insurance is targeted and will be made available only to paddy farmers but it will be expanded to other agricultural crops eventually. As of the date this report is being drafted, the policy states to cover a maximum loss of USD 4,283 per ha to paddy farmers. However, there is no detailed information on how the insurance program will be managed and financed. In terms of the institutional architecture, the proposal has identified that the Ministry of Agriculture would implement the program with the support from the Bank Negara Malaysia as a supporting financial agency.

Since the idea is new, the proposed plan has been discussed among the related ministries. The proposal has identified paddy crop as an important entry point for the penetration of insurance into arable farming community. The reasons for identifying paddy as entry point are: paddy is the staple food crop with maximum proportion of arable cropping under it, most paddy grown areas are vulnerable to floods and other forms of hydro-meteorological disasters and there is sufficient statistical data on the intensity of natural hazard and crop loss relationships to help design crop insurance. However, since the government has decided to introduce crop insurance only to cover paddy, the subsidy component was found to be affordable compared to the previous assessments carried out covering wide range of arable crops.

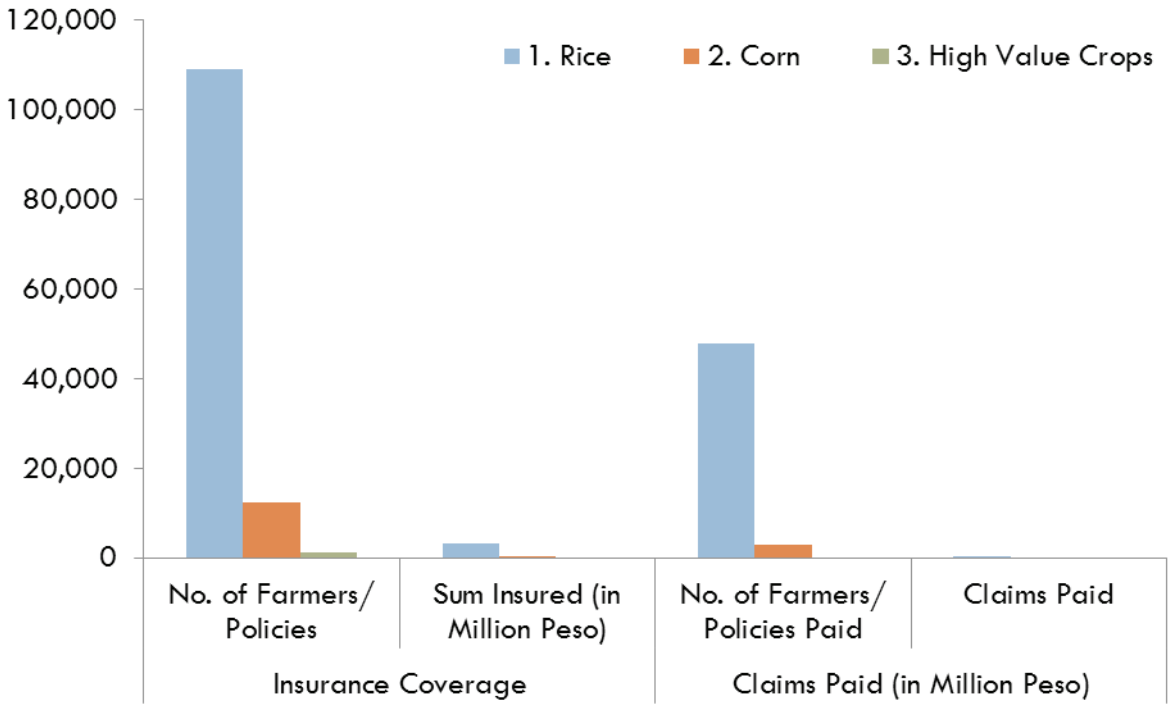
3.2 Philippines

Agriculture and fishery contribute to 15 % of the Gross Domestic Product (GDP) of the Philippines and provide livelihood to one third of the total employed. Communities that depend on agriculture and fishery are the most vulnerable to climatic risks due to their dependence on livelihood options that are sensitive to climatic vagaries. Losses in the major agricultural crops (paddy, corn, sugar cane, coconut, and pineapple) due to climate-related events in recent years have been reaching several millions of dollars per year. During 2007-20011, typhoons caused a total loss of USD 1.2 billion damage to paddy crop alone (PIDS, 2012). In December 2012, typhoon Pablo caused an estimated damage of USD 0.4 billion to agriculture mostly in Davao province (Official Gazette, 2012). As a result, economic damages due to natural disasters are estimated to reach more than 0.5% of the country's GDP.

The above disaster profile of Philippines has triggered the Government of Philippines to invest in risk mitigation and risk spreading options as a result of which the country boasts the presence of one of the rich experiences in crop insurance today. With ever increasing crop losses due to typhoons and droughts, the government of Philippines has established the Philippine Crop Insurance Corporation (PCIC) with a mandate to implement agriculture insurance against crop losses due to natural hazards and non-crop losses due to different perils. An Interagency Committee for the Development of the Philippine Crop Insurance System was created in 1976. Subsequently, Philippines Crop Insurance Corporation (PCIC) was established on June 11, 1989 under the Department of Agriculture promulgated through Presidential decree No. 1467 and started its nationwide implementation of crop insurance on May 7, 1981 covering only paddy and later on corn and other high valued crops. As a result of these efforts, 123000 farmers were insured and 51000 farmers were paid the claims as of 2011 (Figure 2, PCIC, 2011).

The PCIC offers several types of crop insurance including insurance for paddy and corn, high value commercial crops, livestock insurance, fisheries insurance and term insurance. These insurances cover wide range of perils, such as, natural disasters, pests and diseases with a total premium rate of 10.81% for paddy and 19.27% for corn (Table 2). The amount of cover varies from crop to crop and within crop depending on the type of variety (e.g. Hybrid vs inbred). The maximum ceiling for paddy was set to be USD 1,600 for hybrid seed production and USD 970 for hybrid corn. For high value commercial crops, the premium rate varies between 2-7% and covers the same type of perils as in the case of paddy and corn. The premium rate could go as much as 10% in the case of livestock and covers accidental death and diseases. As of 2012, PCIC had covered 6% of paddy farmers in the country. Its goal in 2013 is to increase the coverage to 9-10%. Those involved in the coconut industry hope that the goal will include coconut, which is one of the important crops in the Philippines. At present, PCIC and other insurers do not yet offer crop insurance for coconut.

Figure 2. Insurance coverage and claims paid to paddy, corn and commercial crop farmers in Philippines in 2011 (PCIC, 2011)



One of the most useful programs offered by PCIC includes the insurance of agricultural assets against natural disasters and other perils with a premium rate at the prevailing industry rates. PCIC also has several traditional insurance plans tailored for farming community which include term insurance such as accident insurance, life insurance and loan repayment protection plan with variable premium rates decided based on set procedures. PCIC has also implemented some special insurance programs, for example, programs that support the food security and poverty alleviation program of the government and others that cover aquaculture and fisheries, tobacco, and hybrid paddy seed growers.

A new system that PCIC is currently pilot-testing is parametric insurance, the area-based yield index insurance (ARBY). It uses yield of an area as index for determining payout. The trigger for payout or threshold yield index is established based on the historical average yield of an area over a long enough period of time, e.g., 20 to 30 years. PCIC is testing ARBY in Southern Leyte in collaboration with Deutsche Gesellschaft für Internationale (GIZ) in the Philippines through its Micro-insurance Program for Social Security (MIPSS), which assists in developing national policy and regulatory frameworks and in promoting financial literacy on micro-insurance and weather index insurance (WII).

Both the PCIC and private insurance companies have been piloting the WII. PCIC, in collaboration with the International Labor Organization and with national agencies and local government units (LGUs) and organizations as partners has been implementing WII in selected local communities using automatic weather stations established by Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). The project includes facilitating loan to farmers and

providing training and capacity development. In the private sector, Microensure and the Philippines Coop Life Insurance and Mutual Benefit Services (CLIMBS)[1] Weather Protect, a collaboration of GTZ and Munich Re, are leading in offering WII cover to farmers and cooperatives. CLIMBS program is aimed at protecting the loan portfolio of cooperatives against loss from weather events. All these pilot programs are known to generate rich lessons for scaling up similar innovative schemes to cover more agricultural products and farmers throughout the country. The pilot crops are paddy and corn and the WII products cover low and excess rainfall and continuous dry or rainy days. PCIC uses data from the automatic weather station established by PAGASA and validated by field data generated by the farmer field schools of the LGUs. So far, PCIC has completed three cycles of pilot-testing for paddy.

Table 2. Sharing of subsidized premium costs of PCIC insurance program enrollees

	Paddy Premium Rate (% of sum insured)	Corn Premium Rate
Farmers	2.91	5.65
Lending Institutions	2.00	3.00
Government	5.90	10.62
TOTAL	10.81	19.27

A special insurance in the agriculture sector provides protection for agrarian reform beneficiaries (ARBs) under the Agrarian Reform Beneficiaries Agriculture Insurance Program (ARB-AIP). This government program aims to enroll over 224,000 ARBs with 330,000 ha of land and 30,700 farm animals in the PCIC's subsidized insurance programs. Each ARB can have insurance cover of up to 3 ha and up to 3 types of insurance.

Another government initiative is the Agricultural Guaranty Fund Pool (AGFP), which was established in May 2008, with a total contribution of USD 0.11 billion from the national government, Land Bank of the Philippines (LBP), Development Bank of the Philippines (DBP), other government-owned and controlled corporations (GOCCs), and government financial institutions (GFIs). It is supervised by the DA, in coordination with the LBP, which serves as the program's institutional manager. AGFP provides guarantee for agricultural loans in order to mitigate the risks involved in agricultural lending thereby facilitating the provision of credit in the agriculture sector. Through an all-risk guarantee facility, eligible financial and lending entities (banks, cooperatives, small and medium enterprises or SMEs, NGOs, and farmer organizations), can expand their unsecured lending to eligible small farmers and fisher folks engaged in food crops production, tilling not more

1 CLIMBS (Coop Life Insurance and Mutual Benefit Services), is the result of collaboration between GTZ (now GIZ) and Munich Re. It offers "grassroots insurance"-life and non-life insurance products and services--to cooperatives and their members and families. It also offers natural catastrophe (NatCat) insurance, a weather-index parametric insurance that protects a cooperative's loan portfolio against loss from weather events. Its WII insurance trigger depends on a municipality's geographic profile, as well as individual risk perception and vulnerability.

than 7 ha for crop production, and with no assets to serve as collateral. The AGFP can guarantee up to 85% of the principal eligible loan to farmers.

Both private and government offered insurance products are available in the Philippines, they both differ in various areas (Table 3). In terms of triggers and risks covered, government (PCIC) and private sector crop insurance programs are similar. However, in terms of premium, private sector charges high rate compared to PCIC because of the latter's premium is subsidized by the government. Furthermore, private sectors are also subject to taxes which increase the premium.

Table 3. Comparison of government and private sectors crop insurance products in the Philippines

CROP Insurance Implementer	Triggers of Pay-out	Risk Covered
ILO - International Labour Organization	Amount of Rainfall	Excess rainfall & Drought
CLIMBS	Wind Speed & Rainfall	Excess rainfall & Wind
GTZ	Area Based Yield	Multi-peril
PCIC - Philippine Crop Insurance Corporation	Actual Crop Loss	Multi-peril
MicroEnsure	Amount of Rainfall	Excess rainfall

In private sector, numerous business organizations (i.e., agri-business and insurance companies) and several NGOs are involved in the agriculture and fishery insurance. As of 2012, there were 34 private companies in the Philippines providing life insurance, including savings and investment/endowment fund management, and hospitalization, accident, and disability insurance. There were 84 non-life insurance companies offering insurance cover for fire and allied perils, marine and aviation, motor and machineries/equipment, travel accident, and bond. There were also 26 Mutual Benefit Associations (MBAs). The private insurance industry has also been involved in crop insurance, particularly WII, through a micro-insurance distribution system. But the non-life insurance part of the industry, which is expected to be the main provider of crop insurance in the private sector, is observed to be fragmented, with members involved in fierce competition, with low capital base, and with excessive dependence on international reinsurers (The World Bank, 2005). MicroEnsure Insurance Brokers Philippines, Inc., is a leading advocate of micro insurance in the private sector. It operates in partnership with various organizations, including Micro Finance Institutions (MFIs), cooperatives, rural banks, credit unions and humanitarian organizations that provide supportive non-financial services, e.g., housing for the poor.

Coconut is one of the important plantation crops in Philippines and risk insurance in the coconut industry is a relatively important and new. Although there is no crop insurance yet for coconut, Cocolife offers its 'Coconut farmer life insurance' product. The main issue for implementing insurance for coconut farmers is the need for substantial funding and no insurance company has ventured in investing

in it due to the perceived high risk. The differentiating characteristic between coconut and other arable crops is that coconut trees can withstand moderate disasters and they can even produce fruits within 2-4 years after a moderate typhoon. However, replantation which requires up to five years of gestation before fruiting may be needed in case of severe typhoon, as it happened in Mindanao. Formulating appropriate insurance products for coconut farmers appears to be both a technical and economic challenge, which offers significant opportunities for insurers that can design affordable and innovative insurance.

According to the crop insurance experts the author interacted, the crop insurance in Philippines faces at least three major issues: Lack of enabling environment for micro-insurance, scaling up WII to other commercial applications and developing regulatory framework for WII and parametric insurance. The main challenge appears to be reaching consensus on who will be responsible for what between Insurance Commission (IC) and Climate Change Commission (CCC). Four main recommendations seem to emerge from various stakeholders: a) to develop WII insurance as fundamental framework, b) joint memorandum circular between IC and CCC. The second option is to make insurance wider by CCC taking the role of coordinating body and advocate of WII, c) to promote individual out-of-pocket proactive participation in risk management which appears to be challenging since individuals are not willing to pay without subsidizing premium component, and d) to advocate LGUs to act as risk insurance aggregator by which local governments will be able to reduce overheads in implementing a massive insurance program.

3.3 Vietnam

Agriculture is an important sector of the Vietnam economy. With 70% of Vietnam's population occupied in farming and living in rural areas, annual agricultural production contributes to a third of the country's GDP. Located in a tropical monsoon area of South East Asia, Vietnam's agriculture has been frequently suffering from natural hazards such as floods, droughts and storms as well as seasonal epidemics. The combination of exposure to natural hazards and poor adoption of improved agricultural practices have resulted in repeated crop losses. Over the past 20 years, natural disasters have caused a total loss of life of 13,035 persons (average of 652 lives per year), with damage to housing, public property, agriculture and infrastructure valued at USD 6.4 billion (an average USD 322 million per year). Excessive and extended flooding and tropical storms represent 95 % of the reported value of losses. The analysis of selected events shows that approximately one third of all the value of damage is incurred by agriculture, a quarter by private housing and the rest by public property in a catastrophic typhoon event. Preliminary catastrophe risk analysis indicates that a major disaster year in Vietnam, occurring once in every century, could cause losses in excess of USD 3.8 billion at 2008 GDP values (World Bank, 2010). The rising concerns about the impact of climate change on the frequency and intensity of climatic hazards in Vietnam has significant implications for the farming sector. The country has been identified as one of the five worst affected countries by climate change owing to the fact that a large proportion of the population, industry, infrastructure and

agriculture are concentrated in the narrow coastal strip and low-lying Red River Basin and Mekong Delta.

According to the Vietnam Farmers Association, total value of loss in annual agricultural production in Vietnam was 8.2% of GDP in 1994, 10.5% in 1997, 4.8% in 1999, and 4.57% in 2000. In addition, Vietnamese farmers have to cope with seasonal epidemics which are potential risk for crops and livestock. Avian influenza, foot and mouth disease in pigs, disease in shrimp, fungi in coffee, insect pests in rice have been causing severe economic damage. Some of the significant damages reported are: (i) Three outbreaks of avian influenza in December 2003 have destroyed nearly 50 million poultries (ii) In 2004, 38 million poultries, accounting for 15% of the national herd, were destroyed causing a damage of USD 150 million and direct impact on daily life of millions of households (iii) In 2007, porcine reproductive and respiratory syndrome (PRRS) in pigs has caused a damage of USD 10 million (iv) In 2008, the historic cold wave lasting 38 days led to death of 65,802 cattle, damage to 104,000 ha of paddy and 9,500 ha of paddy seed plots in the northern Vietnam with an estimated damage of USD 300 million. Over the past several years, the annual costs of natural disasters have been equivalent to an average of 1.0 -1.2 % of GDP with a peak loss of 3% in 2006. In comparison, average annual expenditure made on disaster relief was 0.5-0.6% of GDP (World Bank 2010). Despite the importance, the concept of agriculture insurance is still at nascent stages in Vietnam. According to the Department of Insurance, Ministry of Finance, the proportion of crop insurance in Vietnam stands at a low level. Less than 1 % of the cropped area, cattle, pigs and poultry were insured during 2001-2009.

Realizing the above potential for crop insurance in Vietnam, the Government of Vietnam has been encouraging enterprises, particularly the state-owned ones, to provide agriculture insurance services. However, there has been a bumpy road toward improving insurance market for agriculture. The first agriculture insurance was piloted in 1983. So far, there are two companies – Bao Viet and Groupama-providing agriculture insurance for crops and livestock, and two others– Bao Minh and Agriculture Bank's Insurance Company- have potential to provide insurance services.

Bao Viet, the Vietnam Insurance Corporation, has piloted its paddy insurance service in two districts of Vu Ban and Nam Ninh of Nam Ha province, before expanding this service to many other provinces in 1993. The service was expanded to 26 provinces after 15 years of deploying paddy insurance during 1983-1998. However, the insurance program was not successful as the total covered area was only 1.16% of the country's cultivated area in 1995 and 0.27% in 1997. The insurance service for paddy then encountered difficulties leading to decrease of area covered and premium revenue with an increase in the rate of compensation. In 1999 Bao Viet stopped the paddy insurance with declining interest among farmers (USD 0.62 million premiums against USD 0.69 million compensations).
From 1996, Bao Viet agriculture insurance had focused on forest and rubber plantations but could only cover limited area. Premium revenues during 1996-1998 were USD 0.16 million against 200 million compensation in Kien Giang area.

Insurance for eucalyptus plantation was introduced for a joint venture plantation project in an area of 44000 ha during1997-1998 with USD 0.72 million premiums earned. Livestock insurance was also deployed in some provinces from 1996 but was stopped soon due to insufficient demand. So far, Bao Viet agriculture insurance has been mainly implementing insurance for rubber in Binh Phuoc and Tay Ninh and for dairy cows in Kon Tum. However, business efficiency has been low as the rate of compensation (80% of premium revenue) has been much higher than the rate of compensation of its other insurance services (50%).

Groupama General Insurance Company Limited – a French insurance company- began to operate agriculture insurance in Vietnam in 2001. Groupama has been offering several insurance services for livestock, crops, assets, supply of materials, equipment, accident of agricultural workers and civil liability, and shrimp farming since 2002 in provinces of the Mekong Delta region. Although being a big agriculture insurance company with extensive international experience, Groupama agriculture insurance failed in Vietnam due to low revenue and high compensation rates. The company grossed a mere VND 5 million in the first six months of 2004. Many aquaculture households complained that Groupama did not compensate in accordance with contractual commitments. From 2005, the company had expanded its operation area beyond the Mekong Delta while narrowing the investments in insurance and insuring only cows and pigs. The company has strictly defined regulations for insurance products: pets must be fully vaccinated and minimum herd size should be 5 pigs or 3 cows. However, guidelines to inspect and animal husbandry practices for preventing losses was a big question for the company. Due to these limitations, the company has earned insurance revenue of VND 11 million in 2007.

Two other companies with potential to offer agriculture insurance are Bao Minh Insurance and Insurance Company of Bank for Agriculture and Rural Development of Vietnam. Bao Minh Insurance has been insuring credit loans for agriculture under the weather index in Dong Thap. However, due to the relatively high rate, 15 % of the loan value, banks have not shown sufficient interest in this program. Insurance Company of Bank for Agriculture and Rural Development of Vietnam obtained permission for implementing agriculture insurance but still studying the feasibility for implementing agricultural insurance.

The above experiences suggest that the implementation of agriculture insurance in Vietnam has not been effective. Annual revenue of agriculture insurance increased slowly, proportion of revenue of agriculture insurance was very small compared to the overall premium of non-life insurance: 0.069 % in 2004; 0.008% in 2005; 0.012 % in 2006; and 0.01 % in 2007. The rate of compensation on the turnover was higher than 80%. The implementation of agriculture insurance has been ineffective not only for insurance companies but also for the farmers. There is a potential to insure grain crops, fruit trees, industrial crops and the number of livestock and poultry but only a very small number of industrial plantations are covered under insurance. Paddy is a crucial crop but has not been covered by most insurance companies. The implementation of agriculture insurance neither met the industry goals nor supported the farmers.

There were many causes leading to the poor performance of the agriculture insurance companies in Vietnam. The analyses of business results of Bao Viet and Groupama as well as interviews with staff of insurance companies and experts in the field of insurance has provided some of the main reasons as discussed below. One of the foremost important reasons was inappropriate design of agriculture insurance services by most companies. Most were multi-risk insurance services but not specific services for particular peril or subject which could be deployed in a large scale. As noted by experts in Bao Viet, paddy fields and farms were located in large areas but the number of insurance staff was few without proper knowledge of crops, animals and insurance. The cost for insurance operation was high while value of insurance was small and scattered in large area. There was no effective risk management practice for insured crops and animals. The fear of farmers exploiting agriculture insurance has been another reason. In addition, the settlement of compensation was slow and procedures were laborious making it more difficult for the insured affecting the enthusiasm of farmers after enrolling in insurance services.

High losses and low profitability made insurance services least attractive for the insurers. In all these cases, the cost of selling insurance was high and damage assessment, inspection and compensation were problematic while commissions were low. Farmers could not afford to participate in insurance programs with high premium rates and low financial viability made the insurance programs unviable. In addition, businesses were targeting revenue and profit as their top priority and salaries of insurance operators were based on the profits earned. Financial capacity of the insurance companies was a limitation. Disaster and epidemic risks in agriculture insurance are sometimes catastrophic with mass destruction causing huge financial losses exceeding the financial capacity of the insurance companies. Hence, the insurer tends to select specific types of risks and deployed in limited areas. Since the risks are high in operating insurance business, the insurance companies need to be backed by the reinsurance. However, the reinsurance market was undeveloped and there was no reinsurance programs sharing the risks of the primary insurers.

Keeping the above lessons in view, the Government of Vietnam issued Decision on Crop Insurance - Decision 315/QD-TTg - which introduced a pilot insurance program for agriculture in 2011. This pilot program will be implemented in 20 provinces for three years from February 2012. The program guarantees 100 % premium subsidy for poor farmers, 80 % for the near-poor, 60 % for other categories of farmers and 20 % for the organizations of agricultural production. The funding for subsidies come from the central government for most of the provinces receiving central budget allocation and others have to bear from their own provincial budget. This program has been introduced in some provinces for paddy, livestock and aquaculture on a pilot basis. The provinces are given the opportunity to implement the program in the whole province or in selected areas of the province keeping in view the vulnerability factors. The pilot program covers a range of natural hazards, diseases and epidemics.

The Decision 315/QD-TTg also provides detailed guidelines and eligibility criteria for operating as insurance provider and lays down the roles and responsibilities of ministries involved in implementing insurance programs (Ministry of Finance, Ministry of Agriculture and Rural Development, Provincial Peoples' Committees, and insurance companies). Bao Viet and Bao Minh, two largest state-owned insurance companies, to implement the insurance program, Vina Re in association with Swiss Re provides reinsurance support for the program. In addition, Swiss Re provides strategic and technical support to the government in implementing the program. The government has established elaborate institutional mechanism for implementation of the program through steering committees at the national, provincial and district levels. Through the Decision 315/QD-TTg, the Government of Vietnam arranged a system of five main actors and their agencies involving in the pilot program (Table 4, The Government of Vietnam, 2012). The national level steering committee constitutes Vice Minister of Finance and line ministries and the provincial level committees constitute Vice Chairman of People's Committee and provincial departments.

Table 4. Matrix of institutional arrangement for the pilot program on agriculture insurance

Name	Responsibility
Ministry of Finance	• Choosing enterprise/company to implement agriculture insurance; • Approving the rules for premium, insurance commissions and insurance liability; • Guiding financial mechanisms, supporting policies for insurance companies; • Stipulating profile, procedures and processes for agriculture insurance; • Providing funding under the responsibility of the central budget and guiding the • Provincial People's Committees to implement policies to support agriculture insurance; • Supervising the implementation of agriculture insurance; • Reviewing, evaluating and annually reporting to the Prime Minister on the agriculture insurance.
Ministry of Agriculture and Rural Development	• Giving specific guidance on the types of natural disasters, epidemics that are covered; • Coordinating with the Ministry of Finance in stipulating profile, procedures and processes for agriculture insurance; • Promulgating criteria on scales of paddy, animal husbandry, aquaculture for agriculture insurance. • Promulgating standard cultivation procedures for paddy, livestock, aquaculture in agriculture insurance. • Quarterly making reports on the performance assessment under the scope of responsibility and proposing measures to the Ministry of Finance.
Provincial People's Committees	• Establishing of the Steering Committee for local agriculture insurance chaired by a Vice Chairman of the Provincial People's Committees; • Organizing the implementation of agriculture insurance; allocating funding (from the central budget and local budgets); inspecting and supervising agriculture insurance in the province. • Coordinating with the Ministry of Finance stipulating profile, procedures and processes for agriculture insurance; • Quarterly assessment reports and propose remedies to the Ministry of Finance, Ministry of Agriculture and Rural Development.
Insurance companies	• Implementation of pilot agricultural insurance in accordance with the decision and guidance of the Ministry of Finance, Ministry of Agriculture and Rural Development; • Coordinating with the Provincial People's Committees, Ministry of Agriculture and • Rural Development to expand distribution channels, transaction systems to serve farmer participated in agriculture insurance; • Quarterly making reports and recommending measures for deploying agriculture insurance to the Ministry of Finance, Ministry of Agriculture and Rural Development and Provincial People's Committees.
National Corporation for Reinsurance	Agriculture reinsurance under the guidance of the Ministry of Finance.

4. COMMUNITY OPINIONS ON CROP INSURANCE

Opinions of the insurance beneficiaries and those who did not join insurance provide an important insight into various issues and advantages of implementing insurance programs. Though insurance providers conduct feasibility studies before implementing insurance products, these studies are often controlled and results are not made available widely and hence it is often difficult to judge what went into these pilot experiences. Keeping this in view, the study has conducted structured questionnaire surveys with farmers (insured and uninsured) to elicit responses on various aspects of insurance. The results are presented as percent of responses.

4.1 Malaysia

Keeping in view the newly proposed crop insurance policy by the government, the study team has conducted a reconnaissance survey with agriculture communities to obtain their opinions and preferences on the proposed policy. These responses provided a useful insight into important characteristics of insurance as opined by the interviewees. The study relied on primary data collected through self-administered questionnaires which was distributed among paddy producing farmers in the MADA areas of the northern Peninsular Malaysia[2]

The majority of respondents were males and more than half were 50 years old. More than one third leased or owned 1 to 2 ha of paddy fields and half of them were in the low income group. The survey has revealed that 77% of the respondents received financial aid from the government after the disaster (in the form of disaster compensation). However, payments were not immediate. Most of them (43%) received payments one or two months after incurring losses. Only 15% received immediate payment and the rest of them waited longer for the payment, which could be more than four months after the disaster.

With regards to the timeliness of payment, more than half of respondents stated that it was timely for them to recover. In fact, 42 % of the respondents claim that the period taken by government in delivering the financial aids met their expectation. However, there are some weaknesses raised with regard to the payment system. Half of the respondents are dissatisfied with the loss assessment since the payment received did not represent the loss. A further 8 % of respondents claimed that there are leakages of fund along the distribution channels, thus hampering the effectiveness of the payment system. Nonetheless, it turns out that more than half of the respondents relied upon the financial aid in recovering their losses while only 22.7 % recovered independently.

The respondents were asked on their opinion regarding the financial aid given by government to the affected farmers. 80 % of the respondents were satisfied

2 The north of Peninsular Malaysia is the main producer of paddy in Malaysia, accounting 40% of the Malaysia's total production of paddy (MADA, 2009). Most of the paddy areas in the northern Peninsular Malaysia are managed by Muda Agricultural Development Authority (MADA), agency under Ministry of Agriculture, and it covers an area of 96,558 ha.

with the amount of the financial aid and less than 10 % are dissatisfied with the amount granted by government. In term of the basis of loss assessment, only 24 % of the respondents said that it was at least good. More than one third (36.4 %) of the respondents admit to forwarding their complaints to the authoritative bodies while half of them never made any complaint. In their opinion, the government has provided a good (51.3%) mechanism for grievance redress and only a small percentage (17%) said otherwise. Overall, more than half of the respondents had good perception on the overall government policy in the financial aid program for crop losses and a quarter of the respondents had negative view on the financial aid policy by government.

Although, a high number of respondents provided good feedback on the government policy on compensating farmers for the crop losses, 70.5 % of the respondents suggest that crop insurance should be an alternative to the government financial aid program. In fact, more than half of the respondents are aware of the recently announced government crop insurance program but only one third claimed having good understanding on crop insurance. 40 % of the respondents said that they didn't know whether anyone in the community was called to participate in the development of the crop insurance program.

From the survey, we found that the average willingness to pay for a crop insurance policy is USD 9 per hectare per season for insurance premium with conditions set as below:

- Maximum compensation should be USD 4280 per hectare.
- Coverage should include floods, fire and disease outbreak.
- Amount of compensation should to be paid based on valuation made by related authority

Twenty six percent of the respondents are unwilling to pay for the bid amount given to them. The most common reason why they are not willing to pay is because they believe the premium should be subsidized by the government (71.4%). Only 14.3 % give the reason that they do not believe in insurance. The respondents were also asked on their expectation if the crop insurance program is not offered. Thirty seven (37) % indicated that they will not be able to recover from losses while 18 % said they will be able to recover with the helps from various parties such as friends, relatives, NGOs and government.

4.2 Philippines

Insights on how farmers, with or without insurance cover, look at insurance for agriculture were obtained from structured questionnaire surveys conducted in various locations with the help of MicroEnsure and Cocolife. A total of 29 insurance beneficiaries and 10 non-beneficiaries from various municipalities have participated in the surveys. The beneficiary group respondents comprised of 35 % male and 65% female, with 72% above 50 years old. Most were farmers with one rural entrepreneur. 58 % considered themselves belonging to the low-income

group and the rest to the middle-income group. 69% owned 2 ha or less of land and 100% of the lands owned by all respondents were arable.
All the respondents have experienced crop losses due to natural calamities (floods, droughts, landslides, forest fires, insect outbreak, uncongenial weather conditions such as temperature, humidity, etc.), mostly in 2012. 90% had crop losses in the range of 75-100%. 50% of them have not recovered from their losses yet, 67% of them are still at a loss, 3% took a bank loan to cope with their loss, and 28% resorted to various types of coping measures that included borrowing from MFIs (100 % of them), insurance payout (50%), personal money (38%), and crop loan, compensation from other crops, and assistance from the department of agriculture (12%).

Among the participants of insurance program, 55% said they have been in an insurance program for less than a year, 38 % for 2-3 years, 1% for 4-5 years, and 1% for more than 6 years. More than half of them (59%) expressed having average level of understanding of their insurance program and 41% expressed having good level of understanding. They attributed their understanding to the efforts of the insurance providers, with 48% of them rating such effort as good, and 41% rating such effort as average. 10% of them rated the efforts as bad.

Majority of the respondents paid more than USD 49 premiums for insurance per year, with 41% paying USD 49-73 and 31% paying more than USD 73. Those who paid less were 17% for USD 25-49 and 10% for USD 25 and less. Among those who responded to the question on affordability of the premiums, 17% said it is affordable and the same percent also said it was not. One third said it was costly but was made affordable by innovative approaches and one third of them were not sure.

Of those who responded to the question on the amount received as insurance claim payout, all said it partially compensated their loss but was insufficient for recovery from disaster. On the level of satisfaction with the claim received, majority (66%) was uncertain, 21% thought it was bad, 4%, very bad, and 10% had high level of satisfaction. On the insurance claim procedure, 62% was uncertain, 24% thought it was bad, and 14% had high satisfaction. 44% said they received their payout within three months after their submission of the required documents to the insurance agency. Over 30% (31%) received it within two months after and 25% received it four months after. Of those who commented on the timeliness of the payout, only 33% said that it was timely for them to get back to their normal life. Most of the respondents (83%) said that their claims were assessed fairly, 14% were uncertain, and 3% said they were unfairly assessed. Of those who responded to the question on grievances, 67% indicated that their grievances on insurance settlement were not addressed well by the insurer.

Their recovery after the disaster was slow according to 59% of the respondents and very slow according to 28%. Some (7%) had not progressed since the disaster. A few (3%) said they are better than before the disaster or had recovered fully. Before enrolling in the insurance program, 79% were not able to recover from disaster, 14% were able to recover with the help of relatives and friends, and 3%

were able to recover with the help of the government; but 3% said that they were able to recover better than with insurance. All of the respondents said that the government should provide subsidy for the crop insurance premium, with 52% of them saying 100% subsidy, 17% with 75% subsidy, 17% with 50% subsidy, 7% with 25% subsidy, and 7% with subsidy that is based on the economic level of the farmer. Most (86%) of them wanted that 100% of the crop loss would be covered by the insurer, 7% said partially covered but could be insufficient for full recovery, and another 7% said partially covered but sufficient for full recovery.

Among the non-beneficiary group covered by the survey, 10 farmers were randomly chosen, with 60% male and 40% female, with 70% of them with an age more than 40 years. 40% of them considered themselves belonging to the low-income group and 60% to the middle-income group. Fifty % of them owned 2 ha of land and 50% owned at most one hectare of land. All of their lands are arable. All had experienced crop losses, mostly in 2012, with 50% experiencing 50% crop loss, 40% with 75% crop loss, and 10% with 25% crop loss. 70 % said they had not recovered from the disasters although 40% of them borrowed money from MFIs. All of them said they did not receive any government support to cover their crop loss. All of the respondents had no experience with any type of crop insurance. All wanted government subsidy for the premium, with 30% of them opting for 100% subsidy, 20% for 75% subsidy, and 50% for 50% subsidy. All wanted insurers to cover their crop losses fully.

4.3 Vietnam

The questionnaire survey was undertaken in two communes - Lung Hoa (Vinh Tuong district) and Kim Long (Tam Duong district) of Vinh Phuc province- to understand farmer opinions on the agriculture insurance programs which have been implemented in their locality (Table 5). Among nine communes chosen for the pilot program of agriculture insurance in Vinh Phuc province, Lung Hoa has lowest number of insured households. As the number of insurance beneficiary in Vinh Phuc province was only 7 households, it was decided to change the target respondents. 34 households were interviewed, 15 beneficiaries and 19 non-beneficiaries in the pilot insurance program.

Table 5. Number of households participating in pilot agriculture insurance program in Vinh Phuc (DARD, 2013)

District	Commune	Number of households	Insured value (million VND)	Number of interviewed households	
				Participated in the pilot program	Didn't participate
Tam Duong	Hoang Hoa	488	44,257.00		
	Hoang Lau	102	12,288.00		
	Kim Long	166	22,706.25	10	8
Lap Thach	Thai Hoa	252	8,362.01		
	Quan Son	470	50,399.90		
	Dong Ich	392	13,111.73		
Vinh Tuong	Vinh Thinh	35	1,135.20		
	Binh Duong	551	38,791.05		
	Lung Hoa	28	784.30	5	11

Twenty six percent of the respondents suffered livestock losses due to the typhoon Number 5 in August 2012. In this disaster, Vinh Phuc province was not considered among the most-affected provinces to receive post-disaster relief program of the government. To offset the loss, 11.1% of respondents had to take bank loans, 22.2% borrowed money from their relatives and 33.3% had to use personal effort to recover from the disaster. This delayed the recovery process and most of the damaged respondents (88.8%) said the government should compensate loss of farmers in all affected provinces based on loss assessment.

Respondents expressed their opinions about a post-disaster relief program implemented 7 years ago. The program had no loss assessment based on the extent of damage but compensation was equally provided to all the affected households. When asked to rate the program, a high proportion of respondents expressed low levels of satisfaction on the basis for making compensation, the time taken for compensation and particularly the quantum of sum compensated as it was insufficient for recovering from disaster. Although complained about the program, 61.8% of respondents said that the relief program was necessary for helping farmers sought improvement in the program implementation at the local level.

A large number of the households participated in the pilot agriculture insurance program expressed high levels of satisfaction on quantum of sum assured, period of risk covered, basis for making insurance payments and time taken for claim settlement but wished that the number of risks covered could be increased. The opinion on number of risks covered was same for households who did not participate in the program. Although expressed different opinion on the agriculture insurance program, most of the respondents thought that the government should subsidize the premium of the agriculture insurance.

Of all the respondents, 44.1% (15 households) have participated in the pilot agriculture insurance program for the last one year. 80% of the participating respondents were poor households - below poverty line - and had the government subsidized entire premium. 52.9% of respondents said that the current premium was not affordable compared to their income and 41.2% believed that the premium was made affordable by government subsidy.

In addition, many respondents stated that the compensation disbursement was complex and not reasonable. Those who did not participate in the pilot program disagreed with insurance company insuring only for four diseases (two for pig, one for chicken and cattle) and they wanted damages to be paid for all natural disasters and epidemics. These respondents believed that insurance payment based on damage of more than 20% of the commune's average yield was unfair. Although diseases in agriculture crops occur frequently, sometimes severe, farmers still do not buy insurance. Among farmers that did not participate in agriculture insurance program, more than 30% thought that the loss compensation was not sufficient.

One of difficulties in expanding the pilot agriculture insurance program has been the lack of information on the program. Some farmers adopt industrial agricultural practices with large farms and these farmers wanted to be covered in order to avoid risks. However, these farmers are not convinced by the way the insurance companies sell their products and the information they get from the insurance agents. Although there are a number of promotional activities on agriculture insurance, most (94.1%) of the respondents interviewed said that they had average or above average levels of understanding the agriculture insurance program. However, after assessing their knowledge by asking some open ended questions, it can be said that they lacked knowledge on procedures for buying premium, compensation and grievance redress mechanism. This finding calls for improvements in the way the insurance products are communicated to the prospective insurance buyers and those who have already enrolled in the insurance.

In addition, interviews showed that the insurance companies were not closely associated with the rural credit institutions and did not coordinate with social organizations such as farmers' associations, women's associations, unions and cooperatives to implement and develop an appropriate agriculture insurance service. 95% of the insured in Vinh Phuc province were poor households (the national rate is 88%) and the insurance is 100% subsidized by the government. Continuing subsidies may make these households dependent on government subsidies or disaster relief. Moreover, this may causes the middle and high income households to interpret the emphasis of pilot agriculture insurance program as a poverty reduction mechanism and may refrain from participating in such programs. This explains why only 4% of non-poor households had participated in agricultural insurance in the province. This calls for agriculture insurance program with proper loss assessment to encourage medium and large size agricultural producers. High voluntary participation of farmers in agriculture insurance is essential for a successful insurance program.

5. CONCLUSIONS AND RECOMMENDATIONS

Tables 6-7 provide a comparative evaluation of insurance experiences in the three case study countries. From these tables and the foregone discussion, it can be concluded that the crop insurance programs in the case study countries are at different stages of development with Philippines at forefront followed by Vietnam and Malaysia. Several lessons and best practices emerge in terms of what should be the essential design elements for promoting agriculture insurance which are discussed here.

1) Keep the price of the insurance premium affordable: The price of the insurance premiums is one of the major determinants for enrolling maximum number of insured and hence keeping its price affordable is an important aspect of the overall design of insurance. In the case of Vietnam and Philippines, the premiums were heavily subsidized to make the premiums affordable. In Philippines, the prices of premiums were able to be kept at affordable level by linking micro-insurance with the cooperatives. The proposed insurance policy by the government of Malaysia talks about subsidizing insurance. However, there is a limit to which the insurance agencies can reduce the insurance premium prices since the premium prices would have to cover capital costs, reinsurance costs and admin costs and profit margins. As seen in case of Vietnam, the insurance companies went out of business trying to reduce the insurance costs. It proves that any substantial reduction in insurance costs can only be possible by a combination of approaches such as efficient management at the end of the insurance firms, reducing basis risks through risk mitigation measure such as best management practices in agriculture including expansion of area under irrigation, providing timely weather and climate information for decision making and capacity building of farmers through farmer field schools etc. There is a great potential for promoting such combined approaches in the study countries.

Table 6. Major issues and policy solutions identified for promoting agriculture insurance in the study countries

S No	Item	Policy and institutional solutions/issues
A. Issues for which solutions have already been identified and or implemented		
1	High cost of insurance	Subsidizing the premium (all study countries with varying degrees) Mitigating non-crop losses (Philippines) Implementing non-financial risk mitigation strategies (all study countries though not coordinated and not linked)
2	Instilling trust among farmers and insurance agencies	Creating regulatory bodies, regulations and arbitration guidelines (all study countries with varying degrees)
3	Access to re-insurance	Public-private partnerships (Vietnam and Malaysia) Mostly government (Philippines)
4	Reaching economies of scale	Introducing comprehensive insurance products that suits a wide range of target farmers (Philippines and Vietnam) Provide monetary incentives in paddy farming to encourage landowners to outsource the management of their land (Malaysia)
5	Lack of weather and crop loss data	Remote sensing approaches (Philippines and Malaysia)
6	Lack of capacity	Public-private partnerships (all study countries though they vary in the strength of these relationships. In all cases, the introduction of national programs have invariably happened with the help of an external private agency such as Swiss Re, Munich Re, GTZ etc)
B. Issues for which solutions have not been identified and or not implemented		
7	Rapid land development	A more comprehensive risk assessment of impact to surrounding arable land area before undertaking any development projects (Malaysia)
8	Unproductive arable land with high pest infestation	Enhance cooperative efforts to ensure full land utilization and thus reducing risk of losses (Malaysia)
9	Relief dependency of farmers	Efforts to increase awareness on the concept of crop insurance and to change the perception of dependency on subsidy program (Malaysia)
10	Main insurance beneficiaries are not clearly defined in the policy	Crop insurance policy should not start with/focus on poverty household/ beneficiary but big beneficiaries whose products contribute high proportion to GDP (e.g. paddy, coffee, pepper, cashew nut). This direction may attract more players – both in insurance industry and agriculture- to participate in crop insurance (Vietnam)

Table 7. Major strengths and weaknesses of insurance for arable crops identified through surveys conducted in Malaysia, Philippines and Vietnam

Country	Strengths	Weeknesses	Opportunities	Threats
Malaysia	• Strong presence of private • insurance industry (both national and international) • Long experience with insurance for industrial crops • Educated young next generation of farmers with favourable attitude towards crop insurance • Strong political will in risk mitigation • Matured paddy sector • Well-structured government agencies in paddy production • Availability of good database on paddy farmers • Availability of remote sensing technology to allow for a more accurate loss assessment	• Lack of experience with arable (mostly food) crop insurance • High subsidy costs to be borne by the government • Average paddy field size is 2 ha • Highly dependence on government subsidy lead to relief dependency	• Government efforts to promote large-scaled farming will contribute towards a more cost-effective and viable crop insurance • High demand for insurance among paddy farmers • High confidence on the government ability to implement the crop insurance	• Farmers are reluctant to move into large-scaled farming • Infrastructural development flaws • Variety of insect outbreak may increase the potential losses • Lack of understanding of insurance concept among paddy farmers • Difficulty in managing claim eligibility due to restrictive social system • Poor maintenance of irrigation systems
Vietnam	• High political will • Introduced law and guidelines on crop insurance • Strong and authoritative national and local governments	• Lack of willingness among farmers for enrolment • Limited private sector presence in the farm financing sector • High subsidy costs to be borne by the government • Limited expertise and market penetration	• Agricultural economy • Is one of the ways forward for the country's economic orientation • High farming population	• Relief dependant farmers unwilling to pay insurance • Risk in agriculture is high in its frequency and severity • Agricultural production is still in very small scale (household) and insurance buyers are dispersed • Lack of technical infrastructure for preventing and coping with epidemics in agriculture • High cost of loss assessment

Country	Strengths	Weeknesses	Opportunities	Threats
Philippines	• Creation of institutions that address risk transfer-CCC, PCIC • Involvement of some private companies that actively promote WII and some LGUs in crop insurance • Rich presence of community based organizations, including those in microfinance • Several years of experience with crop insurance, as well as pilot implementation of WII • Agricultural asset insurance covering non-crop losses	• Lack of policy and regulatory framework for micro-insurance • High subsidy of insurance premiums by the government • Absence of a level-playing field for more private insurance companies to be involved in crop insurance since their premiums are taxed and not subsidized • Limited new product development • Limited market development and penetration • Lack of reliable risk data and technical experts especially at the local level	• Growing interest on weather index based • insurance products among private and public insurance agencies • Growing realization on the importance of crop insurance among farmers and agriculture supply chain • Newer projected threats from climate change studies especially related to typhoon • Greater emphasis has been given to insurance in the national policy framework for combating climate change	• Lack of willingness to design cost effective insurance products by private companies in absence of government subsidies • Lack of appropriate tools and regulations to take into consideration the future climate change impacts into design of insurance products could diminish the effectiveness of these instruments in the long-run. • Heavy dependence on foreign insurers leading to under development of domestic strengths

2) Generate public awareness: The community surveys conducted in this study reiterates the importance of public awareness on various aspects of risk communication and management. Though insurance agencies tend to educate potential insurance buyers on the insurance products they offer, it was seen that this area still needs greater attention by all agencies involved in insurance sector. We have seen that the lack of awareness among various stakeholders is a major issue especially on the subject of damage assessment and payment mechanisms. This hurdle was mostly overcome by incorporating the grassroots level awareness generation activities. Though governments and insurance agencies are implementing several farmer advocacy programs in almost all countries, the process still requires substantive efforts to make a real difference. The trust deficit between farmers, insurance companies and governments goes beyond implementing stringent rules and regulations. Most often, farmers were either consulted at the end of designing insurance products or were never consulted. Developing insurance products that incorporates the preferences of farming communities could be the first step in achieving a greater public awareness and acceptance of insurance products.

Overcoming beliefs, perceptions and other cultural and sociological barriers to the management of risks and use of insurance is a continuing challenge. However, the recent disaster experiences of farmers from climate-related events have convinced more of them to become involved in protecting themselves and their farms from climate risks. Their lack of knowledge on and awareness of the risks, the variables that they can and cannot control, and the measures that they may take must be addressed with joint efforts from the public and private sectors. Risk communication must also convey the message that climate change is related to deforestation, pollution, and other environmental problems so that farmers will avoid contributing to them.

3) Avoid the moral hazard and adverse selection: One of the major problems with the traditional indemnity based crop insurance programs has been the moral hazard, i.e. unfair practices by the insured that leads to higher insurance costs, and adverse selection, i.e. propensity of risk takers to buy risk insurance more than those without risk taking behavior. Our study did not found presence or absence of moral hazard and adverse selection. However, it doesn't warrant their absence in the study countries. However, we did found the issues with the way the crop damages are estimated by the insurance companies and disparities between expected (by farmer) and actual insurance payouts. The issue of moral hazard has largely been overcome by the advent of weather index based insurance systems where payment is triggered by factors that are extraneous to the human control, i.e. the actual incidence of the particular intensity level of the hazard (e.g. 60 % reduction in rainfall). One factor that needs to be taken into consideration, however, is the weather data required for developing such indexes. Index insurance is still in nascent stages in all the case study countries with Philippines at advanced stages with pilot programs being implemented than other countries.

4) Link with reinsurers and investment in financial markets: The study did found issues related to the reinsurance. For example, insurance companies in Vietnam have often had difficulties to be reinsured and heavy dominance of foreign reinsurance companies often limited the development of domestic reinsurance companies. Support by reinsurers is one of the important considerations for putting in place robust insurance systems as reinsurers provide needed financial backup to the insurers. In addition, insurance facilities created may also consider investing, in part or total, in international financial markets by the support of the international reinsurance facilities. Such example is epitomized by current agricultural weather index program in Thailand and the Caribbean catastrophe insurance facility. Efforts should be made so as to ensure that the financial markets provide greater risk reduction benefits to individuals by giving right price signals encouraging greater participation in insurance. The growing natural disasters and related losses necessitate the establishment of a regional catastrophic pool on the lines of Caribbean Catastrophic Risk Insurance Facility (CCRIF). Such a facility will enable sharing risks among countries in the region and be able to diversify the risk portfolio. Such a facility could reduce the burden on insurance companies and reinsurers in the wake of a catastrophic event.

5) Enhance the availability of and access to risk information and risk assessment tools: Availability of reliable rainfall data and associated crop losses is a prerequisite for designing a robust index based insurance facility. Similarly, comprehensive information on physical characteristics of the infrastructure such as agriculture practices, irrigation systems, risk taking behavior of farmers etc., to be studied and quantified for estimating the risk from hazards such as floods, droughts, and earthquakes. Such robust information infrastructure is still not readily available in the large-scale in most of the countries hindering expansion of insurance. Due to lack of or access to such data, the predominant form of insurance in case study countries is still indemnity based insurance that heavily depended on direct loss estimation with implication for human costs and overheads for implementing the insurance program.

Risk assessment methods and models are highly specialized subjects and often are out of reach of most stakeholders involved in risk reduction. Methods and models used in risk assessment by insurance agencies and other groups should be widely shared and discussed with others who may help apply them in other areas so that the most appropriate ones can be applied on each location and more importantly more stakeholders are exposed to and become familiar with these tools. It is expected that there may be various methods and models as different disciplines and modelers may be involved. Hence, a modeling forum where the technical experts may periodically share their work and findings will help.

6. Pool the risks at local level: While there has been much emphasis on risk pooling at the regional and international levels, there has been very limited discussion on the possibility of risk pooling at the local level and the role of local agencies in acting as risk aggregators. During the consultations in Philippines, many insurance agencies expressed that the local government units could act as risk aggregators reducing the overall burden on the macro mechanisms leading

to reduced costs and efficient management of insurance. Such a process could empower communities and local agencies leading to better acceptance of risk insurance products.

7. Climate change and insurance: In this study, no evidence could be obtained on how different insurance agencies approach the problem of climate change and how the insurance products could be designed for a changing climate. This indicates that the insurance industry is still to come to the grips of this subject before they could design products and introduce to the potential insurance buyers. With the uncertainty of climate change impacts in the future, both insurers and potential insurance beneficiaries face the challenge of securing an optimal level of protection from climate change risks. More rigorous risk assessment, with consideration of future uncertainties, not only past experience, should help in facing this challenge.

8. Public-private partnerships: Though often treated as a buzzword, the success of insurance is very much dependent on how well the public-private partnerships are created and nurtured. We have seen in the study countries that all the insurance products, wither currently been implemented or in pipeline, are products of public-private partnerships wherein the governments engage with insurance industry (often an international entity) to design insurance products. However, it also shows the lack of expertise to design innovative insurance products among the domestic insurance players, including government and private sector. The increasing number and magnitude of climate-related disasters now require a more efficient and effective public-private partnership in implementing a risk management strategy in the agriculture sector. Closer relationships between and among the government and private insurance industry and with other business groups, e.g., agribusiness companies, and institutions in civil society, especially the academe, and farmers, must be developed and nurtured. More dialogues and interactions could address such comments as "lack of willingness at the policy level to hear recommendations."

9. Policy and regulatory framework and enabling environment: Just like any other developmental issue, a successful expansion in insurance can only happen in an enabling policy environment set by the governments. Though countries are waking up to this fact, the current policy environment is only congenial for implementing a traditional insurance program such as indemnity based one. A major issue identified is the lack of policy and regulatory framework and enabling environment for micro and parametric insurance. Scaling up of insurance in the agriculture sector needs such regulatory framework and environment, with safeguards for protecting farmers. Such a framework must cover "what" parametric insurance is and its features and what standards, protocols, and others shall govern its implementation, "who" can offer and buy the insurance, "who" the other parties are (regulator, data collector, funding source, data source, etc.), "who" should be involved in the insurance transactions and their roles and responsibilities, and "how" the insurance system will be implemented and regulated.

10. Develop market for insurance: Only a few insurance companies are now involved in climate related risks, agricultural crops, and micro insurance. There is a need to encourage more companies to become active in this challenging business. Although national agencies are increasingly playing a significant role in agriculture insurance, in the long run, it is important to have a well-functioning market for insurance. Continuing government subsidy to all types of farmers could become eventually unhealthy and unsustainable. One recommendation is to focus government subsidy to marginalized farmers and to an industry that is in bad economic shape for a limited period.

The private insurance industry must also assume the responsibility of offering affordable and effective insurance products to farmers. Private insurers believe that having a level-playing field is the key to encourage private companies to be involved and do so. One recommendation from the private sector is for government to simplify the tax system and to use collected taxes for the strengthening of the micro insurance industry. Another is to extend the tax exemption granted to insurance premiums for agricultural insurance to premiums of private micro insurance companies and of the reinsurance covering them (especially in case of Philippines).

This study has identified existing limitations in promoting insurance by drawing lessons from the three case study countries. Numerous insurance experiences show that risk spreading is a way forward for dealing with a variety of climate and non-climate related risks. However, feasibility and sustainability of implementing insurance programs at global, regional, national, and local level could face several barriers, as identified in this study, which include limited knowledge among stakeholders about the benefits of insurance systems, limited expertise to design and implement insurance products, challenges in keeping the premium prices low, lack of good quality data on risks and historical losses and limited presence of reinsurers. Addressing these limitations, with collaboration of the public and private sectors, is essential in enhancing readiness to acceptance of insurance. In this regard, further assessment is needed to identify the best mix or combination of risk mitigation and risk spreading tools for each country concerned with a careful consideration for implementing risk pooling concepts at all levels. A combination of approaches such as targeted subsidies or implementing risk mitigation measures as a package with risk insurance in agriculture sector is of paramount importance. An integrated risk communication, risk assessment, and risk management strategy is needed within the sustainable development plans and programs of the countries. The ultimate metric for the real impact of insurance proposals should be in terms of scaling up of insurance leading to substantial risk reduction on the ground so that sustainability and prosperity can be achieved, despite climate change.

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ANNEX: QUESTIONNAIRE[3]

☐ Insurance Beneficiaries ☐Non-Beneficiary

SURVEY ON EFFECTIVENESS OF RISK INSURANCE

IGES-APAN collaborative project on risk insurance

Dear Respondent, Thank you very much for your acceptance to participate in this survey organized by IGES in collaboration with APAN, Bangkok. Your participation will help us get insight into risk insurance experiences and be able to provide better policy suggestions to relevant agencies involved in climate risk reduction. The data collected through this survey will be kept confidential and be strictly used for research purposes only. SVRK Prabhakar, Senior Policy Researcher, IGES, Japan.

I. Opinion on the crop loss compensation program

1. Have you experienced crop loss due to natural calamities (floods, droughts, landslides, forest fires, insect outbreak, uncongenial weather conditions such as temperature, humidity etc.) in the past 5 years?

☐Yes ☐No

2. If yes, when?_____

3. What was the largest extent of crop loss (in economic terms) you faced in a single instance?

☐ Complete crop loss, ☐ 75% loss, ☐ 50% loss, ☐ 25% loss, ☐ 10% loss, ☐ didn't measure

4. How did you come out of the loss? (tick multiple if needed) ☐ Took bank loan, ☐ Bank loan waived off, ☐ Government paid the compensation, ☐ Couldn't come out, I am still at loss. ☐ Others:_____

5. What is your opinion on the government response to crop loss in the form of loss compensation? (tick multiple if needed)

☐ Compensation is costly for the government, ☐ is necessary for helping farmers, ☐ compensation is a bad policy for the government and for farmers, ☐ Compensation is a good policy but didn't work due to loopholes in the system, ☐ Compensation alone is not sufficient, we need alternatives, ☐ Others:_____

6. What loopholes did you observe in the crop loss compensation mechanism of the government?

☐ Same payment irrespective of amount of loss, ☐ delay in payment, ☐ corruption, ☐ no loss estimation, ☐ losses were measured but it was not satisfactory

7. Your satisfaction levels on the overall crop loss compensation policy of the government:

☐Very high, ☐high, ☐average, ☐bad, ☐very bad

8. Total time taken to receive your compensation after the crop loss was identified by the government:

3 This questionnaire is a generic one. This was modified by individual country partners before implementing the survey to suit to individual country circumstances. The questions slightly differed for both beneficiaries and non-beneficiaries.

☐<1 month, ☐2 months, ☐3 months, ☐4 months, ☐>4 months

9. Was the compensation disbursement 'timely' for you to get back to your normal life?

☐Yes ☐No

10. Rate the fairness with which the government has assessed your loss:

☐Very fair, ☐fair, ☐uncertain, ☐unfair, ☐very unfair

11. Were your grievances related to loss compensation were addressed well by the government?

☐Yes, ☐no, ☐I have no grievances.

12. Rate your recovery after the disaster:

☐ I am better than before disaster, ☐ I recovered fully, ☐ Not sure, ☐ my recovery is slow, ☐ my recovery is very slow, ☐ recovery is not in progress

13. Of your recovery from disaster, how much do you attribute it to the crop loss compensation program:

☐Completely attribute to compensation money, ☐partially attribute to the compensation money, ☐do not attribute to compensation money.

14. Rate the crop loss compensation program on 1-5 scale on the following indicators. 1 is very good and 5 is very bad

Quantum of sum compensated: ☐1 ☐2 ☐3 ☐4 ☐5

Basis for making compensation payment: ☐1 ☐2 ☐3 ☐4 ☐5

Mechanism of grievance redress: ☐1 ☐2 ☐3 ☐4 ☐5

Time taken for compensation: ☐1 ☐2 ☐3 ☐4 ☐5

II. Opinion on the insurance program

15. For how long you have been participating in this insurance program?

☐ 1 month, ☐ 5 months, ☐ 10 months, ☐<1 year, ☐>1

16. Your level of understanding of the insurance program you are participating in:

☐Very good, ☐good, ☐average, ☐bad, ☐very bad

17. How do you rate the efforts of insurance organizers in making you understand the insurance program before enrolling: ☐Very good, ☐good, ☐average, ☐bad, ☐very bad

18. Amount of premium you are paying (total sum insured):_____

19. Was the premium affordable for you:

☐Affordable, ☐not affordable, ☐was costly but was made affordable by innovative approaches of the program, ☐not sure

20. Amount received as insurance claim:

☐100% loss was compensated, ☐partially compensated but was insufficient for full recovery from disaster, ☐partially compensated but was sufficient for full recovery from the disaster

21. Your satisfaction level on the overall claim amount you received after the disaster:

☐Very high, ☐high, ☐uncertain, ☐bad, ☐very bad

22. Your satisfaction levels on the overall insurance claim procedure:

☐Very high, ☐high, ☐average, ☐bad, ☐very bad

23. Total time taken to receive your insurance claim after the disaster:

☐<1 month, ☐2 months, ☐3 months, ☐4 months, ☐>4 months

24. Was the claim disbursement 'timely' for you to get back to your normal life?

☐Yes ☐No

25. Rate the fairness with which the insurance agency has assessed your claim:

☐Very fair, ☐fair, ☐uncertain, ☐unfair, ☐very unfair

26. Were your grievances related to insurance settlement were addressed well by the insurance agency:

☐Yes, ☐no, ☐I had no grievances.

27. Rate your recovery after the disaster:

☐ I am better than before disaster, ☐ I recovered fully, ☐ Not sure, ☐ my recovery is slow, ☐ my recovery is very slow, ☐ recovery is not in progress

28. Rate your experience of recovering from a disaster before enrolling in the current insurance program

☐ I was able to recover better than with the insurance, ☐ I was not able to recover from disaster, ☐ I was able to recover with the help of friends and relatives, ☐ I was able to recover with the help of the government, ☐ I was able to recover with the help of NGOs

29. Of your recovery from disaster, how much do you attribute it to the insurance program:

☐Completely attribute to insurance, ☐partially attribute to the insurance, ☐do not attribute to insurance.

30. Do you think the government should subsidize the premium component of the crop insurance?

☐Yes, 100% subsidized, ☐ 75%, ☐ 50%, ☐ 25%, ☐ 10%, ☐ No, the government should not subsidize the crop insurance, ☐ Subsidy rate should depend on the economic level of the farmer

31. What proportion of your crop loss do you think the crop insurance should cover?

☐100% loss is to be covered by the insurance, ☐partially covered but should be insufficient enough for full recovery from loss, ☐partially covered but should be sufficient for full recovery from the loss

32. Rate the insurance program on 1-5 scale on the following indicators. 1 is very good and 5 is very bad

Quantum of sum assured: ☐1 ☐2 ☐3 ☐4 ☐5
Number of risks covered: ☐1 ☐2 ☐3 ☐4 ☐5
Period of risk coverage: ☐1 ☐2 ☐3 ☐4 ☐5
Convenience in enrolment: ☐1 ☐2 ☐3 ☐4 ☐5
Basis for making insurance payment: ☐1 ☐2 ☐3 ☐4 ☐5
Mechanism of grievance redress: ☐1 ☐2 ☐3 ☐4 ☐5
Time taken for claim settlement: ☐1 ☐2 ☐3 ☐4 ☐5

III. Respondent profile

33. Gender: ☐ Male ☐ Female

34. Age: <20, 20-30, 31-40, 41-50, > 50

35. Occupation: ☐ Farmer, ☐ Merchant, ☐ Rural artisan, ☐ Farm labourer, ☐ Rural entrepreneur, ☐ Others

36. What kind of agricultural products you have been producing (crops, animals or aquatic products) in last year crop and this year crop?

☐ Arable crop, ☐ Diary products, ☐ Meat, ☐ Aquatic, ☐Others:_____

37. Area of land owned (ha): ☐ 0.25 ☐ 0.5 ☐ 0.75 ☐ 1 ☐ 2 ☐ >2

38. Area of land (ha) under arable cropping (paddy etc): ☐ <1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 & above

39. What number of animals do you own? ☐_____

40. Economic status (as per national statistical organization classification): ☐ Below poverty line, ☐Low income group ☐Middle income group ☐ Large income group

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