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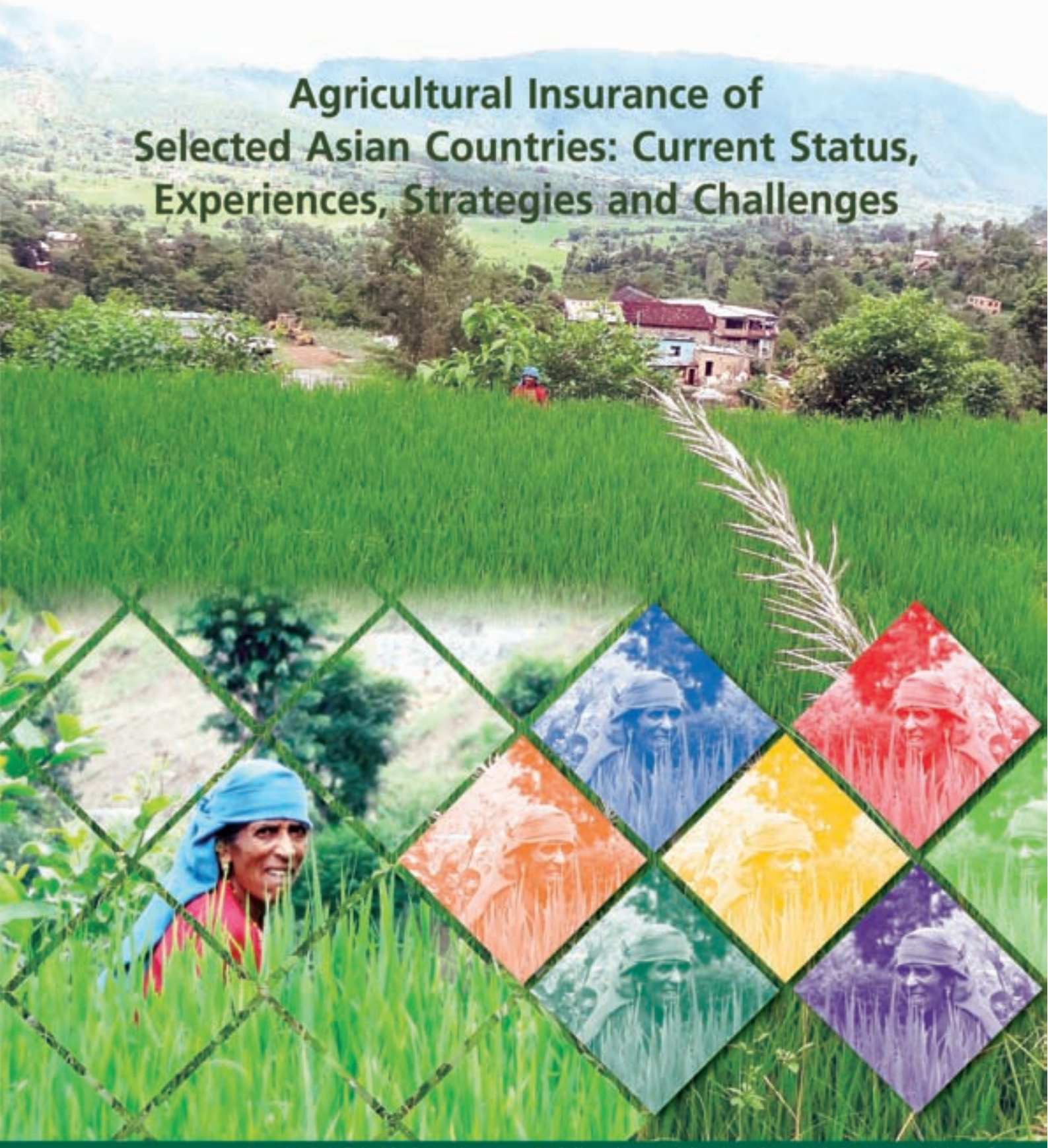
Agricultural Insurance of Selected Asian Countries: Current Status, Experiences, Strategies and Challenges



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Preface

This publication is the result of a four-country commissioned research study of several experts on agricultural insurance highlighting the current status, experiences in the field, strategies used, challenges and future directions. It was prepared based on a need by those involved in the area of rural and agricultural finance. Not to mention, those stakeholders who painstakingly worked with farmers, traders, entrepreneurs and interest groups looking at several areas on how these are affecting them especially on risks encountered and associated during production, processing and post-production activities.

The countries identified and studied were Bangladesh, India, Indonesia, and the Philippines. Each country has a unique experience on agricultural insurance highlighting cases and strategies used in addressing the issues, constraints and concerns of financial institutions and non-government organizations providing support to financial management, rural and agricultural development.

As the results are shared to all, we would like thank the researchers and study teams who extended and provided their valuable time in doing a thorough and extensive study of their respective countries. We would like also to express our gratitude to the reviewers who made possible that these are relevant to these changing times.

May the results be used as a take-off point for knowledge sharing and exchange of ideas and insights including a learning platform for those engaged in agricultural insurance, rural finance and community development.

May you find this document worthy in addressing your needs to foster partnerships with financial institutions and organizations through their experiences and strategies for best application and practice.

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We take pride in disseminating the outputs for the members and partners of the Asia-Pacific Rural and Agricultural Credit Association in the region and globally.

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Acronyms

ADB	Asian Development Bank
AFAUS	Al-Falah Aam Unnayan Sangstha
ASA	Name of a prominent MFI in Bangladesh; the name means "hope"
ASKS	Anannyo Samaj Kallan Sangostha
ATO	Assistant Technical Officer
BADC	Bangladesh Agricultural Development Corporation
BBS	Bangladesh Bureau of Statistics
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BDT	Bangladeshi Taka
BER	Bangladesh Economic Review
BF	Beef Fattening
BFID	Bank and Financial Institutions Division
BKB	Bangladesh Krishi Bank
BLB	Bacterial Leaf Blight
BMD	Bangladesh Meteorological Department
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
BRRI	Bangladesh Rice Research Institute
BSP	*Bangko Sentral ng Pilipinas* (Central Bank of the Philippines)
CARD	Center for Agriculture and Rural Development
CCCP	Community Climate Change Project
CDA	Cooperative Development Authority
CEO	Chief Executive Officer
CLDDP	Community Livestock and Dairy Development Project
CRF	Covariant Risk Fund
DA	Department of Agriculture
DAE	Department of Agriculture Extension
DAR	Department of Agrarian Reform
DIISP	Developing Inclusive Insurance Sector Project
DLS	Department of Livestock Services
DMF	Disaster Management Fund
DPs	Development Partners
DSK	Dustha Shasthya Kendra
EM-DAT	Emergency Disasters Database
FGD	Focus Group Discussion
FMD	Foot and Mouth Disease
FY	Financial Year
GB	Grameen Bank
GDP	Gross Domestic Product
GMPF	Grameen Motsho Pashusampad Foundation
GoB	Government of Bangladesh

GRAMAUS	Grameen Manobik Unnayan Sangstha
GUK	Gram Unnayan Karma
HH	House Hold
IC	Insurance Commission
ICCCAD	International Centre for Climate Change and Development
IDRA	Insurance Development and Regulatory Authority
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
INAFI	International Network of Alternative Financial Institutions
IPCC	Intergovernmental Plan on Climate Change
IPM	Integrated Pest Management
IWM	Institute of Water Modelling
JAKAS	JAKAS Foundation
JBC	Jiban Bima Coorporation
JFPR	Japan Fund for Poverty Reduction
LDF	Livestock Development Fund
LI	Livestock Insurance
LIF	Livestock Insurance Fund
LTA	Livestock Technical Assistant
MBA	Mutual Benefit Association
MBSK	Mohila Bohumukhi Shikkha Kendra
MFI	Microfinance Institution
MFMSFP	Microfinance for Marginal and Small Farmers Project
MoEF	Ministry of Environment and Forests
MoF	Ministry of Finance
MPCI	Multiple Peril Crop Insurance
MRA	Microcredit Regulatory Authority
NBFI	Non-Bank Financial Institution
NCB	No Claim Bonus
NDRRMC	National Disaster Risk Reduction Management Council
NGO	Non-Government Organization
NSCB	National Statistics Coordination Board
PCIC	Philippine Crop Insurance Corporation
PIC	Project Implementation Committee
PKSF	Palli Karma-Sahayak Foundation
PLCF	Proshika Participatory Livestock Compensation Fund
PMU	Project Management Unit
PO	Partner Organization
PRIME	Programmed Initiatives for Monga Eradication
PSA	Philippine Statistics Authority
RSBSA	Registry System for Basic Sectors in Agriculture
SBC	Sadharan Bima Corporation
SEC	Securities and Exchange Commission
SEPO	Senate Economic Planning Office
SSS	Society for Social Services
TAG	Technical Advisory Group
TSI	Total Sum Insured
UK	United Kingdom
UNU-EHS	United Nations University Institute for Environment and Human Security
USA	United State of America
VS	Veterinary Surgeon
WIBCI	Weather Index-Based Crop Insurance

Introduction

Asia and Pacific region has one of the highest exposures of any region in the world to natural hazards including typhoons, floods, droughts, earthquakes, volcanic eruptions and tsunamis. Weather-related risks, particularly hurricanes, flooding and droughts, are a frequent occurrence and affect crop yields, livelihoods and assets and the personal safety of vulnerable groups across the region, the frequency with which these disasters occur often taxes the ability of such groups to rebound quickly, increasing their risks of hunger and malnutrition. Low-cost agricultural insurance schemes are increasingly viewed as mechanisms for providing social protection to the increasing number of people affected by such risks and in helping to lessen the impacts they suffer owning to such shocks (Konuma, 2012).

Agricultural insurance systems in the region range from major public sector programs like India and the Philippines, private-public partnerships in China and Republic of Korea and purely private markets in Australia and New Zealand, including non-formal private mutual and community-based interventions in Bangladesh, India and Nepal, all of which are directed to address the risks and fate of affected stakeholders in rural and agricultural development. In so doing, these countries made it a policy to incorporate agricultural insurance in the overall framework of their agricultural development.

The increasing concern of the ill-effects of climate change vis-à-vis its impacts to people across the world are now given importance. Several sectors have analyzed and studied closely these impacts in order to provide appropriate measures including policies, programs and services for smallholder agriculture stakeholders.

It is with prime importance that another completing study be done in selected countries in Asia where agricultural insurance is considered an important aspect in rural and agricultural finance and sustainable development. Farmers, producers, traders, processors, entrepreneurs, and interest groups who are affected by disasters be it natural or man-made require certain guarantee especially during the production, processing and post-production activities including marketing to exist. The identified countries presently include Bangladesh, India, Indonesia, the Philippines and Thailand. These countries were selected based on the emerging need to describe the present state and condition of their dynamic and innovative agricultural insurance as well as the strategies used, challenges encountered and the future direction.

As a regional study, it analyzed and determined innovative models and update specific viable and feasible strategies on agricultural insurance and its processes in ensuring social and economic development protection of stakeholders especially the rural people engaged in agriculture and agri-based related activities.

The focus of each country includes the agricultural insurance analysis on the present condition, evolving processes, strategies and tools on the provision and delivery of financial products and services for better access by smallholder farmers and other stakeholders. It highlighted lessons learnt and experiences of financial institutions within the planning, implementation and monitoring and evaluation schemes for sustainable rural and agricultural development.

All countries followed a developed research framework which was supported by appropriate research methods such as key informant interviews, focus group discussions, observations, historical and content analysis. Depending on the resources available and people engaged in the process, the research team members ensured to capture the most relevant and up-to-date conditions of the countries which are described in detail.

The document is divided in five parts including the introduction. Part 1 describes the Bangladesh agricultural insurance system, Part 2 presents the Indian agricultural Insurance, Part 3 reviews the Indonesian agricultural insurance situation, Part 4 shows the current status, experiences and challenges in the Philippine agricultural insurance, and Part 5 describes the Thailand agricultural insurance highlighting the experiences and future direction with the Bank for Agriculture and Agricultural Cooperatives.

Specifically, the country reports documented the latest updates and status of agricultural insurance in relation to the impacts of climate change and other social and economic concerns including special concern highlighting country areas affected by natural disasters and erratic climatic condition through strategies particularly on crop insurance, livestock insurance, fishery insurance, post-harvest and storage insurance and others which are commonly implemented for smallholder farmers including women and youth.

Bangladesh

Bangladesh economy draws its main strength from agriculture sector. Agriculture contributes 16.77% (including forestry) to the national GDP and provides employment for 47.5% of the population (Economic Review of Bangladesh 2013). The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security. The country's agriculture is heavily dependent on the weather, and the entire harvest can be wiped out in a matter of hours when cyclones hit the country.

In recent years, natural disasters, particularly climate-related ones, have increased both in frequency and magnitude. Scientists have agreed that human induced climate change is exacerbating this impact (Intergovernmental Plan on Climate Change IPCC, 2007). For floodplain countries like Bangladesh, structural measures for management of disaster risk and its consequences often were found less effective. So, non-structural measures like micro insurance are being suggested as a risk management strategy.

Micro insurance is expected to pool the risks by collecting relatively small premiums from a large population and funding relatively large payouts to small portion of that population that suffers losses from specified risky events.

Palli Karma-Sahayak Foundation (PKSF) as a "not for profit" organization in Bangladesh is serving the nation to help reduce poverty through various means since 1990. PKSF is now seeking to promote integrated development approach in which financing is an important component along-with education, training, health, risk mitigation etc. One major area of its attention is to protect the poor from income erosion.

PKSF plays an important intermediary role between its partner organizations (POs) and the poor beneficiaries to transmit production and life-centered services. It has emerged as the leader in the micro credit sector for its innovative and vision oriented ideas. PKSF is much familiar with the vulnerability of the poor in times of adversities and natural calamities. Also, it has always been able to strive forward with timely programs to re-establish the livelihood of the poor in times of natural disasters by addressing their need in all possible ways. Particularly, PKSF has identified the desperation during and after a natural disaster as a symptom of under development and feels the need to devise a kind of

permanent solution which cannot be achieved only by providing emergency assistance. It requires preparing a concrete guideline for disaster management which will enable the poor to cope the risk better.

It is evident from the recent experiences of SIDR and AILA that poor people are the most affected by natural calamities, which are increasing in both frequency and intensity under climate change. PKSF has successfully assisted a significant number of affected people in the aftermath of Sidr and Aila.

In addition, the Livestock Insurance program under International Fund for Agricultural Development (IFAD) assisted Microfinance for Marginal and Small Farmers (MFMSF) project has been formulated with the objective of providing protection to the livestock raisers against the death of their animals. This has started paying benefit for the livestock raisers who have joined the scheme.

PKSF has recently started a dynamic project titled "Developing Inclusive Insurance Sector Project" (DIISP) for mitigating the risk of the poor, as it is closely associated with poverty reduction. The vulnerability of the poor people is exacerbated with risk and creates a vicious cycle that hinders their economic upliftment. The project is offering insurance products and services (related to life, health and livestock) to the low-income group with minimal documentation procedure.

These situation and experiences encountered by stakeholders in Bangladesh particularly those under PKSF helped defined the future direction and development to a more responsive agricultural insurance system for the poor specifically working in rural and agriculture development.

India

The Indian economy is the world's tenth largest by nominal Gross Domestic Product (GDP) and third largest by Purchasing Power Parity (PPP) with a nominal worth of US$ 2.047 trillion during 2014 (IMF, 2014). India has got the second largest labor force in the world amounting to 486.6 million during the year 2011. The service sector contributes the highest to the GDP of the country and its share stands at 55.6%.

The Indian agricultural system is predominantly mixed farming system with the livestock segment supplementing farm incomes and hence also a model of sustainable agriculture. The agricultural sector in India is still heavily depended on monsoon rainfall. Around 60% of total food grains and oilseeds production is grown during the Kharif (winter) with only 35% of the total arable area being irrigated.

These unpredictable and uncontrollable risks render the Indian agricultural system vulnerable and insurance plays a pivotal role in anchoring a stable growth of the agricultural and allied sector. Agricultural insurance including crop insurance is based on the principle of large number. The risk is distributed across space and time. The losses suffered by farmers in a particular locality are borne by farmers in other areas or the reserves accumulated through premiums in good years can be used to pay the indemnities.

Agriculture insurance in India till recently concentrated only on crop sector and confined to compensate yield loss. Recently some other insurance schemes have also come into operation in the country which goes beyond yield loss and also cover non-crop sector also. These include Farm Income Insurance Scheme, Rainfall Insurance Scheme and Livestock Insurance Scheme.

Agricultural insurance market is on the threshold of a spectacular growth. The government underlined its priorities for agriculture by increasing agricultural credit over the years. A large chunk of credit for agriculture would be supported by insurance collateral. Considering consumer's preference for branded agricultural products big corporate houses too have taken up corporate farming, increasing the demand for insurance.

Over the years, Indian agricultural insurance system has contributed in the improvement of the agricultural sector especially on crop and livestock production. However, focused insurance products and services were directed to commodity specific concerns which dramatically improved the conditions of the farmers and players involved and the areas covered.

Indian's three important experiences and cases are presented which describe the lessons learned in implementing agricultural insurance system like the Basix ICIC Lombard Weather Insurance Product, Crop Insurance Scheme for Banana Farmers of Kerala and the Deficit Rainfall Insurance Scheme of DHAN Foundation. These cases serve as innovative knowledge platform as continuous research and development interventions support the Indian agriculture sector.

Good governance will remain the key for success various developmental programs as well as for successful implementation of agriculture insurance schemes. With the improvements in governance, it is feasible to effectively operate and improve upon the performance of various agricultural insurance schemes in India.

Indonesia

The high risk exposure of agricultural sector is always shadowed by the harvest failure due to various unpredictable climate and weather conditions. The impacts of global climate change have caused reduced production in food crops, especially rice, the staple food for the majority of Indonesians. The Government of Indonesia has always been challenged to manage the agricultural development to adapt to such climate anomaly, to protect farmer's interests and to supprt their welfare. Agricultural insurance is introduced to share various risks of damage and/or loss caused by many perils and natural disasters.

The applications of rice crop insurance pilot study in several rice producing centers have been relatively successfully implemented with enthusiastic responses from the majority of farmers. Rice farmers are invited and insisted to participate in the voluntary program of the rice crop insurance. With sum insured of IDR 6 million/ha/planting season as a maximum payout, the indemnity-based rice crop insurance apply a flat premium rate of 3% of which 80% is paid under a government subsidy scheme leaving 20% born by farmers. The lessons learned from such study have significantly promoted the farmers toward better agricultural management practices. The farmers are shielded from crop damage caused by named perils (flood, drought, or pest and disease infestations) and are entitled to a cash capital in case of coverable claim.

Harmonious partnerships between the government as regulator, the insurance company as the supply side of the insurance coverage, and the farmers as the insured are encouraged to ensure proper implementation of the rice crop insurance pilot program. The rice crop insurance program is subject to review to become one that benefit to both the demand and the supply sides. The program is ultimately expected to be a self-suatinable protection system. With the premiums subsidy scheme by the Government through a specifi item in state budget, the well running agricultural insurance program will be cheaper for the state in the long run. The pilot study is primarily supported by JICA and is to be continued in the process of educating and empowering the small holder farmers and to achieve the next level of crop insurance applications.

Philippines

Risk in agriculture remains a formidable challenge among farmers and rural finance institutions. Producers face myriad of risks arising from pests and diseases and vagaries of nature that affect production yields and farm incomes. In the Philippines, agricultural losses due to natural calamities are huge as agriculture contributes 11% of the economy and provides livelihood to 31% of the population. The situation has been exacerbated by climate change characterized by more frequent and longer droughts during the dry season and excessive rainfall and strong typhoons during the wet season.

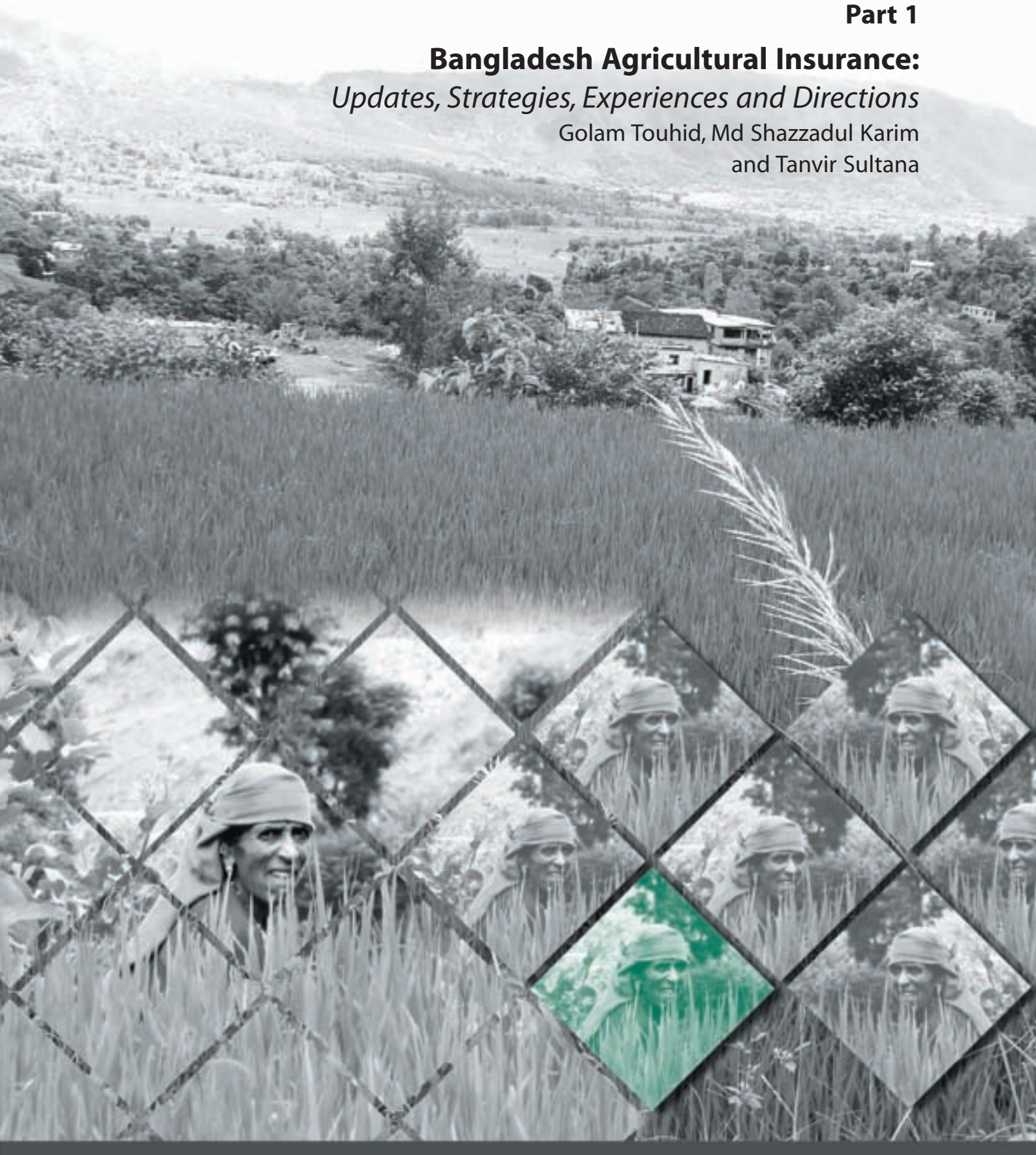
The Philippine study report covers an updated review of the Philippine agricultural insurance system. The report focused on: (a) an assessment of the performance of the agricultural insurance program in the Philippines and (b) identification of major challenges and prospects for viability and sustainability. The Philippine agricultural insurance is essentially a government program implemented by the state-owned Philippine Crop Insurance Corporation (PCIC). Among the key findings are: (a) markedly improved performance of the insurance program in recent years and (b) PCIC's improved prospects for attaining continued growth and sustainability. Bulk of PCIC insurance is subsidized multi-peril rice and corn insurance. Profitability was attained beginning 2012 due to markedly improved administrative cost efficiency while maintaining manageable loss ratio, exhibiting prospects of financial viability.

However, key challenges remain that include: inadequate government funding support, low penetration rate and need for innovative and affordable agricultural insurance products. The recommended actions are: (a) for the government to provide larger and adequate funding to PCIC, to discontinue the full premium subsidy under its special insurance program and continue under a reduced government share on the premium; (b) conduct an updated actuarial review of current premium rates for multi-peril rice and corn insurance to determine if downward adjustments are possible, and (c) for PCIC to forge public-private partnerships on risk sharing among micro-insurance organizations and private insurers.

Part 1

Bangladesh Agricultural Insurance:
Updates, Strategies, Experiences and Directions

Golam Touhid, Md Shazzadul Karim
and Tanvir Sultana



CHAPTER 1
Introduction

1.1 Background of the study

Bangladesh economy draws its main strength from agriculture sector. Agriculture contributes 16.77% (including forestry) to the national GDP and provides employment for 47.5% of the population (Economic Review of Bangladesh 2013). The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security. In Bangladesh, Agriculture is heavily dependent on the weather, and the entire harvest can be wiped out in a matter of hours when cyclones hit the country. It is, therefore, important to have a profitable, sustainable and environment-friendly agricultural system in order to achieve the objectives of this sector.

Bangladesh lies between 20°34′ to 26°38′ north latitude and 88°01′ to 92°42′ east longitude. The country is situated on one of the biggest river deltas in the world and has an area of about 147,570 sq km with 22.22 km territorial waters/sea and up to 370.40 km economic zone in the high seas, measured from the base line. It enjoys a subtropical monsoon climate with a hot and rainy summer season from July to September and a dry winter from December to March. The rivers Ganges-Padma, the Brahmaputra-Jamuna, and the Surma-Meghna and their numerous tributaries form the main arteries of the drainage system of Bangladesh. The territory consists mainly the flood plains of these three rivers.

Bangladesh is a South Asian republic bordering India, Myanmar and northern coast of the Bay of Bengal. It has nearly 600 km of coast and is low-lying with many rivers, forming a fertile delta which experiences frequent and severe flooding. Tropical monsoons and frequent floods and cyclones inflict heavy damage in the delta region. The adverse affects of Climate Change – especially High Temperature, Sea-level Rise, Cyclones and Storm Surges, Salinity Intrusion, Heavy Monsoon Downpours etc. has aggravated the overall Economic Development scenario of the country to a great extent.

In recent years, natural disasters, particularly climate-related ones, have increased both in frequency and magnitude. Scientists have agreed that human induced climate change is exacerbating this impact (Intergovernmental Plan on Climate Change IPCC, 2007). For floodplain countries like Bangladesh, structural measures for management of disaster risk and its consequences often were found less effective. So, non-structural measures like Micro insurance are being suggested as a risk management strategy. The rationale is that poverty and vulnerability to climate change feed each other, and this nexus warrants that climate change policies work in concert with poverty reduction policies. However, traditional microcredits and savings are inadequate when poor farmers with no safety or security nets are exposed to risks beyond their means to cope with. Therefore, Micro insurance, customized to specific needs of the poor, may be an effective instrument for the purpose.

The vulnerability of the poor is exacerbated each time they incur a loss, creating a vicious cycle that precludes the lasting improvements of human and economic welfare. Micro insurance is expected to pool the risks by collecting relatively small premiums from a large population and funding relatively large payouts to small portion of that population that suffers losses from specified risky events. Since by nature it is micro and the number of poor is quite large so it is assumed that it might be affordable to the poor clients if designed and managed appropriately.

Palli Karma-Sahayak Foundation (PKSF) as a "not for profit" organization in Bangladesh is serving the nation to help reduce poverty through various means since 1990. PKSF is now seeking to promote integrated development approach in which financing is an important component along-with education, training, health, risk mitigation etc. One major area of its attention is to protect the poor from income erosion.

PKSF plays an important intermediary role between its partner organizations (POs) and the poor beneficiaries to transmit production and life-centred services. It has emerged as the leader in the microcredit sector for its innovative and vision oriented ideas. PKSF is much familiar with the vulnerability of the poor in times of adversities and natural calamities. PKSF has always been able to strive forward with timely programs to re-establish the livelihood of the poor in times of natural disasters by addressing their need in all possible ways. Some of the noteworthy activities in this area have been cash-for-work for employment generation on emergency basis, provision of loan for the reconstruction of houses and provision of safe drinking water. PKSF has identified the desperation during and after a natural disaster as a symptom of under development and feels the need to devise a kind of permanent solution which cannot be achieved only by providing emergency assistance. It requires preparing a concrete guideline for disaster management which will enable the poor to cope the risk better.

It is evident from the recent experiences of SIDR and AILA that poor people are the most affected by natural calamities, which are increasing in both frequency and intensity under climate change. PKSF has successfully assisted a significant number of affected people in the aftermath of SIDR and AILA.

In addition, the Livestock Insurance program under International Fund for Agricultural Development (IFAD) assisted Microfinance for Marginal and Small Farmers (MFMSF) project has been formulated with the objective of providing protection to the livestock rearers against the death of their animals. This has started paying benefit for the livestock rearers who have joined the scheme.

PKSF has recently started a dynamic project titled "Developing Inclusive Insurance Sector Project" (DIISP) for mitigating the risk of the poor, as it is closely associated with poverty reduction. The vulnerability of the poor people is exacerbated with risk and creates a vicious cycle that hinders their economic upliftment. The project is offering insurance products and services (related to life, health and livestock) to the low-income group with minimal documentation procedure.

In the above mentioned background, PKSF has prepared a study paper on 'Bangladesh Agricultural Insurance' as an outcome of the Special Service Agreement with the Asia-Pacific Rural and Agricultural Credit Association (APRACA) FinServAccess Project.

1.2 Objectives of the study

General:

To assess the present condition and provide recommendations for developing suitable agricultural insurance systems for smallholder farmers and other stakeholders in Bangladesh.

Specific:

- To determine the present condition of agricultural insurance programs and models in Bangladesh
- To identify influencing factors contributory and limiting to the efficient implementation of agricultural insurance policies, programs and models for sustainable service access
- To document and analyze the innovative, emerging and evolving models, processes, strategies and tools used in the provision, delivery and access of agricultural insurance by the different stakeholders in rural and agricultural development
- To determine and recommend solutions in addressing the challenges in agricultural insurance for sustainable rural and agricultural development

1.3 Expected Outputs

- Documentation of the present condition of agricultural insurance programs, systems and models
- Influencing factors contributory and limiting the efficient implementation of agricultural insurance policies, programs and models for sustainable service access
- Analysis of the innovative, emerging and evolving models, processes, strategies and tools used in the provision, delivery and access of agricultural insurance by the different stakeholders in rural and agricultural development
- Recommend solutions in addressing the challenges in agricultural insurance for sustainable rural and agricultural development

1.4 Focus of the Study

- Policy initiatives from the identified sectors
- Issues, Concerns, Constraints and Challenges
- Models of agricultural insurance provision including strategies and tools
- Cases studies and experiences
- Lessons learnt
- Future Directions including guidelines and recommendations to policy makers seeking to introduce agricultural insurance programs

Based on the above, it contains the following chapters:

Chapter two describes a brief scenario of agriculture in Bangladesh, Chapter three provides information of the Insurance Market of Bangladesh, Chapter four deals with the state of Bangladesh Agricultural Insurance followed by findings from primary and secondary data. Chapter five explains number of initiatives taken by PKSF in order to reduce the poor's vulnerability. The final part concludes with a suggested framework and strategies for a viable agricultural insurance scheme in Bangladesh.

1.5 Approach and methods

A small advisory committee was constituted to provide advice and guidance to the research team on the approach and methods. Three complementary research methods were applied: a comprehensive review of secondary information relevant to micro insurance and the collection of primary data through semi structured interviews in selected districts, sub-districts, villages and household levels. Another type of tool was also used for cross checking the primary data by collecting information from insurance policy owners' focus group discussion (FGD), case studies and stakeholders' discussion at different levels.

CHAPTER 2

Brief Scenario of Agriculture in Bangladesh

2.1 Agricultural Sector

Food security of the vast population of Bangladesh is directly linked with agriculture. Besides, agriculture is directly related to the issues like poverty alleviation, raising standard of living and increased employment. The economy of Bangladesh is predominately agriculture based and the major sub-sectors are fishery, livestock and forestry. Agriculture is the main occupation of the people in Bangladesh employing about 47.5% of the total labor force (Bangladesh Economic Review, 2013). Agriculture sector plays a significant contribution to the GDP. The combined contribution of all sub-sectors (crop, livestock, forestry and fishery) of agriculture was about 16.77% in 2012-13 (BBS provisional estimate). In FY 2011-12, Bangladesh earned US$ 402.70 million by exporting agricultural products which was 1.46% of total export earnings (US$ 24,301.90 million). In addition to the exports of main agricultural commodities such as, raw jute, jute goods, tea, frozen foods, the Government has taken steps to increase exports of non-traditional agricultural commodities. (Source: Economic Review of Bangladesh 2012)

The crop sub-sector (crop and forestry) alone contributed for 11.25% (Economic Review of Bangladesh 2014) of GDP in 2012-13 and the growth rate of this sector is 1.18% (Ministry of Finance 2013). Rice, wheat, jute, sugarcane, tea, pulse, oilseed and tobacco are the major agricultural crops for Bangladesh. Rice is the dominant crop in terms of both cropped area and production.

Livestock is one of the important sub-sectors of agriculture. It contributed about 1.84% of GDP in 2012-13 and the growth rate of this sub-sector was about 3.39% (Ministry of Finance 2013). About 25% of the total population is dependent on this sub-sector as their only source of livelihood and another 50% of the population depends on the sub-sector as one source of their livelihood (Bangladesh Economic Review, 2004).

Bangladesh is fully abundant of fishery resources. There are about 260 freshwater fish species and 24 species of prawns in Bangladesh (Alam and Thomson, 2001). Fishery sector accounted for about 4.37% of national GDP and 23.37% of Agriculture GDP (Bangladesh Economic Review, 2013). Fisheries sector contribute more than 2% of total foreign export earnings and in the last five years, a total of 6 hundred thousand additional employment opportunities has been created by Fisheries sector (National Fish Week, 2014).

Fishery sector provides full time employment to an estimated 1.2 million people and the livelihood of about 12 million people indirectly depend on fishery sector as subsistence fishers, part time fishing labor, aquaculture operators, fish traders and processors (Bangladesh Economic Review, 2004). The total fish production was estimated at 18.90 hundred thousand metric tons, which reached 34.10 hundred thousand metric tons in 2012-13 (National Fish Week, 2014).

2.2 Management of Agriculture

Achieving self-sufficiency in food is one of the avowed goals of the present Government to fulfill the food demand of the vast population of the country. (The Government has placed highest importance to the overall development of agriculture sector including increased national food production. With a view to developing the agriculture sector, the Government has taken a number of

steps. These include, among others, expansion of small irrigation facilities; reduction of water logging; production of improved quality and high yielding varieties of seeds, their preservation and distribution; increase productivity of fish farming in both inland closed and open water bodies; increase the productivity of livestock resources and development of the poultry sector. Agricultural research has been given special priority for the development and expansion of the draught and saline tolerant varieties, short duration crops and varieties of crops adaptable to the weather and environment of a particular region and producing crops suitable for a particular kind of land as well as proper use of fertilizer and integrated pest management (IPM) for pest control, research on variety development of cattle, buffalo, goat, sheep and poultry and transfer of the research findings, Increase the nutritional quality of livestock fodder through the use of biotechnology, the development of new varieties of fodder and preservation of existing varieties and provide training to farm owners, research on the management and development of inland open water, coastal and marine fish and Research on breeding of endangered varieties of fish and conservation of the gin pool and conducting technology based training. Saline tolerant and short duration crop variety and technology has been invented and extended to the field through nuclear and bio-technological methods. Saline tolerant crop varieties have extended the coverage of rice cultivation in the vast coastal areas of southern region. Cultivation of short duration crops helps reduce food scarcity in monga-prone areas and generate employment. Improvement of the genetic characteristics of livestock through production of semen, proven ox, artificial breeding programs and extension of transportation of embryos. It is possible to prevent and control the diseases of livestock through increase in the number of hybrid livestock, livestock health services and through production of vaccination. Employment generation, service delivery, human skill development, development of health, nutrition and empowerment will be enhanced through management of domestic open water body, coastal and marine fish and by imparting training on culture of endangered fish species and through conducting research on conservation of gene pool and training.

Steps have been taken to scale up subsidy on agricultural inputs, ensure fair price and supply of agricultural inputs, expansion of irrigation facilities and increased availability of irrigation instrument, agriculture extension as per target, quality control of agricultural products, ensure sufficient storage facility of food grains, extension of animal health services, ensure the quality of livestock food, prevention and control of livestock and poultry diseases through increase of vaccination and spray, development of livestock and poultry farm management through increased training and mass awareness campaigns, organize fishermen to bring '*Jalmahals*' and flood plain land under community based management and establish fish sanctuaries and develop fish habitat. Implementation of various programs is underway to increase food production through expansion of coverage of agricultural land and to increase the opportunity of multiple cropping by virtue of expansion of irrigation by using ground water in various regions of the country, reduction of water logging and planned drainage of water in '*haor*' areas. The Government has taken an initiative to introduce a 'Crop Insurance' scheme to provide the small and medium crop farmers with crop price support in the event of crop failure due to natural disaster. In addition an 'Endowment Fund' has been established to provide support to increase productivity through diversification of crops. Apart from this, the Government has distributed input assistance cards to 1 crore 40 hundred thousand farmer families of the country up to June 2012. (Source: Economic Review of Bangladesh 2014, MoF)

2.3 Major Challenges in the Agriculture Sector in Bangladesh

a. Loss of arable land

Bangladesh has lost about 1 million ha of productive arable land from 1983 to 1996 (BBS, 1999). That is about 80,000 ha of agricultural land per year going out of crop production. Major factors responsible for such land loss are, urbanization, human settlement, building of infrastructure, and river erosion. The

loss indeed is very alarming and therefore, needs to be addressed properly. Although Government has prepared a Land Usage Policy to stop this trend, improvement is not visible or not at all significant. Available statistics also indicate that about 1 million ha shoal lands are available in the country that could be used for growing crops like groundnut, sesame, mustard, maize, millets, etc.

b. Population growth

Another major challenge to agriculture is the growth of population growth rate stands at 1.37% (BER, 2014). Population is increasing by 2 million per year and the total population would be around 233 million by 2050 if current growth rate continues. Such a growth rate in a country of 143,000 sq km is viewed as a great challenge not only to achieving desired economic development but also to fulfilling basic needs such as food, accommodation, education, and health.

c. Climate change

Atmospheric CO2, CH4, SO2, N2O, etc. are mainly responsible for temperature increase resulting in the rise of sea level. Temperature rise by 1ºC would inundate 18% area of Bangladesh as indicated by different studies. At the same time, the country is frequently affected by flood, drought, cyclone, and salinity due to climate change. As a result, soil fertility, crop productivity, and food security would be seriously threatened. Climate change has also accelerated hunger, poverty, malnutrition and incidence of diseases.

d. Imbalanced use of fertilizers

Organic matter content of soil is much below the critical level of 1.5% in about 60% of arable land of Bangladesh. Farmers normally use Urea in recommended doses. Because of high prices, they apply other fertilizers at the rates that are far below the recommended amount. Chemical fertilizers are not normally integrated with organic manures. It is thus evident that farmers virtually do not use balanced fertilizers that are necessary for high productivity. A task force of the Ministry of Agriculture recently stated that the productivity of crops for the last few decades or so has either stagnated or declined even though fertilizer use in the country has almost increased three-folds.

e. Inefficient water use

Water usage efficiency in Bangladesh is extremely low. On the average, 25-30% of irrigation water is used by crops and the rest is lost due to faulty flood irrigation system. Conservation of rain water during monsoon is virtually non-existent that could be utilized for irrigating crops during dry season. Studies show that irrigation with surface water instead of underground water might reduce the hazards of climate change. Irrigation cost in Bangladesh is relatively high mainly due to high price of diesel. It is to be mentioned that more than 80% irrigation pumps in the country are diesel operated.

f. Pests and diseases

The use of fertilizers, quality seeds, and irrigation together cannot ensure sustainable production unless timely and appropriate measures for the management of pests and diseases are simultaneously pursued. It is important to note that the incidence of diseases and pests has lately become very severe due to the adverse effects of climate change, particularly rise in temperature (IPCC, 2007). It is estimated that 4-14% of rice yield in Bangladesh is lost every year by different insect pests. Bacterial leaf blight (BLB) and nematode (ufra) are now the serious diseases in rice. But the use of technologies to resist pests and diseases are still very limited. Use of IPM technology is limited to rice and few vegetables. In the country the epidemic of some infections is the most significant hinders for poultry industry.

g. Lack of quality seeds

Of the total seed requirement, only about 6% quality seeds were supplied in 2010-2011, although seed as an input could increase crop production by 10-15%. Contribution of private sector and NGOs to quality seed production is still insignificant because they lack costly seed preservation and processing facilities. They have to depend on BADC for seed processing. It may be noted that farmers' low quality seeds still meet about 95% seed requirement that is considered to be one of the major constraints to crop productivity.

h. Unfair price of agricultural products

Productive farmers of Bangladesh mainly belong to small and marginal categories. These farmers do not have either Farmer's Association or Farmer's Co-operative to bargain for fair prices of their products. They are thus forced to sell their produces at low prices to intermediaries. Since the farmers are often unable to meet procurement requirements (14% moisture content, absence of foreign materials in seeds, etc.) of the government, they cannot sell their products at the price fixed by the government. On the contrary, increase in feed cost sometimes emerges to be the most significant hinders for livestock sectors.

2.4 Strengths of Agricultural Sector in Bangladesh

- **Self Dependent on Rice Production**

Bangladesh is today self dependent on rice production. Bangladesh imports a nominal amount of rice which is a very positive side.

- **Hybrid Seeds**

It is one of the revolutionary items in agro-research. Our agriculturists/researcher from BRRI, BARI have invented various seeds those have high productivity, saline tolerant etc. Farmers are using these seeds in many parts of the country according to their need.

- **Crop Cycle**

Today because of agricultural awareness, technical advancement farmers know how to use land throughout the year that has increase the productivity.

- **Subsidies on fertilizer**

Governments of Bangladesh have been allocating a good number of subsidies for with a view to making the farmers avail themselves of purchasing fertilizers at an affordable price.

- **Seasonal Fruits and vegetable out of Season**

Today we get seasonal fruits and vegetable throughout the year like: winter vegetable, mango etc. because of agricultural development.

- **Self Employment for Youth**

For some years Government has taken a very good initiative for the self employment of educated young people. That added a new dimension in our agro-products. They are working for producing poultry, fish, flower, fruits, vegetables etc.

- **Successful Control over Bird-Flu**

The government took careful step to control bird-flu in Bangladesh which was an international crisis on poultry industry. Government even supported to those poultry farmers those who faced financial loss.

- **Numerous perennial and seasonal water bodies**

Bangladesh is also richly endowed with numerous perennial and seasonal water bodies known locally as *haors*, *beels, baors, khals*, *ponds* and *dighies*.

- **Some Other Revolutionary Invention**

There are some revolutionary inventions in that sectors like: Drum Seeder (a machine), Leaf Color Chart System (a chart system with different color), Guti Urea (a processed form of urea fertilizer), sex pheromone trap, porus pipe (Alternate Wet and Dry (AWD) Irrigation System) etc. are going to have positive contribution to our national crop production. Adoption of these improved technologies required relatively small amounts of investment with potentials of incremental gains with low levels of yield variability.

2.5 Weaknesses in Agriculture Sector of Bangladesh

- Agricultural marketing system is comparatively weak.
- Post-harvest loss is high.
- Farmers own capital for agricultural activities is inadequate.
- Access to institutional agricultural credit is limited.
- Farmers' organizations are inadequate and ineffective.
- Input use (water, fertilizer, pesticides) efficiency is low.
- Technology to meet export market requirement is inadequate.
- Technologies to cope with unfavorable environment are insufficient.
- Private sector investment in Research and Development is insignificant.
- Trained scientists and infrastructural facilities for advanced agricultural science are inadequate.
- Diversification in agriculture is low.
- Quality control of agricultural input mechanism is weak.
- Coordination among the public and private universities and research organizations is minimal.
- Use of ICT in extension system is almost insufficient.
- Opportunities for farmers and entrepreneurs training are inadequate.
- Inadequate production and supply of quality inputs persists (e.g. fertilizer, seed).

2.6 Opportunities

- Modern technological know-how is available for dissemination.
- Scope for expanding hybrid technology exists.
- Prospects for adoption of advanced technology in agriculture are bright.
- Potentials for proper utilization of hilly areas including agro-ecologically disadvantaged regions exist.
- Export potentials exist for high-value crops to upstream and ethnic markets.
- Scope for crop diversification and intensification exists.
- Scope exists for value addition to agricultural produces.

- Market for value added products exists.
- Agriculture sector has capacity to absorb labor force and to generate income.
- Scope for reducing yield gaps exists

2.7 Threats in Agriculture Sector of Bangladesh

- Environmental vulnerability (climate change, flood, drought, storm, salinity, pest and diseases, river erosion) prevails.
- Soil health is declining.
- Cultivable land and water resources are shrinking.
- Uncertainty of fair prices of agricultural commodities is causing disincentive to farmers.
- Agricultural biodiversity is eroding.
- Agricultural environment is degrading.
- Budgetary allocation for agriculture, especially for research is inadequate use of agricultural land for non-agricultural purpose is increasing.

CHAPTER 3
Insurance Market of Bangladesh

3.1 Brief background of insurance development in the country

Risks associated with life, health and assets of human exist with time immemorial. From long ago humans are facing risks, losses, famine etc. With the passage of time knowledge, science and innovations of humans allowed them to cope with such events. In such a process insurance company was rooted in thirteenth century. Although the launching of insurance business in Indian sub-continent started in 1818, in Bangladesh insurance was first introduced in 1907. Here the first Insurance Rule was developed in 1912 and the first Insurance Act became effective since 1938 in light of which the insurance business was operating. After the British regime that is from 1947 to 1970 there were 75 operating insurance companies in this region.

After the independence of Bangladesh, to rebuild the war damaged economy all insurance companies came under the control of the government by issuing an ordinance on 8 August 1972. For the operation of the insurance industry in the country, 5 corporations were formed followed by the nationalization ordinance. On 14 May 1973, the mentioned 5 corporations were abolished and two government organizations were formed namely Jiban Bima Corporation (JBC) for rendering life insurance services and Sadharan Bima Corporation (SBC) for rendering non-life insurance services. Postal Life Insurance and American Life Insurance Company were allowed to continue their business along with the two nationalized organizations.

Later on, for the promotion and development of insurance industry, the government created scope for emerging insurance organizations in the private sector by introducing the Insurance Corporation (Amendment) Ordinance, 1984. As a result, 24 non-life insurance companies and 5 life insurance companies were established in 1985. Currently there are 46 non-life insurance companies and 31 life insurance companies operating business in the country among which 2 are state owned corporations. It is very important to impose effective control on these companies to ensure systematic insurance services by covering the interest of the policy owners and beneficiaries. Along with developing insurance rules the government is initiating many adornments which are transforming the traditional insurance practices into systematic mode. These initiatives are having greater positive impacts and the insurance industry is benefitting out of these.

Many countries including Bangladesh have national policies on different issues excepting national insurance policy. The government has now taken initiative to design 'National Insurance Policy, 2014' to ensure social and financial security of people and their assets. It is expected that this policy would help in creating awareness on insurance, maintaining financial discipline, ensuring transparency and accountability and professionalism in insurance operation. Protecting the insurance sector from indiscipline, mismanagement and corruption by giving well-timed instructions would also be possible. [Source: National Insurance Policy, 2014; Bangladesh Gazette No. 53.005.015.00.00.128.2013-174]

3.2 Insurance Market under Regulatory Framework

The insurance industry of Bangladesh is regulated by an independent body, the Insurance Development and Regulatory Authority (IDRA), as stipulated in the IDRA Act 2010. This Authority is comprised of a chairman and four members. The chairman, as the chief executive of the body, is in charge of running the Authority. Previously, the industry was regulated by the Chief Controller of Insurance, Department of Insurance and Ministry of Commerce. Key functions of IDRA include the licensing of

insurers, setting of capital and solvency margins, consumer protection, policy approval, monitoring and supervision of insurance company accounts and balance sheets, and investment funds.

All public and private limited insurance companies in Bangladesh are regulated by the Insurance Act 2010 and IDRA Act 2010. Previously, insurance legislation was governed by the Insurance Act 1938 and Insurance Rules 1958. Important provisions of the current Act include the followings:

- According to the 2010 Act the types of companies which are authorized to conduct insurance business, include (i) public limited companies incorporated under Companies Act, (ii) cooperatives which were previously registered under Insurance Act 1938, and (iii) subsidiaries of foreign incorporated insurance companies. It is a very important feature of Bangladesh that under the 1938 Insurance Act, cooperative insurance societies have been officially recognized and regulated and authorized to transact insurance business, including agricultural insurance.
- As per the 2010 Act, mutual insurance companies have now been prohibited from conducting non-life-insurance business and this would prevent them from underwriting agricultural insurance. It is understood that cooperative insurers continue to be permitted to underwrite non-life business, including agriculture.
- In a gazette published on 2 January 2013 to supplement the Insurance Act 2010 obligated insurers to provide insurance for rural and social sectors. After this gazette came into effect all insurer will be responsible to render insurance services to the rural and social sectors as below:
  (A) For policies issued by life insurance company
    1) At least 1% in first year
    2) At least 3% in second year
    3) At least 6% in third year
    4) At least 9% in fourth year
    5) At least 12% in fifth year and onwards
  (B) For policies issued by non-life insurance company
    1) At least .10% in first year
    2) At least .20% in second year
    3) At least .30% in third year
    4) At least .40% in fourth year
    5) At least .50% in fifth year and onwards
- The insurance company must be registered with and licensed by the IDRA in order to transact life or general insurance business. Legislation requires separate companies to underwrite life and general insurance as well as traditional and Islamic shariya-based insurance.
- Restriction on becoming directors of same class of several insurer or insurer and Bank Companies or other financial institution. It says that an insurer shall not be a director of another insurer registered for the same class of insurance business or other insurer or bank Company or other financial institution.
- Prescribed qualification and experience in the field of insurance to appointment as the Chief Executive Officer (CEO). According to the regulation the CEO should have a minimum of 15 years working experience in the same class of insurance business. This is a very important addition which will help in improving the quality of business dealing of total insurance sector.
- There are minimum capital and deposit requirements to operate an insurance company. For general insurance companies previously the minimum paid-up capital requirement was Tk 150 million, but under the new 2010 regulation this requirement has been increased substantially to Tk 400 million (US$ 5.1 million). Similarly, the minimum capital requirements for life companies have been increased from Tk 75 million to Tk 300 million (US$ 3.8 million). For cooperative insurance societies, the minimum capital requirement is considerably lower

but has been raised from Tk 20 million to Tk 25 million (US$ 0.32 million) and a similar deposit is required of Tk 25 million. Mutual insurance companies have an even lower minimum working capital requirement of Tk 15 million (US$ 0.19 million).

- Microcredit Regulatory Authority (MRA) is mandated to regulate the NGOs/MFIs as per the MRA Act 2006 which allows them to "offer different types of insurance services and other social development-oriented loan facilities to their members" (Article 24). The NGOs/MFIs are not, however, recognized under the Insurance Act as organizations authorized to issue their own micro insurance policies and to accept risk in exchange for and premium payment and to indemnity claims. According to the spirit of the new 2010 Act, the role of NGOs and MFIs could be explained as being restricted to acting as a broker or intermediary, distributing authorized life and general insurance policies to their members which issued by and underwritten by registered and approved insurance companies.
- Mediator as narrated in part IV of the Insurance Act 2010. Previously insurance regulations did not permit agents or brokers and payment of commissions to intermediaries. Therefore each insurer has had to establish its own branch offices and direct sales outlets and this has added huge overhead administrative and operating expenses to the insurer's premiums. Clause 124 of the 2010 Act now permits independent insurance brokers to operate in the market. An insurance broker's license will be issued by the IDRA. The director or the shareholder of an insurance company is prohibited from working for a broker.

This new provision will allow an NGO/MFI to register as an insurance intermediary and to act as a potential delivery channel for agricultural insurance products to its members.

Non-life insurance has a wide range of authorized categories for conducting business. The Insurance Companies in Bangladesh can normally cover the risks of fire, lightning, explosion, earthquake, riot and strike damage, hail, flood, cyclone, air/marine/land, transit, accident, employer's liability, workmen's compensation, public liability, professional indemnities, burglary, robbery, theft, fidelity, motor vehicle, engineering, third party risks, glass, life, disease, sickness, health, agricultural crop, livestock and poultry risks, and every kind of guarantee and indemnity business and counter guarantee and counter indemnity. Currently, however, Sadharan Bima Corporation (SBC) is the only company to have a registered and approved livestock mortality policy, and none of the private commercial insurance companies have yet to develop their own agricultural insurance products.

The special case of index-based insurance may also have to be considered by the IDRA, if crop-weather index insurance or area-yield insurance is developed and sold to farmers in Bangladesh. There may also be a case for specific agricultural insurance legislation to be drawn up for Bangladesh to cover both traditional indemnity based products and new drought, flood, and other index products.

3.3 Insurance Market not under Regulatory Framework

3.3.1 Microfinance Institutions (MFIs) as Insurer

MFIs operating in Bangladesh started to offer a wide range of micro insurance products to their members in the late 1990s, these products include loan insurance, life insurance, health insurance, livestock insurance and property insurance. BRAC, Grameen Kalyan, ASA, Proshika, Gonoshashtho Kendra, Integrated Development foundation (IDF), and Society for Social services (SSS) and Sajida Foundation are the major providers of micro insurance in this sector. A market survey conducted by INAFI Bangladesh in 2007 revealed that 61 MFIs were offering a total of 81 micro insurance products/schemes, of which loan protection insurance was the most popular product being offered by 57 (93%) of the 61 MFIs, followed by life insurance offered by 13 (21%) MFIs. Four also offered livestock micro insurance (Table 1).

Table 1. Types of Insurance Products Offered by MFIs in Bangladesh

Type of Insurance Product	Number of MFIs offering	Product/Scheme % of MFIs offering product*
Loan protection Insurance	57	93%
Life Insurance	13	21%
Health Insurance	5	8%
Livestock Insurance	4	7%
Property Insurance	2	3%

Source: Adapted from Al Hasan 2007. * Total Number of MFIs = 61.

To protect the MFI against the risk of death of the borrower, which might lead to non repayment of the loan is covered by the loan protection policy. As this is a supply-driven product, the MFIs link it on a compulsory basis to their microfinance. Nearly all the MFIs that have entered the micro insurance market, adopted loan protection policy as a standard product. The average premium rate for this cover is 0.8% of the loan amount, with a range from 0.2% to 4.0% across the surveyed MFIs. The policy term is linked to the duration of the loan period, usually up to a maximum of 12 months. In the event of death of the borrower, the outstanding amount of loan is covered by the policy. The life insurance products being marketed by a smaller number of the MFIs are similar to the loan insurance product, but the policy duration is usually for a longer term of between three to ten years. Microhealth-insurance rates vary between 0.8% and 2.5% and cover typically includes primary health care services and discounts of 25% to 50% on hospitalization and essential medicines. The livestock insurance products offered by four MFIs are reviewed below. The premiums are collected from the members. Some MFIs contribute part of the premium by themselves.

As per the INAFI market survey, 69% of the 30 million microfinance clients were covered by the micro insurance products. Many of the MFIs target poor females, and this is reflected in the finding that 17.5 million or 85% of the micro insurance clients were female. The distribution of micro insurance policies by MFI was BRAC 5.5 million policies (27% of total), ASA 5.7 million policies (28%), Grameen Bank 5.58 million (27%), Proshika 1.94 million policies (9%), and the remaining 1.97 million policies by the remaining 57 small and medium MFIs.

3.4 Growth of Insurance Sector in Bangladesh

Bangladesh has low insurance penetration as compared to with other South Asian countries. The developed countries have significant contribution in their GDP. For example, average gross premium income (total of life and non-life business) as a share of GDP was 11.8% in UK, 8.1% in USA, 8.1% in Japan, 11.4% in Hong Kong, 3.2% in Brazil, 3% in China, 7% in Singapore and 4.1% in India. The insurance market in Bangladesh is still fragmented and the competition is very high. Here insurance penetration rate is very low thus a huge untapped market. At present the average gross premium income (total of life and non-life business) as a share of GDP in Bangladesh is 0.9% out of which 0.7% from life and 0.2% non-life. Insurance density (premium per capita) in US$ in the mentioned countries are: 4535 in UK, 3846 in USA, 5169 in Japan, 3904 in Hong Kong, 398 in Brazil, 163 in China and 59 in India. Whereas, in Bangladesh only 4 people in every thousand have life insurance, that is, most insurable lives and assets are not covered under insurance. In recent years, the insurance growth rate is having a positive trend. The premium income of life insurance industry was 9.05% more in 2011 compared to 2010. It was possible with the expansion of micro insurance. The premium income of non-life insurance industry was 16.06% more in 2011 compared to 2010. In 2012 life fund of Jiban Bima Corporation (JBC) was BDT 14.36 billion (US$ 184.10 million) and the total life fund of 17 private life insurance companies was BDT 195.06 billion (US$ 2,500.77 million); Total premium income of Sadharan Bima Corporation (SBC) and 43 private non-life insurance companies, altogether was BDT 24.39 billion (US$ 312.69 million). The market is dominated by life insurance. Non-life business centers on property-fire and marine hull and

cargo insurance, accounting for nearly three quarters of non-life premium, followed by motor insurance and miscellaneous classes. [*Source: National Insurance Policy, 2014; Bangladesh Gazette No. 53.005.015.00.00.128.2013-174;* www.idra.org]

3.5 Micro insurance in Bangladesh

In 1980, Grameen Bank of Bangladesh started lending to poor people without collateral security, thereby revolutionizing finance and banking. Inspired by this scheme initiated by Dr. Mohammad Yunus, founder of Grameen Bank, a life insurance company – Green Delta of Bangladesh – came forward in 1988 to provide financial security to the poor in the form of micro insurance at a small amount of monthly premium. After its introduction in Bangladesh, micro insurance spread among other life insurance companies at a rapid pace. To date, almost every life insurance company in Bangladesh operates at least more than one micro insurance project. For eight life insurance companies, more than 50% of premium income comes from micro insurance. For others, micro insurance constitutes an average of 30% of total premium income premium.

In 2008, about two million new policies were sold under micro insurance, compared to a million under ordinary individual life. Total micro insurance premiums in 2008 amounted to around half of ordinary and other life premiums. For the last few years, micro insurance portfolio of different companies has grown at an average rate of more than 20% per annum. This spectacular growth of micro insurance in such a short period reflects the necessity and acceptability of micro insurance among the masses in the country. Given that this trend is expected to continue in the years to come, premium income under the micro insurance portfolio will likely overtake ordinary life premium in about five to six years' time. [Source: Micro insurance in Bangladesh: A promising sector by Mr. Kazi Md Mortuza Ali]

The private commercial life insurance sector has offered a range of micro insurance products (life and health insurance covers) for a number of years, which have been widely purchased by urban and rural poor. Most of the private life companies in Bangladesh currently offer micro insurance products. For nine of these companies the reported coverage in 2005 was about 4.48 million clients with premiums of approximately Tk 5.5 billion, which is equivalent to about 25% of the total life insurance market premium in 2005. On the other hand, most of the products and services offered by the commercial non-life insurance sector in Bangladesh are not relevant to the needs of two-thirds of the population who are based in rural areas. [Source: Agricultural Insurance in Bangladesh Promoting Access to Small and Marginal Farmers – THE WORLD BANK Report No. 53081-BD, June 2010]

3.5.1 SWOT Analysis of Micro insurance in Bangladesh

Table 2. Mainstream Insurance Companies Perspective

Key Factors	Strengths	Weaknesses	Opportunities	Threats
Product	• Different simple term life insurance and life insurance products with endowment • Products are designed and packaged based on actuarial calculation • Different premium rate based on clients age, sum insured amount, maturity time etc.	• The products are mainly coming from supply side with less consideration on demand • Products features itself sometimes exclude some potential clients like the bottom poor and moderate poor • Less risks coverage i.e. only covers life risks	• Consider the need and demand of target market during product designing and packaging • Design diverse products for different client segment	• Difficult to design products by considering needs and demand • According to Insurance Regulation, life and non-life products can't be offered together by a single entity • The products may not be sustainable • Exclusion of large potential clients due

Table 2. (continued)

Key Factors	Strengths	Weaknesses	Opportunities	Threats
	• Different maturity time • Products contain various benefits • Commitment to continuous improvement	• Only life insurance products are offering, no other products like health insurance, asset/enterprise insurance, crop insurance etc.		to product features and packaging • Sometimes it takes long time to get approval of product from Insurance Regulatory authority
Marketing	• Different cliental groups i.e. moderate poor, vulnerable non-poor and middle class people • Concentrated business approach • Country wide experienced and trained commissioned agent based marketing • Reward system for commission agent	• No insurance education and awareness for diverse cliental groups • Lack of standardised marketing • Renewal rate is not satisfactory • Uneven growth of different policies • Lack of interconnectivity between head office and agencies	• Large potential market • Demand for differentiated products • Possibility of horizontal and vertical expansion as people are becoming conscious about insurance • Linkage with FIs/NGOs • Lower interest rate of banking sector encourages potential clients to purchase insurance	• Market confusion and misconception about insurance • Market expansion and penetration strategy may not be successful • Emergence of market competitors • Giant multinational insurance companies might enter in the market • Merger and acquisition
Operations	• Structured underwriting process • Different premium collection procedures (monthly, quarterly, biannually, annually, single premium etc.) • Innovative approaches • Efficient management and professional staffs	• Complex underwriting process • Premium deposit difficulty • Procrastination of claim settlement • Poor monitoring enhances irregularities among the agents • Lack of coordination among different departments • Unfair business practices	• Reduce operational cost through linkage with MFIs/ NGOs (Partner-Agent Model) • Increase operational efficiency by providing specific responsibility to agents and MFIs/ NGOs • Develop operational manual by considering good practices • Availability of professional staffs	• Clients unwillingness to purchase insurance due to complex underwriting process • Higher non-renewal because of premium deposit difficulty • Probability of losing potential market and credibility due to procrastination of claim settlement • Irregularities and misappropriation of agent will affect efficient operations • Inadequate support from MFIs/NGOs, if there is any Partner-Agent model operations
Accounting	• Proper documentation and accounts maintaining • Some companies have automated insurance tracking system • Prepare financial statements regularly	• Poor insurance accounting knowledge at agent office level • Some companies don't have automated system for tracking insurance • Poor Accounting and Management	• Enhance insurance accounting knowledge at agent office level through training • Develop automated system to track each insurance client • Develop Accounting and Management	• Poor accounting knowledge may encourage fraudulent • Poor performance analysis of agent and individual product might affect the revenue and sustainability

Table 2. (continued)

Key Factors	Strengths	Weaknesses	Opportunities	Threats
	• Invest collected premium in government bonds and different financial instruments • Financial strengths	Information System at agent office level • Inadequate tools to analyse performance of agent as well as each product	Information System at agent office level • Develop effective tools and reporting system to analyse performance of agent as well as each product	
Risk Management	• Lower moral hazard due to standardised products • Less adverse selection because of standard client selection format • Reinsurance to minimise risks	• Possibility of moral hazard due to poor monitoring of agents • The risk of adverse selection is higher due to weak monitoring of agents • Some companies don't have reinsurance facility • Some companies have liquidity risks	• Develop strong monitoring tools to reduce moral hazard and adverse selection • Sign MOU with Reinsurance companies and keep reserve for reinsurance • Manage liquidity risks through efficient portfolio management and invest premium amount in different financial instruments according to investment guidelines of Insurance Act. • Government support	• More moral hazard and adverse selection will affect revenue and sustainability • Political and environmental risks • Lack of reserve for risks management and cope with liquidity risks • No Reinsurance to cope with devastating natural disaster or epidemic
MFIs/NGOs Perspective				
Product	• Simple product design and packaging • Comprehensive coverage options (loan protection and life insurance) • Diversified products (loan protection, life, health, asset/ livestock insurance etc.) • Affordable premium rate • Short maturity time	• Usually products are designed and packaged by considering Microfinance context • No actuarial calculation is done • Premium rate is not calculated by considering probability of risks and sustainability of products • Integrated credit, savings and insurance products • No diversified products in terms of sum insured, premium and maturity time.	• Design product by addressing the need and demand of target market • Diverse and flexible product designing and packaging will enhance outreach. • Product can be designed and packaged through actuarial calculation	• Regulation to design product through Actuarial calculation • Regulation to take approval of each product from Insurance Regulatory authority • MFIs/NGOs may not get authorization to offer insurance products according to regulation • Regulation not to offer life and nonlife insurance products together
Marketing	• Set target clients usually Microfinance clients • Large client base • Wide providers network	• No insurance education and awareness for clients • Lack of standardised marketing policy • No market expansion strategy other than	• Wide untapped market • Potential demand for diverse products • Prospect of horizontal and vertical expansion	• Difficult to position product due to lack of insurance knowledge among the clients • Might face problems both in horizontal

Table 2. (continued)

Key Factors	Strengths	Weaknesses	Opportunities	Threats
		only concentrating on Microfinance clients • Only adapt the push marketing strategy • Lack of insurance knowledge among the staffs	• Linkage with mainstream insurance companies	and vertical expansion • Probability of higher non-renewal or drop out • Market competition
Operations	• Simple underwriting process • Easy premium collection process (either once at a time or weekly) • Relatively low administrative costs • Simple claim settlement process • Strongly committed staffs	• Insufficient knowledge and capacity to operate insurance program • Tendency to adjust outstanding loan with insurance claims • Weak governance and management	• Potential of relatively low operating costs and enjoy economies of scale • Operate within the same organizational structure • Develop operational manual by following good practices • Develop separate insurance department and gradually set up mainstream insurance company	• Lack of knowledge and experience of staffs about insurance will hamper the growth and sustainability of insurance program • Weak governance and management will affect efficient operations
Accounting	• Books of accounts are maintained properly • Some organizations have automated system for Microfinance program • Prepare weekly and monthly financial statements integrated with Microfinance reporting • Strong monitoring and internal control mechanisms • Invest collected premium as revolving loan fund for higher rate of return	• Limited insurance accounting knowledge • Poor costing and pricing ability • No separate financial statement • No separate sustainability and financial ratio analysis • Poor Accounting and Management Information System for management decision making	• Develop expertise on insurance accounting, product costing and pricing • Prepare separate financial statement • Analyse sustainability and financial ratio • Develop Accounting and Management Information System for management decision making	• Poor costing and pricing ability will make the insurance program a losing concern in the long run • Limited insurance accounting knowledge may open the door to fraud • Without financial and sustainability analysis the insurance program might face tremendous financial crisis • Due to poor accounting and management Information System, the management may not able to take any strategic decision
Risk Management	• Lower moral hazard due to long relationship and continuous visit to the clients, and strong monitoring • Less adverse selection due to set clients of Microfinance group	• Limited ability to assess risks • No compliance management system to comply with insurance regulation • No policy for risks management	• Develop expertise to assess risks • Follow the compliance of insurance regulation • Develop risk management policy • Strong monitoring tools development to	• Political and environmental risks • Potential regulatory problems • Inadequate reserve for risks management and cope with liquidity risks

Table 2. (continued)

Key Factors	Strengths	Weaknesses	Opportunities	Threats
	• Integration of insurance products with other products like savings and credit	• Reinsurance is not possible • Higher liquidity risks	reduce risks of moral hazard and adverse selection • Explore alternative of reinsurance and sign MOU with mainstreaming insurance companies in this regards • Reduce liquidity risks through efficient portfolio management and invest premium amount in different financial instruments	• Without reinsurance, it is not possible to settle claims during devastating natural disaster or epidemic

Source: Rashed Al Hasan, INAFI Bangladesh; http://www.doc88.com/p-10453224402.html

3.6 Insurance under Cooperatives and Mutuals in Bangladesh

The cooperative and mutual insurance market is very limited. Insurance legislation permits cooperative and mutual insurance. Currently very little insurance is underwritten by cooperative entities. Conversely till now no license has been issued under the mutual insurance category.

SBC is the dominant figure in the reinsurance market. For general (non-life) insurance business, private companies are required by law to cede 50% of their treaty reinsurance business to SBC, the public-sector insurer and reinsurer. The private companies are then free to place the remaining 50% of their treaty reinsurance requirements either with SBC or with international reinsurers. In practice, SBC offers very competitive terms and conditions and practically 100% of reinsurance business is placed with SBC. Some private insurers also access reinsurance capacity from GIC of India and international reinsurers, mainly in the London and European markets. Traditionally, SBC was major direct insurer both of public-sector utilities and of private business, but today 75% of the company's premium income is derived from reinsurance of the private companies, 20% from public-sector business, and only 5% from private direct underwriting.

CHAPTER 4

Bangladesh Agricultural Insurance

4.0 Public-sector

Bangladesh is a developing country with potentials and an agriculture dependent economy in South Asia. Each year, disasters like flood, draught, excessive rainfall, storms, hailstorms and insects harm significant portion of this agricultural production since the production system depends on nature. These natural calamities disrupt the overall agricultural system and the farmers' families face financial disaster. Due to the financial crisis after the natural disaster, the farmers cannot reconstruct the agricultural system. Thus, the production becomes disrupted and the farmers become bankrupt that imposes enormous pressure on the national economy. At this situation in 1977 based on the decision of the Government of Bangladesh, crop insurance project was initiated on a test basis to mitigate the risks of the natural disasters like flood, cyclone, surge and draught etc. by the SBC. The project was deferred due to very high rate of claim repayment compared to the premium collection. SBC had a similar experience with a pilot livestock (cattle) insurance scheme in 1981.

Agricultural gross domestic product during 2005-2050 is projected to be 3.1% lower each year as a result of climate change. It is estimated that the loss in rice production attributable to flooding accounts for nearly three-quarters of the total annual loss in agricultural output. Among the most severe disasters was the cyclone Sidr in 2007, which destroyed about 95% of standing crops in the coastal districts. Effective disaster risk management and climate-change adaptation approaches should therefore go beyond traditional credit provision and disaster-relief programs to effectively reach and safeguard the broader rural population.

Small and marginal farmers are often excluded from risk-sharing mechanisms as they have little to offer in mutual aid arrangements. The proposed project will pilot WIBCI as an innovative risk-adaptation tool considered suitable for all types of farmers, including small farm households. No crop insurance has been available to farmers in Bangladesh since its traditional agriculture insurance failed due to huge financial losses from high administrative costs and malpractice.

SBC adopted a conventional individual-grower multiple peril crop insurance (MPCI) yielded-shortfall policy which provided coverage against a wide range of climatic perils, including the potentially catastrophic climatic perils of flood, drought, and wind and biological perils of pests and diseases (box 1). The program started on a pilot voluntary basis for rice (Aman, Boro, and Aus), wheat, sugarcane, and jute. The sum insured was set at 80% of the past three-year average yield for each crop on each farm and valued at the government intervention price for the crop, or in other words a revenue-based valuation. Premium rates were calculated on an actuarial basis, but as these were deemed to be unaffordable for poor farmers, actual premium rates were capped at between 3% for wheat and jute and a maximum of 5% for Aman paddy and sugarcane. Loss adjustment was based primarily on "eye estimation" techniques.

The SBC pilot crop insurance program operated for 19 years on a voluntary basis during which time the uptake rates were consistently low and the program incurred major underwriting losses. Reasons for the low uptake and demand for the SBC voluntary crop insurance pilots include: the insurer did not receive any support from government to implement the pilots; there were no comprehensive farmer awareness and insurance training programs; nor were they actively marketed and promoted through producer organizations and finally they were not implemented as part of a bundled program of improved technology and extension advice etc. During the period 1977 to 1995, the program was insured

exclusively by SBC, which retained 100% of the losses, and there was no support from government. The annual average loss ratio was a very high 508% (box 1). In view of the unsustainable financial losses, the Committee on Crop Insurance constituted by the Ministry of Commerce suspended the pilot crop program in 1995. In spite of several internal evaluations and proposals for reformulating and strengthening the crop insurance program over the past 15 years, to date no insurer in Bangladesh has re-launched crop insurance.

SBC's poor experience with smallholder individual grower MPCI closely mirrors the international experience in many other developing countries both in South Asia (India, Philippines) and in Latin America (Brazil, Ecuador, Costa Rica, Panama), and which has been extensively documented and researched (e.g., Hazel et al., 1986; Hazel 1992; Skees et al., 1999; Mahul and Stutley, (2010). In Bangladesh, the key issues which led to the failure of the SBC MPCI program center on (i) low demand for the voluntary program and problems of adverse section and moral hazard, (ii) technical drawbacks of the policy design including the setting of insured yield coverage levels too high and the capping of premium rates at well below the actuarially required levels, (iii) operational issues including poor control over loss assessment and loss assessment procedures and high administrative costs, and (iv) lack of financial and other support to the program from the Government.

Box 1. SCB Multiple-Peril Crop Insurance Program: 1977-1995

Features	Details
Type of Policy	Individual Grower Multiple Peril Crop Insurance (MPCI) Loss of Yield Policy
Insured perils	Multi peril: flood, drought, cyclone, hail, pest, disease, insect
Insured Crops	Aman paddy, Boro paddy, Aus Paddy, Wheat, Jute, Sugarcane
Policy Holder	The scheme was offered to two groups of farmers: (i) members of the agricultural cooperatives under BRDB and (ii) individual farmers taking loans from commercial banks and BKB.
Voluntary or Compulsory	Voluntary, but some linkage to credit institutions was intended.
Sum Insured	The sum insured was set at 80% of the preceding three-year average yield of the particular farm in question, and valued at the government-declared procurement price of the crop. The sum insured was therefore determined on an individual farm basis
Deductible	20% (80% yield guarantee). A 10% excess also applied. For total losses, the claims were limited to a scale according to the stage in the growth cycle when the loss occurred.
Premium Rates	Rates applied to 80% yield guarantee. Uniform premium rates in all areas. Typical premium rates were: Aman 5%, Aus 4%, Boro 3%, Jute 3%, Wheat 3%, Sugarcane 5%.
Exclusions	Qualitative loss and damage, price fluctuations, fire, theft, animal damage, nuclear risks, war, civil war, riots.
Loss Assessment Procedure	Eye estimation and crop cutting according to needs to establish actual yield and amount of yield loss or damage to the crop. Loss assessment team comprising SBC official, TEO, and credit agency official.
Government subsidy	None
Reinsurance	None

Summary of Crop Insurance Results 1977 to 1995

Item	Total (1977 to 1995)	Annual Average
No. of Farmers Insured	18,782	989
Crop Area Insured (Ac)	23,794	1,252
Sum Insured (Tk)	110,529,276	5,817,330
Premium (Tk)	3,962,337	208,544
Claims Paid (Tk)	19,766,803	1,062,647
Average Premium Rate %	3.6%	3.7%
Loss Cost %	17.9%	17.9%
Loss ratio %	499%	508%

Source: SBC 2009

SBC launched in 1981 a pilot cattle mortality cover policy covering accidental death and diseases. The program was offered only to livestock projects financed by BKB and other nationalized banks. Salient features of the SBC livestock policy and the coverage achieved between 1981 and 2008 are summarized in box 2.

Box 2. SBC Livestock Mortality Insurance Program: 1981 to 2008

Summary Details of SBC Livestock Insurance Policy

Features	Details
Type of Policy	Individual animal insurance for cattle
Insured Perils	Animal mortality due to (i) accident and (ii) diseases
Exclusions	• Surgical operations other than that required due to accident or disease during the period of the cover, and castration • Malicious or willful injury or neglect, overloading, unskillful treatment, or use of the animal other than stated in the policy without the consent of SBC • Disease contracted prior to commencement of cover or within 15 days from the commencement of cover. Intentional slaughter of the animal except in cases where destruction is necessary to terminate incurable suffering on humane consideration on the basis of certificate issued by a qualified veterinarian or in cases where destruction is resorted to by order of lawfully constituted authority • Poisoning • Famine of fodder due to natural calamities such as flood and drought • Transport by air, sea, rail, truck, and inland carriers • Class A epidemic diseases (rinderpest, black quarter, haemorrhagic septicemia, anthrax, FMD, Filaris and Pleuropneumonia), save where a veterinary certificate proves that these diseases are successfully inoculated on the animal • Theft or clandestine sale of the insured animal • Permanent or total disability • Nuclear risks • War, civil war, riots
Policy Holder	Individual animals belonging to individual farmers
Voluntary or Compulsory	Voluntary, but some linkage to credit institutions was intended
Sum Insured	Based on the market value of the animal or the amount of loan (credit)
Deductible	20% of the value of the claim borne as a co-insurance by the Insured
Premium Rates	Rates have changed over time. Between 1998 and 2003 a flat rate of 5% was charged.
Government Subsidy	None
Reinsurance	None

Summary of Livestock Insurance Results: 1981 to 2008

Year	Total (1981 to 2008)	Annual Average
No. of Policies Issued	1,026	45
No. of Insured Cattle	7,591	330
Sum Insured (Tk)	162,107,382	6,754,474
Premium (Tk)	5,734,364	238,932
No. of Claims Settled	92	4
Paid Claims (Tk)	3,220,500	134,188
Mortality Rate %	1.2%	
Average Premium Rate %	3.5%	
Loss Cost %	2.0%	
Loss Ratio %	**56%**	

Source: SBC 2009

The SBC livestock insurance pilot project has operated since 1981 with a long-term loss ratio of 56%, but it is has never achieved a high degree of smallholder market penetration. Over the 24 years of operation the program has insured a total of 7,591 head of cattle, or an average of only 330 cattle per year, and generated an average annual premium of slightly below Tk 240,000 (about UDS$ 3,500). Reasons for the low level of demand for voluntary livestock insurance again centre on SBC's lack of a concerted marketing and sales strategy and specific producer awareness and education training programs. The mortality rate experienced under this insurance scheme has been only 1.2% of the insured animals, which is very much lower than the national mortality rates, which are reported at 3% to 5% in cattle. The average premium rate charged over all years is 3.5%, but since 1998 a flat rate of 5% has been levied by SBC. The long-term loss ratio for the livestock insurance program is only 56%, but due to the very small scale of the program, once administrative and operational costs are included it is unlikely it has operated profitably.

4.1 Pilot Project on Weather Index-Based Crop Insurance by SBC

Learning from the earlier faults of the current crop insurance, the government of Bangladesh has decided to initiate the **'Pilot Project on Weather Index-Based Crop Insurance'**. This project will enable us to increase the poor farmers' and agricultural farms' stability and capacities reducing their climate and nature induced vulnerabilities. Japan Fund for Poverty Reduction (JFPR) will donate 2.00 million US dollar which is BDT 16.38 crore in this Pilot Project on Weather Index-Based Crop Insurance (WIBCI) being funded by Asian Development Bank (ADB). The duration of the project is from July 2013 till June 2016.

Brief information of the Project

Executive Agency of the project:	Bank and Financial Institutions Division (BFID), Ministry of Finance (MoF).
Implementing Agency:	1. Sadharan Bima Corporation (SBC) 2. Bangladesh Meteorological Department
Estimated expenditure of the project (in hundred thousand BDT)	a) Total: 1972.21 b) GoB: 333.77 (In-kind BDT: 183.77 and In-cash BDT: 150.00) c) Project Assistance: 1638.44
Types and Sources of Funding:	GoB and Asian Development Bank (Grant)

Countries such as India, Indonesia, Mongolia, the Philippines, Sri Lanka, and Thailand have already commercialized or started piloting WIBCI, as have some countries in Africa.

Objectives of the Project

- Mainly, develop and implement the crop insurance setting up an index based on the weather, such as rainfall, temperature, flood, humidity etc. to reduce the negative impacts of climatic events and disasters caused by extreme weather.
- Increase the stability and capacity of the poor farmers and agricultural farms reducing their climatic and natural disaster related vulnerabilities.
- Establish new weather stations
- Compensate the affected farmers during the disasters from the crop insurance.

It is notable that, successful implementation of the pilot project titled as Weather Index-Based Crop Insurance will make it possible to reduce the risks of the poor farmers and agricultural farms and scale up the crop insurance to a national level.

Main Activities of the Project

- Establish 20 new weather stations.
- Cover at least 12,000 farm households under this crop insurance.
- Aware 6000 small and marginal farmers regarding management techniques for climatic risks and agricultural risks.
- Train at least 400 staffs of different insurance organizations, IDRA, Bangladesh Meteorological Department (BMD), agriculture research organization, NGO and different governmental organizations.
- Prepare draft regulations for WIBCI and submit for approval by IDRA and BFID, along with standards related to weather data quality, product design, and underwriting and claim settlement.

Components of the Project

Component A : Designing and piloting of WIBCI Products (estimated expenditure 764,700 US$).

Component B : Formulating and strengthening policy and regulatory framework (estimated expenditure 137,200 US$).

Component C : Capacity building, awareness raising, and upgrading of selected weather infrastructure (estimated expenditure 724,000 US$).

Component D : Project management, monitoring, and audit (estimated expenditure 303,000 US$).

Roles and Responsibilities of the key stakeholders

Key Stakeholders	Key Management Roles and Responsibilities
BFID, MoF (executing agency)	• Chair the project steering committee and provide coordination and facilitation of steering committee support to the project • Overall project management; coordination among SSC, the BMD, and IDRA; and execution through the PMU • Ensure project sustainability during the post-implementation stage and report to ADB on the assessed development impacts
Sadharan Bima Corporation (Lead implementing agency)	• Prepare an overall implementation plan for piloting WIBCI products • Serve as contracting party for all contracts under the project and award procurement and consulting contracts • Oversee the financial management system and submit timely withdrawal applications to ADB; conduct timely financial audits in the agreed time frame and take recommended actions • Assist in the evaluation and recruitment of consultants on management and information systems, external audits, and poverty impact evaluations • Manage insurance product design, capacity building, and piloting activities and coordinate with the FMD regarding weather data • Ensure quality assurance of the work and services of consultants and counterpart staff • Issue insurance policies to selected districts and 'reinsurance for private insurance companies • Prepare progress reviews and facilitate timely submission of regular progress and monitoring reports for the project • Coordinate and assist with payments and financial accounting of the executing agency

Bangladesh Meteorological Department (supporting implementing agency)	• Assist in the evaluation of consultants • Provide weather data from selected weather stations for designing WIBCI products and during piloting • Provide support in designing technical training related to weather data collection and processing, and assessment of weather infrastructure in Bangladesh • Assist in procurement related to weather station upgrading and oversee the operation of upgraded weather stations • Assist in progress reviews and submission of regular progress reports • Coordinate and assist with payments and financial accounting of the executing agency
Insurance Development Regulatory Authority	• Assist in the evaluation of consultants for Component B: Formulating and Strengthening Policy and Regulatory Framework • Provide guidance on implementing activities under Component S through the PMU such as providing inputs for (i) review of the policy and regulatory framework; (ii) capacity-building requirements for institutional strengthening; and (iii) standards for WIBCI products and client protection
Agricultural Research Institutions, Bangladesh Bureau of Statistics and Bangladesh Space Research & Remote Sensing Organization	• Assist in providing data related to agricultural production, weather risks to agricultural crops, and area-specific information about the pilot sites
Agricultural Banks, Local NGOs, MFIs, or Farmer Cooperatives as Implementing partners in the Field	• Ensure delivery of WIBCI products and collection of premiums • Oversee the implementation of awareness-building activities for rural communities • Get regular feedback from farmers as inputs for the evaluation of piloted products • Assist in progress reviews and submission of regular progress reports
Steering Committee	• Provide overall guidance and policy road map for project implementation • Review project progress and monitor capacity building of concerned government agencies • Approved district selection • Act on any issues that need to be resolved under the project
ADB	• Assist the PMU in providing timely guidance at each stage of the project for smooth implementation in accordance with the agreed implementation arrangements • Review all documents that ADB require • Conduct periodic review missions, a midterm review, and completion mission, as well as other key events that ADB requires • Process withdrawal applications and release eligible funds in a timely fashion • Ensure compliance with financial audit recommendations • Regularly post updated project information documents on the ADS website for public disclosure, as well as the safeguards documents in accordance with the disclosure provision of the ADS safeguards policy statement, as required

Review of the Implementation Progress of the Pilot Project on Weather Index-Based Crop Insurance (WIBCI) up to August 2014 looks as below:

A steering committee has been formed engaging the secretary of the BFID, MoF as the chair. Meeting of the steering committee held on 1st June 2014. The decisions of the meeting are:

- The project authority will take immediate necessary actions according to the regulations to recruit 2 individual consultants as ADB recommended.
- For the pilot projects being implemented under this project, 3 districts have to be selected based on the designated advisors' reports and consulting with the stakeholders so that the project becomes commercially and financially sustainable.

[Source: Sadharan Bima Corporation 2014]

4.2 Private Commercial Sector

There is no involvement of the private commercial insurance sector in agricultural crop, livestock, forestry, or aquaculture insurance. The reasons why Bangladeshi private commercial insurers have not been involved in crop or livestock insurance to date, include the following: (i) their general belief that agriculture is too risky to underwrite, particularly in view of the very poor underwriting results of one pilot scheme which operated during the 1970s and 1980s; (ii) the lack of awareness on the part of Insurers of crop and livestock insurance products and operating systems and procedures; (iii) the lack of accurate time-series animal mortality data and crop production loss or damage data on which basis to establish technical premium rates; (iv) the prohibitively high administration costs of dealing with very small individual farmers, in particular the costs associated with pre inspections and adjusting crop or livestock losses on an individual farmer basis; and (v) the non availability of agricultural reinsurance protection.

4.3 Informal Sector

Agriculture insurance initiative by the informal sector is very little in Bangladesh. In recent years, few initiatives related to both crop and non-crop was taken which enabled others to think and come forward to work further on agriculture insurance.

4.3.1 Developing Alternative Risk Transfer Mechanism of Disaster & Climate Vulnerable Communities among an Oxfax GB pilote – based flood insurance

Project Aim

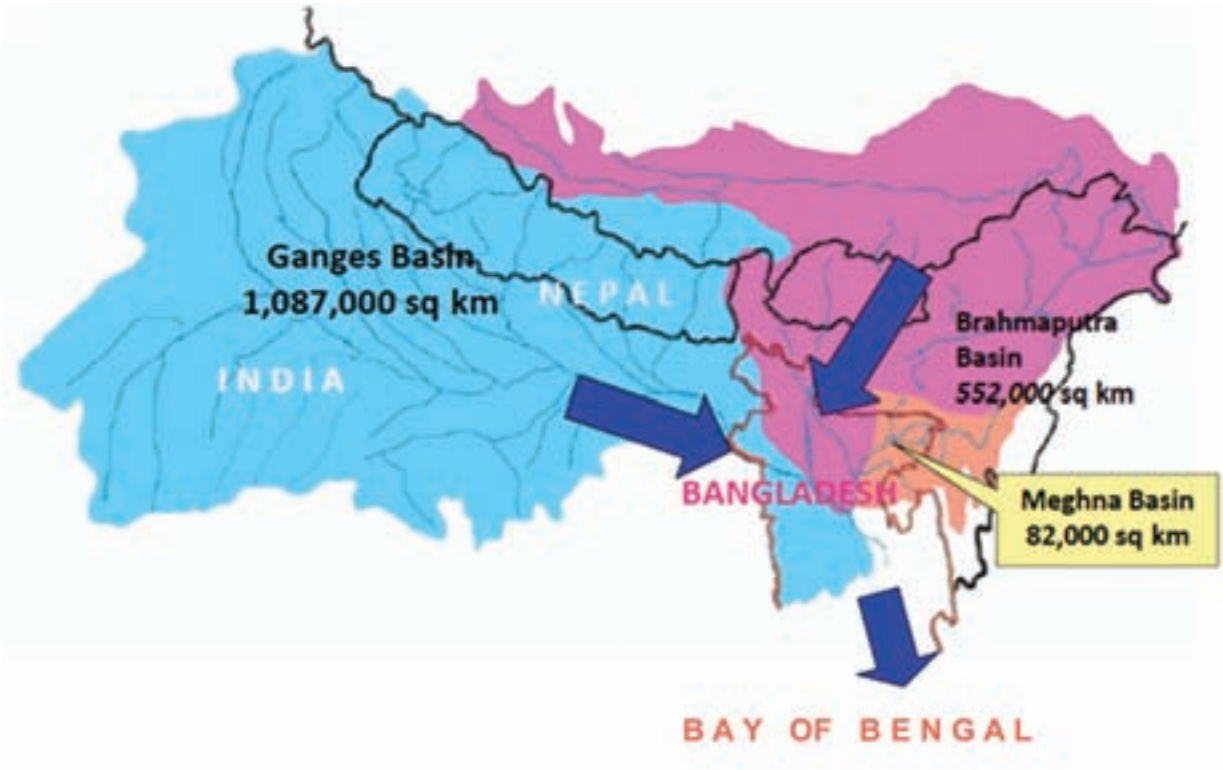
Development of pro-poor river basin flood risk insurance cover for improved resilience of poor and vulnerable women, men, girls, boys, and the elderly in Sirajganj district of Bangladesh.

Project Partners

- Technical Partner (IWM)
- Design Partner (CIRM)
- Funder (Oxfam and SDC)
- Premium Provider (Oxfam)
- Insurer (Pragati Insurance Ltd.)
- Re Insurer (Swiss Re)
- Local NGO (MMS)

Bangladesh Context

- Geographically prone to Flood
- Three major river cross the country Ganga, Brammaputra and Meghna
- During cat flood, people loss their houses, crops, livestock and sometimes lives



Flood Impacts

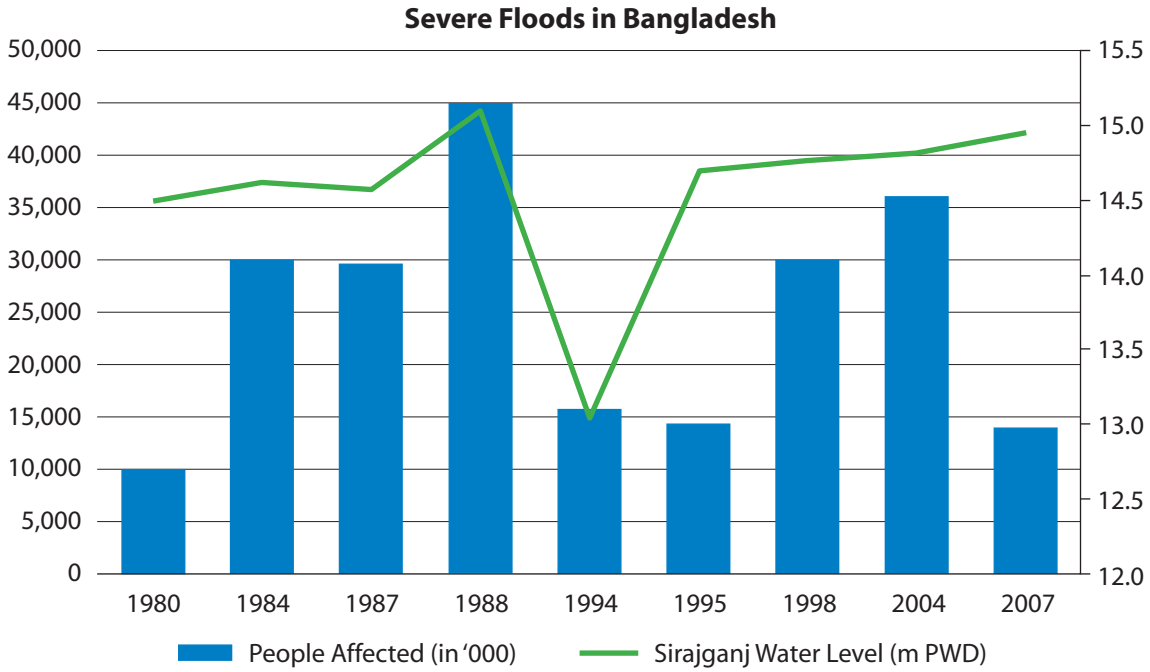
- Every year about 20% of the cultivable land is inundated more than one meter about 4 to 6 months period
- Situation deteriorates during floods of higher magnitude
- Catastrophic floods: 1987, 1988, 1998, 2004

Casualties in 1998 floods

- Over 60% area inundated
- Over 30 million people affected
- Over 4,300 km of roads damaged
- Food grain loss 2.2 million tons
- 270 thousands fish farms washed away
- More than 3,000 industries were affected
- Flooding reduces economical activities and enhances poverty

Severe Floods in Bangladesh

Major floods that affected Bangladesh and their level at Sirajgonj district are shown in the below:



Working Area and Flood Model

A flood model has been developed by Institute of Water Modelling (IWM) to generate historical water level data (in the Jamuna river channel and flood plains). This model was generating data for 2013 flood season to be used for payout calculation. So, the insurer doesn't need to install river gauges and monitor the water level readings every day.

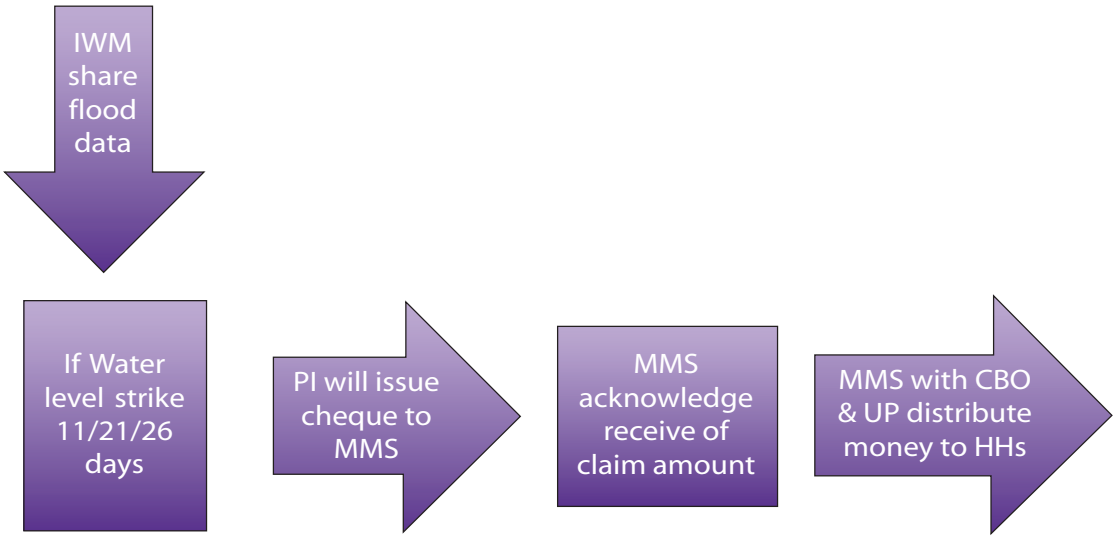
Premium, Coverage, Payouts etc.

- Premium is about 10.3% of the sum insured. A total of BDT 1,573,964 was collected.
- Number of beneficiaries 1,661
- Sum Insured per family BDT 8,000/
- Covering 30 days Wage loss
- Total payouts 13,288,000/
- Flood insurance cover for 1,661 HHs

Compensation Arrangements (per household in reference area)

Event	Compensation
Continuous 10 or lesser days of flood	Tk **0/-**
Continuous 11 days of flood	**35%** of capital sum insured per household (**Tk 2,800.00**)
Continuous 21 days of flood	**55%** of capital sum insured per household **(Tk 4,400.00)**
Continuous 26 days of flood	Capital sum insured per household (**Tk 8,000.00)**

Payout Process



The project fixed the trigger points excessively higher. As a result, there was no claim during the project duration. Such insurance experience discourages the clients to renew their policies. [Source: Workshop on 'Weather Index Insurance: Lessons Learned and Best Practices for Bangladesh' organized by Worldfish in collaboration with ICCCAD Bangladesh]

4.3.2 Agricultural Index Insurance Project by IFPRI-GUK and PKSF

IFPRI-GUK Agricultural Index Insurance Project for the period from April 2013 to December 2013 (1st phase)

Name of project	:	Agricultural/Index Insurance project
Implementing organization	:	Gram Unnayan Karma (GUK), Bogra
Funding agency	:	International Food Policy Research Institute (IFPRI)
Facilitating organization	:	Palli Karma Sahayak Foundation (PKSF), Dhaka
Working area	:	Bogra Sadar, Gabtali and Sariakandi sub-district under Bogra district
Duration of the project	:	April 2013 to December 2013

Goal and objective of the project

The main objective of the project is to enhance the coping capacity of farmers with erratic rainfall either too little or too much. Drought and floods devastate in short term and can perpetuate long term poverty by causing farmers to sell assets and forgo investments. Not only weather other incidences like pests and diseases also lead to huge losses. To protect against risk, poor farmers need flexible simple and affordable insurance products. Index/crop insurance provides new possibilities by making payouts based on objective cut-offs which makes it cheaper to provide. The project is being piloted in the selected sites of Bogra district.

The specific objectives are as follows

a) Designing simple index based micro insurance product that fit the insurance needs of rural small holder farmers in the selected sites.
b) Designing an effective marketing strategy for selling these policies directly to individual farmers under micro credit program of GUK.
c) To document and characterize take up and its determinants, so as to assess the feasibility of scaling up the provision of these policies in the future, and
d) To assess the impact of the provision products on a number of well-being indicators.

Farmer selection criteria

- Farmers must be a member under micro credit program of Gram Unnayan Karma (GUK).
- Having minimum 10 decimal of cultivable land.

Triggers for payouts

- Consecutive 14 dry days during Aman cultivation from 15 July to 14 October 2013 if occurs then a policy holder will get Tk 600/- against a unit of policy of Tk 100/-
- Consecutive 12 dry days if occurs then a policy holder will get Tk 300/- against a unit of policy of Tk 100/-
- Average crop production per acre if less than 26 mounds then a policy holder will get Tk 300/- against a unit of policy of Tk 100/-
- If none of the above triggers happens the policy holders will not get any payout.
- Also the policy holders will not get return of the amount of purchased policies.

Data supplying authority

i. Bogra Government Weather Station.
ii. Upazilla Agriculture Office under DAE.
iii. Bangladesh Bureau of Statistics (BBS).

If may be noted here that if the rainfall is less than 2 mm a day then it will be treated as dry day.

Status of policy sale

a)	Total no. of villages under control group	:	60 villages
b)	Total no. of villages under treatment/intervention group	:	60 villages
c)	Total no. of farmers selected through field survey	:	1,200 farmer respondents
d)	Total no. of farmers targeted for policy sale	:	1,126 farmers
e)	Total no. of insurance policy holders	:	997 policy holders
f)	Total unit of insurance policies sold	:	2,787 units
g)	Total amount of sale proceeds of policies	:	Tk 116,670/-
h)	Total unit of policies purchased by discount beneficiaries	:	2,071 units
i)	Total unit of policies purchased by rebate beneficiaries	:	716 units
j)	Total no. of discount beneficiaries	:	(10%-90%) for 556 persons
k)	Total no. of discount beneficiaries purchased policies	:	(10%-90%) for 506 persons
l)	Total no. of rebate beneficiaries	:	(10%-90%) for 570 persons
m)	Total no. of rebate beneficiaries purchased policies	:	(10%-90%) for 491 persons

4.3.3 GUK-IFPRI Agricultural/Index Insurance project for the period from May 2014 to December 2014 (2nd phase)

Name of project	:	Agricultural/Index Insurance project
Implementing organization	:	Gram Unnayan Karma (GUK), Bogra
Funding agency	:	International Food Policy Research Institute (IFPRI)
Facilitating organization	:	Palli Karma Sahayak Foundation (PKSF), Dhaka
Working area	:	Bogra Sadar, Gabtali and Sariakandi sub-district under Bogra district
Duration of the project	:	May 2014 to December 2014

Goal and objective of the project

The main objective of the project is to enhance the coping capacity of farmers with erratic rainfall either too little or too much. Drought and floods devastate in short term and can perpetuate long term poverty by causing farmers to sell assets and forgo investments. Not only weather other incidences like pests and diseases also lead to huge losses. To protect against risk, poor farmers need flexible simple and affordable insurance products. Index/crop insurance provides new possibilities by making payouts based on objective cut-offs which makes it cheaper to provide. The project is being piloted in the selected sites of Bogra district. This year IFPRI has launched a new variety of drought tolerant paddy namely BRRI dhan-56 in 30 villages in addition to rainfall indicators.

The specific objectives are as follows

a) Designing simple index based micro insurance product that fit the insurance needs of rural small holder farmers in the selected sites.
b) Designing an effective marketing strategy for selling these policies directly to individual farmers under micro credit program of GUK.
c) To document and characterize take up and its determinants, so as to assess the feasibility of scaling up the provision of these policies in the future, and
d) To assess the impact of the provision products on a number of well-being indicators.
e) To encourage the farmers to cultivate drought tolerant rice crop BRRI dhan-56.

Farmers selection criteria

- Farmers must be a member under micro credit program of Gram Unnayan Karma (GUK).
- Having minimum 10 decimal of cultivable land.

Number of villages:

a) Full Season: 30 villages (covering the entire Aman season).
b) Menu: 30 villages (covering early part, full season and the late part of Aman season).
c) Drought tolerant rice producing villages: 30 villages (covering the entire Aman season) for intervention of BRRI dhan-56.
d) Number of control villages: 30 (without any intervention).

Category of policies

- The entire Aman season is covered by two categories of policy.
  a) Menu: Menu policy will cover 30 villages with 3 options:
     i. Early : This type of policy will cover the early 45 days of the season (15 June to 31 July 2014).
     ii. Full season : This category will cover the entire Amon season (15 June to 15 October 2014).
     iii. Late : It will cover the last 45 days of Aman season) (1 September 15 October 2014).
  b) Full season : It is covering 30 villages with single option.

Price and discount of Policies

The price was fixed based on the category of the policy. The price was Tk 55, 300 and 175 for Early, full and late season respectively. Four FGDs were conducted for each village during 28 May to 15 June 2014. In each FGD one lottery was drawn to determine the rate of discount through a farmer who was nominated by the group members. The range of discounts was between 10% to 67% having 6 slabs (10%, 20%, 30%, 40%, 50% and 67%). It is to be noted that no member will be allowed to purchase more than 5 policies starting from 1 policy for 10 decimals.

Triggers for payouts

- Consecutive 7 dry days during early part of Aman season from 15 June to 31 July 2014 if occurs then a policy holder will get Tk 100/- against each unit of policy for each dry spell.
- Consecutive 7 dry days during entire Aman season from 15 June to 15 October 2014 if occurs then a policy holder will get Tk 100/- against each unit of policy for each dry spell.
- Consecutive 7 dry days during last part of Aman season from 1 September to 15 October 2014 if occurs then a policy holder will get Tk 100/- against each unit of policy for each dry spell.
- If none of the above triggers happens the policy holders will not get any payout.
- Also the policy holders will not get return of the amount spent for purchasing policies.

Rainfall data supplying authority

i. Bogra Government Weather Station.
ii. Sub-district Agriculture Office of Gabtoli and Sariakandi under DAE.
iii. Bangladesh Bureau of Statistics (BBS).
iv. Rain gauge installed by IFPRI at 3 points of respective 3 sub-districts under the project.

It may be noted here that if the rainfall is less than 2 mm a day then it will be treated as dry day.

Status of Agricultural/Index Insurance project 2014 at a glance

a)	Total no. of villages under control group	:	30 villages
b)	Total no. of villages under Menu season	:	30 villages
c)	Total no. of villages under Full season	:	30 villages
d)	Total no. of villages under Drought Tolerant rice cultivation	:	30 villages
e)	Total no. of farmers selected through field survey	:	1,711 farmers
f)	Total no. of farmers targeted for policy sale	:	1,146 farmers
g)	Total no. of farmers targeted to bring under D. T. (BRRI dhan-56) rice cultivation	:	565 farmers

h)	Total no. of farmers received Drought Tolerant (BRRI dhan-56) seed	:	338 farmers
i)	Total quantity of BRRI dhan-56 sold in kilogram	:	895 kg
j)	Total no. of insurance policy holders	:	1,035 policy holders
k)	Total unit of early insurance policies sold	:	198 units
l)	Total unit of full insurance policy sold	:	3,785 units
m)	Total no of late insurance policy sold	:	176
n)	Total amount of sale proceeds of policies	:	Tk 506,057/-

Under the project 556 farmers were offered discount out of which 506 availed this option. Whereas, rebate was offered to 570 farmers and 491 took this option. A total of 2,787 policies were sold against which Tk 116,670 was collected as premium. Total payout was Tk 1,672,200 @ Tk 600 per claim. This project shows a negative business trend where total payout was way higher than the total premium collected.

4.3.4 International Center for the Improvement of Maize and Wheat (CIMMYT)

In February 2013, CIMMYT began the first phase of their Index-Based Insurance (IBI) project, which was to design and evaluate weather index-based insurance instruments that are responsive to the needs of maize farmers in the coastal districts of Bangladesh. Since voluntary participation in these insurance programs tends to be much lower than anticipated, the second phase of the project will develop a viable savings component that can be bundled with the insurance product. This is expected to increase the attractiveness of these schemes to farmers, who will be able to benefit even if there is no crop loss. The final phase of the project will be randomized controlled trials (in the production seasons that follow the preparatory project) specifically designed to evaluate the performance of index-based micro-savings insurance. Ultimately, the desired outputs derived from such an intervention should be that insured maize farmers will significantly reduce their production risk, expand the area that they devote to maize cultivation and invest in more productivity-enhancing technologies and/or value-adding post-harvest options. The intended impact should be increased incomes for farm households and their communities, as well as greater economic resilience in the face of adverse weather and market-related shocks.

The sample frame consists of more than 5,000 farmers working with CIMMYT as part of the Cereal Systems Initiative for South Asia in Bangladesh (CSISA-BD) project. These farmers are organized into groups of 25-35 farmers (on average) and offer the potential to design and test insurance/savings instruments at the group level as well as on an individual basis. CIMMYT is implementing the project with local NGOs that they are currently working with as part of the maize farming group concept through which trainings and demonstrations are implemented. The pilot project will be located in Bhola district (greater Barisal area) alongside a local partner organization called Grameen Jano Unnayan Sangstha.

The product design process will include focus group discussions with maize farmers, key informant interviews with various stakeholders (including NGOs, banks, etc.), collection and analysis of yield and weather data for index development, and collection and analysis of longitudinal household data to estimate correlations between extreme weather, yield losses and household expenditures. This should enable development of one or more indexed-based (e.g., wind-/flood-index) insurance instruments by structuring the contract in terms of:

i. determining trigger payout levels.
ii. pricing of the contract premium.
iii. ensuring that payout is sufficient.
iv. estimating the basis risk.

A small-scale choice experiment will be undertaken with about 200 farmers to better understand the demand for specific instruments, as well as to quantify farmers' willingness to pay for them.

The data required to establish the various weather indices (and design the proposed insurance contracts) will be collected from secondary sources. This includes long-term climactic data (ca. 30 years of daily time-step weather station records) from the BMD, data from CIMMYT's 44 independent field plot trials during the 2011-2012 maize production season as well as from other sources.

[Source: Ahmed, T. (2013). Scoping report: current status of index-based insurance in Bangladesh. WorldFish, Penang, Malaysia. Project Report: 2013-38.]

4.3.5 International Finance Corporation (IFC)

IFC has completed a scoping study on the technical and commercial feasibility of piloting index-based weather insurance (IBWI) for farmers in Bangladesh. Following the study, IFC hosted a round table discussion in May 2013 to investigate possible future actions to design and construct IBWI, its delivery channels and pricing. Currently, the IFC is reviewing two to three IBWI models which it intends to pilot. The focus for IFC is on partnering with private insurance companies and building their capacities.

[Source: Ahmed, T. (2013). Scoping report: current status of index-based insurance in Bangladesh. WorldFish, Penang, Malaysia. Project Report: 2013-38.]

4.4 Non-regulated Livestock Insurance

Several MFIs have provided their own informal livestock mortality micro insurance products. The MFIs providing livestock mortality loan protection cover include Proshika (since 1990), Grameen Fisheries and Livestock Foundation (since 2001), and Palli Bikash Kendra (PBK), Dustho Shasthya Kendra (DSK) and Gana Unnayan Kendra (GUK).

4.4.1 Proshika Participatory Livestock Compensation Fund (PLCF)

Since its formation in 1976, the Livestock Development Program (LDP) has been a core component of Proshika's development activities for resource-poor farmers and rural landless HHs, especially women. The LDP has three main components: (i) livestock production (cattle, sheep, and goats); (ii) poultry production; and (iii) livestock support services. LDP provides a range of financial and technical support services to its group members, including livestock investment credit; training and skill development in animal husbandry practices; and training for para-veterinarians, vaccinators, and artificial insemination technicians.

Proshika was the first MFI to introduce a livestock mortality loan protection scheme in 1990 under its Participatory Livestock Compensation Fund, PLCF. The PLCF is linked on a compulsory basis to Proshika's revolving credit fund for cattle, sheep/goats, and poultry rearing projects. The PLCF compensates against the "sudden death" of insured livestock and poultry during the loan repayment period (usually 12 to 24 months), and it is in effect an all-risk accident and disease policy. It does not, however, compensate poor management practices or negligence on the part of the Insured. The rates charged by the PLCF are between 3% and 5% of the purchase price (or loan amount) for cattle and sheep/goats and 10% for poultry (Proshika 2008, Activity Report July 2006 to June 2007). Over the 19 years that the PLCF has operated, a total of 11,739 livestock producers' groups have been insured under this program and a total of 140,439 head of livestock have been insured, of which 87% have been cattle and smaller numbers of sheep and goats and 13% poultry. Claims have been paid out on the death of 4,855 head of animals/poultry with an implied average mortality rate of 3.5% with claims valued at Tk 21.3 million against premium receipts of Tk 31.4 million equivalent to an average loss ratio of 68% (box 3).

Box 3. Proshika Participatory Livestock Compensation Fund

Scope

- The Participatory Livestock Compensation Fund (PLCF) pays for the loss caused by the sudden death of cattle, goats, and poultry under their livestock development program.
- The PLCF mortality cover is compulsory for Proshika members taking out microcredit livestock investment loans from the MFI.

Features

- Coverage: animal mortality due to sudden death (includes accident and disease)
- Insured classes of livestock: cattle, sheep/goats and poultry
- Livestock mortality coverage is bundled as part of a package which includes credit and technical assistance.
- Cover Period: duration of the livestock loan, which is usually 12 months to 24 months
- Guarantee amount (sum insured): loan amount/purchase value/investment scale
- Subscription (Premium) rates: originally 5% (cattle and goats) and 10% (poultry). Currently in 2009 the rates applied are lower at 3% (cattle) and 6% (poultry).
- Premium contribution is paid before the loan is disbursed.
- Deductible: 5% of the TSI applies for poultry insurance
- Loss adjustment: conducted by MFI members under the supervision of Proshika

Results (1990 to 21/03/2009)

- 11,739 livestock producer groups have participated in PLCF since inception.
- 140,439 head of animals have been insured under PLCF since inception, of which cattle (and goats) account for 122,678 animals (87%) and poultry accounts for 17,761 birds (13% of total)
- Total value of livestock loans protected under PLCF = Tk 598 million (TSI), with average sum
- insured per animal of Tk 4,256.
- Total borrower's contributions (premium): Tk 31.4 million, with an average premium rate of 5.25%
- Total claims paid (number of animals): 4,855 animals giving an average mortality rate of 3.5%
- Value of total claims paid: Tk 21.3 million, giving a long-term average loss cost of 3.6%
- Loss ratio: 67.9% (average since inception in 1990 up to 21/03/2009)

Key Challenges

- The PLCF mortality product is not recognized under the Insurance Act 1938/2010
- Proshika PLCF is not reinsured and is exposed to catastrophe claims (flood, cyclone, epidemic disease).

Sources: Proshika 2008, Proshika Field visits 2009.

4.4.2 Grameen CLDDP Livestock Insurance Fund

The Grameen Fisheries and Livestock Foundation (Grameen Motsho Pashusampad Foundation, GMPF) is a sister organization of the Grameen Bank (GB). In 1999, GMPF added livestock and dairy activities to its fisheries program for small rural HHs under the United Nations Development Program funded Community Livestock and Dairy Development Project (CLDDP). The CLDDP dairy producers were provided livestock loans which were protected under a livestock mortality compensation scheme provided by the Livestock Insurance Fund (LIF) 20 (See box 4 for details).

The LIF program insures against death of the dairy cow where this is "outside the control of the owner", and in effect it is an all-risks livestock mortality policy. Insurance is provided as part of an integrated package under which CLDDP veterinary and extension staff assist in the pre inspection of the dairy cow

or heifer and certify its health status. The animal is then routinely inspected and vaccinated by CLDDP-trained veterinary staff and in the event of death the cause of loss is verified by the veterinary staff. These measures lead to greatly reduced livestock mortality rates and the ability to levy very low premium rates for individual animal mortality cover. The sum insured is equivalent to the amount of loan taken out to purchase the cow and premium is currently charged at a rate of 3% of the value of the loan. Coverage terminates once the loan has been repaid (usually over a maximum of two years). In addition, a fee of 2.5% of the value of the loan is levied to cover the cost of veterinary services, vaccinations, and technical assistance. The program has now operated for eight complete years during which a total of slightly over 7,000 dairy cows have been insured with an average mortality rate of 2.8%. The LIF liability is totally retained within GMPF, and the program does not carry any form of catastrophe reinsurance protection.

Box 4. GMPF CLDDP Livestock Insurance Fund: 2001 to date

Scope

- The Livestock Insurance Fund is a component of CLDDP Livestock Development Program (1999) and compensates dairy cattle owners against mortality of their cows.
- Livestock mortality insurance is compulsory for dairy farmers who purchase cows/heifers on credit using CLDDP microloans.
- Insured animals: heifers, dairy cows, beef cattle (>70% dairy cows)
- Territorial scope: mainly northwestern Bangladesh

Features

- Community-based program
- Coverage: animal mortality due to disease, accident, and any cause outside the control of the owner
- Insurance is provided as part of an integrated package which includes, credit, technical assistance, vaccines and veterinary services, concentrate feeds and fodder, and milk marketing services.
- Guarantee amount (sum insured): loan amount/replacement cost
- Premium rate: 3% (previously 2.5%) of the loan money deducted at source
- Service fee of 2.5% of value of loan is charged to Livestock Development Fund (LDF) in order to contribute toward veterinary inputs (animal inspections, vaccinations etc.) and to cover salaries of veterinary staff.

Results

Year	No. of insured dairy cows	No. of insured cows died	Mortality rate (%)
2001	1,337	25	1.9%
2002	586	33	5.6%
2003	707	47	6.6%
2004	798	29	3.6%
2005	822	29	3.5%
Total	**4,250**	**163**	**3.8%**

Livestock insurance premiums (Tk) – 1,975,000

Livestock indemnities paid (Tk) – 1,485,000

Loss ratio % – 75%

B. CLDDP Sustainable Project from 2006 to 2008

Year	No. of insured cows	No. of insured cows died	Mortality rate (%)
2006	1,195	14	1.2%
2007	875	16	1.8%
2008	695	1	0.1%
Total	**2,765**	**31**	**1.1%**
All Years	**7,015**	**194**	**2.8%**

- Overall loss ratio at end 2008 is about 45%.

Key Challenges

- The Grameen livestock mortality product is not recognized under the Insurance Act 1938/2010.
- The Grameen livestock mortality product is not reinsured and is exposed to catastrophe claims (flood, cyclone, epidemic disease).

Source: Authors, based on information provided by Grameen Bank March 2009.

CHAPTER 5

Initiatives for Agricultural Development by PKSF

5.1 Introduction

Palli Karma Sahayak Foundation (PKSF) was established in May 1990 by the Government of Bangladesh as a 'not-for-profit' company, registered under the Companies Act 1913/1994. Legally, PKSF is a "company not for profit" and is registered under the Companies Act of 1913/1994 with the Registrar of Joint Stock Companies. The legal structure of PKSF allows flexibility and authority to undertake program in a dynamic environment, implement them throughout the country and manage its affairs as an independent organization.

The principal objective of PKSF is to provide funds to various organizations for their micro credit program with a view to help the poor who have no land or any credible material possession. Funds enable them to gain access to resources that lead to employment opportunities and enhancement of their livelihood.

5.2 Major Objectives

a. Provide financial assistance and institutional development support to appropriate organizations for implementing sustainable inclusive financial program for reduction of poverty through creating productive employment opportunities for the moderate and ultra poor, small and marginal farmers and micro-entrepreneurs.

b. Support, promote, develop and identify sustainable employment opportunities for the moderate and ultra poor, small and marginal farmers and micro-entrepreneurs; and to provide them assistance including education, health, training and risk reduction services as may be necessary for enhancing their capacity.

c. Build and strengthen the institutional capacity of the POs and enhance their ability to provide various financial and non-financial services to the poor on a sustainable manner.

d. Support, promote and sponsor innovative program and suitable projects for improving the quality of life of the poor and enabling them to lead a dignified life.

e. Help the poor to diversify and strengthen their livelihood strategies, enhance their security, give them access to assets and rights, and augment their self-respect by providing them greater choices and independence.

5.3 The Basic Operational Strategies

a. PKSF acts as a second-tier organization. It does not directly provide services to the program participating households, rather PKSF reaches them through its Partner Organizations (POs);

b. Instead of following a particular model of development, PKSF encourages practical and effective approaches to poverty reduction and development interventions, keeping adequate flexibility to adapt with dynamic environments.

5.4 Core Programs

PKSF works towards expanding livelihood opportunities as well as enhancing human capacities for the various heterogenous poverty-stricken segments of the society. To attain its stated objectives, PKSF provides demand-driven financial and non-financial services to the poor through its POs. In addition, PKSF supports building and strengthening the institutional capacities of the POs in order to provide necessary resources to the poor in a sustainable manner. The major functions include:

5.4.1 Inclusive Financial Service

Promoting Inclusive financing is one of the core strategies of PKSF. Considering the heterogeneity of different poverty groups living in different agro-ecological regions of the country, PKSF strives to address their diverse financial needs. These groups include moderate poor, ultra-poor, micro entrepreneur, small and marginal farmers. Vulnerable areas, such as coastal, bakswamp, shoal, drought and flood-prone, and economically backward areas, are given priority during the selection of geographical locations for program interventions.

a. **Financing the moderate poor:** The contribution of the agricultural sector to GDP has been reducing gradually over the last three decades. Similarly, scope for employment opportunities has also decreased during this period. PKSF started its activities by launching credit programs for the rural moderate poor to create employment opportunities in the rural off-farm sector. The objective was two-fold: one was to create new employment opportunities, and the other was to reduce the pressure on the crop sector for employment, and thereby improving productivity in the farm sector. Later on, finding enormous demand and opportunities in the urban areas, PKSF extended its services to the urban moderate poor.

b. **Financing the ultra-poor:** The ultra-poor have always been left out from traditional financial services due to self-exclusion, social exclusion and institutional exclusion. The fundamental reasons behind these include weak socio-economic conditions, lack of confidence and perceived weak entrepreneurial abilities of the ultra-poor. The classical microcredit required to include some encouraging elements in its practice to ensure inclusion of the ultra-poor. Considering all these constraints, PKSF devised a flexible financial service to include the excluded. Distinct features of this service are lower interest rate 13 and flexibility in repayment mode. PKSF continuously induces its Pos to undertake necessary steps to eliminate the barriers of social and institutional exclusion. At present, PKSF is running the country's biggest financial program for the ultra-poor. Along with providing flexible financial services, PKSF initiated a specially designed project entitled 'Programed Initiatives for Monga Eradication (PRIME)' in 2006 to prevent the negative impacts of Monga in the North, and situations similar in the South, and to reduce the economic hardships of the ultra-poor to eradicate their poverty in the long run.

c. **Financing the micro entrepreneur:** Micro enterprises are considered engines of economic growth that create both gainful self-employment for micro entrepreneurs and wage employment opportunities for the ultra-poor. Recognising the potential of this sector, PKSF launched its micro enterprise program in 2001 to meet the larger demand for credit of the micro entrepreneurs. Under this program, an entrepreneur can access a credit facility up to BDT 1 million and enjoy flexibility in repayment and amortisation period. They are also eligible to get working capital loan amounting up to BDT fifty thousand.

d. **Financing the small and marginal farmer:** The small and marginal farmers are considered as core driving forces of the economy. The lack of access to finance has always been one of the major constraints of the farming communities, in particular small and marginal farmers. Higher degree of covariant risk, inadequate agricultural credit services of formal institutions, and the rigid microfinance operational modality hindered the inclusion of farmers into the

mainstream financial system. Considering the diverse financial needs of farmers, PKSF has been implementing a specially designed agricultural lending program since 2005. The salient features of this service include provision of flexible repayment mode, such as one shot, seasonal or balloon repayment, consistent with the seasonal agricultural activities; and the flexibility of having multiple loans to diversify their production. To provide agricultural extension services, recently PKSF has set up two units, namely, agriculture unit and livestock unit.

PKSF may raise funds and accept donations, grants, loans or other financial assistance from any Government, private or any other sources and agencies, institutions in Bangladesh and abroad for use in work consistent with the purposes and objects of PKSF. However, the receipt of any foreign loans or donations will be subject to Government approval. So far PKSF has received funds from the GoB, the World Bank, the USAID, the Asian Development Bank (ADB), Department for International Development (DFID), European Union (EU), International Fund for Agricultural Development (IFAD) and the Kuwait Goodwill Fund (KGF). PKSF, as the leading apex microcredit and capacity development organization in Bangladesh, has till date lent about US$ 2,429.38 million (at present value) to its 273 POs covering more than 8.13 million borrowers of which more than 91% are women.

5.5 Social Protection Program of PKSF

The poor suffer from losses of income from time to time due to natural hazards, personal situations, adverse market behavior, and various other reasons. Keeping the foregoing in mind, PKSF has, so far, made a number of initiatives in order to reduce the poor's vulnerability. They are as follows:

5.5.1 Sahos

Due to geographical position, Bangladesh is one of the most disaster-prone countries in the world. Humanitarian crisis or natural disasters are quite common phenomena in Bangladesh. These bring in plight of varying degrees for the people, particularly the poor. Sudden and tremendous fluctuations of fortunes of the people often have terrible impact even on the regular socio-economic development of the country. Mitigation measures and immediate material help become an urgent necessity. To help them cope with and recover from disasters PKSF has created a Disaster Management Fund (DMF) to provide quick financial assistance to the poor families; prevent them from selling advance labor or valuable assets and enable them to find a humble and decent life. This Fund Newly titled as 'Sahos'.

'Sahos' is a special PKSF fund exclusively designed for ensuring immediate financial assistance to support the vulnerable poor during and post disasters. This fund mainly seeks to facilitate the coping and recovery mechanism of poor people. This fund is primarily used for the livelihood restoration including repairing of houses, tube wells and latrines; restoring the existing IGAs and ensuring consumption capabilities during post-disaster period. It also guarantees the provision of emergency medical services, water and sanitation. PKSF mobilizes this fund from its own income as well as from resources made available by other organizations.

Box 5. Sahos of PKSF	
Features	**Details**
Type of policy	Provides grant and flexible loan to organized group members to meet their emergency needs for pre-disaster preparation, during disaster and post-disaster reconstruction and rehabilitation works
Source of Fund	• Loan/grants from PKSF • 1% of service charge earned from POs micro credit program to be deposited quarterly to this fund.
Activities	Restoration of livelihoods, such as repairing houses, tube wells and latrines; providing urgent medical services; re-establishing IGAs and procuring consumer items to meet emergency needs.
Loan ceiling	• The loan size for **'Sahos'** would not exceed Tk 10,000/- per beneficiary per time • In case of several disaster beneficiaries are allowed to borrow two **'Sahos'** loans at a time but the loan ceiling would not exceed Tk 15,000/- per person.
Loan Period	PKSF to Partner Organizations (POs) : Thirty (30) Month with six (6) month grace period
	PO to Beneficiaries: Twenty Five (25) Month with one month grace period.
Rate of Service Charge	PKSF to (POs) : 0.5% (Declining balance method)
	POs to Beneficiaries: 4.0% (Nominal rate in flat method)
Grant service	For emergency relief, Food, medicine etc.
Summary of 'Sahos', May 2014	
No. POs:	149
Current Borrower:	112,457
Loan disburse:	PKSF to PO: Tk 440.48 crore
	PO to Beneficiaries: Tk 505.80 crore

This fund made significant contributions during super cyclones 'Sidr' and 'Aila'.

5.5.2 Special Fund

But in the event of sudden disaster, such structured operational system is found to be not really helpful as per the demands of the immediate situation. Ironically though, the compliance of formal rules does not permit the Partner Organizations to help them out since all kinds of material transactions have to be earlier endorsed within the budgetary allocation. This is also required to maintain accountability and transparency to which PKSF is uncompromisingly committed. In the absence of such a provision within the on-going mainstream program, PKSF has formed a 'Special Fund' from its own resources with a set of principle in which community services are to be prioritized over the individual. This fund will be used to provide the ultra-poor with both short and long term financial grants and other social services (for example, provision of safe drinking water, health, education etc.) at the time of man-made or natural disasters to help combat the emergency situation.

Box 6. Special Fund	
Features	**Details**
Source of Fund	PKSF's Own Fund
Provision of the fund	(a) Assistance programs to restore the livelihood of under-privileged people severely damaged by natural disasters such as cyclone, tornado, flood, drought, epidemic, earthquake, severe winter etc. (b) Community Support programs to face special situations such as scarcity of safe drinking water in an area or any kind of infrastructural repair on an emergency basis of road, bridges or culverts etc. (c) Provision for scholarships or grants (secondary to post-graduate level) for the meritorious students.
Target people/Institutions	(a) Belonging to the poor and ultra-poor having membership of PKSF Pos (b) Charitable non-government institutions/educational institutions/ hospitals helping the poor/ultra-poor (c) Provision for financial and product services to the poor/helpless individuals suffering from acute diseases.
Coverage	Provide the ultra-poor with both short and long term financial grants and other social services (for example, provision of safe drinking water, health, education etc.) at the time of man-made or natural disasters to help combat the emergency situation.
Summary of Special Fund of PKSF	
• At Savar, the Rana Plaza collapse on April 24, 2013 has been one of the deadliest national catastrophes in the history of Bangladesh in which 1,129 people died and 2,500 people were badly injured. In the context of the magnitude of the disaster, PKSF has donated BDT 2,000,000 to the Relief and Welfare Fund of the Prime Minister. • Distribution of blankets to the members of ultra poor program of Dinajpur district through MBSK, a Partner Organization of PKSF in January 2013. • Grant and disbursement of BDT 1,180,000 as medical assistance to individuals deserving the assistance for continuation of their treatment at home and abroad. • Disbursement of BDT 57,900 during FY 2012-2013, as scholarship to meritorious students studying at Medical Colleges and different public Universities	

5.5.3 Community Climate Change Project (CCCP)

Bangladesh belongs to one of the most vulnerable countries to climate change impacts. This poses an enormous challenge to the aspiration of Bangladesh to get out from a low-income country and move to a middle-income country by 2021. Over the last three decades, Bangladesh has been implementing programs related to flood management schemes, coastal embankments, cyclone and flood shelters, community-based natural disaster management, raising roads and highways as well as research and development to adapt with the climate change impacts. As a result, Bangladesh's ability to manage natural disasters, particularly floods and cyclones, has been steadily improving since 1991.

Realizing the extent of climate change impacts and required efforts for enhancing resilience, the Government of Bangladesh (GoB) adopted Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009. The strategy identifies 6 pillars for future programming:

(i) food security, social protection and health;
(ii) comprehensive disaster management;
(iii) infrastructure;

(iv) research and knowledge management;
(v) mitigation and low carbon development; and
(vi) capacity building and institutional strengthening.

Development Partners (DPs) agreed to support the plan and Bangladesh Climate Change Resilience Fund (BCCRF) was created as a multi-donor trust fund in 2010 by the GoB.

BCCRF is managed by the Ministry of Environment and Forests (MoEF) and is supposed to support implementation of BCCSAP up to 2018. BCCRF has attracted US$182 million as of June 2014 from several DPs. On behalf of the contributing development partners and in consultation with the GoB, the World Bank ensures the performance of efficient and intelligent BCCRF (including fiduciary management, transparency and accountability) for a limited duration. BCCRF envisages two funding windows such as an on-budget window for public sector projects and an off-budget window for civil society and NGO sector projects. The Governing Council of BCCRF accredited PKSF to function the off-budget window for channeling funds in favor of NGOs. This component of BCCRF, to be called as 'Community Climate Change Project (CCCP)' is channeling 10% of the BCCRF resources. The project has officially launched in 2012 and the implementation of CCCP will be undertaken till December 2016 with a total budget of US$ 12.5 million.

The development objective of CCCP is to enhance the capacity of selected communities to increase their resilience to the adverse impacts of climate change. This objective is expected to be achieved through establishment of an effective grant financing mechanism within PKSF to channel funds to eligible non-government organizations. The project is designed on an innovative approach to finance community-based adaptation interventions in selected climate vulnerable areas by increasing the institutional capacity of PKSF to administer the fund. Since most adaptation interventions to date at the community level are extremely small, scattered and un-coordinated, the project would adapt a framework approach for the identification of scalable community sub-projects using transparent screening criteria to meet the objectives of the project. Initially, the project focuses on three climate vulnerable zones such as salinity affected coastal areas; flood affected shoal lands and river basins; and drought affected and rainfall scarce areas.

5.5.5 Pilot Livestock Insurance

Information on beef fattening program in Bangladesh is rather scanty. Cattle meat traditionally ranked as a top food item in hospitality and social festivals in rural Bangladesh. Moreover, being a Muslim country, Bangladesh experiences a seasonal demand of beef cattle during Eid-ul-Azha (Muslim festival). About 1.8 million cattle are sacrificed at this time each year. It is increasingly turning into a regular menu of the growing population of the country through urbanization, income increase, migration of rural people to different global places and the mushrooming of chain shops in cities and towns. A large number of farmers and traders are involved in beef fattening (BF) round the year, mostly just before 3 or 4 months of Eid-ul-Azha, when they sale cattle at profitable prices. The BF for cattle production has become an important business of the marginal and small farmers in Bangladesh.

In recent year, most POs are continuing to disburse a large amount of BF seasonal loans to organize and selected group members. But there is no appropriate risk coverage product in Bangladesh to protect from the risk of cattle death. An integrated cattle death insurance and proper cattle health services tied to BF seasonal loans be one of the strategy to overcome the apprehension of farmers' uncertainty. This necessitates appropriate insurance products for the microfinance clientele groups that can protect the cattle production and its marketing risk. POs and their BF seasonal loans may play a vital role in protecting the loss of cattle due to an unexpected death. In view of the above circumstances, PKSF started pilot 'livestock insurance' scheme has started within the International Fund for Agriculture Development (IFAD) assisted Microfinance for Marginal and Small Farmers Project. Before going to

implement the pilot 'livestock insurance' scheme in the field level project team was visit Grameen Motsho and Livestock Foundation (GMLF), which already had an insurance scheme for dairy animals. They also visited GMLF and also reviewed the schemes operated by two PKSF's POs (SOJAG and DSK), who had been implementing such programs on a limited scale for several years. The project explored the potentials for incorporating LI scheme with BF seasonal loans and developed a draft policy for the pilot LI scheme. A comprehensive livestock insurance scheme was tried to test in the field with direct participation of POs in respective areas.

POs area coverage under LI scheme

The pilot LI scheme had started its process of operation from August 2009. Up to June 2011, the project has been operating pilot LI scheme through 73 branches of 7 POs in 31 Upazilas (sub-districts) under 9 districts of Bangladesh.

Pilot Livestock Insurance Policy

PKSF has developed a detail policy for management and implementation of the pilot LI scheme and associated cattle health service. The "LI scheme" effectively a combination of cattle life "insurance" and cattle health services tied to BF seasonal loans. The POs had to play a vital role in awareness building, education and training on the concept of LI scheme. POs imparted formal training on cattle housing, management, and health care services and facilitated the services for nursing the cattle by insurers to protect the cattle death. The BF seasonal loan borrowers bought cattle death insurance policy in lieu of smaller payments as premium. The insurance package was as follows:

Box 7. Summary Details of Livestock Insurance Policy

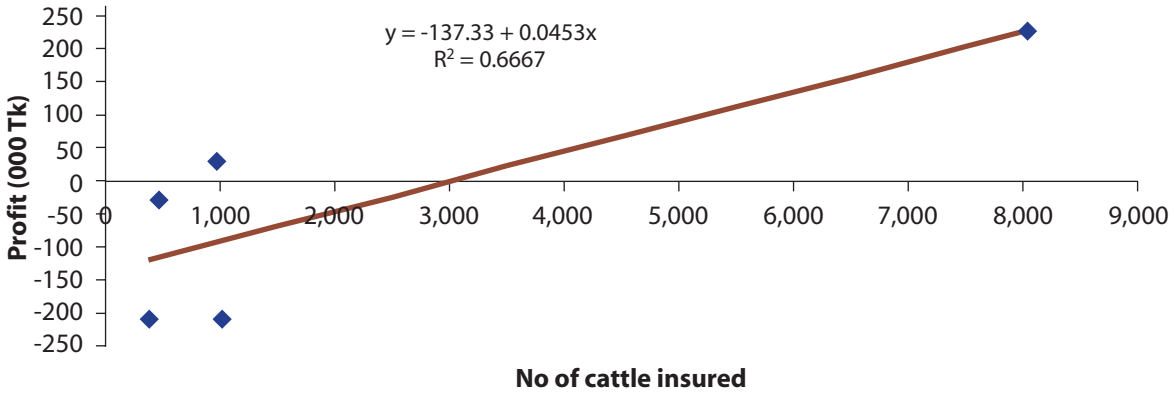
Features	Details
Type of Policy	Individual Livestock Insurance associated with cattle health service
Insured Perils	Animal mortality due to FMD, Deworming, Anthrax, Ephemeral fever, Food poisoning/Dysentry, Diarrhoea, Dermartophillosis, Balano Prosthitis
Exclusions	POs did not pay any claim if the insured cattle are stolen or theft.
Policy Holder	Individual animals belonging to individual farmers
Voluntary or Compulsory	Voluntary
Sum Insured	On payment of a premium of Tk 200 per cattle
Caring cost	Tk 500 per month towards the cost of caring for the cattle.
Term	• The term would be 6 months. • The insurance policy owner pays the premium for the policy period.
Pre requisite	The recruitment of Veterinary Surgeon (VS) in each PO is ensured.
Deductible	Owners of insured cattle were compensated, if the animal died, with the value of their loan (including service charge payments).
Process of Claim settlement:	In the pilot LI policy, the insurers are to maintain the health cards in their house and certified by the VS regularly during the visit of cattle. POs are using the 'paravets' who are rural level local trainers and they are trained by VSs. The para-vets administered vaccines, treatments and did cattle follow-up visits. If the insured cattle are sick or injured and died from the same causes before the policy expires, and the policy owner reported this to POs branch offices, and he would get the claim amount. The VSs performed official examination of the cattle dead body in order to discover the causes of cattle death. POs offered the livestock insurance and recognized clients' financial hardship when a cattle died knowing that pilot LI scheme would help families to stay in the same financial condition to buy another calf.

Benefit from Premium	Farmer is provided maximum upto Tk 35,000/- as a compensation against premium of Tk 200/-.
Government Subsidy	None
Reinsurance	None
Summary of Livestock Insurance Results: June 2014	
No. of Insured Cattle	179,532
Sum Insured (Tk)	4,195,962,780
Premium (Tk)	39,889,611
No. of Claims Settled	28,000
Paid Claims (Tk)	20,682,216
Mortality Rate %	0.52%

Relationship between profits and number of cattle insured with each PO

Linear regression analysis has been done to show the profitability and number of cattle insured for 5 POs (AFAUS, ASKS, GRAMAUS, JAKAS and SHARP). The relationship between combined cattle life insurance and health services businesses profit and number of cattle insured with 5 POs under LI scheme is presented in Figure 1.

Figure 1. Relationship between profit or loss (000 Tk) incurred and number of cattle insured under livestock insurance scheme



Linear relationship between number of cattle insured with each PO and profit gained under the pilot LI scheme were estimated as Y = -137.33 + 0.0453 × (R^2 = 0.667). The R^2 = 0.667 value indicated that 67% of the variation of profit has been explained by the independent variable included in the regression. The result indicated that the profit could be predicted well on the basis of cattle number insured with each PO. Thus, the estimated linear positive effects of cattle number insured with each PO contributed significantly to the variation in profit gained under the pilot LI scheme. The estimated equation stated that with a 1% increase in cattle number insured, the corresponding combined cattle insurance and health services profit would be increased by an amount equivalent to the co-efficient, Tk 453. Using the combined cattle death insurance and health services profit estimated break-even point was 3,032 (from estimate – a/b = 3,031.57) numbers of cattle to be insured. By following the line forward in time and amount, we can estimate future insurance policy sales, if we can safely assume that growth will remain linear.

Box 8. Case study in the operational of agricultural production/insurance

Ramisa, her husband, a son and a daughter belong to her small family. Her home is situated at 8 km north from Dangapara village in Hakimpur sub-districts under Dinajpur district. She owns two acre of cultivable land. She merely earns her livelihood from cultivating paddy in this land. Due to the lack of adequate money she could not cultivate paddy well. She got enrolled in the Dangapara Mohila Shomiti (a cooperative) which was organized by JAKAS Foundation at Hakimpur branch 20 November 2011. Being enrolled, she participated in the training on modern cultivation technique of paddy and took a loan of 6 thousand for a six month period. She cultivated *Boro* in that season with the money and got good yield of paddy. Selling the paddy she paid-off the loan and stored rice for the entire year.

Being in a better state, Mrs. Ramisa Begum expressed her wish to rear cow. Then she was trained on cattle fattening and provided a loan of 20,000 (twenty thousand) taka from the Hakimpur branch of JAKAS Foundation. She bought a bullock. She sold it at 40,000 (forty thousand) taka after rearing for six months. Ramisa Begum and her husband's interest got amplified as they could make a profit of 12,000 (twelve thousand) taka at the first time. Next time Ramisa took a loan of 20,000 (twenty thousand) taka and bought a bullock with 19,000 (nineteen thousand) taka. At the moment of receiving the loan she paid 200 (two hundred) taka as premium of the livestock insurance and 60 (sixty) taka for treatment purpose to the branch office. Thus, the organization took the responsibility to provide two vaccines (Anthrax, FMD) and deworming tablets for the cow and the cost of the cow if it dies suffering from any disease. According to the contract, the cow was treated by the designated veterinary doctor of the organization. Yet, the cow died suffering from Anthrax after four months. The organization paid the loan from the insurance fund and provided her another loan of 20,000 (twenty thousand) taka to buy another cow.

In her success in beef fattening and paddy cultivation she was provided loan of 40,000 (forty thousand) taka for buying two cattle and of 25,000 (twenty-five thousand) for paddy cultivation. Ramisa bought two cows with 40,000 (forty thousand) taka and reared for six months following the advices of the livestock officer of Hakimpur branch of JAKAS Foundation. She sold the cows at 75,000 (seventy-five thousand) taka. Ramisa's family has become solvent now.

Challenges

The overall results indicated that the pilot LI scheme had potential and was one of the effective options for marginal and small farmers for increasing the beef production. However, still there are some challenges for a wider involvement of the farmers in general:

a) The clients observed high inputs (feeds, medicines, etc.) price and instability of the market situation for buying calves and selling fattened cattle hindered the pilot LI scheme.

b) POs would be confidence in the supply sources of vaccines and made available as and when necessary for insured cattle. Most of the vaccines nationally supplies from DLS, which is not easy to get as and when necessary in the field. The private sources have also supplied with high cost for poor marginal and small farmers, which is not too reliable.

c) All the insurance policyholders were the borrowers of POs, sometimes borrowers insisted to adjust the BF seasonal loan outstanding with another loan and savings, which was necessary to maintain separate arrangements for the pilot LI scheme and microcredit operations.

d) The Less number of farmers received BF seasonal loan and bought LI policy in some area is another challenge for financial sustainability of the PO's pilot LI scheme.

e) POs would prepare an efficient investment strategy of BF seasonal loan so that PO can do its asset-liability matching properly and does an appropriate portfolio mix for the best return.

f) A key component of this scheme was awareness-building, education, formal training and informal answered against questions raised on the concept of the pilot LI scheme. POs needed to recruit the VSs and support technical staff to implement initial client training of cattle housing, criteria to select calves, ensure vaccination, health services and to involve PO's core

credit staff with basic training under the pilot LI scheme. POs also needed to develop the local para-vets to follow up above activities. In this arena, it is a big challenge to build the capacity of POs and PKSF too.

g) POs would develop smooth and efficient operation strategy for the pilot LI scheme so that POs will reduce the operational expenses and achieve operational self-sustainability.

h) POs would get registration of the pilot LI scheme is a big challenge. As the MRA policy and the Government Insurance Act may interfere the pilot LI scheme.

i) The inclusion of all interested cattle owners' (of BF seasonal loan borrowers and non-borrowers) cattle with the pilot LI scheme is a big challenge. As the POs are not interested to sale cattle insurance policy to the non-borrowers. But this inclusion would create economies of scale involving as many cattle as possible from a village to create clusters that will reduce the health services cost per cattle.

Lessons Learned

From one and half years of pilot LI scheme operation the project gathered significant operational insights to determine the future direction as well as improve operational efficiencies as follows:

a) The project piloted the LI scheme appeared to be able to offer microcredit group members a useful service at a cost that is both attractive to scheme members. The pilot LI scheme seems to at least have the potential to cover its costs, especially if cross-subsidized by the surplus generated by giving loans. By providing health care services along with insurance, and also by training all members in how to care for their cattle, the risk of loss is reduced, which in turn helped offset the cost of premium. The four pitfalls (adverse selection, moral hazard, covariant risk and fraud) of insurance are avoided as:

   i) *Adverse selection:* was avoided by requiring all cattle to be inspected by PO staff before being accepted into the pilot LI scheme to ensure that they are healthy. It was not practical for such inspection to take place prior to purchase (staff would have to be available to visit many cattle markets and wait there until a purchase was or was not made). But insurers had to agree to sell and replace any cattle that veterinary staff did not deem to be insurable.

   ii) *Moral hazard:* was minimized by ensuring that insured cattle are properly cared for through the health care package, training of owners and by close monitoring from PO credit and technical staff during the fattening period.

   iii) *Covariant risk:* was largely avoided by vaccination against contagious diseases and by the fact that normal floods did not affect large numbers of cattle deaths as owners were usually able to get their cattle to safety. Although cyclones could not kill very large numbers of cattle, this occurred in a fairly narrow belt along the coastal belt and, so far, the pilot LI scheme did not operate in those areas.

   iv) *Fraud:* was avoided as: (i) the initial cattle inspection ensured that the value of animal purchased not worth very much less than the value of the loan (which is the insured amount); (ii) a post mortem was carried out on dead cattle to determine the cause of death and no claim was paid if cattle have been deliberately killed; and (iii) false claims for the death of cattle not covered by the insurance was avoided by having a health card, detailed written description of the appearance of the animals and by the cattle being seen at regular intervals by PO credit and veterinary staff. Introduction of Health Card for each insured cattle was compulsory under the pilot LI scheme.

b) In the initial stage of pilot LI scheme operations, the income from cattle health services provided at cost is simply impossible. The expenses of vaccines, medicines, operating expenses such as salary, travel and others could cover from the POs BF seasonal loan operation income surplus or with the support of any other project of PKSF.

c) The dedicated VSs and technical staff for pilot LI scheme gives much better result through utilizing the para-vets, and the COs whose core responsibility are loan operation.

d) The low educated marginal and small farmers did understand the concept of the pilot LI scheme if it is presented in a proper way (with using training, flip charts and mobile cinema van, etc.).

e) The marginal and small farmers were the main clients, who agreed the most popular premium Tk 200 per cattle for one policy, which reflected that relatively acceptable. There were No Claim Bonus (NCB) or POs could not offer any other bonus amount in terms of discount for continuing next insurance policy sale. This may try further with the discussion of POs and cattle owners.

f) Mainstream insurance companies may take the opportunity to provide reinsurance for this pilot LI scheme initiative in Bangladesh. They may take the opportunity to offer reinsurance products for covering the covariant risk that serves the demand, need and are affordable to the insurance clients and POs. Reinsurance coverage by the mainstream insurance company would require a series of dialogues to change the policies. Once they are convinced that all risk related data are available for assessing the risk, they may come forward with the reinsurance offers.

g) There is need to review the premium charged based on actuarial calculations of the probability of cattle dying.

h) Microfinance regulatory Authority (MRA) in Bangladesh allow POs to provide micro insurance. It would be difficult (or more expensive) for an insurance company to provide a package combining cattle insurance and health care and so reduce the risk of cattle loss and hence the cost of insurance. Although an insurance company could employ veterinary staff to provide these services, and also to deal with issues of adverse selection, moral hazard and fraud, in the project pilot LI scheme these staff work along with the regular microcredit staff that provided additional monitoring of insured cattle. POs were also able to manage veterinary staff using their existing branch office and administrative infrastructure without incurring additional overheads. Finally, POs may not need the insurance cum health care package to completely cover its costs as it helped to generate additional and profitable lending, and surplus service charge income could help cover the costs of the health care service.

Box 9. Case Study

In 2010, Mr. Abu Bakar became interested in beef fattening activities and became an active member of *Kandapara Krishak Shamiti-2* (a cooperative) in *Kandapara* Branch, Shojag, Dhamrai, Dhaka.

He started with a loan of 25,000 (twenty five thousand) taka borrowed from Shojag for beef fattening at the first time and bought a bullock in the next year. (He started next year with a loan of 25,000 (twenty five thousand) taka borrowed from Shojag for beef fattening as his first initiative and bought a bullock). After rearing the bullock for six months he sold it at 55,000 (fifty five thousand) taka while it did cost only 10,000 (ten thousand) taka to rear it for these months. He earned a profit of 20,000 (twenty thousand) taka by rearing this cow. He got inspired and took 50,000 (fifty thousand) taka loan from Shojag for the second time in the same year and bought 2 bullocks with 42,000 (forty two thousand) taka. In the next six months, he spent 18,000 (eighteen thousand) taka rearing these two cows. He sold these cows at 102,000 (one lac and two thousand) taka and earned a profit of 42,000 (forty two thousand) taka.

At the 3rd time, he took 100,000/- (one hundred thousand) taka loan and bought 4 bullocks. 10 months later he sold those bullocks at 197,000 (one hundred and ninety-seven thousand) taka whilst spent 32,000 (thirty-two thousand) taka for rearing during these months. Thus he earned a profit of 65,000 (sixty-five thousand) taka.

At the 4th time, Md. Abu Bakar took a loan of 120,000 (one hundred and twenty thousand) taka and bought 4 bullocks with 90,000 (ninety thousand) taka. Five months later, one of his four bullocks suddenly died on 10th October 2012. He bought this one with a price of 17,000 (seventeen thousand)

taka. But he did not lose hope at all as because he had livestock insurance for each of his cattle. He claimed and received a total of 22,000 (twenty two thousand) taka that comprised of 17,000 (seventeen thousand) taka as the insurance and 5,000 (five thousand) taka at a rate of 1,000 taka per month for rearing the bullock for five months. Receiving the money, he bought another bullock and started fattening. Rearing for 10 months he sold the four bullocks at 230,000 (two hundred and thirty thousand) taka where it did cost 63,000 (sixty three thousand) taka for rearing the cows. Thus he earned a profit of 77,000 (seventy-seven thousand) taka.

Mr. Bakar became very happy and affable receiving the insurance for the dead cow. So he admired the livestock insurance initiative of Shojag. Witnessing the insurance support to Mr. Bakar other farmers both the members and non-members of Shojag became inspired to the insurance. In this context, cow rearers expressed their interest to pay the insurance premium spontaneously.

It was a milestone in the development of livestock insurance. Now the farmers are being inspired in cattle rearing.

Observations (pilot LI scheme)

The pilot LI scheme was not fairly known in the microcredit sector in Bangladesh. The insurance clients of the pilot LI scheme clearly understood the functioning of insurance as they witnessed the claim settlement cases. POs could achieve trust on the services to the clients and ensured quality of services. The employees of POs were now more motivated than ever before. The project promoted VSs, technical staff and para-vets assured that their good performance would be recognized and rewarded.

The outsiders could see how the clients' awareness created, how the training were helping them to catch the idea, how clients were continuing a fair understanding about the concept, how premium records were kept in a separate head of account, how well the funds were being maintained full security, also how well the financial dealings and dedication of POs staff. In one and half years of insurance selling record, project reached 12,058 clients undoubtedly were a great achievement. Being able to create awareness, provided insurance education, implemented effective cattle health services, understood the effective ways of project implementation, got a response from marginal and small farmer clients about going for the new LI scheme were some key strengths of the project. The advices and guidance received from the IFAD project supervision mission and all POs were precious and main inspiration for the smooth growth of the pilot LI scheme. The project hoped and expected that with the inclusion of new POs it would gain faster growth in the coming days and be able to provide cattle health services and cattle death security to reduce the vulnerability of the marginal and small farmers in Bangladesh through LI scheme.

Based on the insured cattle health services and production dataset from seven POs for the period of 2009-2010 and 2010-2011, this study investigated changes in cattle health services, associating the changes with the involvement of POs, focusing to increase beef production and reduce the number of cattle deaths. The empirical results showed the beef fattening seasonal loan operation were profitable in all of the six POs. Though the data was scanty, the cattle death rate reduced from very high to very low, which were sustained throughout the period. The improvement in cattle health services explained the most of this growth rates.

The study also quantified the profitability of POs led cattle health services business operation, a previously unnoticed sources of service delivery. It was found that the project and POs jointly needed to subsidize the cattle health service business alone to care the insured cattle. This contribution of the project and POs needed in the initial few years of pilot LI scheme operation to sustain the insurance market condition. These trends continued, by the recruitment of professional Veterinarians, through the vaccination, advice, diagnosis and treatment of clients' cattle health. In all seven POs for the period, however, the growth rate of premium surplus was high enough to keep separate. The net result was that

the growth rate of premium surplus per cattle was much higher, resulting in a slow pace of beef fattening insurance entry in the country.

This study also underlined that the importance of POs, willingness of clients in the future and the overall impact of the pilot LI scheme. Incorporating BF seasonal loan, cattle health services and life insurance revealed that clients improved understanding and built confidence to POs. Comprehensive cattle life insurance business and health services business into framework would be highly desirable. Further research is needed to quantify the structural determinants of the changes and their net effects on the welfare of marginal and small farmers, analysis of the cattle marketing situation, investigate the LI services to all interested cattle owners from a village brought under the scheme to create economies of scale involving as many cattle as possible to create clusters, etc. These are left for future study.

Concerns for future of this programme

a) The pilot LI scheme necessitated continuing to be gradually up-scaled with more POs joining. However it should, for the time being, need to be remaining as a pilot and not become a mainstream financial product.

b) As livestock insurance is a pilot scheme, project needs to adopt a flexible approach, and allow POs to offer different insurance and health care packages at different prices. POs could also try different modes (employed staff or contracted service provider) and different levels of staffing.

c) In order to make the provision of health care services as efficient as possible, as many cattle as possible need to be covered within the working area for a team of VS and LTAs/ATOs/ para-vets. Consideration should be given to extending the scheme to cover loans for dairy animals and for beef fattening financed by weekly repayment (rather than seasonal) loans. As these are not seasonal loans, a different level of cover and premium may be appropriate. Consideration may also be given to extending the pilot LI scheme to cover loans for a series of beef fattening (at one month interval) financed by a series of seasonal loans.

d) The likely cost of claims needs to be assessed using actuarial principles and the insurance premium may rise if necessary. There is also necessary to employ actuary calculation to carry out this assessment as well as to support other micro insurance pilots.

e) The charges for the insurance premium and health care package should be reviewed to see if it would be possible to generate funds to cover some or all of the cost of veterinary staff.

f) Covariant risks need to be considered if the scheme is to operate in coastal areas with the risk of mass loss of cattle in a cyclone or floods. Although policies could exclude cover for losses in such natural disasters, clients are likely to want to have such cover included. At a time when they may have lost other assets and livelihoods, they do not want to be denied cover for insured cattle. POs could re-insure their schemes against such losses, in fact re-insurance could shift some or all of the risk of any loss from the PO to an insurance company. Although this could appear to be attractive, it may result in some additional cost, as a re-insurer would need a premium to cover the risk that the PO was less diligent in minimizing losses and claims as it was no longer bearing some or all of the risks arising from claims.

g) Further studies into livestock insurance would be useful. These could adopt a market research approach, and cover both insured and uninsured livestock owners, with the objective of assessing the demand for insurance and health care services, what features clients would like, and what they are willing to pay.

h) Pilot LI scheme experience could be shared to disseminate lessons within PKSF program and with other interested agencies.

i) There is potential to improve the health care part of the package, and any other project could support the training of PO staff.

5.5.6 Developing Inclusive Insurance Sector Project (DIISP)

Millions of people in developing countries like Bangladesh live in a state of destitution. Their economic opportunities are extremely restricted by social, geographical and political conditions. Poor people confront many risks in higher frequency. Moreover, the vulnerability of poor people is exacerbated each time they incur a loss, creating a vicious poverty cycle. Micro insurance is considered as one of the best interventions of microfinance to safeguard the poor against such perils. Although Bangladesh has a long history of microcredit interventions, micro insurance service for the poor is relatively a new concept. With field level experiences, PKSF has learned that addressing the risk mitigation needs of the poor is particularly important for sustainable poverty alleviation. Hence, with a financial grant (US$ 2 million) from the Japan Fund for Poverty Reduction (JFPR) and administered by the Asian Development Bank (ADB), PKSF has been implementing Developing Inclusive Insurance Sector Project (DIISP) since 2010.

Goal

The project goal is to reduce the vulnerability and improve welfare of the poor through improved access to reliable and affordable institutional risk mitigation services (micro insurance), building upon the existing semi-formal risk mitigation services offered by MFIs.

Objective

The objective of DIISP is to protect the livelihood of poor, especially women, from risks such as accident, illness, theft or natural disaster to secure their welfare and insure their productive or non-productive assets through the development of low-cost inclusive insurance services (micro insurance). Mostly life, health and livestock insurance services are offered to the low-income groups with minimal documentation.

Specific objectives of the project are:

(i) Extend and Increase affordable insurance services for the low-income people of Bangladesh.

(ii) Decrease unexpected expenditures or resulting loss of assets, to cope with risks of poor households those will be covered by the pilot micro insurance schemes under DIISP.

(iii) Extend insurance awareness campaign and training to low-income households in order to enable them familiar with the insurance concept, formal and informal risk coping mechanisms.

(iv) Increase capacity of MFIs on micro insurance operations to develop institutional expertise in insurance underwriting, financial management, product development and marketing.

Project Activities

Project activities are divided into four components.

Components	Major Activities
Component A: Market Assessment and Product Development	• Micro insurance Market Assessment Survey; • Micro insurance Product Development
Component B: Strengthening Policy, Legal and Regulatory Framework	• Legal and policy review; • Draft guidelines for Micro insurance
Component C: Awareness Creation and Capacity Development	• Improve insurance awareness among poor households; • Training and capacity building of MFIs on Micro insurance

Component D: Micro insurance Pilot Scheme	• Pilot micro insurance scheme (marketing and operation of micro insurance product) through MFIs; • Impact assessment of the pilot scheme

Market Assessment Survey A nationally representative and comprehensive 'micro insurance market assessment survey' has been conducted under the project to develop a consolidated profile of poor and low-income people of Bangladesh—including their knowledge of insurance services, risks, income and expenditure patterns, seasonality of income and spending, health and health care conditions, ability to afford insurance premiums and willingness to pay, association and linkage with existing risk mitigation services by microfinance institutions (MFIs). About 3,500 households were chosen in the study throughout the poverty-prone areas (e.g., coastal, island, shoal and bakswamp areas) of Bangladesh. The survey decisively examined the extent of the health, lifecycle, financial, disaster and other shocks faced by the poor and subsequently the economic burden these inflict upon the poor. The core focus of market assessment is to evaluate the scope and design of viable micro insurance 'products' or 'services' for the poor that can adequately help address the concerns over vulnerability. The market assessment survey was conducted by an international consultant which is one of the most inclusive market assessment surveys that has undertaken in the context of Bangladesh.

Products Design Based on survey findings and data from other relevant sources, potential micro insurance products were developed for pilot testing that include a variety of poor-friendly life, health and livestock insurance products. Products are designed with assistance from an international level actuary which includes benefit, terms, eligibility, premium, restrictions, administration, claim verification, and monitoring. The products are "user-friendly", simple, and easy to understand for the target people.

Regulatory guidelines for micro insurance A review of the current legal and policy framework relevant to micro insurance has been completed under the project with the assistance of an international micro insurance legal specialist for development of a functional regulatory environment for the promotion of the micro insurance sector of Bangladesh. To expedite the sector development and for the successful execution of micro insurance pilot scheme of the project the legal specialist has drafted regulatory guidelines, which include definition and types of micro insurance products, policyholders rights and duties, financial management, confidentiality and restrictions, governance etc. PKSF ensured the participation of all stakeholders during the preparatory stage of the draft regulatory guideline. Based on the draft regulatory guideline an 'Operational Manual' has been prepared for the field level pilot testing of micro insurance.

Capacity Development Capacity development of relevant PKSF and PO officials on micro insurance operations is one of the major targets of the project. All the relevant officials of 40 selected POs have received quality trainings on micro insurance operations which include-awareness creation, underwriting and claims management, financial management, asset management, monitoring and evaluation, MIS, service quality, fraud management, reporting, etc.

Awareness Creation 40 POs under the project are engaged in awareness creation and promotion of micro insurance among their members throughout the country. Trained officials of POs are creating insurance awareness of their members on regular basis. The project has produced brochures, educational posters and micro insurance dramas for the purpose of awareness creation of poor. Brochures and posters were supplied to the respective branches of POs to run promotional activities. Television and DVD players were also provided in respective branches of POs to play promotional dramas and documentaries among their members.

Micro insurance Pilot Testing PKSF has launched actuarial based Credit life (Microcredit Insurance), Livestock (cattle), Health (hospital cash benefit) insurance services and also introduced a basic healthcare (paramedic service) services for field level pilot testing under DIISP. 40 POs under DIISP are currently implementing the pilot testing in the field and disseminating insurance services to their members.

Pilot testing of micro insurance products under DIISP started in September 2013. Actuarial based credit life, livestock (for beef fattening program) and health (hospital cash benefit) insurance services have been launched and a basic health care (paramedic service) service has been introduced for the targeted poor and low-income people.

Status of Livestock Insurance under DIISP

Minimum pooling size for implementing the livestock insurance under DIISP is 2,000 cattle as determined by the actuary. 28 out of 40 POs under DIISP are engaged in pilot testing of livestock insurance. It is mandatory for the borrowers under beef fattening program to obtain livestock insurance policy for their cattle under DIISP. To obtain a policy the borrower has to pay 0.7% of loan amount as premium per cattle to get their cattle insured for the period of six months. In case of death of cattle-head during the insured period due to conventional mortality or Natural Catastrophe/Epidemic 100% loan amount of the borrower with the PO is waived. Borrower's life could be covered by the policy against an additional payment of 0.3% of loan as premium. In that case same benefit is applicable in case of death of the borrower during the insured period. The premium for cattle insurance to be paid by the borrower during the time of policy issuance and at the beginning of the loan cycle. Other terms and conditions of cattle rearing should be strictly maintained by the borrower. Every individual policyholder received an insurance card for their livestock insurance policy where all relevant information for beef fattening was described. These information among others include – cattle selection during procurement, how to take care of the cattle, building a healthy cattle-shed, healthy food for the cattle, vaccination, benefits and conditions of livestock insurance etc.

Piloting status of Livestock Insurance activities under DIISP (January-May 2014)

Number of cattle insured	Total collected premium	Total claims paid (number)	Total claim amount paid (in BDT)
240,856	39.58 million	782	15.50 million

The project has selected 40 partner NGOs/MFIs for piloting micro insurance scheme taking into account their experiences, geographical location, capacity on risk management and effectiveness in working for pro-poor development. The Project intervention covers comprehensive aspects for the promotion of micro insurance including regulation and supervision, institutional development, capacity development, product design and development and delivery and social intermediation.

5.6 Livestock Insurance experience of Shojag (a partner organization of PKSF)

Shojag (Shomaj O Jati Gathon), a partner organization of PKSF pioneered on livestock insurance. Shojag believes that Livestock and poultry rearing is a potential and profitable sector in poverty reduction and socio-economic development of Bangladesh. This is duly important to state that, this sector is as much risky as its potentials. Lack of strong and sufficient cure and antidote system of livestock diseases lets them to face high risks. Minimum initiatives in fighting these risks will help this sector to flourish and eradicate poverty significantly. Withstanding these initiatives, governmental and non-governmental cooperation is also imperative.

5.6.1 Experience of Shojag

Shojag is working intensively for one and a half decade in engaging NGOs with the basic productive sectors such as crops, animals and birds, and pisciculture continuously and for six years in livestock rearing. This is obvious that, in the context of Bangladesh, above stated productive sectors are risky and depend on the environment/nature. Yet, considering the vulnerabilities of the farmers no adequate initiatives are there for mitigating or reducing their risks. Though everyone agrees to the importance, no one is found coming forward to implement the most discussed crop-insurance or livestock insurance. Realizing the helplessness of the livestock rearers, *Shojag* has taken some innovative initiatives. In this context, livestock insurance project is initiated in 2008 on a test basis.

5.6.2 Initiative to Reduce Death Rate

In controlling cattle's diseases for prevention and cure, *Shojag* has recruited three University graduate veterinarians. At the same time, the Agriculture Officers of *Shojag* are also trained on livestock's and bird's primary treatment and vaccination so that they can enhance their skills in these activities. It is ensured that, cattle, that are bought with *Shojag* loan support receives vaccination instantly. The three full-time employed veterinarians provide advices regarding inclusive care together with the treatment of the affected livestock. A farm with 100 cows (bullock and cow) is established for beef cattle fattening demonstration and training. This farm is mainly used to demonstrate and train the farmers/cattle rearers. As a result of providing timely vaccine and treatment livestock death rate has reduced significantly. *Shojag* has provided loans for 18,322 cattle fattening in the year 2014 where only 64 cows died during the first quarter. Thus, the death rate lies below 0.35%.

5.6.3 Compensation initiative

Livestock is a precious asset for a tenant farmer/lease holder, marginal or small farmer or a poor person. Livestock death is such a great loss to them which becomes very difficult to recover alone. In such cases, paying off the cattle price would allow this sector to flourish at its own pace. Farmers and poor people will be more interested to rear cattle. Alongside, scopes of self employment would be generated.

Keeping the compensation in consideration *Shojag* arranged several concept sharing meetings. The rearers expressed their helplessness and misery. They agreed on their vulnerability of treatment and vaccination of their cattle which can lead them to greater loss any time. They realized the importance of integrated effort and their participation to tackle these risks. Thus it has created scopes for *Shojag* to take new initiatives. At present, this new initiative is mainly considered as a part of social responsibility to the committee/group members organized by *Shojag*.

After the discussion every rearer participated the meeting agreed to pay taka 200 as the premium of the insurance for each season (6 months period). This six monthly premium is only applicable for beef cattle fattening. While repaying the loan, each of the borrowers have paid 200 taka as the premium which is really encouraging and optimistic. The way courage and determination worked in one hand, skilled collective activities and mutual trust worked the same way on the other to make this a successful venture.

5.6.4 Monitory benefits of Insurance

Monitory benefits of insurance are conditional. Such as, the cattle owner must follow the advices of the workers of *Shojag* in treatment, vaccination and caring of the cattle. They would have to pay premiums each six months. Taking the health card of these cows is essential. If the cattle dies even the rearer took appropriate care, the farmer will get one thousand taka per month for rearing along with the price money he used to buy the cow. For last seven years the insurance is being practiced in this manner.

For transparency and informing the participants regarding this initiative, information of the premium recovery and claim of the insurance is given in the following table:

Serial No.	Season	Number of cows distributed	Premium collection	Number of dead cows	Death rate	Insurance payoff	Surplus
01	Jul-Dec: 2008	2,810	562,000	14	.50%	217,000	345,000
02	Jan-Jun: 2009	3,856	771,200	32	.83%	564,300	2,06,900
03	Jul-Dec: 2009	5,627	1,125,400	49	.87%	908,950	216,450
04	Jan-Jun: 2010	7,644	1,528,800	34	.45%	539,400	989,400
05	July-Dec: 2010	9,473	1,894,600	39	.42%	817,000	1,077,600
06	Jan-Jun: 2011	11,430	2,286,000	53	.47%	1,019,600	1,266,400
07	July-Dec: 2011	14,100	2,820,000	65	.46%	1,349,900	1,470,100
08	Jan- Dec: 2012	28,000	5,600,000	154	.55%	3,661,800	1,938,200
09	Jan-Oct: 2013	17,300	7,239,833	221	1.27%	5,442,200	1,797,633
10	Jan-Oct: 2014 (First Quarter)	18,322	3,264,400	64	.35%	1,440,150	1,822,250
Total		**118,562**	**27,092,233**	**725**	**.61%**	**15,960,300**	**11,129,933**

5.7 Why did PKSF not go for Crop Insurance?

DIISP of PKSF was supposed to introduce crop insurance along with life, health and livestock insurance. Followings are the main reasons why PKSF did not go for crop insurance under DIISP or afterwards:

- The MFIs did not see crop failure as a major risk for their portfolio and weather/crop insurance was not the priority according to DIISP survey;
- PO representatives said they could not identify reliable sources of historical data;
- Currently, weather data is not sufficient in Bangladesh due to a lack of weather stations;
- ADB is implementing another project on crop insurance with SBC;
- There was not enough time to develop such products in terms of data/information collection; and
- Lack of credible weather data to be used for actuarial product designing.

5.8 Covariant Risk Fund (CRF)

DIISP explored the possibility of having reinsurance services by the participating MFIs to cover covariant risks from both local and foreign sources and found that the existing legal system of the country does not allow MFIs to directly obtain this service from either of these sources. In this context, as an alternative to reinsurance, PKSF has established a covariant risk fund to meet obligations to pay claims associated in the event of a catastrophe. In case of any catastrophic event/s, PKSF will compensate the PO under DIISP affected by catastrophic event/s from CRF. In turn the PO shall pay the claims directly to their affected policyholders. CRF has been created initially with the contribution from PKSF's own fund. The project also has a reinsurance allocation for meeting such catastrophic obligations during pilot testing if needed. Besides, The PO has to pay required fees and charges to get access to CRF services.

Summary and Recommendations

The objective of this paper is to assess the present condition and provide recommendations for developing suitable agricultural insurance systems for smallholder farmers and other stakeholders in Bangladesh.

Despite many limiting factors in the implementation, agricultural insurance of Bangladesh is advancing having contribution from both public sector and private sector that include formal and informal insurance sectors. The economy of Bangladesh is predominately agriculture based it is directly related to the issues like poverty alleviation, raising standard of living and increased employment. Major sub-sectors of agriculture here are fishery, livestock, crop and forestry. The Government has taken a number of steps with a view to develop the agriculture sector, these include among others, expansion of small irrigation facilities; reduction of water logging, production of improved quality and high yielding varieties of seeds, their preservation and distribution, increase productivity of fish farming in both inland closed and open water bodies, increase the productivity of livestock resources and development of the poultry sector. Major challenges of agriculture sector in Bangladesh are – loss of arable land, population growth, climate change, imbalanced use of fertilizers, inefficient water use, pests and diseases, lack of quality seeds, unfair price of agricultural produces etc. Some mentionable weaknesses of agriculture sector in Bangladesh comprise comparatively weak marketing system, high post-harvest loss, farmers own capital for agricultural activities is inadequate, access to institutional agricultural credit is limited, farmers' organizations are inadequate and ineffective, input use (water, fertilizer, pesticides) efficiency is low etc.

After the independence of Bangladesh, to rebuild the war damaged economy all insurance companies (except two) that had operations in this region gradually came under the control of the two corporations formed by the government. Previously, the industry was regulated by the Chief Controller of Insurance, Department of Insurance and Ministry of Commerce which recently has been replaced by the Insurance Development and Regulatory Authority (IDRA) under Ministry of Finance. The insurance market of Bangladesh comprises insurers under regulatory framework while some insurers are not under regulatory framework which includes non-governmental organizations (NGOs) and microfinance institutions (MFIs). Bangladesh has low insurance penetration as compared to with other South Asian countries which at present is only 0.9% as a share of GDP and only 4 people in every thousand have life insurance, that is, most insurable lives and assets are not covered under insurance. In recent years, the insurance growth rate is having a positive trend. The premium income of life insurance industry was 9.05% more in 2011 compared to 2010. It was possible with the expansion of micro insurance. The first agricultural insurance was initiated on a test basis by the state owned non-life insurer SBC in 1977 which was a crop insurance project. The project used to cover the risks of the natural disasters like flood, cyclone, surge and draught etc. by the SBC. The project was deferred due to very high rate of claim repayment compared to the premium collection. SBC had a similar experience with a pilot livestock (cattle) insurance scheme in 1981. Currently SBC is piloting a pilot project on weather index-based crop insurance which is supposed to end in June 2016. Some MFIs also initiated and still continuing some crop and livestock insurance programs while some donor agencies also came forward to do some pilot projects on agriculture through the MFIs. Palli Karma Sahayak Foundation (PKSF) was established by the Government of Bangladesh as a 'not-for-profit' company in May 1990. The legal structure of PKSF allows flexibility and authority to undertake programs in a dynamic environment, implement them throughout the country and manage its affairs as an independent organization. The major objectives of PKSF are to – (a) provide financial assistance and institutional development support to appropriate organizations for implementing sustainable inclusive financial programs for reduction of poverty through creating productive employment opportunities for the moderate and ultra poor, small and marginal farmers and micro entrepreneurs, (b) support, promote, develop and identify sustainable employment opportunities

and to provide assistance including education, health, training and risk reduction services as may be necessary for enhancing capacity, (c) build and strengthen the institutional capacity of the partner organizations for providing various financial and non-financial services to the poor on a sustainable manner, (d) support, promote and sponsor innovative programs and suitable projects for improving the quality of life of the poor, (e) help the poor to diversify and strengthen their livelihood strategies, enhance their security, give them access to assets and rights, and augment their self-respect by providing them greater choices and independence. PKSF focuses on inclusive financial services that include financing the moderate poor, ultra poor, micro entrepreneur and small and marginal farmers. It also has social protection programs that covers (a) 'Sahos', a special PKSF fund exclusively designed for ensuring immediate financial assistance to support the vulnerable poor during and post disasters and (b) 'Special Fund' which includes – (i) assistance programmes to restore the livelihood of under-privileged people severely damaged by natural disasters such as cyclone, tornado, flood, drought, epidemic, earthquake, severe winter etc. (ii) community support programs to face special situations such as scarcity of safe drinking water in an area or any kind of infrastructural repair on an emergency basis of road, bridges or culverts etc. and (iii) provision for scholarships or grants (secondary to post-graduate level) for the meritorious students. The development objective of Community Climate Change Project **(**CCCP) is to enhance the capacity of selected communities to increase their resilience to the adverse impacts of climate change. This objective is expected to be achieved through establishment of an effective grant financing mechanism within PKSF to channel funds to eligible non-government organizations. The project is designed on an innovative approach to finance community-based adaptation interventions in selected climate vulnerable areas by increasing the institutional capacity of PKSF to administer the fund. Since most adaptation interventions to date at the community level are extremely small, scattered and un-coordinated, the project would adapt a framework approach for the identification of scalable community sub-projects using transparent screening criteria to meet the objectives of the project. Under micro insurance activities PKSF started with livestock insurance program in 2009 to cover the death risk of the cattles under beef fattening program and then in 2010 the Developing Inclusive Insurance Sector Project (DIISP) was started. The objective of DIISP is to protect the livelihood of poor, especially women, from risks such as accident, illness, theft or natural disaster to secure their welfare and insure their productive or non-productive assets through the development of low-cost inclusive insurance services (micro insurance). Mostly life, health and livestock insurance services are offered to the low-income groups with minimal documentation through selected 40 POs. This project is supposed to end in December 2014. DIISP was supposed to introduce crop insurance along with life, health and livestock insurance. Due to some practical reasons PKSF did not go for crop insurance under DIISP or afterwards. DIISP explored the possibility of having reinsurance services by the participating MFIs to cover covariant risks from both local and foreign sources and found that the existing legal system of the country does not allow MFIs to directly obtain this service from either of these sources. In this context, as an alternative to reinsurance, PKSF has established a Covariant Risk Fund (CRF) to meet obligations to pay claims associated in the event of a catastrophe. The project also has a reinsurance allocation for meeting such catastrophic obligations during pilot testing if needed. Besides, The PO has to pay required fees and charges to get access to CRF services.

The research paper has narrated the past experience and present condition of agricultural insurance in Bangladesh. ***Recommendations*** to design pro-poor agricultural insurance for an agrarian economy like Bangladesh would include – carrying out and analyze a baseline survey; using trained people with sound technical capacity to implement the program; ensuring availability of accurate historic data and a good network of weather stations for an effective management of basis risk; complying with the prevailing insurance regulation; confirming a reinsurance mechanism; educating target clients about the concept the proposed insurance; gaining clients' trust with a simple and fast claim settlement method (less claim rejection); charging less premium in initial years (provide subsidy if necessary); designing poor friendly products; using of effective distribution channels etc.

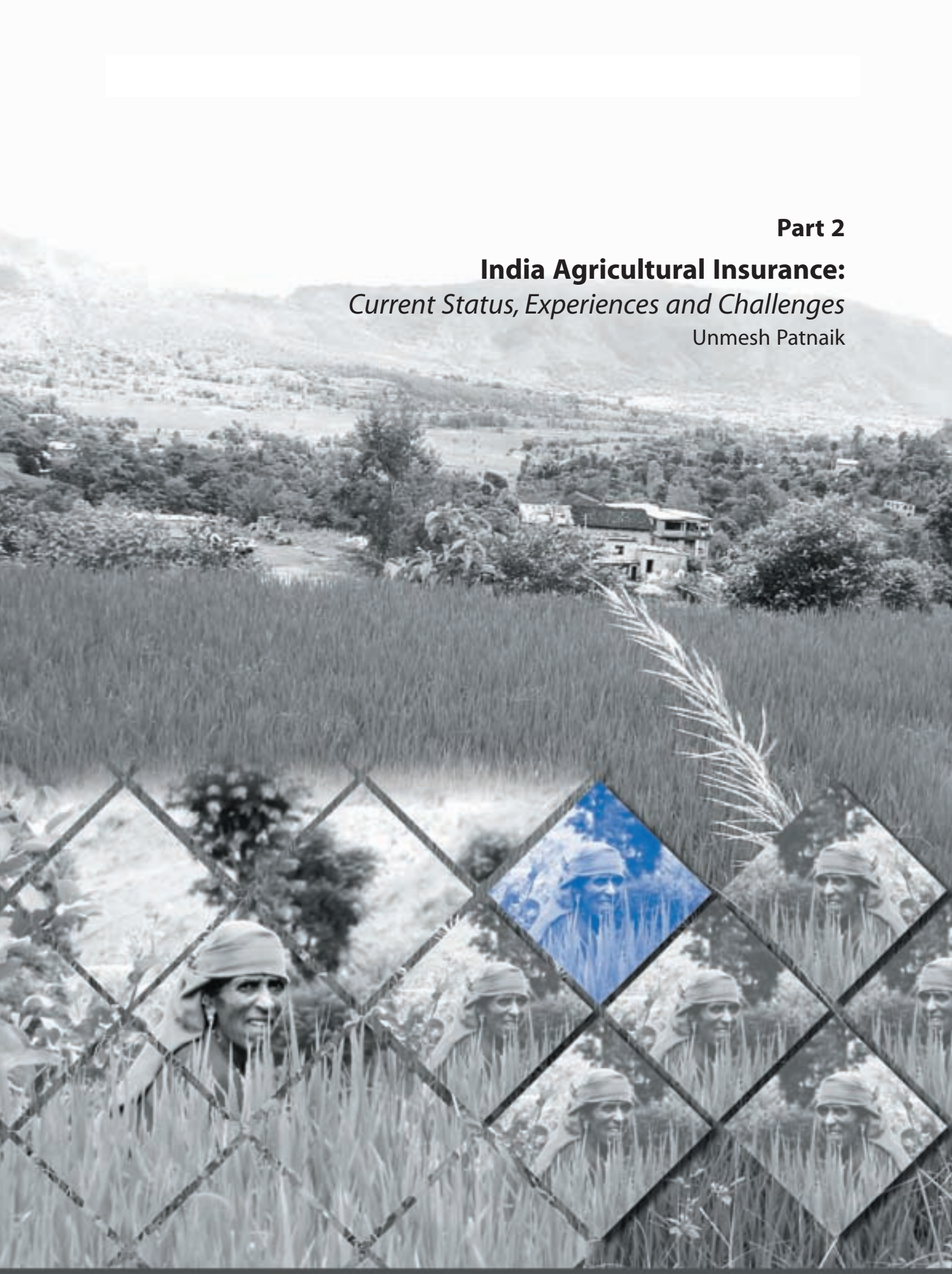
GLOSSARY

Baor	oxbow lake or wetland formed when a river changes its course and a section of it is cut off by siltation. A baor is more stagnant than a beel and generally has water year-round.
Beel	marshy, saucer-shaped depression, formed by erosion, that floods during the wet season
Haor	bowl-shaped depression located behind the natural levee of a river and/or between the natural levees of rivers, comprising a number of beels that merge into a large water body during the monsoon
Dighi	Large pond
Jalmahal	any water body, natural or artificial, open or closed, flowing or stagnant where activities for growing fish or for conservation, development, demonstration, breeding, exploitation of fish or living aquatic organisms are undertaken; in Bangladesh, fisheries resources are administratively defined as jalmahals
Hector-	*1 hectare* is equivalent to 10,000 square metres or 2.471 acres.
Crore-	*1 Crore is equivalent to* 10 millions.

Part 2

India Agricultural Insurance:
Current Status, Experiences and Challenges

Unmesh Patnaik



CHAPTER 1
Introduction

India is the seventh largest country in terms of area (3.28 million square kilometres) and the second most populous country in the world. India is a federal constitutional republic governed under a parliamentary system consisting of 29 states and 7 union territories. Geographically situated in South Asian region between 28°36.82'N 77°12.52'E, it has a population of around 1.21 billion and is often referred to as the most populous democracy in the world with a population density of 381.1 persons per square kilometre as per the 2011 census. The population of the country grew by 17.64% during the decade 2001–2011, compared to 21.54% growth in the previous decade (1991-2001). The first postcolonial census, conducted in 1951, had recorded 361.1 million people in the country. The national sex ratio, as per the 2011 census, is 940 females per 1,000 males. The average life expectancy in India is around 68 years with life expectancy for women being 69.6 years and for men being 67.3 years. The average literacy rate in 2011 was 74.04% (65.46% among females and 82.14% among males) with Kerala being the most literate state with 93.91% literacy while Bihar was the least with 63.82% literacy rate. In terms of human development index (HDI) the country recorded a score of 0.586 in 2013 occupying 135th position in the world. The income distribution in the country is medium with a Gini Index of 33.9. The number of Indians living in urban areas has grown by 31.2% between 1991 and 2001. According to the 2001 census over 70% lived in rural areas and there are more than 27 million cities in the country with Delhi, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad and Pune being the most populous metropolitan areas. The median age observed for the country was 24.9 in the 2001 census.

The country is bounded by the Indian Ocean on the south, the Arabian Sea on the southwest and the Bay of Bengal on the southeast respectively. The land borders with Pakistan and Afghanistan in the west, China, Nepal, and Bhutan in the northeast, and Bangladesh and Myanmar in the east. Similarly in the Indian Ocean, India is in the vicinity of Sri Lanka and the Maldives and India's Andaman and Nicobar Islands share a maritime border with Thailand and Indonesia. The Indian economy is the world's tenth largest by nominal Gross Domestic Product (GDP) and third largest by Purchasing Power Parity (PPP) with a nominal worth of US$ 2.047 trillion during 2014 (IMF, 2014). Until the year 1991, all successive Indian governments followed protectionist policies characterized by state intervention and regulation which isolated the economy of the country from the rest of the world. An acute balance of payments crisis in 1991 forced the nation to liberalise its economy and gradually move towards a free market system by emphasising on intensification of foreign trade and capital investment inflows.

India has got the second largest labour force in the world amounting to 486.6 million during the year 2011. The service sector contributes the highest to the GDP of the country and its share stands at 55.6%. Similarly the contribution of the industrial and agricultural sectors to the GDP stands at 23.3% and 18.1% respectively during 2011. The country recorded unprecedented growth of over 8% between the years between 2005-06 and 2007-08. However this trend slowed down in the subsequent years due to the global financial crisis of 2008-09 with the Indian economy faced challenging times, which culminated in lower than 5% growth of GDP at factor cost at constant prices for two consecutive years, i.e. 2012-13 and 2013-14. Similar situation of sub 5% GDP growth for two years in succession was last witnessed a quarter of a century ago in 1986-87 and 1987-88 (Economic Survey, 2013-14). However, in 2014-15, the Indian economy is poised to overcome the sub 5% growth of GDP which was witnessed over the previous two years (OECD, 2014). In addition to the economic slowdown, rising inflation also posed a significant challenge for the country during recent times. Although this trend appears to have slowed down during 2013-14 with the average wholesale price index (WPI) inflation reducing to 6% much below the 8.9% and 7.4% clocked during the years 2011-12 and 2012-13 respectively, it is still higher than comfort levels. Additionally, it is also observed that during the same period WPI inflation

in food articles was significantly higher than for non-food articles. This also additionally contributed to the slowdown in growth, savings, investment, and consumption for the country.

Similar improvements are also observed on the fiscal front for the country, with the fiscal deficit declining from 5.7% of GDP in 2011-12 to 4.9% in 2012-13 and subsequently 4.5% during 2013-14. Much of this improvement has been attributed to reduction in expenditure rather than from increases in revenue, nonetheless this has contributed to the turnaround of the economic conditions in 2014. OECD (2014) summarizes these developments and highlights that: (i) fiscal consolidation by the central government accompanied by a decline in both inflation and the current account deficit has boosted the confidence on the economy and the on-going reforms, (ii) the large depreciation in the rupee has also helped revive exports and (iii) industrial production has rebounded and business sentiment has surged, triggered by a decline in political uncertainty. Further in this context table 3 presents the performance of key economic indicators for India during the last five years.

Table 3. Performance of key economic indicators for India during 2009-10 to 2013-14

Sl. No.	Key Indicators	Unit	2009-10	2010-11	2011-12	2012-13	2013-14
1	**GDP and Related**						
	Growth Rate of GDP at Market Prices	%	15.1	20.2	15.7	12.2	12.3
	Growth Rate of GDP at Factor Cost (2004-05 prices)	%	8.6	8.9	6.7	4.5	4.7
	Savings Rate	% of GDP	33.7	33.7	31.3	30.1	NA
	Capital Formation Rate	% of GDP	36.5	36.5	35.5	34.8	NA
	Per Capita Net National Income (Factor Cost at Current Prices)	INR	46,249	54,021	61,855	67,839	74,380
2	**Production**						
	Food grains	MT	218.1	244.5	259.3	257.1	264.4
	Growth rate of Index of Industrial Production	%	5.3	8.2	2.9	1.1	-0.1
	Growth rate of Electricity Generation	%	6.1	5.5	8.2	4	6.1
3	**Prices**						
	Average Inflation (WPI)	%	3.8	9.6	8.9	7.4	6
	Average Inflation CPI (IW)	%	12.4	10.4	8.4	10.4	9.7
4	**External Sector**						
	Export (in US$)	% change	-3.5	40.5	21.8	-1.8	4.1
	Import (in US$)	% change	-5	28.2	32.3	0.3	-8.3
	Current Account Balance (CAB/GDP)	%	-2.8	-2.8	-4.2	-4.7	-1.7
	Foreign Exchange Reserves	$ billion	279.1	304.8	294.4	292	304.2
	Average Exchange Rate	INR/$	47.44	45.56	47.92	54.41	60.5
5	**Money and Credit**						
	Annual Change in Broad Money (M3)	% change	16.9	16.1	13.2	13.6	13.3
	Scheduled Commercial Bank Credit	% change	16.9	21.5	17	14.1	13.9
6	**Fiscal Indicators (Govt. of India)**						
	Gross Fiscal Deficit	% of GDP	6.5	4.8	5.7	4.9	4.5
	Revenue Deficit	% of GDP	5.2	3.2	4.4	3.6	3.2
	Primary Deficit	% of GDP	3.2	1.8	2.7	1.8	1.2

Note:

a) Data Source: Economic Survey, Government of India, 2013-14

b) NA: Not Available; INR: Indian Rupees; $: US Dollars; MT: Million Tonnes; CPI (IW): Consumer Price Index Industrial Workers category; WPI: Wholesale Price Index

c) Statistics for the year 2013-14 for some key indicators are based either on Revised Estimates or Provisional Estimates

d) The Index of Industrial Production has been revised since 2005-06 on base (2004-05 = 100)

Despite the improved performance of the economic indicators and the gradual recovery in the world economy, the growth momentum achieved during the previous decade is yet to be matched. Complicated and distorting tax regimes and cumbersome business environments remain in the country and coupled with structural bottlenecks and inadequate education and training of the labour force are impeding growth and job creation. Female labour force participation rate still remains low, reducing household incomes and resulting in severe gender inequalities. Although over these years poverty has declined in absolute terms, it remains moderately high, and income inequality has actually risen since the early 1990s. Therefore in order to rise higher on the growth trajectory addressing the domestic structural constraints is important and structural reforms would raise India's economic growth (OECD, 2014). With this backdrop of the overall economy the subsequent sections examine in detail the scenario in the agricultural sector and the progress in rural development of the country.

1.1 Situation in the Agricultural Sector

Agriculture is a state subject in India. Hence, the primary responsibility for increasing agricultural production and productivity, exploiting untapped potential, and enhancing incomes of the farming community rests with the governments of the respective states. The efforts of the state are supplemented by central government many through centrally sponsored schemes. Over the last decade Indian agriculture sector has become robust with record production of food grains and oilseeds. Increased procurement of agricultural produce has added huge stocks of food grains in the granaries.

1.1.1 Area, Production and Yield

India is one of the world's top producers of rice, wheat, milk, fruits and vegetables. The contribution of the agriculture sector to the GDP of India continued to decline with the share falling from 15.2% during the eleventh plan (2007-2012) to almost 14% during 2013-14. However it still stays as the main source of livelihood for the majority of the rural population in India and still accounts for about 54.6% of total employment (Census, 2011). Over the last five years, aided by favourable monsoons, the agriculture and allied sectors achieved a growth of 4.7% in 2013-14, compared to its long-run average of around 3% (between 1999-2000 and 2012-13) (Economic Survey, 2013-14). Important structural changes are taking place within the sector and there are signs of improved performance. There has been an unprecedented decline in the absolute number of cultivators, from 127.3 million (Census 2001) to 118.7 million (Census 2011) indicating a shift from farm to non-farm employment. Agricultural growth has accelerated compared to the tenth plan period (2002-07) and process of diversification is on-going. Table 4 presents the details.

Table 4. Performance of agricultural sector in India over different plan periods

Plan Periods	Share of Agriculture in the Economy	Growth Rate of Agriculture and Allied Sectors	Growth Rate of Total Economy
Ninth Five Year Plan (1997-2002)	23.4	2.5	5.7
Tenth Five Year Plan (2002-2007)	19.0	2.4	7.6
Eleventh Five Year Plan (2007-2012)			
2007-08	16.8	5.8	9.3
2008-09	15.8	0.1	6.7
2009-10	14.7	1.0	8.4
2010-11 (QE)	14.5	7.0	8.4
2011-12 (RE)	14.0	2.8	6.5
Eleventh Plan Average	15.2	3.3	7.9

Note:
a) Source: Twelfth Five Year Plan, Planning Commission, Government of India
b) All figures are in percentages
c) QE: Quick Estimates; RE: Revised Estimates

As per the National Sample Survey Organization (NSSO) data, rural labourers are shifting to non-agricultural work, tightening the labour market in agriculture and putting pressure on farm wages. However, dependence on agriculture remains unchanged among the rural self employed whose average farm size continues to decline with population growth. There are also concerns that with the ageing of population, educated young members are less likely to want to stay in farming. Therefore the focus of the Twelfth Plan (2012-2017) for the country is towards the viability of farm enterprise, mostly small farms along with other priorities like resource use efficiency and technology to ensure sustainability of natural resources, adaptation to climate change and improvements in total factor productivity.

The average of annual growth rates of GDP in agriculture and allied sectors during 2007-2012 is approximately 3.3%. Although this is short of the target of 4% but is significantly better than the achievement of 2.4% during the tenth plan period (2002-2007). Failure to reach this target is one reasons attributed for the high inflation in prices of food and other primary commodities that persist in the economy in addition to the slowdown in overall GDP growth. Nonetheless, substantial progress in acreage and production are recorded for the year 2013-14. As per the 3rd Advance Estimates of the Directorate of Economics and Statistics, Department of Agriculture and Cooperation (DAC) the acreage under food grains has increased to about 126.2 million hectares and that for oilseeds has augmented to 28.2 million hectares. Table 5 presents the growth rate in area, production and yield for select crops in India during the last two decades.

Table 5. Compounded growth rates of area, production, and yield of principal crops during 1980-81 to 1989-90, 1990-91 to 1999-2000

Crops	(Base: TE 1981-82 = 100)						(Base: TE 1993-94 = 100)		
	1980-81 to 1989-90			1990-91 to 1999-2000			2000-01 to 2013-14		
	Area	Pro-duction	Yield	Area	Pro-duction	Yield	Area	Pro-duction	Yield
Rice	0.41	3.62	3.19	0.68	2.02	1.34	0	1.82	1.82
Wheat	0.46	3.57	3.1	1.72	3.57	1.83	1.35	2.65	1.29
Coarse Cereals	-1.34	0.4	1.62	-2.12	-0.02	1.82	0.25	2.96	2.7
Pulses	-0.09	1.52	1.61	-0.6	0.59	0.93	1.59	3.72	2.1
Sugarcane	1.44	2.7	1.24	-0.07	2.73	1.05	1.34	2.1	0.75
Nine Oilseeds	1.51	5.2	2.43	0.86	1.63	1.15	2.35	4.71	2.31
Cotton	-1.25	2.8	4.1	2.71	2.29	-0.41	3.22	13.53	9.99

Note:

a) Source: Department of Agriculture and Cooperation, Government of India
b) All figures depict Growth Rate in % per annum
c) TE: Triennium Ending
d) Nine oilseeds include Groundnut, Castor seed, Sesamum, Rapeseed & Mustard, Linseed, Niger seed, Safflower, Sunflower and Soybean
e) Figures for the year 2013-14 are based either on Revised Estimates or Provisional Estimates

Figure from table 3 reveal that for most of the major crops, higher production in 2013-14 has been achieved by expanding acreage, rather than productivity. Groundnut has shown the major jump in yield while productivity increases are significant in the case of cotton and coarse cereals, as they have been achieved against a declining or stagnant acreage. The compound growth rate of area, production, and productivity during 2000-01 to 2013-14 has been higher than in the previous two decades for coarse cereals, pulses, oilseeds, and cotton, while it has largely declined for rice and wheat.

With the objective of continuing this trend further, the country under the National Food Security Mission (NFSM) aims to produce additional 25 million tonnes of food grains by 2016-17, which translates to 10 million tonnes of rice, 8 million tonnes of wheat, 4 million tonnes of pulses, and 3 million tonnes of coarse cereals (Economic Survey, 2013-14). Under this mission the focus of the government is on

targeting cropping systems and marginal farmers through development of farmer producer small and organizations (FPOs), creating value chain and providing market linkages. Similarly, Bringing Green Revolution to Eastern India (BGREI) is a major sub-scheme under the NFSM with an allocation of INR 1,000 crore in 2013-14, aims for increased paddy production in implementing states by 7% in 2012-13 over 2011-12.

1.1.2 Gross Capital Formation

With regards to production of outputs, use of inputs and increasing productivity the Eleventh Plan (2007-2012) made some noteworthy developments like: (i) the introduction of decentralised plan funds to encourage initiatives at state and lower levels, (ii) to overcome low public investment and food security needs, it increased centre's spending on these, particularly in disadvantaged regions, (iii) to tackle farmer distress, it tried to focus not only on increasing production but also on augmenting farm incomes through focussing on service delivery and suggesting encouragement of group and (iv) funding research more and emphasizing on getting more from existing technology. Some of these initiatives have led to the steady increase in Gross Capital Formation (GCF) (both public and private) from 16.1% of its GDP in 2007-08 to 21.2% in 2012-13 (at 2004-05 prices). However, public expenditure (comprising public investments and input subsidies) has been surrendering its share in total GCF of the agriculture and allied sector to the private sector and was 14.7% in 2012-13. As a percentage of agriculture and allied sector GDP private investment has also been rising and was 18.1% in 2012-13. The quality of public GCF, which is largely directed towards subsidies, is also of concern. The largest increase in private GCF was in labour-saving machines such as irrigation and water-saving equipment, as a result of the declining rural workforce and rising real wages (Twelfth Five Year Plan, Vol. II: 8). Table 6 presents some key indicators for the agriculture and allied sector for India at constant (2004-05) prices.

Table 6. Percentage growth in key indicators for the agriculture and allied sector in India from 2009-10 to 2013-14

Sl. No.	Item	2009-10	2010-11	2011-12	2012-13	2013-14
1	Growth in Agriculture and Allied Sector GDP	0.8	8.6	5	1.4	4.7*
1.1	Share in total GDP	14.6	14.6	14.4	13.9	13.9*
1.2	Agriculture	12.3	12.4	12.3	11.8	NA
2	Share in total Gross Capital Formation	7.3	6.3	7	7.1	NA
2.1	Agriculture	6.7	5.8	6.5	6.5	NA
3	GCF as percentage of Agriculture and Allied Sector GDP	20.1	18.5	20.8	21.2	NA
3.1	Private sector	16.7	15.7	18	18.1	NA
4	Agriculture and Allied Sector exports (inclusive marine products) as per cent of total exports	8.2	8	10.1	11.8	11.9(P)

Note:

1) Data Source: Economic Survey 2013-14; Central Statistics Office (CSO) and Directorate General of Commercial Intelligence and Statistics (DGCI&S)
2) * Quarterly Estimates of GDP as of 30 May 2014; NA: Not Available; P: Provisional Estimates

1.1.3 Research and Development

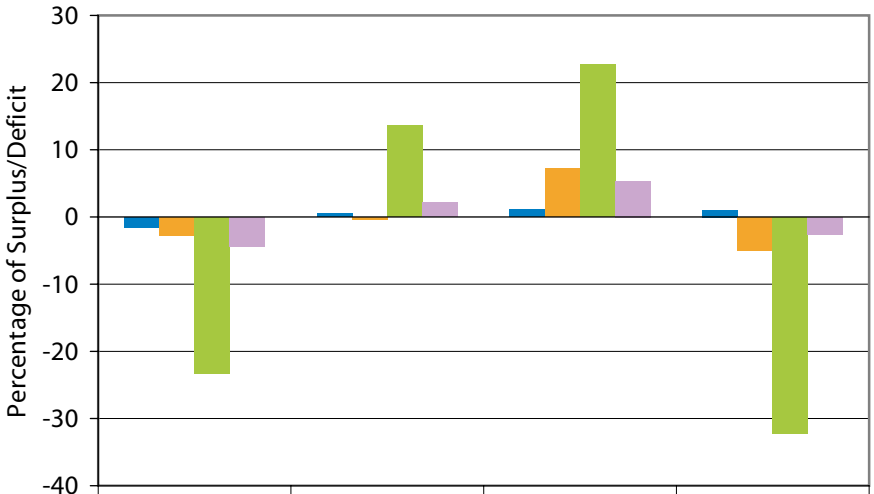
As recognized in the Eleventh Plan of the country, that maintaining sustainable growth in agriculture requires continual research in developing innovative technologies for conservation and management of limited natural resources. Keeping up with the expectation of the country and the increased funding allocations the Indian Council for Agricultural Research (ICAR) has developed new crop varieties that improve yield and nutritional quality along with resistance to various biotic and abiotic stressors. For different agro-ecological zones of India, the ICAR released 104 varieties of various crops. To make quality

seeds available to farmers, 11,835 tonnes of breeder seeds of recommended varieties of different field crops was produced. Similarly under the central sector Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds (DPQS) Scheme the availability of certified seeds has increased to 328.58 lakh quintals while requirement was 315.18 lakh quintals in 2012-13. (Economic Survey, 2013-14). The adoption of improved varieties and crop management techniques has resulted in record production of cereals, pulses, and other crops over last three decades and especially more in recent years. Furthermore, as a policy initiative amendments carried out in the New Policy on Seed Development (NPSD) include permission for 100% foreign direct investment (FDI) under the automatic route and simplifying the procedure for inclusion of new varieties in the Organization for Economic Cooperation and Development (OECD) seeds scheme. Under this scheme the thrust is on creating a seed bank for the country. A Seed Rolling Plan for the period up to 2016-17 is also in place for all the states of India since 2013-14 for identification of good varieties for the seed chain, and agencies responsible for production of seeds at every level.

1.1.4 Fertilizer Usage

Over the years, increased use of fertilizer in agriculture has played an important role in improving agricultural productivity. In India the highest consumption of fertilizer is recorded for Urea, which is the main source of Nitrogen (N) and represents around 50% of total fertilizer consumption. Although India meets 80% of Urea requirement through indigenous production, it is largely dependent on imports for its Phosphatic (P) and Potassic (K) fertilizer requirements. Figure 2 reports the trends in availability and consumption of fertilizers in the country in terms of percentage of deficit or surplus for different years.

Figure 2. Trends in Fertilizer Deficit/Surplus from 2009-10 to 2012-13 (Data Source: Department of Fertilizers, Govt. of India)



	2009-10	2010-11	2011-12	2012-13
Nitrogenous fertilizers (N)	-1.52	0.55	1.14	1.03
Phosphatic fertilizers (P)	-2.78	-0.31	7.23	-4.97
Potassic fertilizers (K)	-23.33	13.64	22.76	-32.2
All fertilizers (NPK)	-4.4	2.16	5.36	-2.59

From figure 1 it can be observed that deficits in the requirement of various types of fertilizers are reducing over years. The subsidy regime shifted from a product-based subsidy (PBS) to nutrient-based subsidy (NBS) regime in 2010. This was done to address NPK nutrient imbalances and lack of secondary and micronutrients, through use of fertilizers on specific soil-moisture conditions and crop needs. A comparison of the production, imports, and consumption of NPK fertilizers between 2009-10 and 2012-13 shows that availability as well as consumption has been skewed towards the use of

Nitrogenous fertilizers or urea since the roll out of the NBS in 2010. Among other factors the pricing of subsidized fertilizers is also responsible for higher usage of straight fertilizers and skewed usage of nutrients (Report of Working Group on Fertilizer Industry for the Twelfth Plan: 8). While NPK ratios were higher than the recommended national 4:2:1 NPK balance in 2009-10, the situation has drastically worsened. Indiscriminate use of NPK has led to imbalanced use of soil nutrients, in some of the leading food producing states of India, leading to deterioration in soil quality and declining growth in land productivity in these states. While urea consumption has increased from 59% to 66% of total consumption in 2012-13 over 2010-11, per hectare consumption of fertilizer has declined from 140 kg to 128 kg over the same period. Fertilizer subsidy was INR 67,971 crore in 2013-14 (revised estimates) which constitutes an increase of 11% from 2009-10. It is noteworthy that while the quantum of fertilizer subsidy is increasing, subsidy as a percentage of GDP has been declining since 2010 (Economic Survey, 2013-14).

1.1.5 Farm Mechanization

With regards to farm mechanization and technology it is observed that although India is one of the top countries in terms of agricultural production, the current level of farm mechanization, which varies widely across states. The national average is around 25% while the same for developed countries is more than 90%. The primary obstacles for achieving a high level of farm mechanization in country are characteristics of Indian agriculture like: (i) being highly diverse in nature with different soil and climatic zones requires customized farm machinery and equipment and (ii) large small land holdings with limited resources. According to the ICAR, the economic benefit of adoption of improved implements is about INR 80,000 crore per annum, which is only a small fraction of the potential. Due to continuous reduction of agricultural workforce over the years, higher levels of farm mechanization are necessary for sustaining productivity and profitability. This has led to the foundation of a dedicated Sub-Mission on Agricultural Mechanization has been initiated in the Twelfth Plan of India (2012-2017), with focus on spreading farm mechanization to small and marginal farmers and regions that have low farm power availability.

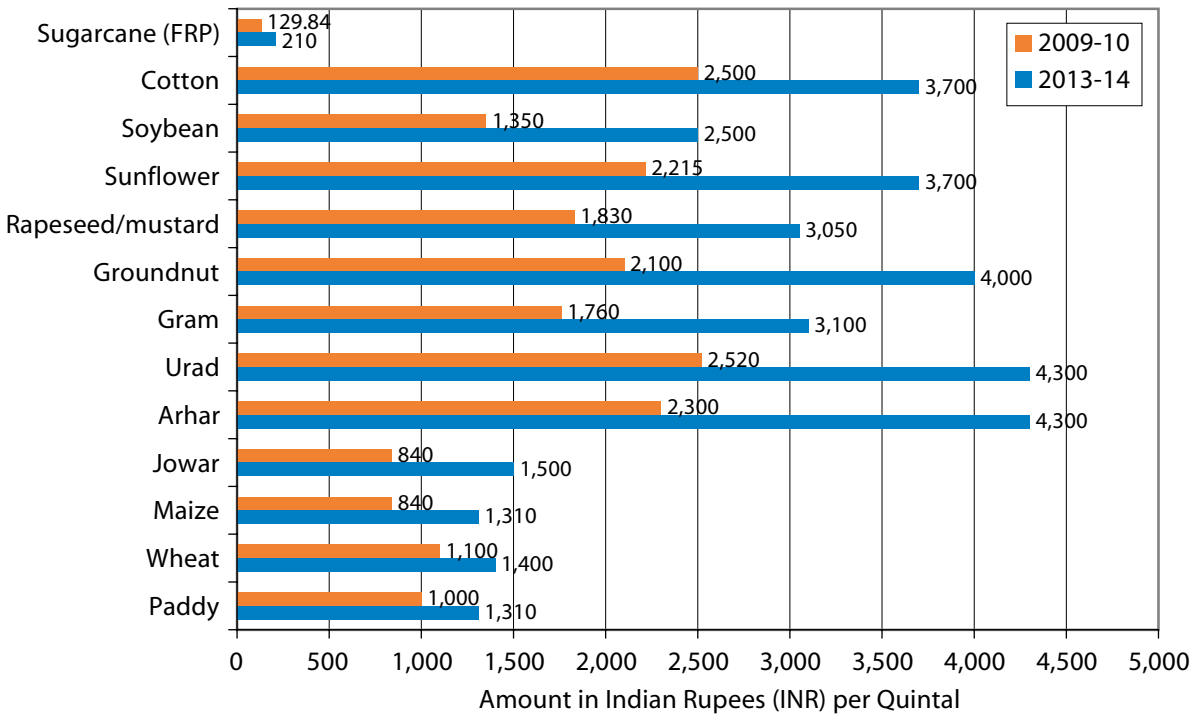
1.1.6 Irrigation

Water is one of the critical requirements for agriculture. Currently approximately 63 million hectares or 45% of net cropped area (NCA) is irrigated. Overexploitation of water resources is leading to alarming reduction in the water table in most of the India states along with the states of Punjab and Haryana which are termed as the 'rice bowl of India'. In view of this a Crop Diversification programme, targeted at promoting technological innovation and encouraging farmers to choose crop alternatives in the states of Punjab and Haryana and in western UP to counter the problems of stagnating yields and overexploitation of water resources, was budgeted with INR 500 crore in 2013-14. Also under the Accelerated Irrigation Benefit Program (AIBP), INR 64,228 crore of central loan assistance/grant had been released till the end of the year 2013. An irrigation potential of 8,054.61 thousand hectares is estimated to have been created by states from major/medium/minor irrigation projects under the AIBP till March 2012 (Planning Commission, 2011).

1.1.7 Prices for Agricultural Produce

To ensure remunerative prices to growers for their produce, encourage higher investment and production, and safeguard the interests of consumers by ensuring supplies at reasonable prices Government of India has in place a price policy for major agricultural commodities. The Commission for Agricultural Costs and Prices (CACP) recommends minimum support prices (MSP) based on certain economic criteria for 24 major agricultural commodities. The commission takes into account the views of state governments and other concerned ministries and departments while fixing the MSPs. There have been substantial increases in the MSPs in the last few years, especially for pulses, oilseeds, and cotton.

Figure 3. MSP/FRP (including bonus wherever applicable) for Select Crops in 2013-14 and 2009-10 (Data Source: Dept. of Agriculture and Cooperation, Govt. of India)



For sugarcane fair and remunerative prices (FRP) are recommended, taking into account the cost of production of sugarcane, recovery rates, and pricing of sugar and its by-products: molasses, bagasse, and press mud. MSPs/FRP exhibits an upward trend for all the major crops from 2009-10 to 2013-14. Figure 3 presents the details regarding the MSP/FRP for some major crops during these two time periods. The growth in MSP (percentage change) is the maximum for groundnut (90%) while it is the least for wheat (27%).

1.1.8 Horticulture

Horticulture production consists of a wide array of crops from fruits and vegetables to nuts, spices, medicinal plants, flowers, and plantation crops. Globally, India is the second largest producer of fruits and vegetables. It is the largest producer of banana, coconut, cashew, mango, papaya and pomegranate and also the largest producer and exporter of spices. Horticulture production for India stood at 265 million tonnes during 2012-13 and exceeded the production of food grains and oilseeds. The average growth rate of 8.6% was observed in the in productivity for horticultural crops between 2008-09 and 2012-13. Under the Twelfth Plan all the erstwhile schemes in horticulture sector has been merged under the Mission for Integrated Development of Horticulture (MIDH). To specifically facilitate capacity building of farmers, one of the added features in the mission is to organize farmer producer organizations (FPO)/ farmer producer companies (FPC).

1.1.9 Animal Husbandry, Dairy and Fisheries

The Indian agricultural system is predominantly mixed farming system with the with the livestock segment supplementing farm incomes and hence also a model of sustainable agriculture. The country ranks first in milk production, accounting for 17% of world milk production. During 2012-13, milk production peaked at 132.43 million tonnes. This provides secondary source of income for 70 million rural households engaged in dairying mostly women. This is one sector where the country is above the

average world productivity levels with the average year-on-year growth rate of milk standing at 4.04% whereas the world average of 2.2%. The country has a new scheme called the National Programme on Bovine Breeding and Dairy Development in place for enhancing milk production and productivity in a sustainable manner since 2012. The objective of this program is to: (i) improve productivity of milch animals, (ii) strengthen and expand village-level infrastructure for milk procurement and (iii) provide producers greater access to the market in the dairy sector. Similarly fisheries are an important source of livelihood for the rural and urban households in India. There are 14.4 million fishermen in the country and it ranks second in world fish production, contributing about 5.4% of global fish production. It is also one of the major producers of fish through aquaculture. Total fish production during 2013-14 is estimated at 9.45 million tonnes with a substantial 6.10 million tonnes coming from the inland sector and 3.35 million tonnes from the marine sector. Overall this sector also contributes about 1% to overall GDP and represents 4.6% of agricultural GDP (Economic Survey, 2013-14; Planning Commission, 2011).

1.1.10 Climate Change Challenge

The agricultural sector in India is still heavily depended on monsoon rainfall. Around 60% of total food grains and oilseeds production is grown during the Kharif (winter) with only 35% of the total arable area being irrigated. The south-west (SW) monsoon (from June to September) accounts for nearly 75% of total annual rainfall in India and thus substantially dominates the agricultural performance. Over the successive plan periods significant warming of temperatures, lower mean rainfalls and higher rainfall variability have been recorded by the Indian Meteorological Department (IMD). Around 3 of the 5 years during the Eleventh Plan period had annual rainfall less than 95% of the long period average (LPA), as compared to 5 in the previous 15 years (Twelfth Five Year Plan, Vol. II: 2-3). Table 7 shows the Category-wise Rainfall Distribution in Subdivisions and Districts and All India Rainfall Departure from Normal 2009-14 (cumulative rainfall since 1 June).

Table 7. Category-wise Rainfall Distribution in Subdivisions and Districts and All India Rainfall Departure from Normal Rainfall during 2009-2014

Category	11 June 2014	12 June 2013	13 June 2012	8 June 2014	9 June 2014	10 June 2014
Number of Subdivisions						
Excess/Normal	8	30	23	3	11	2
Deficient/Scanty	28	6	8	19	19	18
No rain	0	0	5	14	6	16
Rainfall departure from normal (%)	-44	23	-42	17	-6	-39
Percentage Distribution of Districts						
Excess/Normal	20	62	15	48	33	25
Deficient/Scanty	50	32	63	34	39	47
No rain	30	6	22	18	28	28

Note:

1) Data Source: IMD, Weekly Report dated 11.06.2014.
2) Notes: Excess: +20% or more; Normal: +19% to -19%; Deficient: -20% to -59%; Scanty: -60% to -99%; No rain: -100%.

In view of the deviations from the trend rainfall showed in table 5, the occurrence of El Niño events gains importance. El Niño effects occur when surface temperatures in the Pacific Ocean continuously rise above average for several months. This in turn adversely affects weather in many parts of the world and on an average these events are recorded every 3-5 years. The phenomenon often begins to form during June-August, and typically lasts for the subsequent 9-12 months. The event gains significance in India since its effect is felt around August, during the SW monsoon. While the majority of drought years in India coincide with the occurrence of the El Niño, the reverse link is not that strong (IMD, 2013).

In the past decade, the El Niño events in India have been recorded in the years 2002, 2004, 2006, and 2009. The year 2002-03 was only year in which India recorded a negative growth in the agricultural and allied sector growth with average rainfall dropping 20% below normal. Similarly India experienced the most severe drought in 2009-10 with total rainfall being 23% normal. A comparison of the changes in Kharif and rabi production during the last four occurrences of El Niño reveals that the impact was more in the Kharif season (Indian Council of Agricultural Research, Agricultural Statistics at a Glance, 2013).

The government of India has establishes contingency measures in about 500 districts of the country. Firstly, the National Mission for Sustainable Agriculture (NMSA) is one of the eight missions of the National Action Plan on Climate Change, whose focus is on encouraging judicious utilization of common resources through a community based approach. Secondly, the Rain-fed Area Development Programme (RADP), attempts to enhance farmers' incomes in rain fed areas. This was implemented in 22 states of the country in 2013-14 and plans are there in place to substantially upscale this programme during the Twelfth Plan. Thirdly, the National Initiative on Climate Resilient Agriculture (NICRA) under the Indian Council of Agricultural Research (ICAR) aims to enhance resilience of Indian agriculture to climate change and vulnerability through strategic research and technology demonstration, capacity building, and sponsored/competitive grants. Similarly, the Earth System Science Organization (ESSO) issues agro-meteorological advisories in regional languages to 600 districts, which are currently subscribed to by over 4.8 million farmers, while Gramin Krishi Mausam Sewa (GKMS) has initiated these advisory services at block level.

All efforts of the government of India highlighted in the previous sections at promoting agriculture through various schemes, subsidies, and programs have resulted in record production of food grains over the years. However, the growth rates of productivity are far below global standards while the productivity of rice and wheat has declined after the green revolution of the 1980s. The issue of soil degradation due to declining fertilizer-use efficiency also remains. The fact also remains that India is still home to a quarter of all undernourished people in the world and since on an average almost half the total expenditure of about half the households is on food, increasing the efficiency of the farm-to-fork value chain is crucial for eliminating poverty and malnutrition. Strengthening the agricultural and allied sector is also crucial for poverty alleviation, ensuring food security, increasing employment opportunities, and enhancing rural incomes. However over the short run the country is comfortable placed on the El Niño front as it is well placed on food grains availability, with record domestic production and huge stocks in the central pool.

1.2 Situation in the Rural Development Sector

Around 833 million people continue to live in rural India as per the census of 2011 which represents approximately 68.8% of the total population. A very large proportion of these are dependent on farm activity for their livelihoods. Therefore, the expansion of income opportunities in the farm sector and a progressive absorption into non-agricultural activity is thought of as the most potent weapon for reducing poverty. Further, at a policy level, there has been wide consensus that the rural development should be inclusive and sustainable in order to alleviate the poverty. This is also reflected in the tentative Gross Budgetary Support (GBS) for the Ministry of Rural Development in the Twelfth Five Year Plan (2012-2017), which increased to INR 44,3261 crore compared to the allocation of INR 29,1682 crores during the Eleventh Plan period (2007-2012).

Various plans have been put in place by the Government of India with the objective of improving the rural development scenario in the country. For instance the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and the National Rural Livelihoods Mission (NRLM) cover employment creation. The improvement in housing conditions is undertaken through the Indira Awaas Yojana (IAY) and other state led schemes. Bank support and sanitation are promoted through the Total Sanitation Campaign (TSP). The provision of drinking water is facilitated via the National Rural Drinking

Water Program, while provision for social security is facilitated through the National Social Assistance Program. Similarly the National Rural Drinking Water Programme (NRDWP) is with regards to the provision of drinking water and the Integrated Watershed Development Programme (IWDP) is for watershed development. Creation of road infrastructure is through the Pradhan Mantri Grameen Sadak Yojana (PMGSY) and rural electrification, including separation of agricultural feeders is undertaken via Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). In all these programs, a certain proportion of funds are set aside for a 'flexifund' to promote innovation that could subsequently be mainstreamed into the program. The subsequent sections attempt to describe the progress under these programs and describe the situation in the country in the context of rural development.

1.2.1 Income Generation and Employment Creation for Rural Households

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was the most significant rural development initiative undertaken in the Eleventh Plan period (2007-2012). Under this program rural households are provided with hundred days of employment in a year. Based on a bottom-up approach, the program is people-centred, demand-driven, self-selecting, rights-based design. In 2011-12 alone, nearly five crore families were provided amounting to over 211 crore person-days of work. Table 8 provides an overview of MGNREGA performance from 2006-07 to 2011-12.

Table 8. Overview of MGNREGA performance from 2006-07 to 2011-12

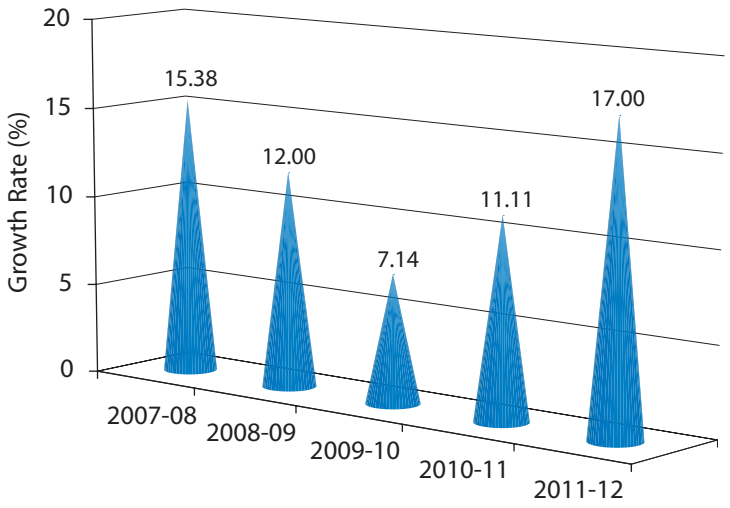
	(200 Districts)	(330 Districts)	(All Districts)			
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Households Employed (crore)	2.1	3.39	4.51	5.26	5.49	4.99
Person-days of Employment generated (crore)	90.5	143.59	216.32	283.59	257.15	211.41
Work Provided per year to Households who worked (days)	43	42	48	54	47	42
Budget Outlay (crore)	11,300	12,000	30,000	39,100	40,100	40,100
Expenditure (crore)	8,823.35	15,856.89	27,250.10	37,905.23	39,377.27	37,548.79
Average Wage per day (INR)	65	75	84	90	100	117
Total Works taken up (lakhs)	8.35	17.88	27.75	46.17	50.99	74.13
Works completed (lakhs)	3.87	8.22	12.14	22.59	25.9	15.01

Data Source: Ministry of Rural Development. Government of India

Since its inception till 2012, it has generated more than 1,200 crore person-days of work at a total expenditure of over INR 166,760 crores. The share of scheduled castes scheduled tribes (SC/ST) households in the work provided under MGNREGA has been 55% of which 45% of workers are women. In this sense MGNREGA has been an unprecedented step in the direction of financial inclusion.

Average wages of workers have gone up by 54% over the last five years and figure 4 shows the annual growth rate of average wage rates per day for the workers. Wages have now been indexed so that workers are protected from inflation. Nearly 100 million bank/post office accounts have been opened and around 80% of the payments in the program is through these accounts. According to the Ministry of Statistics and Program Implementation, MGNREGA has resulted in a significant structural break in rural wage increases. Between 1999 and 2005, pre-MGNREGA, nominal wages in the rural economy grew at an average annual rate of 2.7% (year on year average). Post MGNREGA, the rate of average wage increases almost quadrupled to 9.7% between 2006 and 2009. Since January 2010, agricultural wages rose 20.2% till 2011 while non-agricultural rural wages increased 16.7% during the same period. Wage growth for men in the agricultural sector averaged 19.7% while that for women was 20.8% during 2010-2011.

Figure 4. Annual growth rate of average wage rates per day for the workers in MGNREGA from 2007-08 to 2011-12



A very large proportion (over 80%) of the works under MGNREGA focused on soil and water conservation on the lands of the small and marginal farmers. Therefore the program is also making a potential contribution towards raising rural incomes through improved agricultural productivity, and also reducing the need for small and marginal farmers to continue to work on MGNREGA sites. Studies have pointed out that MGNREGA works have had a positive impact on agricultural productivity, with one study conducted by the Indian Institute of Science (IISc) concluding that besides enhancing agricultural productivity, the works undertaken in the program have successfully reduced water, soil and agricultural vulnerability in Chitradurga district of Karnataka.

However, the true potential of MGNREGA as an instrument of rural transformation is yet to be fully realised. Since the program marks a radical departure from earlier efforts there have been many problems that arise from the sheer scale of the program and there have been concerns about large scale corruption in program in certain parts of the country. However advances in Information Technology have demonstrated that the inefficiencies and corruption could be dealt with effectively. Furthermore, the new MGNREGA Guidelines which are operational from the Twelfth Plan suggests some major steps to overcome the existing weakness.

The second most important program of the Government of India is the National Rural Livelihoods Mission (NRLM) which was set up in 2011. Drawing upon the lessons of previous rural transformation programs like the SGSY (Swarnjayanti Gram Swarojgar Yojana), the government was clear that any Self Help Group (SHG) – Bank Linkage Model (SBL) would be successful if it is tied up with livelihood programs such as improved agriculture, dairying, marketing, etc. Here the SBL and livelihood programs act as complements to each other and their simultaneous implementation forms the key to poverty alleviation. Income of the households through livelihood initiatives is channelled as savings and reinvested in livelihood options that raise incomes, setting up a virtuous cycle. Hence the focus of the NRLM is on creation of federations of SHGs that become powerful units of economic empowerment, enabling the poor to radically alter the balance of power in the markets they participate in as both producers and consumers. The program has been designed to be implemented in a phased manner to ensure quality of out-comes and to avoid spreading resources too thin, too quickly.

1.2.2 Rural Drinking Water and Sanitation

The National Rural Drinking Water Program (NRDWP), Nirmal Bharat Abhiyan (NBA) and the Total Sanitation Campaign (TSP) are the three most important programs of Government of India in this sub theme. Under the NRDWP, the goal is to ensure that every rural person in the country has access to 70 litres of water per capita per day (lpcd) within their household premises or at a distance of not more than 50 metres by the year 2022. The coverage under the program was 68% in 2011-12. As on March 2014, about 73.8% of rural habitations are fully covered with the provision of at least 40 lpcd of safe drinking water. The rest are either partially covered or have chemical contamination in drinking water sources. Further, during 2013-14, a target to cover 141,838 habitations was fixed against which coverage of 152,423 habitations has been reported. The outlay for rural drinking water supply has been increased from 4,098 crore in 2005-06 to 9,700 crore during 2013-14. According to the National Sample Survey (NSS) 69th round (Key Indicators on Drinking Water, July 2012 to December 2012) findings, there were 88.5% estimated rural households in India with access to drinking water from improved sources and 11.5% with access to drinking water from unimproved sources. Similarly, Census 2011 reports that 84.2% of rural households have access to improved drinking water sources from taps, hand pumps, and covered wells. However, slippages are also reported due to depleting groundwater levels, increase in population, demand for increased levels of service, and low involvement of gram panchayats and communities in the planning, implementation and monitoring. Increasing contamination of drinking water sources for a variety of reasons is also adds up the existing problems.

With regards to rural sanitation Census 2011 reports that only 32.7% of rural households have latrine facilities. The NBA, started in 2012, aims at achieving 100% access to sanitation for all households by 2022. As of 2013-14, NBA projects have been sanctioned in 607 districts with a total outlay of 22,672 crore, of which the central share is 14,888 crore. Allocation for the NBA has increased from 1,500 crore in 2011-12 (RE) to 2,300 crore in 2013-14 (RE). The provision of incentives for individual household latrine units has been widened to cover households above poverty line (APL) and also those belonging to SCs, STs, and other vulnerable sections along with all BPL households. The number of households being provided toilets annually has increased from 6.21 lakh in 2002-03 to 45 lakh in 2012-13 which increased to over 49 lakh toilets by 2013-14.

Similarly the TSC was launched in 1999 as a demand driven, community-led program with major Information, Education and Communication (IEC) inputs to sensitize the people about sanitation needs. The TSC has been able to accelerate sanitation coverage from 22% to 31% over two census years 2001 and 2011 respectively. Over 28,000 Panchayati Raj Institutions (PRIs) have been declares as 'Open Defecation Free' (ODF) under this scheme. The program received a major boost during the latter half of the decade, with the introduction of the Nirmal Gram Puraskar (NGP) in 2005. NGP is an innovative incentive scheme for Gram Panchayats, blocks and districts, which have attained 100% sanitation coverage. Notwithstanding these initiatives one of the limitations of the TSC is the narrow range of technology options offered in a country with diverse geographic, hydrologic, climatic and socio-economic conditions (high water table, flood prone, rocky ground, desert/water scarce areas and extreme low temperatures). This has led to problems like non-acceptance by local communities and water pollution especially in shallow water table regions. There is need to broaden the ranges of models permissible under TSC and provide a dedicated implementation agency at either the state/district/gram panchayat level, to implement the program. This was also realized by the central govt. and hence one of the goals of the 12th five year plan is that 50% of the Gram Panchayats attain Nirmal Gram status by the year 2017.

1.2.3 Rural Housing and Infrastructure

Connected with the initiatives taken by the government on rural livelihoods are interventions on the housing front which act as significant steps towards improving the rural development of India. Under the Indira Awaas Yojana (IAY), which is functioning in the country since 1985, nearly 285 lakh houses

have been constructed with an expenditure of about 84,234 crore. The IAY aims at providing dwelling units to houseless people living below poverty line (BPL). The beneficiaries are identified by the gram sabhas and those living in dilapidated and kutcha houses, with a component for providing house sites to the landless poor as well. Under the scheme, a shelter less BPL family is given assistance of INR 70,000 in plains areas and INR 75,000 in hilly/difficult areas/Integrated Action Plan (IAP) districts for construction of a new house. Some other features include: (i) provision of 15,000 for up-gradation of kutcha or dilapidated houses, (ii) for purchase of house sites there is a provision for INR 20,000 to be provided. During the year 2013-14 the govt. targeted construction of 24.81 lakh houses, of which 10.93 lakh have been constructed and 23.76 lakh are under construction. During this period a total of 13,894.90 crore was allocated for construction of 24.81 lakh houses and 12,970 crore was released.

Further, sanitary latrine and smokeless chullah are required to be constructed along with each IAY house. For construction of the sanitary latrine, financial assistance is made available from the Total Sanitation Campaign (TSP) funds in addition to IAY assistance. Similarly, there is a provision for making available homestead sites to those rural BPL households who are listed in the permanent IAY waitlists but do not have a house site. Currently, 10,000 per homestead site is provided and this being equally shared by the Centre and the States. Progress on some of these innovative features and convergence with other rural infrastructure schemes has been slow. Table 9 shows that convergence of IAY with other rural infrastructure schemes in India.

Table 9. Convergence of IAY with other rural infrastructure schemes from 2008-09 to 2010-11

Years	TSC	Smokeless Chullahs	Bio-Gas Plants	RGGVY	Kitchen Garden	Life Insurance Scheme	Health Insurance Scheme
2008-09	5.91	5.17	0	0.11	0.29	0.74	0.29
2009-10	26.5	22.7	0.12	0.65	0.64	4.21	1
2010-11	26.85	24.05	0.07	1.1	0.95	6.18	2.07

Note:
1) Data Source: 12th FYP, Government of India
2) The figures show convergence as a percentage of IAY households

Additionally during the Eleventh Plan period, rural housing was also facilitated by other schemes from the respective state governments and financial institutions/banks. This has been supplementing IAY grant assistance and about 30 lakh houses were constructed under various rural housing schemes of state governments during 2007-2012. The National Housing Bank (NHB), National Bank for Agriculture and Rural Development (NABARD) and Housing and Urban Development Corporation (HUDCO) also provide support for rural housing. For instance, of the total 1.5 crore housing units supported by HUDCO till 2012-13, over 89 lakh units (60%) have been constructed in rural areas.

Nonetheless, some problems have cropped up in the implementation of all these programs. A major weakness of the Indira Awaas Yojana (IAY) relates to the quality of housing and there have been complaints about weak foundations, poor roofing materials and incomplete constructions. Part of the problem has been linked to the available assistance under the IAY program. Although this has been enhanced but it is felt that this enhancement may be inadequate. It needs to be examined whether increasing the permissible loan amount even if at a slightly higher interest rate could solve the problem. However, better systems for monitoring of the program are also required along with innovative measures to bring in deeper convergence across various flagship programs of the government.

Rural infrastructure and development programs are designed to achieve a higher degree of rural-urban integration and an even pattern of growth and opportunities for the poor and disadvantaged sections of society. Working towards attaining this goal the Pradhan Mantri Gram Sadak Yojana (PMGSY) is a fully funded centrally sponsored scheme for increasing and upgrading rural-urban connectivity. Providing

all-weather road connectivity to all eligible unconnected habitations in rural areas of the country having population of 500 persons and above in plains areas and 250 persons and above (as per the 2001 census) in special category states, selected tribal and desert areas is the objective of this program. It also permits up-gradation of existing rural roads. Since inception, projects for providing new connectivity to 144,717 habitations with a road length of 544,462 km have been cleared at an estimated cost of 182,560 crore which includes up-gradation of existing roads. A total of 399,979 km road length has been completed and new connectivity has been provided to over 97,838 habitations up to March 2014. During 2013-14, 25,316 km of all-weather road including new connectivity to 6,560 habitations has been completed at an expenditure of 13,095 crore along with up-gradation of selected existing roads.

1.2.4 Provision of Urban Amenities in Rural Areas (PURA)

This is also one of the key rural development initiative launched by the Government of India with an aim to provide urban amenities and livelihood opportunities in rural areas to bridge the rural-urban divide in the society. The pilot phase of this scheme was implemented from 2004-05 to 2006-07, with a total budget of 30 crores. There were seven clusters selected in seven states, with budgets of 4-5 crores per cluster. Based on the experiences of the pilot a restructured PURA was launched in the Eleventh Plan as a demand-driven program through Public-Private Partnership (PPP) between Gram Panchayats and private sector partners. Core funding is sourced from the convergence of other central government schemes and complemented by additional support through the PURA scheme. The private sector also complements with its share of investment besides operational expertise. The PURA Scheme is implemented and managed by the private sector on considerations of economic viability but designed in a manner whereby it is fully aligned with the overall objective of rural development. To attract the private sector, the scheme functions on a 'project based' design with well-defined risks, identified measures for risk mitigation and risks sharing among the sponsoring authority (Gram Panchayat), central Government, state Government and the selected bidder. Table 10 shows the infrastructure and other amenities to be provided, operated and maintained under a PURA project by the private developer as envisaged in the Twelfth Five Year Plan.

Table 10. The focus schemes under PURA

Mandatory-under MoRD schemes	Under non-MoRD schemes as local conditions permit (Illustrative list)	Add-on projects to generate economic and livelihood opportunities (Illustrative list)*
• Water and sewerage • Village streets • Drainage • Solid waste management • Skill development • Development of economic activities	• Village street lighting • Telecom • Electricity generation, and so on	• Village linked tourism • Integrated rural hub, Rural market • Agriculture and allied common service centre and warehousing • Any other rural economy based project

Note:
1) Source: Planning Commission, Government of India, 2012
2) MoRD: Ministry of Rural Development, Government of India
3) * At least one such activity need to be included in the project.

There is also an increasing demand from the states for greater flexibility in spending decisions with respect to the government schemes primarily because of the differing needs, priorities and levels of development across the states. Hence there is a need to alter the model of the centrally sponsored schemes to fit the requirements of specific states. With this backdrop the Ministry of Rural Development (MoRD) has proposed setting up a Rural Development Flexi-fund (RDF) of 40,000 crores of which 70% would be the central share amounting to 28,000 crore. This would ensure better targeting and focused projects on state-specific priorities. Accordingly, the RDF is envisaged to provide inter-scheme flexibility

to states among the centrally sponsored schemes. The ministry will layout broad guidelines on the usage of RDF and to avoid inter-district distortions, the flexi-fund will be essentially a fund to incentivise: (i) innovation in service delivery, (ii) building sustainable rural infra-structure (iii) Greening of rural development and (iv) devolution to and empowerment of Panchayati Raj Institutions (PRIs) (Panning Commission, Government of India, 2012).

The initiatives undertaken in the agricultural and allied sector for increasing the productivity of agriculture and making it sustainable and the rural development initiatives face a challenge from issues arising out of climate change for instance of increasing frequency of climatic aberrations and extremes among others. Climate related aberrations and extremes like droughts, floods and hurricanes pose a significant problem to the livelihoods of people living in developing countries already struggling with a high incidence of poverty and increasing economic inequalities. This holds true for India also, where a majority of the population is employed in the agricultural sector, which is still highly dependent on rainfall (monsoon) although attempts have been made over the years to improve the efficiency of alternative sources of irrigation (Pandey et al., 2007). The risks to agriculture and the damages due to climatic aberrations and extremes will rise in future as the intensities of events like droughts, cyclones and floods will increase and there will be shifts in rainfall patterns (Mirza, 2003; Bouwer et al., 2007; Botzen and van den Bergh, 2009; IPCC, 2012). Specifically with regards to India, preliminary assessments reveal that the severity of droughts and intensity of floods in various parts of India might increase with most of the river basins in India may experience constant water scarcity, and are likely to experience seasonal or regular water stressed conditions (NATCOM, 2004). Agriculture production and farm incomes in India are frequently affected by natural disasters such as droughts, floods, cyclones, storms, landslides and earthquakes and agricultural insurance is one method by which farmers can stabilize farm income and investment and guard against disastrous effect of losses due to natural hazards or low market prices (Raju and Chand, 2009). With this backdrop the next sections describe the state of agricultural insurance in India.

CHAPTER 2
Agricultural Insurance in India

India is an agrarian country, where the majority of the population depends on agriculture for their livelihood. As discussed in the previous paragraph crop production in India is dependent largely on the weather and is severely impacted by its vagaries as also by attack of pests and diseases. For instance, nearly two thirds of the cropped acreage is vulnerable to drought in different degrees and on an average 12 million hectares of crop area is affected annually by these calamities severely impacting the yields and total agricultural production (GoI, 2013). These unpredictable and uncontrollable risks render the Indian agricultural system vulnerable and insurance plays a pivotal role in anchoring a stable growth of the agricultural and allied sector. Agricultural insurance as a concept for risk management in agriculture has emerged in India since the turn of the twentieth century. It has evolved sporadically over last five to six decades in terms of concepts and implementation and continues to do so even now in terms of scope, methodologies and practices.

Agricultural insurance including crop insurance is based on the principle of large number. The risk is distributed across space and time. The losses suffered by farmers in a particular locality are borne by farmers in other areas or the reserves accumulated through premiums in good years can be used to pay the indemnities. Thus, a good programme combines both self as well as mutual help principle and brings in security and stability in farm income and protects the farmer's investment in crop production and thus improves their risk bearing capacity. Further, it facilitates adoption of improved technologies, encourages higher investment resulting in higher agricultural production (Raju and Chand, 2009). The major role played by insurance programs is the indemnification of risk-averse individuals who might be adversely affected by natural probabilistic phenomenon. Insurance, by offering the possibility of shifting risks, enables individuals to engage in risky activities which they would not undertake otherwise (Ahsan et al., 1982). Individuals cannot influence the nature and occurrence of the risky event. The insurance agency has fairly good but generalized information about the insurer. However, this does not hold true in the case of agriculture or crop insurance. Unlike most other insurance situations, the incidence of crop risk is not independently or randomly distributed among the insured as good or bad weather may affect the entire population in an area. The subsequent sections provide an overview of the agricultural insurance system in India.

2.1 Background and Approaches

Agriculture insurance in India till recently concentrated only on crop sector and confined to compensate yield loss. Recently some other insurance schemes have also come into operation in the country which goes beyond yield loss and also cover non-crop sector also. These include Farm Income Insurance Scheme, Rainfall Insurance Scheme and Livestock Insurance Scheme. Agricultural insurance is a mechanism to protect the farmers against uncertainties of crop production due to natural factors, beyond the control of farmers. It is also a financial mechanism, which minimizes the uncertainty of loss in crop production by factoring in large number of uncertainties having impact on crop yields, thereby distributing the burden of loss. Crop insurance is either based on an *Area Approach* or *Individual Approach*. The 'homogenous area' approach envisages that in the absence of reliable data of individual farmers and in view of the moral hazards involved in the 'individual approach', a homogenous area comprising villages that are homogenous from the point of view of crop production and whose annual variability of crop production would be similar, would form the basic unit, instead of an individual farmer. As the name suggests an area approach is based on "defined areas" which could be a district, taluk, block, mandal or any other smaller contiguous area. The indemnity limit originally was 80%, which was subsequently changed to 60%, 80% and 90% corresponding to high, medium and low risks areas.

The actual average yield/hectare for the defined area is determined on the basis of Crop Cutting Experiments (CCEs). These CCEs are the same conducted as part of General Crop Estimation Survey (GCES) in various states. If the actual yield in CCEs of an insured crop for the defined area falls short of the specified guaranteed yield or threshold yield, all the insured farmers growing that crop in the area are entitled for claims. The claims are calculated using the formula depicted in equation 1:

$$\frac{(\text{Guaranteed Yield} - \text{Actual Yield})}{\text{Guaranteed Yield}} \times \text{Sum Insured by the farmer} \quad \ldots\ldots (1)$$

The claims need to be paid to the credit institutions in the case of loanee farmers and to the individuals who insured their crops in the other cases. The credit institution would adjust the amount against the crop loan and pay the residual amount, if any, to the farmer and hence area yield insurance is practically all-risk insurance. This is very important for developing countries with a large number of small farms. However this structure results in delays in compensation payments.

In the case of individual approach, assessment of loss is made separately for each insured farmer. It could be for each plot or for the farm as a whole (consisting of more than one plot at different locations). Individual farm-based insurance is suitable for high-value crops grown under standard practices. Liability is limited to cost of cultivation. This type of insurance provides for accurate and timely compensation. However, it involves high administrative costs.

Weather index insurance has similar advantages to those of area yield insurance. Here timely compensation can be provided on the basis of weather index, which is usually accurate. All communities whose incomes are dependent on the weather can buy this insurance. A basic disadvantage could arise due to changing weather patterns and poor density of weather stations. Weather insurance helps ill-equipped economies deal with adverse weather conditions. It is a solution to financial problems brought on by adverse weather conditions. This insurance covers a wide section of people and a variety of crops. The operational costs are low and transparent with quick settlement of claims. With this backdrop the subsequent sections trace the evolution of crop insurance in India, which can be divided into two periods: (i) the development during the pre independence phase and (ii) that after the independence of India.

2.1.1 Pre-Independence Era

The earliest mention of agricultural insurance can be traced back as far as the year 1915 in the pre-independence period. Shri J.S. Chakravarthi of Mysore state had proposed a rain insurance scheme for the farmers with view to insuring them against the impact of drought. His scheme was based on, what is referred to today as the area approach. He published a number of papers in the Mysore Economic Journal enunciating the concept of Rainfall Insurance. In 1920 he published a book titled "Agricultural Insurance: Practical Scheme suited to Indian Conditions". Furthermore, certain princely states like Madras, Dewas, and Baroda, also made attempts to introduce crop insurance relief in various forms, but with little success.

2.1.2 Post Independence Phase

After the attainment of India's Independence in 1947, crop insurance gradually started to find mention more often. The Central Legislature discussed the subject in 1947 and the then Minister of Food and Agriculture (MOFA), Dr. Rajendra Prasad, the first President of India gave an assurance that the government would examine the possibility of crop and cattle insurance, and a special study was commissioned for this purpose in 1947-48. The first aspect regarding the modalities of crop insurance was to decide whether it should be on based on 'Individual approach' or on 'Homogenous area approach'. The former seeks to indemnify the farmer to the full extent of the losses and the premium

to be paid by him is determined with reference to his own past yield and loss experience. The 'individual approach' basis necessitates reliable and accurate data of crop yields of individual farmers for a sufficiently long period, for fixation of premium on actuarially sound basis.

The study reported in favour of a 'homogenous area' approach, as various agro-climatically homogenous areas treated as a single unit and the individual farmers in such cases pay the same rate of premium and receive the same benefits, irrespective of their individual fortunes. The Ministry of Agriculture circulated the scheme, for adoption by the State governments, but the states did not accept. In October 1965 the Government of India decided to introduce a Crop Insurance Bill and a Model Scheme of Crop Insurance in order to enable the states to introduce crop insurance if they so desired. In 1970, the draft Bill and the Model Scheme were referred to an Expert Committee headed by Dr. Dharm Narain the then Chairman of the Agricultural Price Commission for full examination of the economic, administrative, financial and actuarial implications of the subject. Thus for over two decades after the independence of India the issue of crop insurance continued to be debated and discussed.

During the decade beginning with early seventies, experiments on crop insurance were undertaken on a limited basis and on a scattered scale. The first crop insurance program in the country was introduced in 1972-73 by the 'General Insurance Department of Life Insurance Corporation of India (LIC) on Hybrid – 4 variety of cotton in Gujarat state. Later, the newly set up General Insurance Corporation (GIC) of India took over the experimental scheme and subsequently included groundnut, wheat and potato and implemented in the states of Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka and West Bengal. This experimental scheme was based on "Individual Approach". It continued till 1978-79 and covered only 3110 farmers for a premium of 4.54 lakhs against claims amounting to 37.88 lakhs. Based on this experience it was realized that crop insurance programs based on the individual farm approach would not be feasible and economically unviable to be implemented on a large scale in a large developing country like India and hence not sustainable over long run in this country.

(a) Pilot Crop Insurance Scheme (1979 to 1984)

In the background and experience of the aforesaid experimental scheme a study was commissioned by the General Insurance Corporation of India and entrusted to Prof. V.M. Dandekar (often referred to as the "Father of Crop Insurance in India") to suggest a suitable approach to be followed in the scheme. The recommendations of the study were accepted and a Pilot Crop Insurance Scheme was launched by the GIC in 1979, which was based on "Area Approach" for providing insurance cover against a decline in crop yield below the threshold level. The scheme covered cereals, millets, oilseeds, cotton, potato and chickpea. The scheme was confined to loanee farmers of institutional sources on a voluntary basis. The premium paid was shared between the GIC and respective state governments in the ratio of 2:1. The maximum sum insured was 100% of the crop loan, which was later increased to 150%. The insurance premium ranged from 5-10% of the sum insured. Premium charges payable by small/marginal farmers were subsidized by 50% which was shared equally between the state and central governments. Hence this scheme named as the Pilot Crop Insurance Scheme (PCIS) – 1979 was implemented in 12 states till 1984-85 and covered 6.23 lakh farmers for a premium of 195.01 lakhs against claims of 155.68 lakhs during the entire period of its operation. The details about the coverage, in terms of number of farmers, area covered, premium collected and total claims paid for the PCIS implemented during 1979 till 1984-85 are presented in table 11.

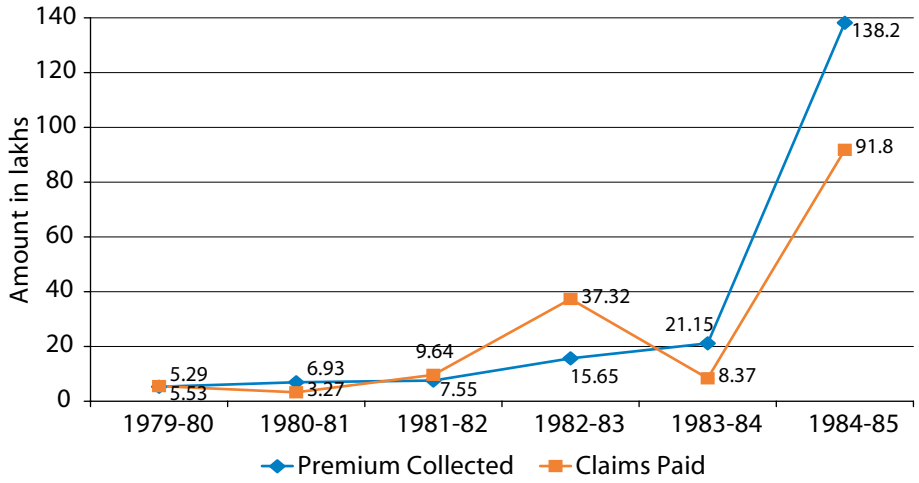
Although the PCIS scheme started in three states during 1979-80 it was extended to twelve states over the years. The area covered also steadily increased from 1979-80 to 1984-85. The overall claim to premium ratio was 79.83% indicating that approximately 79% of the total premium collections were used for the payment of claims or indemnities. The average premium collected for crop insurance declined from 41.95 per hectare in 1979-80 to 22.13 per hectare during 1982-83 and increased thereafter to 28.95 per hectare in 1984-85. Incidentally, the average premium collected per hectare was

Table 11. Indicators for PCIS scheme from 1979 to 1984

Indicators for PCIS	1979-80	1980-81	1981-82	1982-83	1983-84	1984- 85	Total
Number of states	3	3	8	9	11	12	
Area covered in hectares	13,181	18,703	24,467	70,729	87,347	477,333	691,760
Number of Farmers Covered	16,265	23,442	24,625	50,855	60,349	447,086	622,622
Sum Insured in lakhs	130.3	165.77	202.82	468.26	653.64	4,446.49	6,067.28
Claims Ratio (%)	95.71	47.1	127.67	238.46	39.56	66.42	79.83

Source: Tripathi, 1987

Figure 5. Premiums Collected and Claims Paid under PCIS from 1979 to 1984 (Data Source: Tripathi, 1987)



the lowest and the average indemnity paid per insured crop hectare was the highest (52.76 per insured hectare) during 1982-83. Figure 5 shows the volume of premiums collected and claims paid under this scheme during its time of operation.

From figure 4 it is observed that the premiums collected and claims paid under the PCIS substantially improved over the years as the scale of operation increased and the coverage was extended over many states. This also exhibits the economic viability of area based approach provides evidence that with a suitable design agricultural insurance can be sustainable and implemented across a diverse geographical region. However, there were some shortcomings of the scheme which interrupted the coverage of the crop insurance scheme. Firstly, since crop insurance was linked to crop loans, many small and marginal farmers could not participate as majority of these have poor access to institutional credit. Secondly, the unit of insurance was very large and there was lack of awareness among the farmers about the crop insurance scheme. Thirdly, major commercial crops like cotton and sugarcane were excluded from the crop insurance scheme which also acted as a hindrance. Based on the experiences from PCIS, the Comprehensive Crop Insurance Scheme (CCIS) was later introduced.

(b) Comprehensive Crop Insurance Scheme (CCIS) 1985 to 1999

The Comprehensive Crop Insurance Scheme (CCIS) for major crops was introduced in 1985 which also coincided with the introduction of the Seventh Five Year plan (1985-1990) of India. The scheme was linked to short term credit and continued to be implemented based on the "homogenous area approach". Till the Kharif season of 1999 CCIS was adopted in 15 states and 2 union territories (UT) of India. Both PCIS and CCIS were confined only to farmers who borrowed seasonal agricultural loan from financial institutions. The distinguishing feature between PCIS and CCIS was that the former was on voluntary basis whereas the latter was compulsory for loanee farmers in the participating states and UTs. Some of the main features of CCIS were:

- It covered farmers availing crop loans from financial institutions (FIs), for growing food crops and oilseeds, on compulsory basis. The coverage was restricted to 100% of the crop loan subject to a maximum of INR 10,000 per farmer.
- The premium rates were 2% for cereals and millets and 1% for pulses and oilseeds.
- Farmer's share of premium was collected at the time of disbursement of loan and half of the premium payable by small and marginal farmers was subsidized equally by the central and state governments and shared in a 2:1 ratio (Tripathi, 1987).
- The scheme was a multi agency effort, involving the Government of India, State Governments, Banking Institutions and GIC.

CCIS was implemented till the Kharif season of 1999 and it covered 763 lakh farmers for a premium of 404 crores against claims of 2,303 crores. The details are presented in table 12.

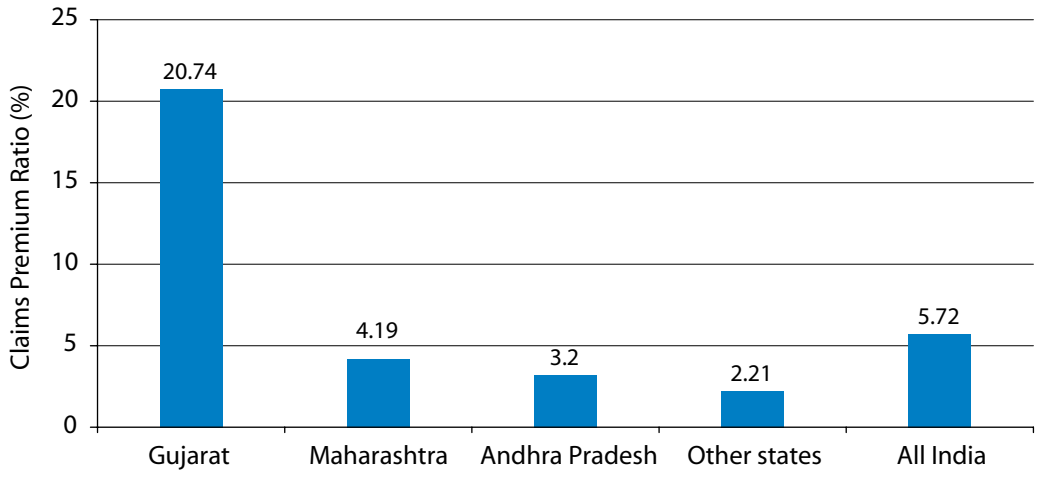
Table 12. State wise performance of CCIS during 1985-1999

States	Premium collected		Claims	
	Amount in Crores	Share (%)	Amount in Crores	Share (%)
Gujarat	64.45	16	1,336.93	58
Maharashtra	60.42	15	253.33	11
Andhra Pradesh	100.7	25	322.7	14
Other states	177.24	44	3,918.6	17
All India	402.81	100	2,305.04	100

Data Source: Agriculture Insurance Company of India (AIC) Limited, New Delhi.

The benefits of CCIS were skewed towards Gujarat, as more than half (58%) of the total indemnities under CCIS were paid to groundnut farmers in Gujarat alone. The other participating states which contributed 84% of the premium during 1985-1999 received only 42% of the total claims. Overall among all the participationg states under this scheme premiums collected amounted to 402.81 crores while the claims paid were to the tune of 2,305.04 crores. Figure 6 shows the claims-premiums ratio across these states.

Figure 6. Claims-Premiums ratio across states in CCIS from 1985-1999 (Data Source: Agriculture Insurance Company of India (AIC) Limited, New Delhi)



From figure 5 it can be observed that the claim-premium ratio was nearly 20.74 for Gujarat, while it averaged to 5.72 at the all India level. Saurashtra experienced severe drought during 1985, 1986 and 1987. Large scale crop failures (especially groundnut in Kharif) were reported during 1990, 1991 and 1993. This resulted in very high indemnity payments. There were reports indicating that the farmers used to pressurize village level officials conducting crop cutting experiments to underestimate the crop yields so that farmers in the area could get the indemnity payments (Mishra, 1994). Table 13 shows the claims and premiums across different crops.

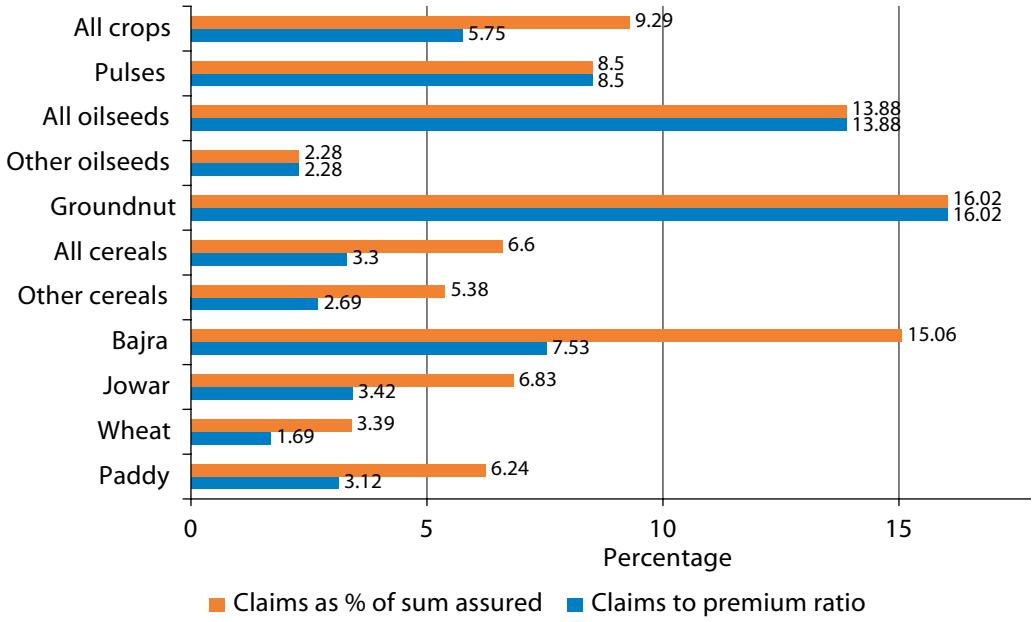
Table 13. Crop-wise CCIS performance during 1985-1999

Crops	Premium (%)	Claims (%)
Paddy	57.88	31.38
Wheat	4.42	1.3
Jowar	8.35	4.96
Bajra	4.12	5.4
Other cereals	1.39	0.66
All cereals	76.16	43.7
Groundnut	19	52.94
Other oilseeds	3.51	1.4
All oilseeds	22.51	54.34
Pulses	1.33	1.96
All crops	100	100

Data Source: Agriculture Insurance Company of India (AIC) Limited, New Delhi.

Among crops, groundnut has the highest loss cost of 16.02. Furthermore, groundnut accounts for 53% of the total indemnity though its share in the premium was only 19%. While the highest indemnity is observed for oilseeds at 54% it share in premium also stands at 23%. All India loss cost was 9.29% and among crop groups, cereals posted lower cost with 6.6% while oilseeds were the lowest at 2.28% which is presented in detail in figure 7.

Figure 7. Crop wise Claims-Premium ratio for CCIS during 1985-1999



Although the CCIS achieved a far larger scale of success compared to PCIS a few shortcomings of the scheme still existed. The major limitations of the scheme were: (i) the area based approach, (ii) coverage being confined to loanee farmers only, (iii) uniformity in premium rate for all the farmers and regions, (iv) coverage of only a few crops and (v) the time lag for indemnity payment (Jain, 2004).

(c) Experimental Crop Insurance Scheme (ECIS) 1997-1998

Attempts were made to modify the existing CCIS was made from time to time due to the demands of state governments. During 1997, a new scheme, namely Experimental Crop Insurance Scheme (ECIS) was introduced during Rabi season of 1997-98. The objective was to cover even those small and marginal farmers who do not borrow from institutional sources. This scheme was implemented in 14 districts across five states. The scheme provided 100% subsidy on premium. The premium and claims were shared by central and state governments in the ratio 4:1. During the period of operation ECIS covered around 4.78 lakh farmers for a sum insured of 172 crores and the claims paid amounted to 39.78 crores against a premium of 2.86 crores. The scheme was discontinued after one season and based on its experience National Agriculture Insurance Scheme (NAIS) was started which continues till date and is described in detail in the subsequent section.

(d) Other Schemes

A Pilot Scheme on Seed Crop Insurance (PSSCI) was introduced during Kharif season of 2000 in eleven states to provide financial security and income stability to the seed growers in the event of failure of seed crop. One of its objective was also to provide stability to the infrastructure established by the state owned seed corporations and state farms, and to give a boost to the modern seed industry by bringing it under scientific principles. Hence all seed producing organizations, under government or private control, producing certain classes of seed for identified crops, states and areas were eligible to participate in this scheme.

Similarly the Farm Income Insurance Scheme (FIIS) of 2003 aims to bring in price fluctuations inside the purview. Farmer's income is a cumulative function of yield and market prices. In other words, a bumper harvest tends to bring down the market prices of grains and vice versa. Therefore, despite normal production, farmers often fail to maintain their income level due to fluctuations in market prices. To take care of variability in both the yield and market price, the government introduced a pilot project, viz. Farm Income Insurance Scheme (FIIS) during Rabi season of 2003-04. The objective of the scheme was to protect not only the income of the farmer, but also to reduce the government expenditure on procurement at Minimum Support Price (MSP).

FIIS was implemented on the basis of 'homogeneous area' approach in respect of rice and wheat crops only. The scheme was compulsory for loanee farmers and voluntary for non-loanee farmers. This scheme was implemented during two seasons only: (i) Rabi 2003-04 season in 18 districts of 11 states for wheat and rice and (ii) kharif 2004 season in 19 districts of 4 states for rice alone. During its existence the scheme covered around 4.15 lakh farmers for an area of 4.02 lakh hectares and a sum insured of 420 crore. Premiums amounting to 28.5 crores were collected and paid claims were to the tune of 28.75 crores. The scheme could not progress further and meet its target of implementation across 100 districts of India due to the following reasons:

- Majority states were not keen to implement the scheme on the ground that it would not be beneficial to the farmers, as yield and price have offsetting behavior.
- The single most important reason given for non-acceptance was suspension of Maximum Selling Price (MSP) based procurement in areas where the scheme is implemented.
- The premium rates were substantially high despite the premium subsidy given by the government. States also demanded that the premium payable by farmer should be restricted

to NAIS level and desired the coverage of the scheme should be enlarged to cover risky crops like soybean, groundnut, red gram and commercial crops like cotton, etc.

- Improper functioning of marketing departments, availability of past as also current data at implementation level was another reason quoted as hindrance for smooth implementation of the Scheme

From the Rabi season of 1999 season, the CCIS was discontinued and replaced by the National Agriculture Insurance Scheme (NAIS), which also currently in operation.

2.2 Latest Programs and Activities

The NAIS along with the weather based crop insurance scheme are two most important as central sector schemes to insulate the farming community against agricultural risks. The NAIS is the flagship yield based crop insurance program of the government of India. The implementation and administration of crop insurance schemes, which were earlier being done by General Insurance Corporation of India (GIC) was taken over by Agriculture Insurance Company of India Ltd. (AIC) since its commencement of business from 1st April 2003.

2.2.1 National Agriculture Insurance Scheme (NAIS)

Keeping in view the demands of States for improving scope and contents of CCIS, a broad-based National Agriculture Insurance Scheme (NAIS) has been introduced in the country from Rabi 1999-2000 with the following objectives.

- Provide insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests and diseases.
- Encourage the farmers to adopt progressive farming practices, high value inputs and higher technology in Agriculture.
- Help stabilize farm incomes, particularly in disaster years.

Some of the improvements incorporated in this scheme were due to the experiences with the CCIS. The scheme was available to all states and union territories on optional basis. However the states opting for the scheme were required to take up all the crops identified for coverage in a given year and shall have to continue for a minimum period of three years before it may quit. This scheme is available to both loanees and non-loanees. It covers all food grains, oilseeds and annual horticultural/commercial crops for which past yield data are available for an adequate number of years. Among the annual commercial and horticultural crops, sugarcane, potato, cotton, ginger, onion, turmeric, chillies, coriander, cumin, jute, tapioca, banana and pineapple, are covered under the scheme. The scheme is operating on the basis of both "area approach", for widespread calamities, and "individual approach", for localized calamities such as hailstorm, landslide, cyclone and floods. For Rabi 1999 only eight states and union territory of Pondicherry opted for the scheme. This number was increased to 17 in Kharif 2000 and to 21 in Kharif 2002. Currently the scheme is operational in 27 states inclusive union territories.

Besides food crops and oilseed annual commercial and horticultural crops are also covered in NAIS. The crops for which past yield data based on Crop Cutting Experiments (CCEs) are available for past 10 years and the state government agreed to conduct requisite number of CCEs for estimating the average yield during the proposed season are covered. The crops to be covered next year will have to be spelt before the close of preceding year. At present 35 different Kharif and 30 different Rabi season crops are being insured under NAIS in the country. Table 14 lists the details.

Table 14. Crops covered under NAIS from 1999-2000 to Kharif 2013

Type	Crops
Food Crops (Cereals, Millets and Pulses)	Wheat, paddy, Jowar, Bajra, Maize, Ragi, Korra, Kodokutki, Green gram, Black gram, Red gram, Horse gram, Moth etc.
Oilseeds	Groundnut, Sunflower, Soya bean, Safflower, Sesame, Niger, Caster etc.
Annual Commercial/ Horticultural Crops	Sugarcane, Cotton, Potato, Onion, Chilly, Turmeric, Ginger, Coriander, Cumin, Fennel, Fenugreek, Isabgol, Jute, Tapioca, Banana, Pineapple, etc.
Not Covered	Mangoes, Apples, Grapes and Oranges

In case of loanee farmers the sum insured at least equals the amount of crop loan advanced and may extend to the value of the threshold yield of the insured crop at the option of the insured farmer. For non-loanee farmers the coverage at normal rates of premium is available up to the value of threshold yield (at MSP or market price). Additionally both can obtain coverage up to 150% of value of average yield of the notified area by payment of premium at actuarial rates. A non-loanee farmer is required to produce a proof of ownership of land whereas a sharecropper/tenant farmer needs a proof sharing/ tenancy arrangements.

The threshold yield (TY) or guaranteed yield for a crop is based on moving average of past three years average yield in case of Rice and Wheat and five years average yield in case of other crops, multiplied by the level of indemnity. Three risk levels of indemnity, 90% (low), 80% (medium) and 60% (high) are identified based on coefficient of variation for yield based on past ten year's data. However, the insured farmers of unit area may opt for higher level of indemnity on payment of additional premium based on actuarial rates. The premium payable is fixed for groups of crops on the basis of the nature of yield variations observed historically and over time these would be replaced by actuarial rates. The rates currently fixed are depicted in table 15.

Table 15. Premium Rates for different crops under NAIS

Season	Crops	Premium Rates
Kharif	Bajra and Oilseeds	3.5% of SI or Actuarial rate, whichever is less
	Other Crops (cereals, other millets & pulses)	2.5% of SI or Actuarial rate whichever is less
Rabi	Wheat	1.5% of SI or Actuarial rate whichever is less
	Other Crops (cereals, other millets & pulses)	2.0% of SI or Actuarial rate whichever is less
Kharif and Rabi	Annual Commercial/Horticultural Crops	Actuarial rates

A subsidy of 50% in premium is allowed in respect of small and marginal farmers, to be shared equally by the centre and state/union territory. The definition of small and marginal farmer follows the land ceiling legislation of the concerned state. Normally, a cultivator with a land holding of up to 1 hectare (2.5 acres) is marginal farmer and 1-2 hectares (5 acres) is classified as small farmer.

The estimation of Crop Yield, Indemnity and Claim Settlement is based on the requisite number of Crop Cutting Experiments (CCEs) for all notified crops in the notified insurance units in order to assess the crop yield and maintain a single series of CCEs and resultant yield estimates, both for crop production estimates and crop insurance. CCEs need to be undertaken per unit area for each crop on a sliding scale as indicated in Table 16. A Technical Advisory Committee (TAC) comprising of representatives from NSSO, Ministry of Agriculture (GOI) and Implementing Agency would be constituted to decide the sample size of CCEs and all other technical matters.

Table 16. Minimum Number of CCEs for Unit Areas for NAIS

Unit Area	Minimum No. of CCEs Required
Taluka/Tehsil/Block	16
Mandal/Phirka/any other smaller unit are comprising 8-10 villages	10
Gram Panchayat comprising 4-5 villages	8

If the actual yield (AY) per hectare falls short of the specified threshold yield (TY), all the insured farmers growing that crop in the defined area are deemed to have suffered shortfall in yield (SY). The scheme seeks to provide coverage against such contingency. Indemnity is calculated as per the formula depicted in equation 2 where [SY = (TY – AY)] for the defined area.

$$Indemnity = \left(\frac{SY}{TY} \right) \times [Sum\ Insured\ for\ the\ Farmer] \quad \text{..... (2)}$$

In case of occurrence of localized perils such as hailstorm, landslide, cyclone and flood where settlement of claims would be on individual basis, loss assessment and modified indemnity procedures would be formulated by the implementing agency in coordination with state/union territory. The broad seasonality discipline that needs to be followed is given in Table 17 which can be modified, if and where necessary, in consultation with state/union territory and the Government of India.

Table 17. Seasonality Discipline for Kharif and Rabi crops under NAIS

Loaning period (loanee)	April – September	October – Next March
Cut-off date for receipt of declarations (loanee)	November	May
Cut-off date for receipt of proposals (non-loanee)	31st July	31st December
Cut-off date for receipt of yield data (for all)	January – March	July – September

On the receipt of the yield data from the respective states/union territories as per the prescribed cut-off dates, claims are worked out and settled by the implementing agency (IA). The claim cheque along with claim particulars is released to the individual nodal banks. The banks at the grass-root level, in turn, credit the accounts of the individual farmers. In the context of localized phenomenon like hailstorm, landslide, cyclone and flood, the implementing agency is required to evolve a procedure to estimate such losses at individual farmer level in consultation with DAC/state/union territory and settlement of such claims are done on individual basis.

For loanee farmers, the banks play the same role as under CCIS. In respect of non-loanee farmers, banks collect the premium along with the declarations and send it to IA within the prescribed time limits. The Department of Agriculture, Directorate of Economics and Statistics, Department of Cooperation, Revenue Department of the state governments are actively involved for the smooth implementation of NAIS. Risk is shared by IA and the government for different groups of crops as presented in table 18.

To meet catastrophic losses a corpus fund has been created with contributions from the Central and State/UT government on an equal basis (50:50). A portion of Calamity Relief Fund (CRF) was also used for contribution to the Corpus Fund which is managed by Implementing Agency (IA). The following points highlight the theoretical benefits of the scheme:

- A critical instrument of development in the field of crop production, providing financial support to the farmers in the event of crop failure
- Encourage farmers to adopt progressive farming practices and higher technology in Agriculture,

Table 18. Sharing of Risk under NAIS

Crops	
Food and Oilseeds	• Till complete transition to actuarial regime in a period of five years takes place, claims beyond 100% of premium would be borne by the Government • Thereafter, all normal claims (claims up to 150% of premium would be met by IA and claims beyond 150%) shall be paid out of Corpus Fund for a period of three years • After this period of three years, claims up to 200% would be met by the implementing and above this ceiling out of the Corpus Fund
Annual Commercial and Horticultural	• Implementing Agency would bear all normal losses (claims up to 150% of premium in the first three years and 200% of premium thereafter) subject to satisfactory claims experience • The claims beyond 150% of premium in the first three years and 200% of premium thereafter would be paid out of Corpus Fund • However, the period of three years stipulated for this purpose would be reviewed on the basis of the financial results after the first year of implementation and the period may be extended to five years if considered necessary

- Help in maintaining flow of agricultural credit,
- Provide significant benefits not merely to the insured farmers, but, to the entire community directly and indirectly through spill-over and multiplier effects in terms of maintaining production and employment, generation of market fees, taxes etc. and net accretion to economic growth
- Streamline loss assessment procedures and help in building up huge and accurate statistical base for crop production.

The scheme had covered more than 218 million farmers and over 329 million hectares of cropped area by the Kharif season of 2013 since its inception. The premium collected during this period amounted to 9,760 crores of which 1,252 crores was the subsidy. The subsidy is more than 13% of the gross total premium while claims are approximately 3.5 times the premium. Table 19 presents the performance of the NAIS across India.

Table 19. Performance of NAIS from 1999 to Kharif 2013

States/UTs	**No. of Farmers Covered**	**Area Insured**	**Sum Insured**	**Gross Premium**	**Premium Subsidy**	**Claims**
	(in 000)	**(in 000 Hectares)**	**In Crores**			
India	218,614.99	329,386.1	323,958	9,760.52	1,252.3	33,426.85

Data Source: AIC (2015)

Over the years approximately more than 585 million farmers (27% of the total farmers covered) have benefited from this scheme. Figure 8 depicts the penetration of this scheme over the years of its operation in terms of number of farmers covered and the area insured.

From figure 8 it can be observed that there has been a steady increase in the coverage of the NAIS scheme over the years. There is a visible upward trend in the coverage of the scheme both for number of farmers covered under this scheme and the total area insured across the states of India. Although there are some troughs in between the overall trend is rising. Similarly figure 8 shows the share of beneficiaries across the participating states and union territories and also the claims-premium ratio for these states for the NAIS scheme from its inception till 2013.

Figure 8. Trend of the coverage of NAIS over since its inception till the Kharif 2012 (Source: Author's Calculation based on data from AIC, 2015)

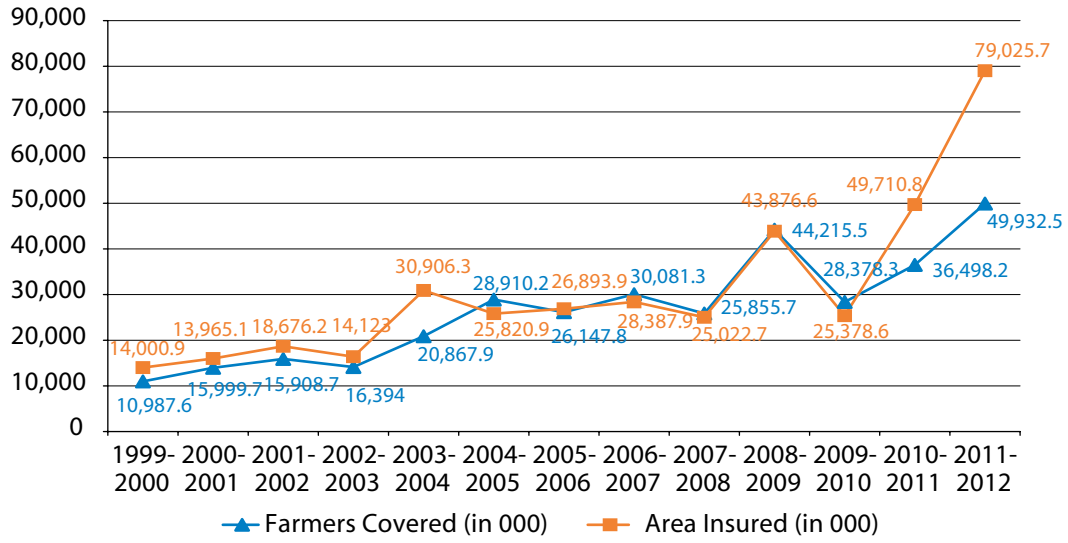
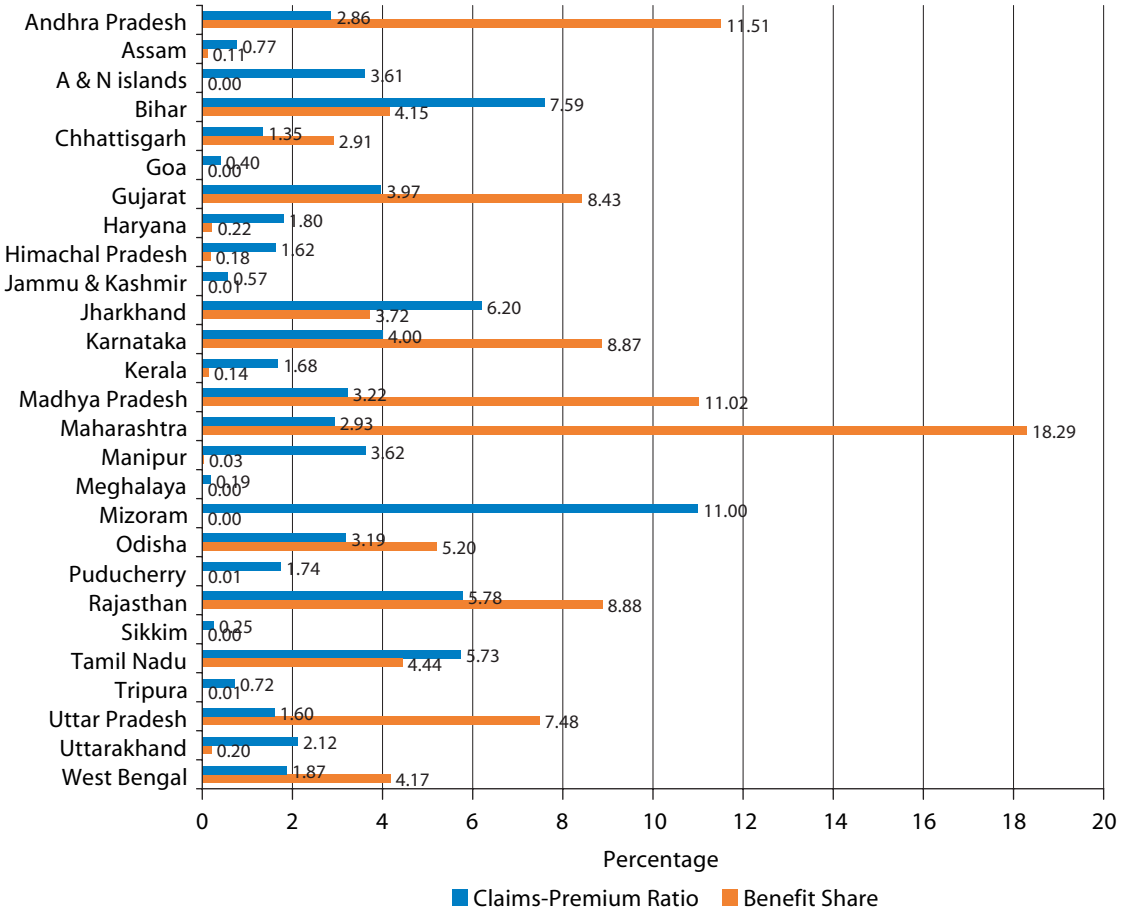


Figure 9. Share of beneficiaries and claims-premium ratio for different states for the NAIS during 1999-2013 (Source: Author's calculation based data from AIC, 2015)



From figure 9 it can be observed around one fifth of the beneficiaries are from the state of Maharashtra only and out of the total beneficiaries of this scheme close to 19% are from this state. They are followed by the farmers from Andhra Pradesh and Madhya Pradesh where more than 10% of the farmers have benefitted. The share across other states are scattered and remains below 10% of the farmers covered under this scheme. Table 20 shows the state wise distributions of insurance cases, area and claim to premium ratio under NAIS.

Table 20. State wise distributions of insurance cases, area and claim to premium ratio under NAIS from 1999-2013

States	Share in Cases Insured	Share in Area under Insured	Insurance Cases Received Claims	Premium/ Sum Insured	Claims/ Sum Insured	Claims-Premium Ratio
Andhra Pradesh	13.15	13.37	23.44	2.85	8.16	2.86
Assam	0.17	0.08	17.13	2.79	2.16	0.77
A & N islands	0.00	0.00	12.61	2.42	8.74	3.61
Bihar	2.76	2.24	40.27	2.55	19.37	7.59
Chhattisgarh	4.77	6.37	16.37	2.56	3.46	1.35
Goa	0.00	0.00	8.54	1.64	0.66	0.40
Gujarat	6.54	9.93	34.53	3.97	15.74	3.97
Haryana	0.29	0.23	20.36	2.89	5.19	1.80
Himachal Pradesh	0.14	0.07	34.50	2.12	3.44	1.62
Jammu & Kashmir	0.02	0.02	8.74	1.96	1.13	0.57
Jharkhand	2.87	1.14	34.70	2.48	15.38	6.20
Karnataka	6.01	6.34	39.55	2.95	11.78	4.00
Kerala	0.21	0.12	18.78	2.16	3.64	1.68
Madhya Pradesh	14.16	22.97	20.86	2.89	9.28	3.22
Maharashtra	15.66	9.01	31.31	4.39	12.88	2.93
Manipur	0.01	0.01	76.88	2.48	8.98	3.62
Meghalaya	0.01	0.01	8.62	4.59	0.89	0.19
Mizoram	0.00	0.00	100.00	4.35	47.83	11.00
Odisha	7.23	4.77	19.29	2.50	7.98	3.19
Puducherry	0.02	0.02	18.70	1.91	3.33	1.74
Rajasthan	6.89	9.53	34.54	2.82	16.18	5.73
Sikkim	0.00	0.00	4.76	1.57	0.39	0.25
Tamil Nadu	2.78	2.41	42.82	2.60	14.87	5.73
Tripura	0.01	0.00	17.63	2.79	2.00	0.72
Uttar Pradesh	10.67	9.40	18.79	2.06	3.31	1.60
Uttarakhand	0.18	0.11	29.91	2.27	4.81	2.12
West Bengal	5.43	1.82	20.60	4.13	7.72	1.87
Total	100	100	26.80	3.01	10.32	3.42

Source: Author's Calculation based on data from AIC (2015)

From table 20 it can be observed that four states Andhra Pradesh, Madhya Pradesh, Maharashtra and Uttar Pradesh together account for approximately 54% of the indemnity payment out of the total beneficiaries. The claim-premium ratio was less than unity for a number of states: Assam, Goa, Jammu and Kashmir, Meghalaya, Sikkim and Tripura. This implies that no loss in premium received by NAIS in these states. On the other side the claims-premium ratio was more than five times the premium collected for the states: Bihar, Jharkhand, Mizoram, Rajasthan and Tamil Nadu.

Further, on an average, 1.51 hectares area was insured per farmer under NAIS from its inception till Kharif 2013. However, the average area insured per participating farmer varied across the states. It was just above half a hectare per farmer in the states of Himachal Pradesh, Jharkhand, Kerala, Tripura and West Bengal, whereas, it was more than the national average of 1.51 ha/farmer in the states Andhra Pradesh, Andaman and Nicobar islands, Chhattisgarh, Goa, Karnataka, Gujarat, Madhya Pradesh and Rajasthan. The details are presented in Table 21. The average sum insured per farmer ranged from a low of 3,707 in Goa, to a high of 29,000 in Gujarat. A number of states are much above the national average of 14,819. The average amount insured per hectare under NAIS at the aggregate level was 9,835. Similarly, the average sum insured per hectare was highly skewed from a low of 2,270 for Goa to a high of 26,265 for Assam. The all India average for the premium paid per hectare stands at a low of 296.

Table 21. Average Area, Sum Insured, Premium Paid and Indemnities claimed under NAIS by different states from 1999 to Kharif 2013

States	Area/ Farmer	Sum insured per		Premium Paid per		Claims per	
		Farmer	Hectare	Farmer	Hectare	Farmer	Hectare
Andhra Pradesh	1.53	19,835	12,947	566	369	1,619	1,057
Assam	0.74	19,490	26,265	543	732	420	566
Bihar	1.22	19,719	16,135	503	412	3,820	3,126
Chhattisgarh	2.01	11,042	5,484	282	140	382	190
Goa	1.63	3,707	2,270	61	37	24	15
Gujarat	2.29	28,876	12,627	1,146	501	4,545	1,987
Haryana	1.21	13,133	10,857	380	314	682	564
Himachal Pradesh	0.78	16,548	21,284	351	452	569	731
Jammu & Kashmir	1.41	22,222	15,802	436	310	251	178
Jharkhand	0.60	5,419	9,028	134	224	833	1,388
Karnataka	1.59	12,480	7,863	368	232	1,470	926
Kerala	0.89	18,217	20,420	393	441	663	743
Madhya Pradesh	2.44	17,485	7,154	504	206	1,623	664
Maharashtra	0.87	6,579	7,585	289	333	847	977
Manipur	1.39	34,828	25,124	864	623	3,128	2,256
Meghalaya	1.03	18,229	17,634	837	810	162	157
Mizoram	1.08	19,167	17,692	833	769	9,167	8,462
Odisha	1.00	14,513	14,577	363	364	1,159	1,164
Puducherry	1.42	24,881	17,474	475	334	829	582
Rajasthan	2.08	10,760	5,164	304	146	1,741	835
Sikkim	0.70	13,439	19,242	212	303	53	76
Tamil Nadu	1.30	27,472	21,076	713	547	4,086	3,135
Tripura	0.65	14,938	22,998	416	641	298	459
Uttar Pradesh	1.33	14,059	10,594	290	218	465	350
Uttarakhand	0.93	21,821	23,382	496	531	1,049	1,124
West Bengal	0.50	10,909	21,615	451	893	842	1,668
Total	1.51	14,819	9,835	446	296	1,529	1,015

Source: Author's Calculation based on data from AIC (2015)

If we look at the claims per farmer, the average for India stands at 1,529. This is also highly skewed across the states. It is much higher than the national average for states like Bihar (3,820), Gujarat (4,545), Manipur (3,128), Mizoram (9,167) and Tamil Nadu (4,086). Similarly, the national average for per hectare claims stands at 1,015 and is also highly skewed across the states.

2.2.2 Modified National Agriculture Insurance Scheme (MNAIS)

To improve the NAIS further and make the scheme easier and more farmer friendly, a Joint Group was constituted by Government of India to study the existing crop insurance schemes. Based on the recommendations of the Joint Group and view/comments of various stakeholders, a proposal on Modified National Agricultural Insurance Scheme (MNAIS) was prepared which was approved for implementation on pilot basis in 50 districts during the Rabi season of 2010-11. As of now the scheme is operational in 18 states of India. Although system of operation and structure is similar with NAIS, there are some notable improvements in this scheme compared to the former, which are highlighted in the points below.

- The actuarial premium with subsidy in premium ranges up to 75% for all farmers
- Only upfront premium subsidy is shared by the central and state government on 50:50 basis and all claims liability is on the insurance company
- Unit area of insurance reduced to village/village panchayat level for major crops
- Similarly the number of crop cutting experiments at the insurance units for establishing crop yield have been increased
- Provision for claiming indemnity for prevented sowing/planting risk and for post harvest losses due to cyclone specifically in coastal areas
- Facilitation of on account payment up to 25% of likely claims as immediate relief to farmers
- Uniform seasonality discipline for loanee and non-loanee farmers
- More proficient basis for calculation of threshold yield and minimum indemnity level increased to 70% instead of earlier 60% under NAIS
- The scheme is compulsory for loanee farmers and voluntary for nonloanee farmers
- Participation of private sector insurers for creation of competitive environment for crop insurance.
- Setting up a catastrophic fund at the national level contributed by the central and the state government on 50:50 basis to provide protection to the insurance companies in the event of premium to claim ratio exceeds 1:5 at national level and failure to procure appropriate reinsurance cover at competitive rates;
- NAIS is withdrawn from those area(s)/crop(s) where MNAIS is implemented.

The scheme was implemented in 50 districts during Rabi 2011-12 season and in 44 districts during Kharif 2012 and is being implemented in 35 districts during Rabi 2012-13. Since inception of the pilot, 7.5 million farmers have been covered over an area of 7.9 million hectares insuring a sum amounting to 18,242.71 crores till the rabi crop of 2013-14. Table 22 shows the details.

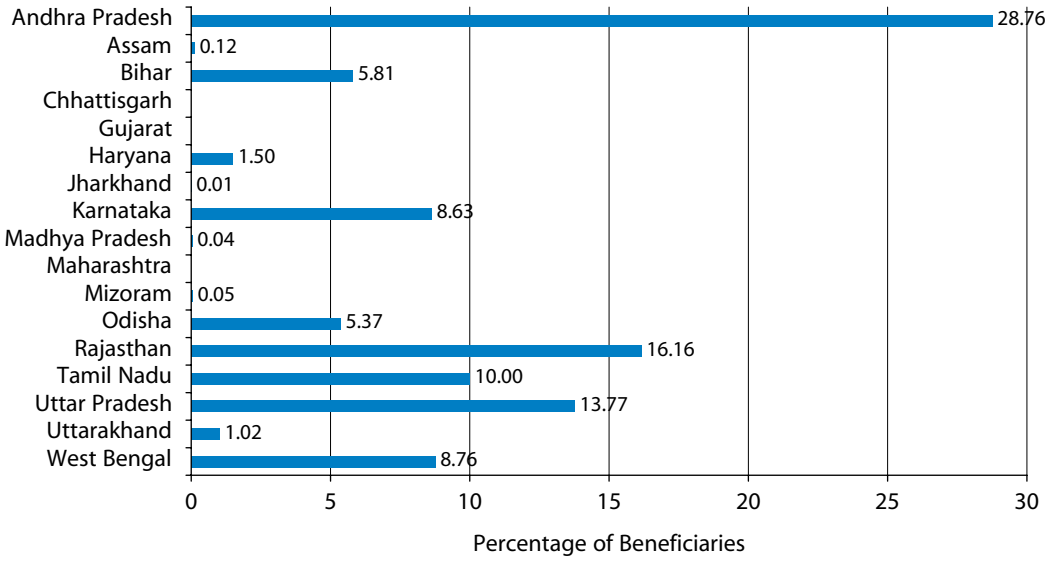
Table 22. Performance of MNAIS from 2010-11 to 2013-14

States/UTs	No. of Farmers Covered	Area Insured	Sum Insured	Gross Premium	Premium Subsidy	Claims
	(in 000)	(in 000 Hectares)	In C rores			
India	7,503.82	7,906.62	18,242.71	1,935.86	1,170.61	1,465.75

Data Source: AIC (2015)

The claims amounting to about 1,465.75 crores have become payable against the premium of about 1,935.86 crores benefiting over one million farmers in the states where it is operational. Figure 9 presents the share of beneficiaries across the states of India where the scheme is operational.

Figure 10. Share of Beneficiaries across states of India under MNAIS from 2010-11 to 2013-14 (Source: Author's calculation based data from AIC, 2015)



From figure 10 it can be seen that farmer in the state of Andhra Pradesh has benefited maximum from this scheme. Out of the total beneficiary farmers of this scheme close to 30% belong to Andhra Pradesh. They are followed by farmers from Rajasthan, Uttar Pradesh and Tamil Nadu whose shares in beneficiary stands at 16%, 14% and 10% respectively. Similarly table 23 presents other operational details of this scheme for different states of India where the scheme is on-going.

Table 23. Beneficiary Share, Claims – Premium Ratio, Average Area, Sum Insured, Premium Paid and Indemnities claimed under NAIS by different states from 2010-11 to 2013-14

States	Claims-Premium Ratio	Area/ Farmer	Sum insured per		Premium Paid per		Claims per	
			Farmer	Hectare	Farmer	Hectare	Farmer	Hectare
Andhra Pradesh	1.70	1.10	43,729	39,747	3,787	3,442	6,426	5,841
Assam	0.30	0.75	29,158	39,100	1,230	1,650	371	497
Bihar	0.40	1.12	22,520	20,117	4,591	4,101	1,833	1,638
Chhattisgarh	0.00	1.50	25,000	16,667	0	0	0	0
Gujarat	0.00	1.37	60,698	44,237	6,512	4,746	0	0
Haryana	0.73	2.08	83,905	40,431	3,362	1,620	2,449	1,180
Jharkhand	0.02	0.52	12,481	24,156	1,129	2,185	17	33
Karnataka	0.54	1.73	27,538	15,947	3,261	1,888	1,748	1,012
Madhya Pradesh	0.04	1.91	25,035	13,096	648	339	28	15
Maharashtra	0.00	0.95	14,667	15,359	2,621	2,745	0	0
Mizoram	1.50	0.96	19,412	20,204	1,176	1,224	1,765	1,837
Odisha	5.74	0.73	24,818	34,021	946	1,296	5,427	7,439
Rajasthan	0.20	1.08	11,372	10,564	1,094	1,016	224	208
Tamil Nadu	0.79	1.09	23,976	21,998	2,974	2,729	2,347	2,153
Uttar Pradesh	1.66	0.99	22,741	22,972	981	991	1,629	1,645
Uttarakhand	0.17	0.91	27,912	30,592	4,223	4,629	713	781
West Bengal	0.20	0.34	28,045	82,307	4,280	12,562	855	2,508
Average	0.76	1.05	24,311	23,073	2,580	2,448	1,953	1,854

Source: Author's Calculation based on data from AIC (2015)

From table 21 it can be observed that all India average for the claims to premium ratio is below unity, which implies that there is no loss in premium received by MNAIS. For most of the states covered under MNAIS this ratio is below unity except for the states Andhra Pradesh (1.7), Mizoram (1.5), Odisha (5.74) and Uttar Pradesh (1.66). Similarly around 1.05 hectare per farmer is under this scheme at a national level. The sum insured per farmer is around 24,311 while the premium paid per farmer stands at 2,580 and claims per farmer stand at 1,953 respectively at the national level. Similarly the sum insured per hectare is around 23,073 while the premium paid per hectare stands at 2,448 and claims per hectare is 1,854 respectively at the national level. These values also vary across the states and are highly skewed.

2.2.3 Weather Based Crop Insurance Scheme (WBCIS)

Weather Based Crop Insurance Scheme (WBCIS) is weather based insurance product designed to provide insurance protection against losses in crop yield resulting from adverse weather incidences. In provides payments against adverse rainfall incidence (both deficit and excess) during the Kharif season and adverse incidence in weather parameters like frost, heat, relative humidity, un-seasonal rains etc. during Rabi season which are deemed to impact adversely the crop production. WBCIS has been piloted in the country starting from Kharif 2003 season. Some of the states where the scheme is piloted over the years include the states of Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh etc.

The objective of this scheme is to bring more farmers under the fold of agricultural insurance. The WBCIS is based on actuarial rates of premium but to make the scheme attractive, premium actually charged from farmers are restricted at par with NAIS. In addition to Agriculture Insurance Company of India Ltd. (AIC) private players like ICICI-Lombard, IFFCO-TOKIO, HDFCERGO and Cholamandalam MS Ltd. have also been allowed for implementation of the scheme. From the Kharif season of 2013 five more private insurance companies have also been allowed to operate. WBCIS operates on the concept of area approach. That is, for the purposes of compensation, a 'Reference Unit Area (RUA)' is deemed to be a homogeneous unit of Insurance. The RUA is notified before the commencement of Kharif season by the State Government and all the insured cultivators of a particular insured crop in that area are deemed at on par in the assessment of claims. Each RUA is linked to a Reference Weather Station (RWS), on the basis of which current weather data and the claims would be processed. An adverse weather incidence during the season entitles the insured a payout, subject to the weather triggers defined in the 'Payout Structure' and the terms and conditions of the scheme.

For Rabi season the weather triggers are broadly fixed to capture the adverse incidence of weather parameters on yield. Claims arise when there is a certain adverse deviation in actual weather parameter incidence in RUA as per the weather data measured at RWS. The actual may be more or less than compared to what has been specified in the Benefit Table leading to crop losses. In such case all the insured cultivators under a particular crop are deemed to have suffered the same adverse deviation and become eligible for claim subject to terms and conditions of the scheme. The claim settlement is automatic process based on weather readings at the RWS. Insured cultivators are not required to make a claim. In a given RUA the payout given per unit area is the same for all cultivators under the same RWS. Weather insurance payouts are assured within 45 days from the end of insurance period. For traditional crops where payout is linked to yield estimates claim processing may take more time.

The amount of insurance protection is broadly the cost of inputs expected to be incurred by the insured in raising the crop. Sum insured is pre-declared per unit area by AIC at the beginning of each crop season in consultation with the experts in state government, and it may be different for different crops in different RUA. Sum insured is further distributed under key weather parameters used in the insurance in proportion to the relative importance of the weather parameters. For a loanee farmer the sum insured per crop is calculated by multiplying per unit area value of inputs with crop specific acreage declared in the loan application form by the loanee cultivator for the purpose of maximum borrowing limit fixed for him by the lending bank. For the non-loanee farmer the acreage figure is the expected area

sown/planted under the particular crop as declared in the insurance proposal form. This scheme has definite advantages which make it beneficial for cultivators. The following points highlight some of the benefits associated with this scheme.

- Trigger events like adverse weather can be independently verified and measured
- It allows speedy settlement of claims
- All farmers can buy these scheme
- Government provides subsidy in premium and hence premium payable is affordable
- It provides transparent, fully objective, efficient and direct payouts for adverse weather incidences
- The insured is not required to submit claim form or other documents as proof for loss
- Since the weather data decides the compensation the insured is willing to put extra effort for getting better yield of crop

With the collaboration of ICICI-Lombard, World Bank and the Social Initiatives Group (SIG) of ICICI Bank the design and pilot testing of India's first Index based Weather Insurance product was done in 2003-04. The pilot test covered 200 groundnut and castor farmers in the rain-fed district of Mahaboobnagar, Andhra Pradesh. The policy was linked to crop loans given to the farmers by BASIX Group, a NGO, and sold through its Krishna Bhima Samruddhi Area Bank. The weather insurance has also been experimented with 50 soya farmers in Madhya Pradesh through Pradan, a NGO, 600 acres of paddy crop in Aligarh through ICICI Bank's agribusiness group along with the crop loans, and on oranges in Jhalawar district of Rajasthan. Similarly, IFFCO-Tokio General Insurance (ITGI) also piloted rainfall insurance under the name "Baarish Bima" during 2004-05 in Andhra Pradesh, Karnataka and Gujarat.

Agricultural Insurance Company of India (AIC) introduced rainfall insurance (Varsha Bima) during 2004 South-West Monsoon period. Varsha Bima provided for five different options suiting varied requirements of farming community. These are (1) seasonal rainfall insurance based on aggregate rainfall from June to September, (2) sowing failure insurance based on rainfall between 15th June and 15th August, (3) rainfall distribution insurance with the weight assigned to different weeks between June and September, (4) agronomic index constructed based on water requirement of crops at different phenophases and (5) catastrophic option, covering extremely adverse deviations of 50% and above in rainfall during the season. Varsha Bima was piloted in 20 rain gauge areas spread over Andhra Pradesh, Karnataka, Rajasthan and Uttar Pradesh in 2004-05.

Based on the experience of the pilot project, the scheme was fine-tuned and implemented as "Varsha Bima-2005" in about 130 districts across Andhra Pradesh, Chhattisgarh, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Orissa, Tamil Nadu, Uttarakhand and Uttar Pradesh during Kharif 2005. On an average, 2 or 3 blocks/mandals/tehsils were covered under each India Meteorological Department (IMD) rain gauge stations. The scheme covered the major crops provided at least two coverage options namely, Seasonal Rainfall Insurance or Rainfall Distribution Index and Sowing Failure Insurance. Varsha Bima-2005 covered 0.12 million farmers with a premium income of 3.17 crore against a sum insured of 55.86 crore. Claims to the tune of 19.96 lakh were paid for the season. Also, during Kharif 2006, the scheme was implemented as Varsha Bima-2006 in and around 150 districts/rain gauge station areas covering 16 states across the country.

The WBCIS of AIC was implemented in the selected areas of Karnataka on a pilot basis. The AIC has implemented the pilot WBCIS in Karnataka during Kharif 2007 season, covering eight rain-fed crops, insuring crops nearly 50,000 hectares for a sum insured of 50 crore. WBCIS is being implemented 2007-08 onwards on a larger scale in selected states. Currently the scheme is operational in 19 states of the country.

Table 24. Performance of WBCIS from Kharif 2007 to Rabi 2013-14

States/UTs	No. of Farmers Covered	Area Insured	Sum Insured	Gross Premium	Premium Subsidy	Claims
	(in 000)	(in 000 Hectares)	In Crores			
India	31,701.05	43,331.72	56,899.46	5,322.49	3,623.17	3,624.43

Data Source: AIC (2015)

Since inception of the pilot, 31.7 million farmers have been covered over an area of 43.3 million hectares insuring a sum amounting to 56,899.46 crores till the rabi crop of 2013-14. The claims amounting to about 3,624.43 crores have become payable against the premium of about 5,322.49 crores benefiting over 1.8 million farmers in the states where it is operational.

With regards to all the above described insurance schemes based on weather/rainfall in total around 32.37 million farmers have been covered under the different schemes of spread over an area of 45.03 million hectares across India. Similarly, the insured sum amounts to the tune of 55,813.40 crore. The claims amounting to about Rs. 2,764.35 crores have become payable against the premium of about 5,113.25 crore benefiting about 181.26 lakh farmers till the Kharif 2012 season. Table 24 below compares the key elements between yield and weather insurance schemes.

Table 25. Comparison between Yield and Weather based Insurance schemes

Parameter	Yield insurance	Weather insurance
Scope of Insurance	Covers yield shortfall	Covers anticipated shortfall in yield due to adverse weather parameters
Perils Covered	All natural and non-preventable perils	Rainfall, minimum and maximum temperature, soil moisture, relative humidity, sunlight, day length etc.
Target Group	All farmers growing insured crops	Farmers and others
Crops	All crops for which past yield data is available	All crops for which correlation is established between yield and weather parameters
Design	Easy-to-design if historical yield data up to 10 years' is available	Technical challenges in designing weather indices and also correlating weather indices with yield losses. Needs up to 25 years of historical weather data
Scheme Approach	Homogeneous area approach (Taluk/block/mandal)	Homogeneous area approach (Jurisdiction of rain gauge)
Introduction of Insurance	Can be introduced for all crops with yield data	Can be introduced successfully for crops with good sensitivity to weather parameters
Premium Rates	High	Relatively lower and flexible
Sum Insured	Loan amount/150% of value of production	Flexible. Can range from input cost to value of production
Control on adverse selection/moral hazard	Relatively less control	Almost complete control
Time taken for settlement of Claims	May range from 6-9 months from occurrence of loss	Within two weeks from close of indemnity period
Administrative set up	Relatively large	Relatively small
Transaction cost	High	Moderate and affordable
Transparency	Not transparent	Transparent and easily

Source: Adapted from Raju and Chand, 2008; Singh, 2010

2.2.4 Other Schemes

The Coconut Palm Insurance Scheme (CPIS) was approved for implementation on pilot basis from year 2009-10 in the selected areas of Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Orissa and Tamil Nadu. The sum insured (SI) is based on the average input cost of the plantation and the age of the specific plant which varies from 600 per palm (in the age group of 4-15 years) to 1,150 per palm (in the age group of 16-60 years). The premium rate per palm ranges from 4.25 (in the age group of 4 to 15 years) to 5.75 (in the age group of 16 to 60 years). Fifty percent of premium is contributed by Govt. of India, twenty five percent by the concerned state govt. and the remaining twenty five percent by the farmer. Agriculture Insurance Company (AIC) of India Ltd. is the implementing agency of the scheme and responsible for making payment of all claims within a specified period. The CPIS is being administered by the Coconut Development Board (CDB). Since inception of the Pilot in 2009-10, around 2.76 million farmers have been covered over an area of 25 thousand hectares insuring a sum amounting to 269.53 crore. The claims have amounted to about 1.53 crores against the premium of about 1.46 crore benefiting approximately 3,385 growers.

Livestock insurance is offered by public sector insurance companies and the insurance cover is available for almost all livestock species. Normally, an animal is insured up to 100% of the market value. Owners of cross-bred cows/buffaloes are the major client group for livestock insurance. The premium is 4% of the sum insured for general public and 2.25% for Integrated Rural Development Programme (IRDP) beneficiaries. The government subsidizes premium for IRDP beneficiaries. Progress in livestock insurance, however, has been slow and poor. In 2004-05 about 32.18 million heads were insured which comprised 6.58% of livestock population. The implementation of the livestock insurance as it obtains now, does not satisfy the farmers much (Raju and Chand, 2008).

Similarly some other insurance schemes of the AIC are also available to cater to very specific requirements. For instance the bio-fuel tree/plant insurance is bio-fuel tree/plant growers and producers whose produce/yield are likely to be affected by specified perils. The Cardamom Plant and Yield Insurance is a mechanism for providing effective risk management aid to those growers who are likely to be impacted by non-preventable natural factors, pests and diseases, etc. Initially, the insurance is available in the states of Kerala, Tamil Nadu, Karnataka and Sikkim. Similarly the coffee rainfall insurance scheme (RISC) provides protection against the failure of Blossom Showers and Bracking Showers and excess rainfall during monsoon and post monsoon rainfall. The scheme is available for farmers in coffee growing areas of Karnataka and Tamil Nadu. The maximum sum insured is 40,000 for Arabica and 30,000 for Robusta per hectare. The potato crop insurance scheme is a unique parametric insurance scheme based on named perils linked to plant population. It is available for potato growers contract farming on the potato growing areas of the country and maximum liability is 25,000 per acre. Related is also the pulpwood tree insurance scheme, which is applicable to pulpwood tree growers and producers whose yield is likely to be affected by known perils. The trees covered under this scheme are Eucalyptus, Poplar, Subabul and Casuarina. The sum insured is based on the cost of inputs (agreed value) per unit area of insurance covered and depends on the nature of the tree. Sum insured is approximately equal to the input cost and can be extended up to 150% of the input cost and remains at the discretion of the insurer. Similarly the rubber plantation insurance scheme is available to rubber growing farmers mainly in the states of Kerala and North-East. All these schemes are very location specific and the coverage under these remains limited. With this backdrop table 25 presents the most popular agricultural insurance schemes in India.

Table 26. Summary of various schemes (major) related to agricultural insurance in India and their features

Schemes	Period	Approach	Crops covered	Premium Crores	Claim Crores	Features
Crop Insurance Scheme	1972-78	Individual	H-4 Cotton, Groundnut, Wheat, Potato	0.05	0.38	Voluntary
Pilot Crop Insurance Scheme	1979-85	Area	Cereals, millets, Oilseeds, Cotton, Potato and Chick pea	1.95	1.56	Confined to Loanee farmers, voluntary, 50% subsidy on premium for small and marginal farmers
Comprehensive Crop Insurance Scheme	1985-99	Area	Food grains and Oilseeds	404	2,303	Compulsory for Loanee farmers
Experimental Crop Insurance Scheme	1997-98	Area	Cereals, Pulses and Oilseeds	2.86	39.78	Non-loanee small and marginal farmers in addition to loanee farmers.
National Agricultural Insurance Scheme	1999-on-going	Area and Individual	Food grains, Oilseeds, Annual Commercial and Horticultural crops	2,944	9,857	Available to all farmers. 10% Premium subsidy for small and marginal farmers.
Farm Income Insurance Scheme	2003-04	Area	Wheat and Rice	15.68	1.5	Insurance against production and market risks. Compulsory for loanee farmers.
Weather/Rainfall Insurance	2003-04-on-going	Individual	Food grains, Oilseeds, Annual Commercial and Horticultural crops.	NA	NA	Available to all. Based on rainfall received at the IMD/ block rain gauges.

Source: Updated from Raju and Chand (2008)

2.3 Issues, Concerns and Constraints

The existing agricultural insurance schemes have met with limited success with low coverage and high claims to premium ratio. There has been a feeling that agriculture insurance itself cannot increase productivity or be a source of financing. But it can certainly play a role in enhancing both. There are some limitations and inherent constraints, which prevent rapid growth of insurance business in rural areas. The market for crop insurance in developing countries is vast and is on the threshold of a spectacular growth in the years to come. The farming community at large does not seem to be satisfied with the partial expansion of scope and content of crop insurance scheme in the form of NAIS in the present over the CCIS of past. There are issues relating to its operation, governance and financial sustainability.

The value of agricultural insurance both private and publicly funded has been an issue of debate cutting across academicians and policy makers. The concept of index-based contracts for natural disasters in place of crop insurance has also been recently introduced with rainfall contracts being one example. However the shortcomings of this approach are similar to the ones based on an area based approach. However, the benefits are significant, including reduction of moral hazard, adverse selection, and transaction costs (Skees, 2000). The alternate model undoubtedly is an improvement over the area based approaches but the participation of private players still poses a challenge. Based on the rigorous review of literature (both published and grey) undertaken in the present study the following sub-points highlight some of the issues, concerns and constraints regarding agricultural insurance in India.

2.3.1 System and Structure

The foremost issue with regards to the currently operating schemes is regarding threshold yield and guaranteed yield. For calculating the guaranteed yield, based on which indemnities are calculated, presently a moving average yield of the preceding three years for rice and wheat, and preceding five years for other crops, multiplied by the level of indemnity is used. The does not provide for adequate protection to farmers, especially in areas with consecutive adverse seasonal conditions, pulling down the average yield. Therefore one of the suggestions is to consider the best five, out of the preceding ten year's yield (Raju and Chand, 2009).

Secondly, risk coverage in adverse seasonal conditions and coverage of post harvest losses is something requiring a deeper probe. The insurance programs based on area based approaches under the existing mode covers risk only from sowing to harvesting. However in many instances sowing/planting are prevented due to adverse seasonal conditions. Hence the farmer not only loses his initial investment, but also the opportunity value of the crop. A situation where the farmer is prevented from even sowing the field is a case of extreme hardship and this risk must be covered. Pre-sowing risk particularly the prevented/failed sowing/re-seeding on account of adverse seasonal conditions, also need to be covered. The issue of post harvest losses assumes significance as in some states, crops like paddy, are left in the field for drying after harvesting. Often, this 'cut and spread' crop gets damaged by cyclones, floods, etc., especially in coastal areas. Since, the existing scheme covers risk only till harvesting, post-harvest risks are outside the purview of insurance cover. Therefore one of the key issues to think about is whether the insurance cover could be extended to at least two weeks after harvest.

As discussed in beginning of this section agricultural insurance in India till recently has concentrated only on crop sector and confined to compensate yield loss. Recently, some other insurance schemes are in operation in the country which go beyond yield loss and also cover the non-crop sector. These include "Farm Income Insurance Scheme" and "Livestock Insurance Scheme". The Farm Income Insurance Scheme (FIIS) was started on a pilot basis during 2003-04 to provide income protection to the farmers by integrating the mechanism of insuring yield as well as market risks. In this scheme, the farmer's income is ensured by providing minimum guaranteed income. Though conceptually FIIS is a good scheme, it suffers from several contradictions regarding the role of minimum selling price (MSP) like: (i) it would be most unconceivable to substitute the MSP regime with income insurance, as MSP is available to all farmers while income insurance is available to only the insured farmers, (ii) MSP is available to farmers at no additional cost while income insurance is available only at a premium and (iii) the National Common Minimum Program (NCMP) of the government also states that the MSP benefits will be extended to nook and corner of the country. In view of this it will be a futile and luxurious wastage of government money if FIIS is to continue along with MSP and hence is perceived as neither practical nor viable.

Similarly, livestock insurance is available for almost all livestock species. Normally, an animal is insured up to 100% of its market value. The premium is 4% of the sum insured for general public and 2.25% for Integrated Rural Development Programme (IRDP) beneficiaries. The government subsidizes the premium for IRDP beneficiaries. Progress in this, has been slow. Weather based insurance may provide financial security to the farming community. Rainfall insurance is viable, besides being in the best interest of farmers, the credit agencies too which extend loans to them, as also for the economic stability of the agricultural enterprise. However some limitations those still need to be addressed like:

- Designing a weather or rainfall insurance contract would require reliable and accurate rainfall data on a daily basis and equally reliable yield data for at least 20 to 30 years. Yield data is available for most of the crops for over 20 years, generated as part of crop insurance program. However, the existing network of Indian Meteorological Department (IMD) weather stations appears to be inadequate to report rainfall data. Further the data recorded is also not reported on time in many instances and huge gaps exist in reporting daily rainfall data even for major stations located at district headquarters.

- Weather insurance products are based on indices derived from daily data. The indices are sensitive to the quality of weather data and historical weather data supplied by IMD often contain missing and erroneous values. Along with this, there can be discontinuities due to non-climatic factors such as relocation of station, changes in surroundings, etc. hence the availability of cleaned data poses a big problem requiring additional support.
- On the basis of present network of IMD, rainfall insurance can be implemented only on the basis of district level rainfall data. Since the district is a very large geographical unit, and the rainfall being discontinuous in nature, the areas away from the weather stations may face the problem of basis risk because of spatial variations. Basis risk will be a significant factor if the experience of individual farmer is vastly different from the area average.
- The success and efficiency of weather insurance depends on establishing accurate correlation between productivity levels and weather variations. However, for crops like soybean, cotton, etc. it is difficult to establish significant correlation. Rainfall though has overriding importance over other agricultural inputs, yet it is too complex to estimate the correlation arising out of interactive nature of various agricultural inputs.
- Insurance contracts usually require an 'insurable interest' by the insured which is incompatible with a weather contract settled on the basis of third party data as opposed to losses suffered by the insured. Since weather insurance is a derivative contract, persons unconnected with agricultural activity may also buy insurance unless appropriate checks and balances are put in place. In other words, existence of insurable interest is essential to extend weather insurance.

2.3.2 Implementation

As of now, the schemes based on area approaches are implemented on the basis of 'homogeneous area' approach, and the area (insurance unit) is the Mandal/Taluk/Block or equivalent unit. The administrative boundaries of these units represent considerable variations in yields and impact of natural calamities. Hence to popularize the schemes the unit for determining claim should be reduced to the level of 'village' in the case of large villages and to 'cluster of villages' in the case of small villages. Ideally, an 'individual approach' would reflect crop losses on a realistic basis, and has been regarded most desirable. However, under the Indian conditions, implementing a crop insurance scheme at the 'individual farm unit level' is beset with the main problem of huge transaction cost (Planning Commission, 2007).

Additionally, the processing of claims in area based schemes like the NAIS begins only after the harvesting of the crop. Further the claim payments need to wait firstly for the results of crop cutting experiments (CCEs) and secondly for the release of requisite funds from the central and state governments. As a result a gap of 8-10 months is observed between the occurrence of loss and actual claim payment. Introduction of 'on-account' settlement of claims would be one of the ways to address this gap. In the process payments to the extent of 50% of likely claims, subject to adjustment against the claims assessed on the yield basis could be initiated without waiting for the receipt of yield data (Raju and Chand, 2009). Some other key issues and constraints are:

- Poor infrastructure facilities for coverage of non-loanee farmers
- Insurance coverage not being available for fruits and vegetables
- Bodily injury of farmers in the course of agricultural activities not covered in the scheme

2.3.3 Policies

The loss or damage to crops is no doubt the major cause of concern for the farmer. However, there are other assets of the farmer, such as livestock, agricultural implements, bullock cart, agricultural pump set, stored grain, health, etc. the loss of which is also an additional source of worry for him. In fact,

maintenance of these assets is absolutely important for him to ensure good agricultural productivity. A composite package insurance covering all assets of the farmer besides crops is ideal for farmers as such policy/scheme could meet all insurance requirements of a farmer under one contract. Ideally, therefore, farmer would prefer to have single insurance policy covering all his assets, including crops. However due to the technical complexities a composite policy covering all important assets of farmers cannot be combined with area based crop insurance program. In view if this a more practical solution would be to differentiate crops and other assets with crops being covered under area approach and other assets to be covered at individual farmer level.

Private sector participation in insurance is also important. Models of private participation in agriculture insurance can be defined in terms of the extent of risk sharing by private insurers. At one extreme is the current implementing agency (IA) model in India where the IA bears no risk, earns no return and is merely reimbursed its administrative expenses. Such a model provides poor incentives for extending coverage and monitoring and controlling moral hazard and adverse selection. Against this there is possibility of public-private sharing of risks. In this case the government is likely to be at a informational disadvantage vis-à-vis the insurance companies which generate the policies. Hence, the risk sharing agreement will have to be appropriately designed to reduce problems of moral hazard and adverse selection. The agreement will also have to provide adequate measures to counteract the natural incentive of private insurers to target larger farmers and pay less attention to small and marginal farmers (Sinha, 2007).

Successful agricultural insurance requires continues institutional and public support. Some crucial elements firstly are providing information on weather patterns and historical crop yields. Second key element is meeting the costs of the research needed before any agricultural insurance program can be started. Thirdly, subsidies on premium, administrative expenditure, and reinsurance, etc. are also important (Roberts, 2005). Global experiences show that due to special nature of agricultural production, in several countries, premium payable by farmers need subsidized by the government. Subsidy on insurance premium in the recent years was estimated to be 60% in USA, 70% in Canada, 50-60% in Philippines and 58% in Spain. In case the farmers are asked to pay full premium themselves then chances of adoption of agricultural insurance are bleak. There with reference to developing economies like India there still remains a need for some subsidization by government.

2.3.4 Development of Products and Services

The design of agricultural insurance schemes including weather insurance product still remains like to a black box to a common man with the intermediate process continuing to remain a mystery for even seasoned personnel dealing in sales and marketing of weather insurance. The simplest evidence of a good weather insurance design is its claim payout during seasons which are adverse or devastating on a widespread level. There is no doubt that weather/rainfall insurance is a promising field and has definite advantages over the traditional insurance schemes. But its implementation is subjected to many constraints and also calls for resolution of certain significant issues. Possibility of adopting automated devices for recording, and the third party for reporting the data need to be checked. Devices for secure and accurate measurement of weather parameters such as Optical Precipitation Sensors (OPS), Real-time telemetric gauges, etc. are being used in countries where weather insurance is successfully implemented. These equipments are mounted/installed on electric/telephone poles to secure the data. Various types of automated weather stations are also being used for research studies within India. With large-scale adoption of such instruments, the prices of which are now high, would become affordable over longer term. With proper controls and regulations, the recording and reporting of weather data could be entrusted to third party administrators or alternatively could be out-sourced which will eventually upgrade the knowledge set required to plan better and more affordable products.

Linkage and close working arrangement with the banking sector is significant for the success of agricultural insurance. Evidences from many countries suggest that: (i) marketing of insurance is much

easier if it is linked to credit and (ii) it also facilitates coordination and integration of the administrative work with the banks which in turn helps in keeping expenses low. Similarly other institutions with which linkages would be fruitful are cooperatives, trade associations, suppliers of inputs, processors of the produce, marketing organizations, extension services of the government, departments and agricultural research institutions and universities.

Integration of various programs, which complement each other are very effective in risk management. Similarly weather insurance could play an effective role in areas where farmers are already using water-harvesting techniques. The water harvesting techniques including watershed development programs provide 1st layer of risk management, followed by financial arrangements like savings program and weather insurance. Hence weather insurance be considered by the government as part of integrated strategy along with such strategies as water harvesting techniques, watershed development, resistant varieties of crops, cloud seeding for rain enhancement, savings account, etc. (GoI, 2005).

2.3.5 Access to Products and Services

The awareness about various on-going agricultural schemes including the popular NAIS is poor in the country. This is partly due to lack of adequate localized interactions and also due to the lack effective awareness generation campaigns. Illiterate or poorly educated farmers are hardly aware of the scheme's existence, the process involved and the benefits. Hence, there is a need to build more effective communication models with the vigorous usage of information and communication tools (ICTs) in this regard, which could be demonstrated and need to be inducted as an integral component of policy planning.

2.4 Challenges and Future Directions

Overall it should be kept in mind that insurance products for the rural areas should be simple in design and presentation so that they are easily understood. Wherever possible, a package approach should be adopted so that the various covers do not have to be marketed separately. A beginning needs to be made with simpler and much easily administrable products on the lines such as livestock. Agricultural insurance besides protecting farm income has a role to play in the development of the rural economy, which will in turn strengthen the national economy. At the same time, it should be recognized that agriculture insurance is only one of several financial services. Insurance should not be seen or promoted as a solitary effort but as a component of services that need to be extended to the agricultural sector. In fact, agricultural insurance can be most effective if it is conceived and implemented as a part of this broader framework (Jain, 2004). Insurance regulations and rules also need to be kept in mind before the development of suitable products as the products need to satisfy the legal and regulatory framework set up by the Insurance Regulatory and Development Authority (IRDA) in India. With regards to area based yield insurance the government should allow private insurers in an experimental basis. This would entail all insurers to enjoy premium subsidy at uniform rate. In addition to the risks of hailstorm and landslide, the scheme should also cover damage caused by wild animals which is witnessing substantial increase in India over recent years. For such type of localised risks could be settled on the basis of individual assessment. Insurance implementing agencies should take up a pilot projects and examine the feasibility of using remote sensing applications in crop insurance, covering crop health, crop acreage, yield estimation and reduction of sample size of CCEs, etc. which could complement the existing design of implementation. They should also attempt to expand their presence and network so as to provide better service to farmers, especially for the non-loanees. Additionally, measures need to be taken to tap the services of rural agents, micro insurance agents which would facilitate insurance marketing at a more localized level. For package insurance policies a single window clearance system should be put in place for providing comprehensive package insurance to farmers. In designing such systems other insurance covers in the package could be made optional to farmers. With regards to weather based insurance schemes the private sector should be encouraged to provide competitive environment

and better service to farmers. States could also be permitted to take up small experimental and innovative crop insurance products including weather insurance and insurance for horticulture and plantation crops in collaboration with the implementing agencies both public and private. Further, the existing infrastructure of the Indian Meteorological Department needs up-gradation both with regards to weather stations and automation so that effective feed data for weather insurance can be made available. This can then supplement the feed from third party weather data providers to extend the coverage network. The government should also consider the implications of making agricultural insurance schemes exempted from the preview of service tax and income tax provisions which could facilitate the implementing agencies to build adequate catastrophic reserves.

CHAPTER 3
Agricultural Insurance Cases and Experiences

3.1 The Case of BASIX – ICICI Lombard Weather Insurance Product

Index-based weather insurance products are contingent claims contracts for which payouts are determined by an objective weather parameter (such as rainfall, temperature, or soil moisture) that is highly correlated with farm-level yields or revenue outcomes. Rainfall-indexed insurance is well suited to agricultural production in regions where widespread crop losses are caused by drought or excess rainfall. In such regions, rainfall can be used as a good proxy for the actual losses incurred by farmers. In other areas, farm incomes can be indexed on temperature indicators for production sensitive to heat or frost, such as horticulture. Index-based insurance is less susceptible to some of the problems intrinsic in traditional multi peril crop insurance. Because payouts for indexed contracts are automatically triggered once the weather parameter reaches a pre-specified level, the insured farmers receive timely payouts. The automatic trigger reduces administrative costs for the insurer by eliminating the need for tedious field-level damage assessment. Because administrative costs are lower, premiums are relatively low and products are more affordable to farmers. The objective and exogenous nature of the weather index prevents "adverse selection" (farmers know more about their risks than the insurer, leading the low-risk farmers to opt out and leaving the insurer with only bad risks) and "moral hazards" (farmer's behaviour can influence the extent of damage that qualifies for insurance payouts). They also facilitate risk transfer to the international markets, because international reinsurers are likely to provide better terms when the insurance is based on measurable weather events and not farm-level losses (Manumorn, 2007).

BASIX is the name used to denote a group of companies, related to each other based at Hyderabad, India. It defines itself as a "new generation livelihood promotion institution" and chooses to work in poor and mostly arid and backward districts of the country. It group consists of the following companies: (i) Bhartiya Samruddhi Investments and Consulting Services, Ltd. (BASICS Ltd.) which is "the holding company. (ii) Bhartiya Samruddhi Finance Ltd. (Samruddhi) which wass aunched in 1998. Samruddhi is the flagship company of the group. It is a registered NBFC (Non-Banking Financial Company), owned by major financial institutions and engaged in microcredit and retailing insurance and providing technical assistance. (iii) Krishna Bhima Samruddhi Local Area Bank Ltd. (KBS LAB) which is a licensed bank providing microcredit and savings services in states of Andhra Pradesh and Karnataka since 2001. (iv) Indian Grameen Services (IGS) is "a section 25, not-for-profit company engaged in research and development and training related to livelihoods." IGS makes investments that cannot be recouped in the short-term, and receives separate funding from foundations both domestic and international. (v) Sarvodaya Nano Finance Ltd. (Sarvodaya) which was also a registered NBFC, owned by women's self-help groups, and managed by BASICS Ltd. In July 2001, BASICS Ltd. disposed off Sarvodaya to a group of community-based mutual benefit trusts, whose members comprise over 5,000 self help groups.

3.1.1 The Product

In 2003, BASIX formed a partnership with ICICI Lombard General Insurance Company (a joint venture between ICICI Bank and Lombard, Canada) to pilot the sale of rainfall index insurance contracts to small farmers in the Andhra Pradesh State of India. The project received technical assistance from the Commodity Risk Management Group (CRMG) of the World Bank and was the first weather insurance

initiative launched in India and the first farmer-level weather-indexed insurance offered in the developing world. The initiative was based upon a study that explored the feasibility of offering weather insurance to Indian farmers in the context of extending rural financial outreach by reducing the exposure to weather risk (Hess 2003). In only three years, the small pilot program with 230 participants graduated into a large weather insurance operation. During the 2005 monsoon season, BASIX sold 7,685 policies to 6,703 customers across 36 locations over 6 states of India. This successful experience sparked much broader interest in weather-indexed insurance in India.

(i) The 2003 Pilot

BASIX decided to pilot the new weather insurance product using an approach that emphasized small scale but intensive feedback. The product design resulted from technical discussions with CRMG and ICICI Lombard, guided by BASIX's own principle that "nothing goes without value added in the following year". The pilot program pursues a business model in which the insurance company, along with a reinsurance arrangement, takes on the entire risk, while BASIX and the insurance company jointly incur administrative expenses. In 2003 the pilot was launched to design and develop a weather insurance product for small and medium farmers in the state of Andhra Pradesh. Rainfall below a certain level triggered a payout, with the amount of the payout inversely proportional to the amount of rainfall up to a pre-determined maximum sum. The trigger levels and payment amounts were crop-specific and determined in consultation with agricultural experts and farmers. Sums insured were calibrated to cover farmers' seasonal input costs, and premium amounts were roughly amounting to 10% of sum insured.

Product information was communicated during workshops and village meetings with the BASIX borrowers, who voluntarily decided to borrow and purchase the insurance contracts. In total, 230 farmers bought the insurance for the 2003 Kharif monsoon season, which runs from June through September. Of these 230 farmers, 154 were groundnut farmers and 76 were castor-bean farmers, most of whom are smallholder farmers with less than 2.5 acres of landholding. ICICI Lombard reinsured the risk with one of the major reinsurance companies, which was the first time that weather risk from farmer-level weather insurance contracts was transferred from a developing country to international markets.

(ii) The 2004 Pilot

Based on the response in 2003, a second pilot program was launched during the 2004 Kharif season. On the basis of farmers' feedback from the first pilot program, this program introduced significant changes to the 2003 design. CRMG continued to provide technical assistance during this second year. The 2004 program was significantly modified in terms of geography, product design, and scope. Geographically, the pilot was expanded to include four new weather stations in two additional districts of Andhra Pradesh (Khammam and Anantapur). To reduce basis risk (the mismatch between insurance payouts and crop losses), the product contained a three-phase payout structure. This new structure reflected the weighted importance of rainfall to crops there phonological stages like, sowing, growth, and harvest). The phase-based payout allows farmers to reinvest in working capital for a fresh crop in case the first crop fails during the sowing stage. In terms of scope, the 2004 pilot offered contracts to BASIX borrowers and non-borrowers during village meetings and farmer workshops. Feedback sessions were added in the month leading up to the groundnut and castorbean-growing season. New contracts were offered to cotton farmers in the Khammam district, and an excess rainfall product for harvest was offered to all castor-bean and groundnut farmers. In total, more than 400 farmers bought insurance from BASIX in 2004. Several farmers were repeat customers from 2003. During 2004, BASIX itself also bought crop-lending portfolio insurance policy based on weather indexes. ICICI Lombard underwrote the retail and institutional rainfall policies, but it did not seek reinsurance as in 2003 (World Bank, 2005).

(iii) The 2005 Scaled-Up Program

The pilot experience proved to be valuable for BASIX and ICICI Lombard in understanding the crop-rainfall relationships and the product design. In addition, interactions with farmers indicated the potential for commercial expansion and highlighted the necessary factors in offering the right weather insurance products to farmers. In the 2005 scaling-up phase, BASIX and ICICI Lombard further improved the product by adding new features recommended by farmers. These new features consisted of: (a) dynamic starting dates, and (b) the exclusion of daily rainfall of less than 2 millimetres (mm) and greater than 60 mm from the cumulative total that determines the payout. Another important change was the contract application. Instead of crop-specific policies, BASIX began to sell area-specific generic weather insurance products that were suitable for all principal rain-fed crops within the same agro climatic region. These products were sold to farmers in 36 locations in 6 Indian states (Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Madhya Pradesh, Orissa, and Jharkhand). BASIX planned to reach a minimum goal of 5,000 policies, with a target of 10,000 policies. By year-end, 7,685 policies were sold. Table 27 lists the design and the evolution of the products introduced by the company during these three phases.

Table 27. Design Evolution of BASIX–ICICI Lombard Weather Insurance Product

Criteria	2003	2004	2005
Sale locations	Mahahbubnagar district with only one reference weather station at the district level.	3 districts with 10 product variations, linked to 5 weather stations. 3 at block-level (Mandal). Excess rainfall product was introduced in one location.	6 states with availability of rainfall data. One product is designed for each agro climatic region, which covers the minimal risk for all the principal rain-fed crops in the region.
Premium	Based on the size of the land holding and proportionate risk coverage.	Per acre basis, linking the quantum of agricultural activity rather than loan size and gives the farmer the flexibility to buy multiple units based on affordability.	BASIX retains the per acre system from 2004.
Product structure	One phase of coverage for the entire monsoon season.	3 phases with separate coverage for sowing, growth, and harvest windows. Claim payout is made after each of the three stages of the crop season.	2 new features to the 2004 design based on farmers' feedback: (1) Minimum rainfall level (2 mm per day) is considered for arriving at the rainfall received during a period. Rainfall of more than 60 mm is excluded from the aggregate. (2) The starting date of the insurance period is determined dynamically based on the minimal accumulative rainfall required to start sowing
Payout	Function of deviation in percentage from the threshold rainfall index.	The loss payout is made a function of per mm deviation from the threshold rainfall index.	Same as 2004
Process	Manual, paper-based system.	Same as before	Changed to reduce transaction costs, automate information processing, and simplify premium routing process.
Product communication	Delivered to customers in vernacular, resulting in good awareness and grasp of the product by customers.	Same as before	Same as before
Subsidy	None	None	None

Source: Modified from Manumorn (2007); Hubka (2004)

3.1.2 Innovation

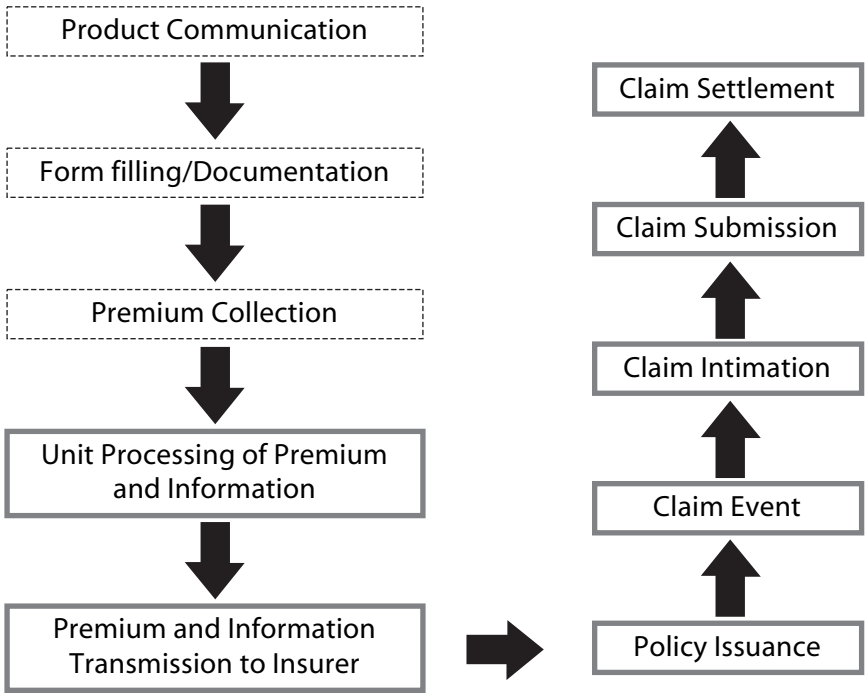
The innovative aspect of the product related to the design and implementation part of the product with the objective to reduce the cost side of the capital markets equation. Cost reduction was driven by two main levers: increased productivity, and information technology (IT) initiatives. BASIX computerized its operations at the Unit Office level, from the inception of the pilot. It had established the Information Technology Solutions for Livelihoods (ITSL) Division for providing IT based solutions to broaden and deepen the outreach, reduce the transaction cost, enhance the accuracy and flexibility of transactions related to microfinance and livelihood support services right from 2002 onwards. The Customer Service Agents (CSAs) are the primary customer interface for BASIX. The Portfolio Manager solution consists of an easy-to-carry kit developed for use by CSAs in the field, and contains a palmtop computer with the required application software, mobile printer, and modem.

Because of these designs BASIX predicted a cost savings of INR 135,000 per year per unit office. With a planned investment of 350,000 per unit office to implement Portfolio Manager, BASIX anticipated that ROI can be achieved over a two to three-year time frame. In addition to these hard savings measures, the company expected that the number of accounts handled per CSA can be increased by 10% which would result in a similar increase for BASIX supervisory staff and a consequent reduction in the fixed staff cost per account, and per transaction.

3.1.3 Process of Administration

The Insurance Distribution Information and Administration Systems (IDIAS) program translates functional requirements of all lines of the insurance business (life, health, livestock, and weather) into database language which is shared across the entire BASIX and forms the backbone of the process administration. IDIAS allows BASIX to automate most of the steps required to deliver weather insurance service to farmers, such as: information and premium processing, information transmission to the insurance company, policy issuance, and claim processing.

Figure 11. BASIX Insurance Process where automated steps are depicted in shadowed boxes (Source: World Bank, 2005)



Once a weather event has triggered payouts for farmers with coverage, BASIX also uses IDIAS to handle 95% of the claim process on behalf of the insurance company. Once notified by ICICI Lombard of the forthcoming payout, a claim event is registered in IDIAS and instantly processed. This automation of the insurance process has minimized actions needed on the part of ICICI Lombard. At the same time, it also allows BASIX to handle a larger number of insurance customers and further scale up at its own pace, while reducing manpower, time, and money required (World Bank, 2005). The IT platform also automatically corrects errors in premiums or payouts made by staff. The system is built to reject the processing of an insurance contract with wrong information. This allows BASIX to offer a large number of policies for a variety of insurance products with no confusion and informational mistakes.

Effective communication between the organization, the insurer, and rural farmers lies at the heart of BASIX insurance business model. It also plays a key role in scaling up the sale of weather insurance. Interactive sessions between the stakeholders are conducted at appropriate times, such as in the early morning before farmers go out to field or in the late evening after they have returned. This facilitates farmer participation and allows them to ask questions and give feedback on the product structure directly to BASIX staff. The feedback is then channelled back to the Insurer, serving as inputs for improving the product design to suit the demand. This strategy creates a close relationships and trust between the organization and farmers and it also directly enlarges the customer base for weather insurance as the first group of educated farmers further expands demand within the village through peer communications. According to BASIX, as much as 90% of new customers come from "word of mouth".

Subsequently based on the BASIX experience a number of institutions, including the original insurance company ICICI Lombard, expanded the market for weather insurance in India. The other initiatives on weather insurance are listed in table 28.

Table 28. Other weather insurance initiatives in India

Sl. No.	Products
1	IFCCO-Tokio, launched weather insurance contracts similar to the 2003 contracts in 2004, selling more than 3,000 policies to farmers throughout India in 2004 and more than 16,000 in 2005.
2	Apart from forming a partnership with BASIX, ICICI Lombard in 2004 directly sold weather insurance policies to an additional 320 groundnut farmers, members of the Velugu self-help group organization in the Anantapur district. For wider distribution in 2005, ICICI Lombard also formed a partnership with ITC Ltd. to sell weather insurance policies through ITC's e-Choupals, internet kiosks located about 3 kilometers from farmers' homes. For the 2005 Kharif season, 329 farmers bought 914 units (1 unit = 0.5 acre) of weather insurance policies through e-Choupals, with a combined premium of 228,500 and a total sum insured of 2,742,000.
3	In conjunction with the government of Rajasthan, ICICI Lombard launched a weather insurance program for farmers for the 2004 growing seasons, insuring 783 orange farmers from insufficient rainfall during the 2004 Kharif and 1,036 coriander farmers in the 2004 Rabi season; this was scaled up to include more crops and farmers in 2005. In total, it was estimated that ICICI Lombard agricultural weather insurance sales, through e-Choupals and other partnerships, reached approximately 100,000 farmers in 2005.
4	AIC, launched a pilot weather insurance scheme for 20 districts throughout the country in 2004, reaching nearly 13,000 farmers. This scheme was included in the government of India's budget for the fiscal year 2004-05. In Kharif 2005, AIC expanded its weather insurance scheme by introducing a program (Varsha Bima-2005) in about 125 India Meteorological Department (IMD) station areas spread across 10 states. Approximately 125,543 farmers have bought the Varsha Bima products, covering more than 98,000 hectares of growing crops and a risk of approximately 560 million, and earning a premium of 32 million.
5	New insurance providers, such as HDFC Chubb General Insurance Company Limited, also entered the market in 2005.

Source: Syroka (2005); World Bank (2005)

With the participation of various players, it was estimated that during the 2005 Kharif more than 250,000 farmers throughout India bought weather insurance. Given this strong level of interest and the potential size of the end-user market, agriculture weather risk management in India is was set to grow (Syroka, 2005).

3.1.4 Impacts

Theoretically with the introduction of formal insurance, the crop mix should change because cash crops, which are profitable but risky, now become safer bets. From a risk-hedging perspective a shift in the cropping patterns toward the insured crops is expected. By reducing the degree of risk in agricultural production, farmers will be less apt to resort to exante risk-coping mechanisms. Increased specialization and higher profits are also expected, because farmers will focus on maximizing the output of the insured crop, Agricultural and Rural Development rather than on diversifying the weather risk through the cropping system. The best evidence that the product was attractive comes from the farmers, who were interested in the purchase of insurance for the subsequent season. Once the benefits of the product are fully understood, farmers will be able to alter their production strategies toward maximizing output, rather than diversifying risk, and to shift their demand for credit from consumption loans to investment loans. This shift is likely to result in increased specialization and investment, and to contribute to increased profits and the well-being of the rural population.

While the farmers were impressed by the prompt payment by the insurance company they also perceived a number of problems with the product and highlighted some issues like: (i) accuracy in the rainfall records maintained by the government machinery, (ii) lack of clarity on the claim calculation and preference for claim calculation based on absolute shortfall in millimetres (mm) rather than in percentiles, (iii) farmers would also prefer a simple linear relationship between the rainfall and the claim amount and unable to appreciate the trigger points and different slab rates and (iv) they are also of the view that insurance needs to provide for rainfall failure during the sowing season since this results in a loss of almost 50% of the crop value and hence would prefer payment receipts in phase wise payouts subject to the maximum limits (Sinha, 2007).

3.1.5 Summary

BASIX sets a precedent for other rural development institutions by mainstreaming weather insurance within its operations. Several factors account for BASIX's ability to dramatically scale up its weather insurance business. The pilot experience was used not only as a feasibility experiment but also as a platform for raising customer awareness and improving the product. As a result BASIX was able to: (i) design an economical product which suits the weather risk management need in different rural areas, (ii) devise an effective product communication strategy that sustains and boosts customer demand and (iii) make the necessary trade-off between product specialization and scalability. BASIX takes advantage of its existing strong delivery channel by adding weather insurance to a comprehensive set of livelihood services. This maximizes staff productivity and cost effectiveness, while increasing the impact of micro-insurance in improving farmer livelihoods. The scalability is also a product of BASIX's consistent attention to details, and of the effort to convert the details into the necessary administrative and technical infrastructure. Such infrastructure is instrumental to the weather insurance process which targets smallholder farmers, requiring the capacity to process small but critical details.

BASIX identifies the following issues as major challenges in further expanding the weather insurance business. First, BASIX and partner insurance companies must work together in formalizing a multi-year continuity plan in order to ensure common speed and matching energy in the business expansion. Second, to cater to increased customer demand, there is a need build partnership across multiple insurance companies to overcome the underwriting limitation naturally incurred by the reliance on one company. Finally, there is also a need for more investment in the network of weather stations throughout the country, especially in distant rural areas because of the diverse agricultural, climatic,

ecological and geographical characteristics in India. Hence investment in augmenting weather data infrastructure by the Indian Government or private companies, or insurance companies themselves is a must to facilitate the growth of the domestic weather risk market, and the placement ability of domestically-underwritten weather contracts in the international markets.

3.2 The Case of Crop Insurance Scheme for the Banana farmers in Kerala

Banana happens to be the single-largest crop covered under the State Crop Insurance Scheme in Kerala. According to the Directorate of Agriculture, Kerala, about 48% of the total indemnity paid in the State has gone to the banana crop.

3.2.1 The Products

One of the insurance products available for Banana in Kerala was the Kerala Horticulture Development Programme (KHDP) with credit support from the participating banks. Under this insurance package banana plants of all varieties cultivated by farmers are covered by the Kerala Horticulture Development Programme (KHDP) with credit support from the participating banks, under this insurance package. Insurance cover is provided against total loss or damage to banana plants due to fire, lightning, flood, inundation, heavy wind, cyclone, storm, landslide, rockslide, tornado, drought, frost, riot and strike, pseudo-stem-borer attack and kokkan disease. The insurance cover expires after 12 months from the date of planting or harvest or by 12 months from the date of receipt of premium whichever is earlier in the case of all varieties except red banana for which the period is 14 months. The policies issued under the agreement are in force from the date of receipt of premium at the Divisional Office of New India Assurance. Further, a salvage value of INR 10/plant was being deducted if the plants are of at least 8 months of age from the date of planting but was applicable only for the Nendran variety of banana. In the case of flood and wind damage, insurance company will bear only 75% of the assessed loss (as per variation table) and the farmers bear the rest. In the case of Kokkan variety and pseudo-stem-borer attack, only 10% of the total insured plants or the actual number whichever is less, will be eligible for compensation. Compensation was payable only once in a policy period for damages due to Kokkan and pseudo-stem-borer.

The second scheme in Kerala, the State Crop Insurance Scheme (KSIC) was started in 1995. The program intended to compensate the farmers at least in part for the losses and damage caused by natural calamities. To realise the scheme, a crop insurance fund was formed by the Department of Agriculture. The insurance scheme covers all the major crops of Kerala. Crop losses caused by the following natural calamities: Drought, Flood, Landslide or Landslip or Landfall, Encroachment of sea, Tornado, Storm, Lightning, Forest fire, and Attack of Wild Elephants are covered. The scheme does not cover any of the crop losses or damages due to pest and disease infestation. Damages caused by wild elephants are included for rural areas of the districts Thiruvananthapuram, Kollam, Pathanamthitta, Idukki, Ernakulam, Thrissur, Palakkad, Malappuram, Kozhikode, Kannur and Wayanad. Insurance coverage is given to rice farmers who had insured through group farming 'samithis' (groups), for crop losses due to pests and diseases. The State Crop Insurance scheme of Kerala was started in 1995 and extended in scope and coverage in 1995-96 and 1996-97. To begin with, the insurance program was confined to the banana crop. The scheme is implemented under guidance and direction of the office of the Director of Agriculture.

3.2.2 Operation of the Schemes

In the KHDP scheme the farmer is required to submit the details of plants to be insured, in his proposal-cum-application form. The branch office of the insurance agency then forwards the premium statement duly filled in to New India Assuracne (NIA) together with a copy of the proposal-cum-application and

the amount of premium by way of demand draft/pay order. The amount of premium shall be debited to the farmers account on the date of issuing demand draft. Risk commences from the date of receipt of premium at NIA. NIA issues an acknowledgement and endorsement number. The process of claims settlement is an eight step process which is described in the following points: (i) In the event of crop loss, the farmer immediately informs the financing agency and the KHDP officials, the cause of damage, the number of plants damaged, and the age of plants, (ii) The farmer has to fill up the claim forms and submit them to the branch of the financing agency, (iii) Joint assessment is then done by the branch and KHDP, (iv) Joint inspection report has to be prepared by bank and KHDP and sent to NIA (However if the total number of plants lost exceeds 300, branch is required to send the claim form and joint inspection report immediately to NIA asking for survey by an independent surveyor), (v) Insurance company then settles the claim, (vi) Voucher for the claim amount is sent to the branch, (vii) Voucher to be retransmitted to NIA duly signed by farmer and bank and (viii) Finally the claim amount will be sent to the branch.

The process starts with the farmer remitting the required premium rate determined by the Government and becoming eligible for crop loss caused after seven days of remittance of premium. The indemnity can be claimed by the farmer only for complete crop loss caused by the perils mentioned above. The price of the damaged crop, if applicable is not deducted from the indemnity. Further, a part of the crop in a field cannot be insured. The insured is provided the indemnity fixed by the government from time to time. Similarly aged and unproductive tree crops cannot be insured in the program and the duration of the insurance coverage for short-duration crops shall be from the seventh day of remittance of premium to the date of harvest. Both own land farmers and sharecroppers are eligible for this scheme.

The second scheme i.e. the state crop insurance scheme is implemented through Krishi Bhavans at the panchayat level. First, the insured first submits the application for the scheme through the concerned Krishi Bhavan. and the Krishi Bhavan official visits the field and determines the premium rate Second the determined premium rate is collected through an agent and deposited at the District Co-operative Bank. The agent is selected by the Agricultural Officer from among the young farmers from each panchayat ward. Finally, the agent remits the premium and submits the receipt to the Krishi Bhavan. The Director of Agriculture opens an account in the State Co-operative Bank and the Principal Agricultural Officers (PAO) in the District Co-operative Banks. The premium collected by the agents is transferred to the PAO's account before the first day of the succeeding month. If the amount in the PAO's account exceeds 50,000, it is transferred the same day to the accounts of the Director of Agriculture.

For claiming indemnity the claim should be submitted to the Krishi Bhavan within three days of the casualty. The damage crop needs to be retained as such till the Krishi Bhavan staff visit the field for perusal. They staff from Krishi Bhavan are required to visit the field and determine the indemnity within five days of receipt of the claim and should send the report to the Principal Agricultural Officer. There are hierarchical limits set on the amount of indemnity that can be recommended by the staff. The indemnity amount is issued in the form of cheque by the concerned Krishi Bhavans. For banana, varieties such as Nendran, Kappa, Palayamkodan and Robusta were brought under the scheme. The insured should have a minimum number of 10 plants of the age of 1-5 months. The premium was fixed as two rupees per plant (which is supposed to be about four percent of the average return per plant). The compensation payable to the insured farmer is INR 20 per plant before bunching and INR 50 per plant with bunches.

3.2.3 Impacts and Summary

The KSIC scheme was abruptly withdrawn after its second year and operations indefinitely withheld. The scheme as such is seen to have been a failure considering the normal objectives of a crop insurance scheme. The ratio of the number of farmers enrolled to the number indemnified was very narrow. The ratio of indemnity sanctioned to premium collected was extra-ordinarily high, of an order of 1:3:3. This shows that the scheme was not financially viable and that it caused a heavy burden to the government,

the implementing agency. The normal concept of a crop insurance scheme is that risks are spread horizontally to all the farmers of the area and vertically over a period of years.

The official version of the experience was that farmers enrolled themselves in the scheme only when they actually faced a threat of damage. Insurance premium was remitted at the time of the damage and the claim was submitted within a week of enrolment. This problem of bogus enrolment can be tackled to some extent if the minimum period for claiming the indemnity were raised from 7 days to 15 days. The majority of the farmers cultivating banana had agriculture as their main source of income. The reason stated for non-enrolment in insurance was not lack of awareness or high premium rate but cumbersome administrative procedures and financial difficulty to pay premium at the pre-gestation stages of cultivation. Even the farmers who had adequate financial resources were reluctant to pay premium in bulk, out of their own sources.

Linking of a credit facility with crop insurance program is found to be an inevitable condition for its success. The crop insurance scheme shall be made viable by spreading the risk horizontally by enrolling all the farmers in a locality in the scheme. The scheme should be attractive, credit-linked, and should have support facilities like a reinsurance package. So a package that covers a longer period (for example a three-year package) with a premium that considers the cost of cultivation for the period as a whole has to be thought of. This will help bring down premium rates, by saving on cost of land preparation, especially in reclaimed lands. Loss assessment and collection of premium may be vested with the primary co-operative credit societies (PACS) with support from the Agricultural Department. Linking of credit with insurance would extend horizontal spreading of risk.

Damages and losses due to pests and diseases are also an important problem in farming, especially in annual crops. The farmers who are destined to struggle with these hazards demand incorporation of the losses caused by these hazards, in the crop insurance scheme. Diseases such as Kokkan, and bunchy top, have to be included in the list of hazards and the loss for indemnity. The amount of indemnity should be assessed considering the dispersion of actual yield from the threshold yield. This is being successfully practised in KHDP insurance program.

Premium rates and coverage level need to be fixed more scientifically at a more disaggregated level considering variations in cost of cultivation and yield across areas even within the same district. Provisions should be made for awareness creation and dissemination of information about the schemes in local language through effective media campaigns. The option for non-credit-linked insurance could be used to tap the farmers who do not need credit facilities for farming operations.

3.3 The Deficit Rainfall Insurance (DRFI) Scheme of DHAN Foundation

DHAN Foundation works in 13 states of India with approximately one million poor households mostly with marginalized farming families. The farmers are motivated, trained and supported to take up various kinds of site specific activities in their agricultural lands to increase their family income. The foundation's broad activities are in the areas of agricultural land development, soil health enhancement, crop production enhancement, livestock development and activities for supplementary income to the farmers etc. Different kinds of risk reduction as ex ante measures have been identified by the foundation in consultation with farming communities and implemented in the field. Life insurance, health insurance, crop insurance and livestock insurance are being taken up for managing farmers' risks by the foundation.

3.3.1 The Product Design and Implementation

The foundation started piloting index-based weather insurance in the year 2004. It was piloted Deficit Rainfall Insurance, a type of index based weather insurance in two locations namely Nattarampalli in Vellore and Tirumangalam in Madurai districts of Tamil Nadu. In both the locations drought in various

degrees is a recurring phenomenon and farmers perceived deficit rainfall as the major weather risk than any other weather phenomena. ICICI Lombard, a commercial insurance company evinced interest and developed a suitable weather insurance product for these rain-fed farmers. The rain-fed farmer's associations promoted by DHAN Foundation were usefed for designing and implementing the weather based insurance. It was observed that no farmers voluntarily go for insuring their crops. Only when they go for crop loan to the nationalized banks or from the primary agricultural co-operative banks, insurance premium is deducted from the loan amount and paid to the agricultural insurance company. Farmers are not informed about the sum assured and other details such as claim administration and payment details etc.

Total rainfall requirement of different crops were arrived and based on that single phase insurance products were developed. Premium was collected from the farmers and implemented the deficit rainfall insurance. The sum assured was finalized to meet the cost of cultivation alone to keep the premium at lower level. As the farmers expressed that the premium amount was high to have the gross return as sum assured, the insurance product was finalized to cost of cultivation alone even less. As far as the rain-fed crops are concerned, more than the total quantity of the rainfall, rainfall distribution matters much for the crop growth and development. Hence, as per the needs of the farmers, multiple phase policies were offered. However, both single phase policy and multiple phase policies are available and famers can choose.

It was observed that the date of sowing the date of seed germination varies in some years. One month difference was reported in between these two dates. Basically this problem was faced by the farmers who have the practice of taking pre monsoon/dry sowing. Famers wanted to have the insurance products reflecting the ground reality. Meaning is that if there is yield loss, the loss must be reflected in the insurance product and the loss must be compensated to the farmers, as per the policy agreement. Hence DHAN for dynamic start up date. Here, the probable date of dry sowing is determined. Three to four insurance products are developed at weekly intervals close to the date of sowing. The premium amount varies across the sowing dates. For the maize crop, the premium was worked out as 524,367 and 210 respectively for the sowing dates of 23rd August, 30th August and 13th September of 2008 for the assured sum of 2000. Among the five premiums for different dates of sowing, for one closer date, the premium is collected and kept in the insurance account of farmer's federation. Then based on the rainfall received, the germination date is finalized. The premium is then adjusted to the actual date of germination.

In response to farmer's feedback, various steps were taken to match the insurance product with the ground reality. The IMD (Indian Meteorological Department) rain gauge's rainfall reading was alone considered by the ICICI Lombard insurance company for working out the payout. For the working villages of Tirumangalam taluk, the IMD station is at the Madurai airport which is situated around 25-30 kilometers away. When the payout arriving stage farmers defended that more quantity of rainfall was recorded in the IMD rain gauges than the rainfall of the insured villages. Then it was decided to establish automated rain gauges to record the rainfall at village level. But the insurance companies were not able to use the local rain gauge's rainfall for calculating the payout. Hence DHAN Foundation has gone for the mutual deficit rainfall insurance. Automated rain gauges were installed in the top of the building of one the group member's house or in the top of the village common buildings such as Panchayath building, the building of the SHGs, bus stop shelter and etc,.

Mutual insurance is an insurance mechanism implemented by the farmers themselves through a Mutual Crop Insurance Committee (MIC) comprised of farmers and federation staff. They decide on the issue to be covered by insurance, design of the product and implementation mechanism, with facilitation from DHAN Foundation. MDRI is an insurance product which uses rainfall data during different stages of the crop period as a proxy for assessing the rain-fed crop yield loss. The advantages of Mutual Deficit Rainfall Insurance over conventional crop insurance are:

- As the insurance products are evolved in consultation with the farmers, need based products are given to the farmers. Here, the previous years' experiences are taken into consideration and customized insurance products are developed in each year
- All the farmers are well informed about the insurance product and they very well know about the payout of that particular year
- Quick settlement of payout to the affected farmers
- There is no problem of moral hazard. The mutual insurance committee is taking care to ensure proper claim settlement and administrative cost is less

Reinsurance support is essential to make Mutual Deficit Rainfall Insurance (MDRI) effective. Eureko Re, a Netherlands based insurance company came forward to offer reinsurance and technical support to MDRI pilots of DHAN Foundation. The structure of the reinsurance agreement between People Mutuals and Eureko Re basically resembles a stop loss contract.

3.3.2 The Impact

Under this scheme, in the first year around 272 farmers were covered and sum insured amounted to INR 636,000. The rainfall was deficit and damage was found in all the crops but payout was done only in select locations. During the second year same crops were covered and although rainfall deficits were recorded in the initial stages and excess in later stages of the season no payouts were made. A total of 604 farmers were covered against an insured sum of INR 21,343,700. Two years of piloting Deficit Rainfall Insurance for groundnut, cotton and black gram indicated that there is a limit to which the effectiveness of the product done through insurance company can be improved.

3.3.3 Lessons Learnt and Summary

In general, the administrative cost for the conventional insurance is high. In India, crop insurance data says that more than four times of premium collected has been given as compensation against the crop loss. At the same time, farmers are not at all happy about the conventional insurance and hence the crop insurance penetration is very poor. Moral hazard is very high in the conventional insurance. To overcome all these issues, mutual deficit rainfall insurance is one of the ways for which the government can support for the people institutions promotion, mutual insurance committee development, insurance education, infrastructure development like automated rain gauge installation and maintenance and for back up guarantee support etc.

Farmers need to be trained for taking the coping up mechanism like intercropping/mixed cropping, bund cropping, crop diversification, crop rotation, selection of right kind of crop varieties, use of quality seeds, ensuring optimum date of sowing, better crop management practices, go for perennial tree crops, soil and moisture conservation practices such as summer ploughing, field bunding and land leveling, farm pond construction for the supplemental irrigation, tank silt application to the agricultural fields etc., Insurance education to the farmers is very much needed. Investment is needed for promoting farmers organization and for training the mutual insurance committee. For the DHAN case Eureko Re of The Netherlands has instituted the backup guarantee. During the operation of the scheme, there was a reinsurance claim during 2007-08. However, overall the claim ratio has not exceeded 100% of the premium. Taking the mutual deficit rainfall insurance for more areas with increased number of farmers is a challenge. Investment on insurance education is very much needed for taking forward in to a large scale.

CHAPTER 4
Conclusion

Agricultural Insurance market is on the threshold of a spectacular growth. The government underlined its priorities for agriculture by increasing agricultural credit over the years. A large chunk of credit for agriculture would be supported by insurance collateral. Considering consumer's preference for branded agricultural products big corporate houses too have taken up corporate farming, increasing the demand for insurance. Agricultural insurance in future is likely to be largely demand driven, the efforts of the government to support and finance insurance products and/or facilitate congenial environment as meaningful risk management tool would further enhance the potential and credibility of agricultural insurance.

Despite progress of irrigation and improvement in infrastructure and communication the risk in agriculture production continues to increase in India. Those states where irrigation is not very dependable continue to face high risk. In some states farmers face twin problem of very low and declining productivity accompanied by high risk of production. The benefit of green revolution has not been able to spread over to the entire country. As, with the passage of time, neither technology nor any other variable helped in reducing production risk, particularly in low productivity states, there is strong need to devise and extend insurance products to agricultural production. The issue of impacts arising out of climate change complicate the problem even more.

Despite various schemes launched from time to time in the country agriculture insurance has served very limited purpose. Although the coverage in terms of area, number of farmers and value of agricultural output has increased over the years the spread is very small. Payment of indemnity based on area approach affects farmers outside the compensated area, and most of the schemes are not viable. Expanding the coverage of crop insurance would therefore increase government costs considerably. Unless the program is restructured carefully to make it viable, the prospects of its future expansion and to include and impact more farmers will be a big challenge.

Some lessons that could be drawn from the India experience are: (i) provision of a cost effective agricultural insurance program requires long term investments in data and capacity beyond the horizon of the private sector. The Government of India has provided widespread agricultural insurance, albeit mostly on a social basis, since the launch of the Comprehensive Crop Insurance Scheme in 1985, and has continued to invest heavily in institutional capacity building and technical inputs. (ii) Technical tools are necessary to help guide policy dialogue, and these tools should reflect on-the-ground realities and political and economic considerations even if this means that the solutions are technically second best. (iii) Although most of the recent debate has focused on either weather or area yield indexed insurance, it is possible to design products which combine the strengths of both, such as the pilot MNAIS product.

Finally, political economy dimensions are important for implementation. Reforms of the scale of the MNAIS require significant political momentum from different ministries, most notably the Ministries of Agriculture and Finance, and an enabling policy climate. Renewed and coordinated efforts the by Government, Public and Private Sector is required for designing appropriate mechanisms and providing financial support for agricultural insurance. Facilitating help to private sector insurers would help in increasing insurance coverage and in improving viability of the insurance schemes over time. With the improved integration of rural countryside and communication network, the Unit area of insurance could be brought down to lower levels like a village panchayat level. Insurance products for the rural areas should be simple in design and presentation so that they are easily understood. There is lot of interest in private sector to invest in general insurance business. This opportunity can be used to allot some

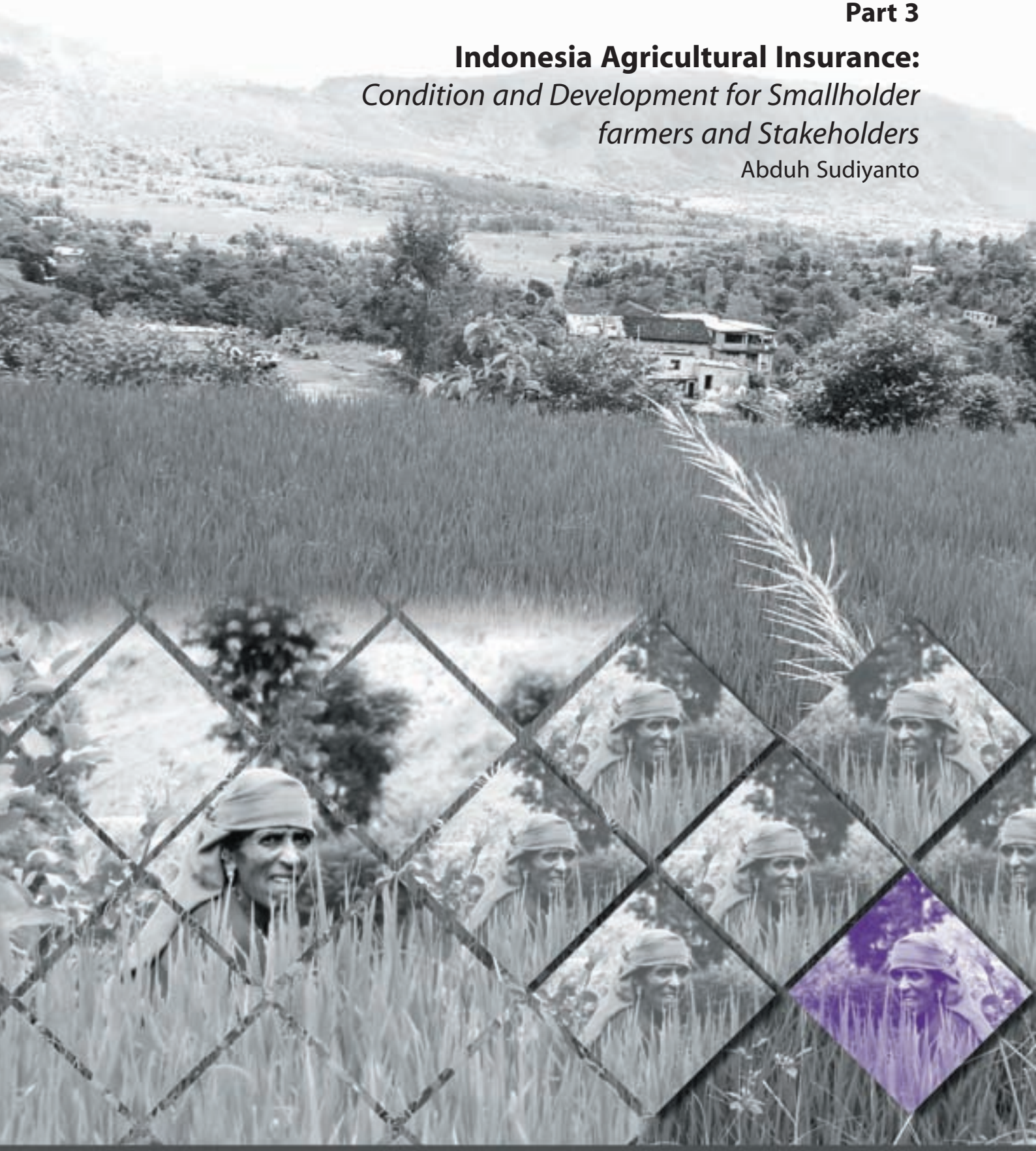
target to various general insurance companies to cover agriculture. Good governance will remain the key for success various developmental programs as well as for successful implementation of agriculture insurance schemes. With the improvements in governance, it is feasible to effectively operate and improve upon the performance of various agricultural insurance schemes in India.

Part 3

Indonesia Agricultural Insurance:

Condition and Development for Smallholder farmers and Stakeholders

Abduh Sudiyanto



CHAPTER 1

The Rural and Agricultural Development

1.1 Background

The Strategic issues currently facing the nations of the world is a crisis of global climate change, food and energy security, rising energy prices, and the trend of food exporting countries to suspend their food supply. Such conditions also occurred in Indonesia, which directs the government to take efforts to secure production and improve national food availability. Other national issues related to an increase in population growth, conversion of agricultural land, agricultural infrastructure is limited and consumption patterns that depend on rice.

In the master plan of agriculture development program for year 2010-2014, the Government set 4 objectives of (1) achieving food self-sufficiency and its sustainability (rice, corn, soybean, sugarcane, and cattle meat), (2) improving food diversification, (3) increasing agricultural product-based value added, competitiveness and exports, and (4) increasing the welfare of farmers. To achieve those objectives, a strategic implementation program called "Agricultural Revitalization Program" has been launched which focuses on 8 basic aspects: of (1) handling land development, (2) managing seed resources and seedlings, (3) developing agricultural infrastructures, agricultural inputs, capital, irrigation system, market creation and access to national and international markets, (4) improving farmer's resource-based capacity building, (5) managing finance and financial accessibility of farming and farmers, (6) supporting the development of farmer-based institutions, (7) supporting the adoption of farmers to technologies, and (8) creating down-stream agricultural product market development[1].

From the standpoint of economic development, the agricultural sector plays a very important for the national economy because of its contribution to Gross Domestic Product (GDP), employment, trade balance, the supply of foodstuffs, energy, industrial raw materials base, and income for farmers and rural society. In the 3rd quarter of 2014, agriculture (crops, livestock and plantations) has contributed Rp 837 trillion or 10.24% of the total GDP of Rp 8.173 trillion as shown in Table 29. Detailed contributions from all sectors of the economy with GDP in the 3rd Quarter of 2014 can be seen in Table 30 and Table 31 at the end of this chapter.

Table 29. Contribution of Agriculture Sector to GDP (in billion IDR)

Agriculture Sector	2014			
	1	2	3	Cumm.
Spesific Sub-Sectors	**270,061.0**	**270,610.5**	**296,465.5**	**837,137.0**
a. Food Crops	190,716.9	171,326.9	187,493.7	549,537.5
b. Plantations	36,080.3	55,068.8	61,855.1	153,004.2
c. Livestock & derivatives	43,263.8	44,214.8	47,116.7	134,595.3
GDP	**2,404,227.9**	**2,483,840.5**	**3,285,021.0**	**8,173,089.4**
Contribution to GDP (at current market price)	**11.23%**	**10.89%**	**9.02%**	**10.24%**

Source: Adapted from Central Statistical Bureau (BPS)

[1] The Indonesian agricultural development goals of food self-sufficiency resulting in the growth of major food commodities which include: (a). Paddy rice: 78,780 million tons or 10 million tons of surplus rice; (b). Corn: 29 million tons of dried-husk corns; (c). Soybean: 2.7 million tons of dried seed; (d). Sugar (Crystal): 5.7 million tons; and (d). Beef: 546 thousand tons.

The development of agriculture sector remains as an important and strategic role in the national economy. This strategic role is portrayed by its real significant contribution through the formation of capital, the provision of foodstuffs, industrial raw materials, feed and bio energy, absorption of labor, foreign exchange source and source of income as well as the preservation of the environment through eco-friendly farming practices. The agricultural development is also expected to achieve its ultimate goal to improve the income and welfare of the farmers especially those of small holders in the rural areas. According to the Central Statistical Bureau (BPS), the number of the poor people was around 28.55 million, about 14.70% or 4.19 million depending their main livelihoods on agriculture sector.

Apart from a series of positive developments, in 2014, the agricultural sector experienced the actual problems such as (1) the impact of climate change as indicated by the aggressive attack of plant pests and diseases that result in decreased productivity and quality as well as production; (2) the increase in food prices led to increased inflation and poverty; (3) the limited production and supply of soybeans, sugar and meat in the country; (4) increase in the volume of imports of food and food ingredients and their impact on foreign exchange; (5) limited sources of funding that can be accessed by farmers; (6) the limited availability of land and irrigation infrastructure; (7) Not effective agricultural education and training systems; and (8) lack of support and the role of local government.

In addition to the issues mentioned above, the current agricultural conditions have already had their long outstanding problems to face as challenges. Policies and programs continue to be implemented to resolve the following issues:

a. Marginal land ownership in which approximately 9.55 million farmer households have no more than 0.5 ha of rice fields, as a result of the fragmentation of land with the consequences of conversion.
b. Less developed technology related to the seeding, especially rice and cattle farming systems in particular;
c. The lack of agricultural infrastructure facilities, land, and water management systems and reservoirs;
d. Lack of support for capacity building and expansion of institutional personnel;
e. Farmers have limited access to financing facilities and financial institutions;
f. The lack of protection on agricultural land used for non-agricultural activities, which recorded a conversion rate of use of agricultural land to non-agricultural is ±110,000 ha per year.
g. The unavailability of insurance products that specifically offer protection against the risk of agricultural crop failure or death of cattle and livestock.

1.2 Credit Schemes for Rural and Agricultural Sectors

Financing to agricultural and rural communities has been a concern, there are a variety of programs aimed at promoting rural businesses and farmers to get access to financial facilities in various ways. Capital is one factor that is absolutely necessary to promote agricultural activities. This is certainly an answer to the classic problem faced by marginal farmers because they do not have access to bank financing. Difficulties which centered mainly on the inadequacy of the assets to be submitted as collateral, and partly because the banking system procedures are still considered complicated for most farmers. In general, banks consistently applying the principle of prudence. In addition, banks see agriculture as a risky business, and this view has been compounded by the absence of special financing or loan scheme for the agricultural sector. Other external factors include a lack of agricultural insurance agencies, and lack of specialized financial institutions to finance the agricultural sector.

Efforts made by the Ministry of Agriculture to overcome those issues were the setting up a credit policy scheme for farmers/breeders/planters by involving state-owned and private banks in such a way that

banking commitments in supporting agricultural development could be materialized and taken real roles. The objectives of the credit schemes include:

a. Prioritize credit scheme to finance prime commodities such as rice, corns, soybeans, sugarcanes.
b. Provide the rationale policy refinement on credit program schemes that already exist in order to be accessible to farmers in accordance with the characteristics of the eligible agricultural sector for the credit facilities;
c. Propose credit schemes which integrates the needs of the farmer/rancher/planters, and the banking requirements under the Government guidance and facilitations through the provision of subsidies on the loan-interests and the guarantee leveling for farmers/breeders/planters.

The main target of setting the credit schemes outlined above is to guarantee the availability of easily accessible credit for farmers/ranchers/planters with low interest rates and the corresponding characteristics of agricultural enterprises under the support of the government. Apart of current various micro-financing facilities available at banks and other financial institutions, there are specific credit schemes for small to medium enterprises for rural, farmers and cattle breeders, they are Credit for Food Security and Energy (KKP-E), Credit for Peoples' Business Development (KUR), and a charitable program for Rural Agribusiness Enterprise Development Program (PUAP) which is specifically run by the Ministry of Agriculture.

Credit for Food Security and Energy (KKP-E)

KKP-E credit scheme is intended basically to promote the national food security program through various efforts and in a comprehensive manner and at subsidized interest rate. This facility have been accessed by farmers or cattle breeders collectively in the form of a corporation, cooperatives or group levels as a requirement. Despite the subsidy on the interest to allow attractive lower interest rate, the absorption of this facility has not been so optimal. An informal survey found out that most banks introduce this facility the same way as those of other loans and credit programs. The prudential banking principles remain applicable as of standard procedure and process. This is for reasons among others is that after all it is the bank monies which are finally used for the loan disbursement. The implementing agents include certain nominated banks and their credit risks are shared to a state owned credit insurance companies.

Credit for Peoples' Businesses (Kredit Usaha Rakyat or KUR)

Credit for Peoples' Businesses (Kredit Usaha Rakyat, or KUR) is a program contained within the small and micro enterprises, targeted to poverty alleviation program and aimed to increase access to capital and other resources by micro and small enterprises. KUR is credit scheme to be used for working capital and/or investment financing specifically dedicated to micro, small and medium enterprises and cooperatives, where enterprises are unable to meet certain requirements set by banks. KUR is a credit/financing provision program of less than USD 500. The overall objective of KUR program is to accelerate the development of economic productivities in the real sector and to alleviate poverty as well as expanding work opportunities.

Government confirmed that this credit scheme is a reflection of Indonesia's success in fostering financial inclusion. Since the launching in 2007 until October 2014, the cumulative realization of KUR is IDR 171.6 trillion with reported non-performing loan level at 4.1% and the total number of debtor is 12.1 million. KUR becomes the target of the banking product because it proved to increase penetration of microcredit and also can keep the risk profile of micro enterprises.

Rural Agribusiness Enterprise Development Program (PUAP)

The poverty reduction programs are part of the implementation of the Indonesia Government's Long Term Development Plan in line with the global policy to achieve the Millenium Development Goals (MDGs). Since 2008, the Ministry Agriculture has been implementing Rural Agribusiness Enterprise Development Program (PUAP) as part of National Program for Community Empowerment scheme (PNPM Mandiri). The Government facilitation is in the form of capital assistance/charitable for farmer members as tenants, farm workers and farm households. The farmer households are coordinated by Farmers Group Association to form a combined group of farmers (Gapoktan). These appointed groups become the implementing officials of PUAP and are eligible for capital assistances. In turn, the groups channel the capital to their registered members though group collateral agreement among the group members. To achieve maximum results in the implementation of PUAP, the Gapoktan assisted by Extension Personnel and the Farmer Partner Supervisor (PMT). The implementation PUAP strengthens Gapoktan's economic capacity which is self-managed by farmers, member of the Gapoktan. To achieve the goal which is mainly reducing poverty and unemployment, PUAP focused on accelerating the development of productive economic activities of farmers in rural areas.

1.3 Banking in the Rural and Agriculture Sector

In its efforts, all banks do fund raising from the public, however, they have not been up in the financing of the agricultural sector. It can be seen from the low penetration that only 0.78% from 2004 to 2008, or lower than the penetration into other sectors such as services, trade, and business industry. Low credit allocation to the agricultural sector can not be separated from the bank's strategy which is focused on low-risk business. Assessing agricultural and rural finance in general is almost impossible to ignore the role of rural credit institutions. It could be argued that the existence of the credit program is one element of a facilitator for success in the agricultural sector development. The role of credit is not only as a facilitator of development, but it can also be a driver of technology adoption that is expected to increase production, value added and income.

In general, credit to the agriculture sector establishes a lower interest rate than the non-agricultural sector. It is intended to spur the growth of the agricultural sector, while encouraging the growth of the rural economy. However, the facts show the uptake of credit to agriculture is relatively slow compared to the absorption of non-agricultural sector. One of the reasons is the low margin of profitability of investments in the agricultural sector. Apart from the advantages, there are aspects which resist the banking institutions from providing financing facilities to agricultural sectors as follows:

1. Limited range and availability of credit and financing services. More banks serving communities around the city, instead of sub-district and villages.
2. Credit application requirement is found very procedural and complicated that not all rural people can comply.
3. The agricultural sector is considered very risky business as it has very high uncertainty as to yield and repayment ability.
4. The processing for a loan facility is relatively long because of the screening and checking.
5. Transaction costs were deemed to be too high relative to the amount of the loan being proposed.
6. Collateral requirements often could be provided when they must be in the form of certificates of land, building or other tangible properties.
7. Assessment of the collateral value tends to be low and that greatly affects the value of the expected loan.
8. Constraints in credit channeling, less matching its characteristics of business in this sector with the nature of the banking business.

9. Agricultural sector is seasonal while banking as a business is not associated with season. This alone leaves banks with extras to manage the cash flow administration in such a way to keep up with variety of short term different transactions.

The above relative conditions understandably lead the lending institutions subsequently reluctant to enter into this market segment. Apart from lacking in information and poor communication between the agricultural sector and financial institutions, the banking sector also have an incomplete understanding of the prospects for the agricultural sector. Another problem is the banking sector's attention remains focused on modern agribusiness and large estates and have not intensively touched the medium and small farmers as a priority markets. The bankers may consider this group could not really promise adequate margins albeit its certainty to its uncertain risks. There is a pragmatism of micro banking business decisions and skepticism of macro-economic policy support. The banking sector took the business decision in accordance with the provisions of commercial banks, which would have to follow the principles as laid down in the Indonesian Banking Architecture. The situation becomes critical as the potential demand being responded by private and individual money lenders which left the borrowers in an even worse financial conditions.

1.4 The Agricultural Sector Financing Scheme

According to Bank Indonesia, until February 2013 the banks recorded the distribution of mortgage financing in the agricultural sector only 5.5% of total bank loans amounted Rp 2,721.9 trillion, and largely focused on oil palm plantations. This is because agriculture is still regarded as a sector that has a high risk that banks tend to be cautious in releasing loans to farmers. The debate about agricultural banks emerged among others on the issues of definition, effectiveness, sources of capital, financing coverage, the format of the bank, and so on. The banking law in Indonesia does not recognize the existence of a bank that specializes in serving agriculture. Some people viewed that agricultural bank is not needed, but instead it is still preferable for existing banks to expand to reach the rural and agricultural sector and improvement of the bureaucracy. (Wikipedia; Bank Pertanian).

By act number 19/2013 there is now new regulation that in the protection and empowerment of farmers, the government assign state owned banks to serve the financial needs of for the farmers, farmers cooperatives or farmers corporations. To that effect the said state own banking institutions are requested to form an agricultural unit. Such divisional or departmental units shall set up a simple requirements and procedures in order to ease the clients. Besides, there is also a provision that private banking institions are also allowed to provide the same services to agricultural business sectors.

In effecting the financing program to farmers and agricultural sector, the banking institutions are also insisted by the Law to take active role in assisting the farmers to meet the requirement to get the credits, loans or financing. In addition the banking institutions have to take a part in assisting farmers and agricultural businesses to have an access for banking facilities. The banking institutions can provide subsidized financing or credit scheme through non-banking financial institutions or microfinancing institutions who specializes their services to agricultural businesses. The same assignment and opportunity under the Law is also provided to central and regional financial institutions to take active role serving the farmers and agricultural sectors the same way as the state and private banking institutions.

Table 30. GDP on Current Price (in billion IDR) 2014

No.	Line of Business	2014			
		1	2	3	Cumm.
1.	**Agriculture, Livestock, Forestry & Fishery**	**361,004.7**	**368,745.5**	**398,427.2**	**1,128,177.4**
	a. Food Crops	190,716.9	171,326.9	187,493.7	549,537.5
	b. Plantations	36,080.3	55,068.8	61,855.1	153,004.2
	c. Livestock & derivatives	43,263.8	44,214.8	47,116.7	134,595.3
	d. Forestry	13,207.8	15,872.6	15,082.8	44,163.2
	e. Fishery	77,735.9	82,262.4	86,878.9	246,877.2
2.	**Mining & Quarrying**	**269,997.7**	**268,161.8**	**274,733.0**	**812,892.5**
	a. Oil & Gas	111,198.3	107,411.2	107,797.3	326,406.8
	b. Non Oil & Gas	120,841.7	118,060.6	122,865.1	361,767.4
	c. Quarrying	37,957.7	42,690.0	44,070.6	124,718.3
3.	**Manufacturing Industries**	**566,519.8**	**589,158.3**	**612,420.3**	**1,768,098.4**
	a. Oil & Gas Industry	72,438.9	72,032.2	73,263.6	217,734.7
	1) Crude Oil Refinery	40,158.8	39,854.0	40,372.6	120,385.4
	2) Natural Gas Liquids	32,280.1	32,178.2	32,891.0	97,349.3
	b. Non Oil & Gas Industry	494,080.9	517,126.1	539,156.7	1,550,363.7
	1) Food, Beverage and Tobacco	175,861.1	190,910.6	204,553.0	571,324.7
	2) Textile, Leather Goods & Footwear	44,378.1	47,006.1	48,310.4	139,694.6
	3) Woods & Forest Products	25,506.1	26,586.0	27,050.0	79,142.1
	4) Paper & Printed Matters	19,317.7	20,445.9	20,561.5	60,325.1
	5) Fertilizer, Chemical & Articles of Rubber	60,875.7	60,367.9	59,420.0	180,663.6
	6) Cement & Non-Metal Goods	16,257.1	16,579.0	16,753.9	49,590.0
	7) Basic Metal Iron & Steel	9,251.0	9,553.7	9,735.9	28,540.6
	8) Transport Equipment, Machinery & Fittings	139,278.7	142,249.7	149,482.5	431,010.9
	9) Other Items	3,355.4	3,427.2	3,289.5	10,072.1
4.	**Electricity, Gas & Water**	**19,680.9**	**21,170.5**	**21,153.7**	**62,005.1**
	a. Electricity	12,789.2	13,741.0	13,569.6	40,099.8
	b. Gas	5,209.3	5,697.2	5,826.6	16,733.1
	c. Water	1,682.4	1,732.3	1,757.5	5,172.2
5.	**Constructions**	**233,343,.4**	**245,097.7**	**255,611.8**	**734,052.9**
6.	**Trades, Hotels & Restaurants**				
	a. Wholesale & Retail	279,185.0	293,166.4	302,286.0	874,637.4
	b. Hotels	10,789.4	11,666.9	11,846.2	34,302.5
	c. Restaurants	57,006.3	58,004.2	59,490.8	174,501.3
7.	**Transportation & Communication**	**346,980.7**	**362,837.5**	**373,623.0**	**1,083,441.2**
	a. Transportations	95,823.2	102,416.3	774,599.1	972,838.6
	1) Rail	804.4	874.8	956.7	2,635.9
	2) Road	51,991.1	52,650.1	55,403.6	160,044.8
	3) Sea	5,837.9	6,272.3	671,870.0	683,980.2
	4) River, Lakes & Crossing	2,944.2	3,022.9	3,191.2	9,158.3

Table 30. *(continued)*

No.	Line of Business	2014			
		1	2	3	Cumm.
	5) Air	21,920.8	26,785.2	30,046.0	78,752.0
	6) Support Services	12,324.8	12,811.0	13,131.6	38,267.4
	b. Communication	77,867.5	79,627.9	81,551.3	239,046.7
8.	**Finance, Real Estates & Related Service**	**185,155.8**	**189,438.5**	**196,284.6**	**570,878.9**
	a. Banks	60,881.0	62,346.2	64,875.4	188,102.6
	b. Non-Bank financial Institutions	25,004.4	25,704.6	26,385.1	77,094.1
	c. Financial Support Services	1,371.2	1,403.0	1,437.5	4,211.7
	d. Real Estates	61,879.8	63,240.8	65,435.8	190,556.4
	e. Related Services	36,019.4	36,743.9	38,150.8	110,914.1
9.	**Services sector**	**247,854.2**	**257,186.5**	**296,617.0**	**801,657.7**
	a. Public Administration	122,138.7	128,434.0	161,557.7	412,130.4
	1) Government & Defense Administration	75,638.5	78,817.1	99,597.2	254,052.8
	2) Other Government Services	46,500.2	49,616.9	61,960.5	158,077.6
	b. Private	125,715.5	128,752.5	135,059.3	389,527.3
	1) Social Community	50,728.9	51,998.7	55,730.3	158,457.9
	2) Entertainment & Recreation	7,342.9	7,608.9	8,047.7	22,999.5
	3) Individuals & Households	67,643.7	69,144.9	71,281.3	208,069.9
	GDP	**2,404,227.9**	**2,483,840.5**	**3,285,021.0**	**8,173,089.4**
	GDP without Oil & Gas	**2,220,590.7**	**2,304,397.1**	**3,103,960.1**	**7,628,947.9**

Source: Central Statistic Bureau (BPS)

Table 31. Contribution to GDP (in %) 2014

No.	Line of Business	2014			
		1	2	3	Cumm.
1.	**Agriculture, Livestock, Forestry & Fishery**	**15.02%**	**14.85%**	**12.13%**	**13.80%**
	a. Food Crops	7.93%	6.90%	5.71%	6.72%
	b. Plantations	1.50%	2.22%	1.88%	1.87%
	c. Livestock & derivatives	1.80%	1.78%	1.43%	1.65%
	d. Forestry	0.55%	0.64%	0.46%	0.54%
	e. Fishery	3.23%	3.31%	2.64%	3.02%
2.	**Mining & Quarrying**	**11.23%**	**10.80%**	**8.36%**	**9.95%**
	a. Oil & Gas	4.63%	4.32%	3.28%	3.99%
	b. Non Oil & Gas	5.03%	4.75%	3.74%	4.43%
	c. Quarrying	1.58%	1.72%	1.34%	1.53%
3.	**Manufacturing Industries**	**23.56%**	**23.72%**	**18.64%**	**21.63%**
	a. Oil & Gas Industry	3.01%	2.90%	2.23%	2.66%
	1) Crude Oil Refinery	1.67%	1.60%	1.23%	1.47%
	2) Natural Gas Liquids	1.34%	1.30%	1.00%	1.19%
	b. Non Oil & Gas Industry	20.55%	20.82%	16.41%	18.97%
	1) Food, Beverage and Tobacco	7.31%	7.69%	6.23%	6.99%
	2) Textile, Leather Goods & Footwear	1.85%	1.89%	1.47%	1.71%
	3) Woods & Forest Products	1.06%	1.07%	0.82%	0.97%

Table 31. *(continued)*

No.	Line of Business	2014			
		1	2	3	Cumm.
	4) Paper & Printed Matters	0.80%	0.82%	0.63%	0.74%
	5) Fertilizer, Chemical & Articles of Rubber	2.53%	2.43%	1.81%	2.21%
	6) Cement & Non-Metal Goods	0.68%	0.67%	0.51%	0.61%
	7) Basic Metal Iron & Steel	0.38%	0.38%	0.30%	0.35%
	8) Transport Equipment, Machinery & Fittings	5.79%	5.73%	4.55%	5.27%
	9) Other Items	0.14%	0.14%	0.10%	0.12%
4.	**Electricity, Gas & Water**	**0.82%**	**0.85%**	**0.64%**	**0.76%**
	a. Electricity	0.53%	0.55%	0.41%	0.49%
	b. Gas	0.22%	0.23%	0.18%	0.20%
	c. Water	0.07%	0.07%	0.05%	0.06%
5.	**Constructions**	**9.71%**	**9.87%**	**7.78%**	**8.98%**
6.	**Trades, Hotels & Restaurants**	**14.43%**	**14.61%**	**11.37%**	**13.26%**
	a. Wholesale & Retail	11.61%	11.80%	9.20%	10.70%
	b. Hotels	0.45%	0.47%	0.36%	0.42%
	c. Restaurants	2.37%	2.34%	1.81%	2.14%
7.	**Transportation & Communication**	**7.22%**	**7.33%**	**26.06%**	**14.83%**
	a. Transportations	3.99%	4.12%	23.58%	11.90%
	1) Rail	0.03%	0.04%	0.03%	0.03%
	2) Road	2.16%	2.12%	1.69%	1.96%
	3) Sea	0.24%	0.25%	20.45%	8.37%
	4) River, Lakes & Crossing	0.12%	0.12%	0.10%	0.11%
	5) Air	0.91%	1.08%	0.91%	0.96%
	6) Support Services	0.51%	0.52%	0.40%	0.47%
	b. Communication	3.24%	3.21%	2.48%	2.92%
8	**Finance, Real Estates & Related Service**	**7.70%**	**7.63%**	**5.98%**	**6.98%**
	a. Banks	2.53%	2.51%	1.97%	2.30%
	b. Non-Bank financial Institutions	1.04%	1.03%	0.80%	0.94%
	c. Financial Support Services	0.06%	0.06%	0.04%	0.05%
	d. Real Estates	2.57%	2.55%	1.99%	2.33%
	e. Related Services	1.50%	1.48%	1.16%	1.36%
9.	**Services sector**	**10.31%**	**10.35%**	**9.03%**	**9.81%**
	a. Public Administration	5.08%	5.17%	4.92%	5.04%
	1) Government & Defense Administration	3.15%	3.17%	3.03%	3.11%
	2) Other Government Services	1.93%	2.00%	1.89%	1.93%
	b. Private	5.23%	5.18%	4.11%	4.77%
	1) Social Community	2.11%	2.09%	1.70%	1.94%
	2) Entertainment and Recreation	0.31%	0.31%	0.24%	0.28%
	3) Individuals & Households	2.81%	2.78%	2.17%	2.55%
	GDP	**100.00%**	**100.00%**	**100.00%**	**100.00%**
	GDP without Oil & Gas	**92.36%**	**92.78%**	**94.49%**	**93.34%**

Source: Central Statistic Bureau (BPS)

CHAPTER 2

Insurance Industry and Agricultural Insurance Condition

2.1 Background

The Indonesian insurance industry provide both general and life insurance products to individuals and businesses. There are state owned insurance companies taking parts commercially in exploiting the market potential for both general insurance and life insurance. Moreover the state also run social insurance companies to cover compulsory motors and accidents at work, workmen compensation, employee benefits and other social schemes. Other state owned insurance companies are also formed to specialize in providing credit default insurance to various state banks operation. From the year 2013, all insurance companies are licensed and supervised by the Financial Services Authority of Indonesia which previously under the Ministry of Finance. The conduct of insurance business is subject to the Insurance Companies Act No. 2/1992, the government and ministerial decrees for further detailed regulations.

Insurance as a financial services industry manages public fund and is intensive in many respects thus therefore it is highly regulated. The Insurance Companies Act No. 2/1992 stipulated all aspects of how this financial services to operate and be conducted to the objectives of primarily protecting the insuring public whilst keeping the insurance companies financially sound. As far as the insurance industry structure is concerned, the Act stipulates that there are 4 categories of the industry players: (1) general insurance companies; (2) life insurance companies; (3) reinsurance companies; and (4) insurance support services industry. The insurance support services further split into (a) insurance agents; (b) insurance brokers; (c) reinsurance brokers; (d) loss adjusters; and (e) actuarial consultants. Among important aspects being regulated include capital requirements, insurance products, conduct of insurance business, solvency requirements, reinsurance, supervision and reporting procedures and penalties on non-compliances including delays in reporting.

In terms of structure the insurance market as at 2013 consists of 139 insurance companies of few state owned and many private nationals and joint-ventures. Out of them, 85 insurance companies licensed as general or non-life insurance and 45 insurance companies licensed as life insurance. There are 4 reinsurance companies where 3 of which is state owned and 1 private national. The insurance services support comprises of 138 insurance brokers, 27 reinsurance brokers, 27 loss adjusters, 29 actuarial consultants and 21 insurance agents. The insurance market as measured by the number of insurance companies shows less fragmented structure as compared to previous years. This has been as the result of mergers and acquisition during the past years following statutory capital requirement. This development is positive in order for local insurers to be able to retain more risks and therefore more insurance premium can be retained locally and insurance common fund can be invested in the country.

2.2 The Insurance Market Potential

With a population of more than 240 million people, Indonesia can be expected to become ASEAN's largest marketplace for insurance both general and life insurance sectors. It is however admitted that the insurance penetration ratio is still relatively low. The general insurance sector has been developing more slowly than the life insurance sector. Based on the available data as at 2012, with the Gross Domestic Product at current market price of IDR 8,242 trillion and the non-life insurance gross

premiums of IDR 44.24 trillion, the penetration ratio is only 0.54% whereas the life insurance premiums of IDR 108.3 trillion is 1.31%. This relatively low penetration indicates the potential market which has not really been able to be exploited, especially the segment of the market in rural and agricultural sectors with micro insurance and personal lines insurance products.

The following review on the insurance industry is based on the report of the insurance industry performance in 2012 published by the Financial Services Authority of Indonesia. Based on the report, the national gross premiums income, including premiums from social insurance sectors, reached the amount of IDR 178 trillion, which is an increased by 16.3% from the previous year with IDR 153 trillion. Within those last five years, the average of gross premium annual growth rate was around 22.8%. The Gross Domestic Product (GDP) amounted IDR 8,242 trillion which is increased by 11% from IDR 7,427 trillion in 2011. The penetration ratio as calculated by the ratio of the total premiums to the GDP was also increased from 2.06% in 2011 to 2.16% in 2012.

Table 32. GPI and GDP 2008-2012

In billion IDR

Year	Gross Premiums*		Gross Domestic Product**		Ratio
	Total	Growth	Total	Growth	a/b
	(a)	(%)	(b)	(%)	(%)
2008	90.31	16.0	4,951.36	25.3	1.82
2009	106.44	17.9	5,613.44	13.4	1.90
2010	125.12	17.5	6,422.90	14.4	1.95
2011	153.13	22.4	7,427.10	15.4	2.06
2012	178.07	16.3	8,241.90	11.0	2.16

* Gross Premium (include Premium of Pension Benefits = Direct Premium + Reinsurance Premium Inward from Abroad.
** **Source:** Central Statistic Bureau (BPS) using Current Market Prices in Trillion rupiah.

The insurance density as measured by the ratio of gross premium to total population, showed that the 2012 resulted in IDR 514,631 as a reflection of the amount that each Indonesian people spent for the insurance premium.

Table 33. Insurance Penetration Ratio

In trillion IDR

Insurance Sector	2008	2009	2010	2011	2012
	(1)	(2)	(3)	(4)	(5)
GDP (At Current Market Price)	4,951.30	5,603.80	6,422.90	7,427.10	8,241.90
Life Insurance Premiums	50.43	61.73	75.06	89.77	108.33
Non-Life Insurance Premiums	26.93	28.99	32.05	33.72	44.24
Total Premiums	77.37	90.71	107.10	123.49	152.57
Total Penetration Ratio	1.56%	1.62%	1.67%	1.66%	1.85%
Penetration Ratio Life	1.02%	1.10%	1.17%	1.21%	1.31%
Penetration Ratio Non-Life	0.54%	0.52%	0.50%	0.45%	0.54%
Population (Million)*	229	237.5	237.6	241.1	244
Insurance Density Ratio (in IDR)	337,860	381,937	450,758	512,194	514,631

* **Source:** Central Statistic Bureau (BPS)
Source: Monitary Services Authority of Indonesia.

2.3 The Market Issues and Challenges

There are local issues to be overcome, such as the fragmented market due to relatively low capitalized insurers which cause ineffective competition and excessive outward reinsurances. Low penetration rate of insurance sales is due to more concentration on commercial risks rather than personal lines insurances and micro-insurance. Also is the lacking of public awareness about the benefits of insurance coverage causing low demand. There are as yet still obstacles in response to some local issues including building of qualified workforce and adapting to local cultures necessary to the exploitation of micro insurance potentials.

Efforts to cope with problems include the financial education by the government and the private sector to help view insurance as a tool for financial planning and business protection. In addition, foreign investors continue to increase their presence in this promising marketplace. The general insurance niche market currently represents about 40% of total insurance premiums paid (A.M. Best, Special Report, 2012), although it is expanding rapidly as more people join the middle class and experience concerns about protecting wealth and guaranteeing a standard of living through products such as health insurance, property insurance and motor vehicle insurance. The market potential becomes a desirable destination for investments in the insurance business from home and overseas.

Going forward in 2013, the effects of increasing minimum capital requirements, as required by Regulation No. 39 of 2008 and referred to in the 2012-2014 Master Plan of the Capital Market and Financial Institution Supervisory Agency is continuing to result in mergers, acquisitions and partnerships between local insurance companies and better-capitalized foreign insurers. For 2014 the capital requirements are scheduled to rise to IDR 100 billion (approx. USD 85 million), placing further pressure on the remaining mid-size insurers. The Negative Investment List No. 36 of 2010 allows foreign investors to control up to 80% of non-pension-fund Indonesian insurers, as long as the foreign company has existing operations in a similar business niche.

The Financial Services Authority (FSA) eventually formed to replace function of both Capital Market and Financial Institution Supervisory Agency and the Central Bank regarding regulation and supervision of insurance services and financial services respectively. One of the stated goals of the FSA is to provide the public with financial literacy and advocacy including helping increase consumer and business awareness about using insurance to mitigate risk. The body will also help insurers comply with norms for the international insurance industry envisioned under ASEAN's upcoming free trade agreement in 2015. Further recent insurance regulatory changes include heightened requirements for automobile liability coverage, workmen's compensation insurance, compulsory insurance for passenger accidents and air-travel delays, and an earthquake tariff levied beginning in 2010; such changes have spurred local insurers to form relationships with foreign insurers.

2.4 Insurance Products and Agricultural Insurance

The product of insurance basically fall into 2 main division of life and general (non-life) insurances. On the general or non-life insurance sector where agricultural insurance will be grouped into consists of 13 main classes of business. Each class has its specific features in terms of risk and its characteristics. The followinga sre the main class of business of which the insurance products and variance are available in the market:

1) Property insurance;
2) Motor insurance;
3) Marine Cargo insurance;
4) Marine Hull insurance;
5) Aviation insurance;

6) Satellite insurance;
7) Energy-Onshore insurance;
8) Energy-Offshore insurance;
9) Engineering insurance;
10) Liability insurance;
11) Personal Accident and Health insurance;
12) Credit insurance and Surety Bond, and
13) Miscellaneous insurance.

Given the above class of business categories, it is noticeable that agricultural insurance has not been in the list since it has not been parcticed in fairly wide scale yet. However by the issuance of and as referred to in the Law number 19 year 2013, it is expressly stated that the insurance protection will be made available and implemented to all 4 sub-sectors which include crop farm, horticulture farm, livestock and plantation. This going forward will bring a big potential of new micro insurance prospect to the insurance industry. As a matter of example, the agricultural insurance activities and commodities could be developed into a variety of insurable products for the insurance industry such as:

1) rice crop insurance,
2) corn crop insurance,
3) high-value commercial crop insurance,
4) livestock insurance,
5) non-crop agricultural asset insurance,
6) agricultural producers protection plan,
7) loan repayment protection plan,
8) accident and dismemberment security scheme, and
9) fisheries or aquaculture insurance.

Turning to the rice crop insurance as a product, the model variation can be developed from the basic and traditional indemnity based to more advanced models whenever appropriate such as yield index (multi-perils) rice crop insurance, revenue index rice crop insurance, and weather index rice crop insurance. Similar models will also be developed for different of crops commodities such as maise and soybean and also for the horticultural produces in the near future. At the moment another product which was approved by Financial services authorithy is livestock insurance policy that the ministry of agroculture had subsequently recommended to be offered to the cattle growers. Considering the above prospective, the agricultural sector will definitely brings potential opportunities as well as challenges for the insurance industry in Indonesia. The following Table 6 below explains the distribution of each class of business to the total premiums which concluded that the commercial lines insurance have still be dominant as compared to personal lines insurance.

From the Table 34 above, it can be drawn that motor is mostly dominant as a source of premium income to the market with Personal accident and Health comes second. This indicates that the retail market or personal lines product is growing passing over the commercial lines of business. This means that the growing number of middle class society has driven the growing potential demand for security and protection.

Table 34. The Distribution of Premium by Class of Business

Economic & Insurance	2008	2009	2010	2011	2012
General Insurance & Reinsurance Data					
Gross Premium (Trillion IDR)*	26,933.79	28,985.38	32,047.13	33,718.94	44,542.04
Net Premium (Trillion IDR):					
Property	6.95%	7.35%	6.62%	7.35%	7.16%
Motor	20.03%	20.05%	22.53%	23.25%	21.65%
Cargo	3.65%	3.30%	3.32%	3.68%	2.96%
Marine Hull	0.90%	1.55%	1.19%	1.37%	1.06%
Aviation	0.22%	1.06%	0.29%	0.32%	0.21%
Satellite	0.00%	-0.01%	0.00%	0.04%	0.00%
Energy-Onshore	0.06%	-0.02%	0.09%	0.10%	-0.10%
Energy-Offshore	0.47%	1.86%	0.24%	0.46%	0.34%
Engineering	0.95%	1.01%	0.82%	1.07%	0.94%
Liability	0.41%	0.69%	0.47%	0.47%	0.39%
Personal Accident & Health	4.93%	6.56%	8.03%	9.29%	9.69%
Credit & Surety Bond	2.17%	1.34%	2.07%	3.01%	2.78%
Others	0.00%	0.00%	3.54%	4.40%	1.61%
Premium Retained:	11,810.17	13,739.77	15,775.78	18,479.18	24,052.70
Premium Reinsured:	15,123.62	15,245.61	16,271.35	15,239.76	20,489.34
Retention Ratio (%):	44%	47%	49%	55%	54%
Reinsurance Ratio (%):	56%	53%	51%	45%	46%

Source: Adapted from Financial Services Authority report.

CHAPTER 3

The Agricultural Insurance Program and Structure

3.1 Background

Food security is a priority of national development plans. Various government policies have been launched to promote food production through the application of technology and adjustment of current programs for improving farm risk management and productivity. Despite the continuous efforts there are challenges on domestic food crops supply shortages driving to increase in prices of several basic foodstuffs that lead to dependency on imports. This situation discouraged local food producers to engage in their uncertain farming activities amid the steadily increasing demand for foodstuff to feed the increasing population. McCulloch (2008) indicates that nearly a quarter (24.8%) of 53.5 million households in Indonesia is rice farmer households. In rural areas, rice farmer households account for 37.8%.

Indonesian agriculture is characterized by its typical small-scale farms, especially on food productions. They are lacking in working capital and in accessibility to microfinancing supports. Rural area is identical with agricultural area, so when issue on rural development is taking place, that also means agricultural development. In this regard, land ownership has been transferred with consequence of increasing number of small holder and land less farmers. With the average of land ownership at around 0.3 ha, it is no longer economical to work it out to produce rice as a source of income for living. It is becoming more sensible to let the small rice field bought for any uses in return for an instant cash and let them work as farm workers for living.

In view of such growing phenomenon, it makes sense that there is a growing need to protect the farmer's from leaving their farms and provide them with protection from harvest failure. Protection to the farmers shall be conducted by providing them with agricultural insurance program by which farmers can transfer their risks to the insurance company in return for paying small cash for the premium. Agriculture insurance closely relates to agricultural finance and the third party (private institution/commercial or government institution) to whom beneficiaries pay cash at certain amount of premium (World Bank 2008).

As staple food for the majority of people, rice is considered as a strategic commodity. Government plays an important role to achieve higher production to maintain food security in the country. With the application of innovative and adaptive technologies to cope with climate change, there are opportunities to improve rice farm performance and other crops production. To that effect, in order to protect rice farmers from harvest failures, rice crop insurance is introduced and would be one of realistic options to help the farmers in sharing their respective farm risks.

3.2 The Introduction of Agricultural Insurance

The initiative to introduce agricultural insurance confirmed the strong political will and commitment of the government in favor of the farmers provided a well conceived program and action plan is made available. One of the advantages of agricultural insurance program is that it enables the farmers to reduce the risk of becoming defaulter and allow them to free from loans at higher interest rates from money lenders. A farmer could adopt new technology and improve farm performance when they are

assured of compensation in case of a harvest failure (Hazell 1992). Global experience shows that the agricultural insurance programs in several countries are serving very useful purpose of helping farmers and improving the performance of farm production. By participating in the insurance scheme, the farmers could expect payouts from the approved claim to be used as working capital for the next planting season.

Agricultural insurance success schemes in developing countries are highly dependent on government initiative and support in various forms such as subsidy in premium, reimbursement of administrative expenses of insurance companies, also reinsurance support for risky crops, technical guidance and financial support. In the US subsidy for insurance premium in recent years was up to 60%, 70% in Canada, 50-60% in the Philippines, and 58% in Spain (Raju and Chand 2008). In 2003, total insurance premiums were estimated at US$ 7.1 billion, which was 0.6% of farm gate value of agricultural production. The premiums are concentrated in North America (69%), Western Europe (21%), Latin America (5%), Asia (3%), Australia (1%), and Africa (1%) (Roberts 2005).

A major lesson learned from global experience on agricultural insurance program is that the public program of crop insurance is usually subsidized by the government in the form of premium to farmers, reimbursement of administrative expense to the insurance companies, and also for agricultural insurance research and development. Crop insurance exerted considerable influence on US farmers' use of fertilizers and pesticides (Horowitz and Lichtenberg 1993). The crop insurance scheme in India was instrumental in increasing loan amount per borrower and reduction in the proportion of non-borrowers among small farmers (Mishra 1994). However, Hazell (1992) observed that many of the risks insured under public insurance programs are essentially uninsurable risks, which occur frequently and are expensive to insure. The multi-peril crop insurance thus is very expensive and has to be subsidized by the government.

The micro level study revealed that institutional milieu and stakeholders' support to launch a rice crop insurance program are available in the selected regencies (Pasaribu et al. 2009a). Farmers, local government officials, farmers' groups, NGOs and all other stakeholders feel very excited and very enthusiastic to implement rice crop insurance program in their area. They appear to be very eager to look for the details of the program, particularly the procedures and mechanism of implementation. All the stakeholders are of the view that the national and provincial governments should take a lead and oversee the implementation of such an important program and provide financial support, which is consistent with the national goal of food security for all Indonesians. The complexity of problems associated with agricultural sector development become an important consideration in proposing the application of agricultural insurance to benefit farmers. The pilot project is highly recommended to learn more about the insurance program (Pasaribu et al. 2009b). By definition, a pilot project is an experiment with which continuous monitoring and evaluation of each implementation stage will be extremely important for preparing a program of up-scaling implementation. It is absolutely important to involve insurance company institutions as program executor. As risk carrier, the insurance company should be ready to see the agriculture insurance program as a new challenging and potential business opportunity. To that effect, they will prepare themselves for the capital and all necessary resources especially distribution and delivery system infrastructures.

As far as the agricultural insurance is concerned, the program for rice crop insurance has been conceptualized based on the results of the study along with several reviews on the experiences of agricultural insurance in other countries, assessment of degree of instability in an area, production and yield of rice at the national, provincial and regency levels, and after ascertaining the views of stakeholders. Specific recommendations for the implementation of rice crop insurance program have been made as a direction for action. A general guidance book along with its technical implementation have been prepared and used in a pilot study implemented by the working committee of agricultural insurance at the ministry of agriculture.

As a matter of fact, there are many crop insurance models currently applied in other countries. Starting from simple indemnity based – named perils and multiple perils or yield index based crop insurance, to area yield index, revenue/price index and weather index based insurance. Along with the continuous pilot project of indemnity based (named perils) rice crop insurance, we would learn as to what direction would this crop insurance be heading. A thorough study on other models would enrich knowledge on the possibility of introducing other appropriate models for different food crops to meet farmer's interests and demand as well as to enhance food crops performance within the food security development framework.

As regard agricultural risks, various agricultural risk management tool can be introduced and adopted. The risk management tool can be in the form of physical and financial controls which farmers should be encouraged. So far, farmers do control by themselves with directions and guidance provided by the officers from the local agriculture offices. However, any loss or damage has to be borne at their own expenses. No financial risk control tool has ever been available to protect farmers from financial loss against agricultural risks. Moreover, the agricultural diverse and potential risks of harvest failures discouraged the insurers to exploit the sector as a profitable business.

It is therefore a potential opportunity and challenge that the agricultural risks can be identified and measured in order to attract insurance company. Rice crop insurance is designed to be the first and prime model of agriculture insurance and it would be one of the strategic options and solutions to help small holder farmers share their risks and transfer to insurance companies.

The introduction of rice crop insurance was legitimated by the issuance of Law No. 19/2013 on protection and empowerment of farmers. The law does not only regulate insurance element but also financial facilities for farmers. When farmers propose loans to banks or other financial institutions, it is then compulsory for the farmers to purchase insurance policy in order for the banks to secure repayment of the loans from the insurance claim money. To that extent, the financial and banking institutions should be given guidelines on insurance as part of their credit application procedure. Financial and banking institutions should be the important stakeholders in the development of rice crop insurance scheme in Indonesia (Pasaribu 2010).

The objective of rice crop insurance is to improve rice farm performance, and hence, the farmer's income and help reducing import dependency which will save government's foreign expenditures. As a new approach, rice crop insurance pilot projects are applied in several rice producing regions. The pilot projects are significant to learn the dynamic of the scheme for better application. The lessons learned from the application of rice crop insurance will be valuable to reduce agricultural risks, improve farm management, and enhance rice crop performance.

The rice crop insurance scheme currently introduced in series of pilot project is one of which the basis of indemnity is the cost of production. This basic model of "indemnity-based" is widely used in other countries and it is adopted by the ministry of agriculture for small holder rice farmers as a replacement of the direct compensation program and also as a learning phase on agricultural insurance.

3.3 Climate change and Rice Crop Insurance

It has been widely known that agricultural sector had always been confronted with increasing problems brought about by the extreme and unpredictable climate changes. The impacts of extreme weather become more difficult to predict and complicate all efforts to improve agricultural production. Agricultural production increases provided the intricacies of nature and the behavior of the resulting risks can be properly managed. Partially irrigated rice land can deal directly with the events caused by extreme weather. In the absence of good risk governance, any extreme weather will result in disaster, leading to low-income farmers forced to reduce food consumption, selling productive assets, stop

sending children to school, and exacerbate their economic and life prospects. The climate change mitigation and adaptation have to be dealt with properly and correctly to acquire a strategcis approach on climate smart agriculture.

The government has developed policies to anticipate harvest failures. The noticeable policies relating to this issues include:

a. Provision of reserve fund to help reducing loss of rice farming caused by harvest failures (BP3 Program) in the form of direct compensation to farmers affected. The program started in 2011 with fairly successful implementation but with some drawbacks. The drawbacks include excessive claim and financial disbursement that did not reach the targeted recipients.
b. In conjunction with efforts to secure national rice production, the government issued Presidential Instruction No. 5/2011 on the protection of national rice production against extreme weather condition. In this Instruction, the Government requested the inter-departmental coordination to anticipate impacts of climate change on the agricultural sector, especially on rice production.
c. In the framework of empowerment and protection to farmers, the Government had drafted a bill on empowerment and protection of farmers which had been legitimated in the Law No. 19 year 2013. In line with this, the ministry of agriculture had prepared a program of rice crop insurance as an alternative model to replace the current direct compensation scheme.
d. Prior to the enactment of the law, a working committee for agricultural insurance was formed in March 2011 with the main tasks of researching, studying and developing agricultural insurance schemes. The scope of agriculture insurance program is not limited to insurance for rice crop commodities, but it is intended to cover all four sub-sectors of agriculture affairs namely: food crops, horticultural crops, livestock, and plantation farm.

3.4 The Insurance principles as applied to Agricultural Insurance

Insurance is a social device which many people agreed to collect dues which are then used to compensate few members suffered from certain risks. With the development of economy and industry, insurance became a commercial financial institution that has an important role in the chain to financial transactions. Therefore, the rules that have been poured embedded in insurance principles underlying the engagement between the insured with the insurer. In economics, insurance is a way how individuals or businesses to change the probability of large losses (variable cost) to be converted into the cost (fixed cost) to transfer these risks to insurance companies and pay the insurance premiums the value of which is much smaller than the exposure to loss.

The insurance has primary functions and secondary functions, as described below.

1. The primary function of insurance is:

a. The risk transfer mechanism: The transfer of risk from the insured to the insurer, and so on from the first insurer to the reinsurer (reinsurance), and next to the insurer of reinsurance (retrocession), resulting in the spread of risk (spreading of risk) that form the basis of cooperation in the sharing of risk.
b. The equitable premium: Insured with more hazardous risks must pay an expensive premium, and vice versa, insured with less hazardous risks are cheap enough to pay a premium.
c. Common Fund: Premiums collected by insurers is a reserve fund with the primary function to pay insured claims, in addition to the acquisition cost of business, administration and profit margins for the insurer's operation.

2. Secondary functions of insurance include aspects of:

    a. Peace of mind. With fully insured risk and activities, insured can then focus on the development and improvement of its business.
    b. Contribution to national development. Premium fund (common fund) kept by the bank may be invested in various fields of business with benefits ultimately help national development.
    c. Stimulus to business enterprise. By shifting the risk of loss to the insurance companies, businesses do not need to reserve funds but the same instead can be used more productively for expansion and business development.
    d. Risk improvement and loss control. Knowledge of risk management can better support to improve risk awareness and mitigation of loss.

Insurance works on the law of large numbers which says that the more the number of objects covered by insurance, then the probability of occurrence becomes certainly closer to the median of the population risk. In other words, the standard deviation of moving up or down of the median will be smaller. An increasing number of the population does not change the probability of loss, but rather it ensures that the probability of occurrence will stay not far from the median. This theory is important for insurers to manage the portfolio so as not to lose and may result in a profit margin. In relation to agriculture, especially rice farming with an area of about 6.5 million hectares of raw land, insurers can be certain to achieve the Law of Large Numbers should all areas can entirely be insured.

The legal contractual relationship between the insured and the insurer is as referred to in most of the insurance policy document. The insurance principle as applied to agricultural insurance can be briefly outlined as below:

    a. **Insurable Interest;** means that the prospective insured must have a valid relationship between him and the object or interest to be insured. Such relationship is to prove that it is the insured who actually suffers financial losses if something occurs on the insured object. Insurable interest generally arises out of right of ownership or possession. This principle is affected to prevent any unrelated party to file against a claim for insurance money illegally. In the case of rice crop insurance, there is hardly document available in some sort such as certificate of ownership to the a rice farm land. To cope with unavailability of such legal document, an acknowledgment that a farmer is a registered member of a farmers group of which the local agricultural office recognized that would be sufficient.
    b. **Utmost Good Faith;** means that the prospective insured is one supposed to know all about the property or interest to be insured, and therefore he or she by common law is under duty to disclose all material facts related and inherent to it. The duty of disclosure actually applies to both parties, but more imposed to the insured. Misrepresentation of material facts may result in the insurance contract become voidable or claim rejection. This principle is intended to achieve fairness and equitability in that the insurer will charge premiums in accordance with degree of risk. In the rice crop insurance as an example, this principle needs to be understood by all farmers and the insurers, even though there would be not as many material facts to be disclosed as that for an industrial risk. For rice farm, the identity of the rice growers, the size in rice field, and the exact location with coordinates details would constitute material facts to be disclosed.
    c. **Proximate Cause;** means that any claim will be entertained by the insurer provided the cause of loss is covered under the insurance policy. It confirm that the cause of loss shall be a dominant and effective cause, and uninterrupted by any other cause from independent source. This principle is so important in determining the cause of the loss when more than one causes found in any one event. This principle is again not have much application on the rice crop insurance, given the cause of loss is fairly straight forward. However, the quantification

of loss as referred to with the application of 75% franchise would present special observance during site inspection and loss adjustment process with the appointed loss adjusters.

d. **Indemnity;** means that the insured's entitlement to a claim is limited to an amount of his/her financial interests before the loss or a value as agreed at inception of insurance contract. This principle is to ensure an exact compensation of no more and no less of the insured actual loss. Insurance contract do not allow any compensation more than the indemnity with maximum limit of the sum insured. In so far as the indemnity-based rice crop insurance is concerned, the indemnity is fixed and agreed at the inception. This amount is a monetary sum equal to the average cost of input as of today. It is different with the actual value of the rice farm which basically is very low during the vegetation growth but very high at the harvest time. The indemnity based principle does not see the value of the rice but rather look at the investment cost which naturally spread in arrears before the transplanting till about before the harvest.

e. **Subrogation;** refers to a case when a claim has been paid to the insured, he/she is obliged to render to the insurer any right of recourse to another party who causes of the loss if any. Subrogation rights arise after the insured receive indemnity payment from the insurer. This principle supports the indemnity in that the insured is not allowed to get more than the indemnity. This principle is again not very significant for the rice crop insurance product since the risk of rice farm is static in nature and independent from the surrounding. Remote though but there is a probability where a rice farm is damaged by impact of an aircraft. However the insurance policy may not pay but the farmers may have recourse against the wrong doer.

f. **Contribution;** refers to a principle that claims should be shared with other insurance policy which is found covering the same objects at the time of loss. This principle discourages double insurance and thus supports the indemnity in that the insured is not allowed to double indemnity from other insurance policy. The same way, this principle has only very little significance to the rice crop insurance due to its nature of static and independent.

3.5 The Goals of Rice Crop Insurance

The concept of agricultural insurance has been formulated by Agriculture Insurance Working Committee at the Ministry of agriculture at the end of 2012 with the overall goals in terms of the vision, mission, objective, and purpose as follows:

a. **The Vision** of the rice crop insurance program is to support the achievement of sustainability of rice farming within the national agricultural development framework.

b. **The Mission** of the rice crop insurance program is to provide compensation against losses caused by named perils of floods, drought, pest and disease, to promote productivity and production, increase farmers' incomes and welfare, while maintaining environmental sustainability.

c. **The Objectives** of the rice crop insurance program is the establishment of long terms partnership and cooperation on the basis of principle of utmost good faith to form a sound business and mutually beneficial relationship between farmers as the insured and the insurance company as underwriter, with the ultimate objective of supporting the sustainability of agricultural activities amid efforts to improve the competitiveness of agricultural products.

d. **The Purpose** of agricultural insurance program is to increase the income and welfare of farmers through the provision of production costs derived from insurance compensation, in the event of a claim for damage caused by flood, drought or pests and plant diseases as coverable under the insurance policy.

The benefits of rice crop insurance program for the farmers and farmers group in particular, for the local provincial and regency agricultural offices and for the insurers can be elaborated as follows:

1. Benefits for farmers:

    a. increasing awareness on the risks that threaten agricultural or farming activities and to find ways of coping and risk mitigation.
    b. promoting knowledge, skills and improved farm management, risk management and loss control.
    c. relieving dependency of farmers on capital from other financial sources as they can get compensated from their claims paid by the insurance company.
    d. increasing the income and welfare of the farmers out of the success and sustainability of the farming business.

2. Benefits for the provincial and regency agricultural offices:

    a. increasing the knowledge and commitment on the importance of anticipation, mitigation and control of risks inherent to rice farming.
    b. help accessing data and information required by insurers to support the implementation of the program objectively and effectively.
    c. providing assistance in the implementation of insurance program, especially in dealing with control of impacts, inspection of damage and loss adjustment.
    d. help monitoring and administering for the success of the rice crop insurance scheme and the national food security program.

3. Benefits to insurance companies:

    a. building partnership with the government which can be used as a lighthouse project with due regard to participating in the role as agent of development.
    b. developing skill and experience in risk assessment and claims adjustment and portfolio development.
    c. developing market for other micro insurance products that the national rice crop insurance offer access and large data base as potential demand.
    d. developing business expansion for the organization either organic or un-organic, improving the competence of human resources, infrastructure development to distribution and delivery networks.
    e. participate in the prestigious government programs dedicated to the agricultural sector and the insurance industry to take the role in empowering and protecting the farmers.

3.6 The Rice Crop Insurance Pilot Project Structure

In order to improve the rice farm and other food crop productions both variety and quality, there are certainly opportunities to employ innovative and adaptive technology. Local wisdom has absolutely to be taken into account with regard to climate change adaptation measures along with the application of new technology to protect farmers from severe production failures. Currently there has been a program adopted by the Ministry of agriculture where a direct compensation is provided against harvest failures. An amount equal to average cost of input per ha rice farm is paid to farmers where the rice crop affected reaches 75% damage intensity and the affected area also reache 75% of total acreage per slot as reffered to in guide-book. The program is expected to be beneficial for farmers but not without some drawbacks.

The Ministry of agriculture introduced the agriculture insurance program to resolve problems associated with direct compensation program and to empower and protect the farmers. A risk transfer mechanism through insurance becomes an alternative scheme to help farmers share their risks. Premium

contribution is pooled with insurance company to form a common fund who will handle claims and pay compensations. As far as rice crop insurance national program is concerned, the source of premiums payment can be in part from farmers self-finance and from the government in a subsidy scheme. Farmers have to contribute to the premium so that they have the commitment which gives them the right for compensation. It is also an educational process to encourage farmers to take better care and exercise better skill in their rice farming practices. In addition, government subsidy is absolutely imperative to help small farmers purchasing insurance and ensuring program's sustainability. At the inital stage, a proportion of 20% of self-farmers premium and 80% by the government subsidy is introduced.

To succeed the program, government role is absolutely required as a key in building necessary infrastructure, controlling the implementation at ground level institutional offices and developing other agricultural insurance models as appropriate. Also, the government needs to ensure that the appointed insurance institutions have the capacity to execute the program with due observance to sound underwriting principles and commercial business practices.

As far as risk pricing for rice crop insurance is concerned, statistics of rice crop harvest failure due to three major risks of floods, droughts and pests & disease infestation over the last 10 years (2003-2012) was used. An average of damage ratio of 1.3% is assumed as pure burning cost ratio. To arrive at risk premium, there are allowances to take into the formulation which resulted in 1.6% rate. There is also the insurance operational loadings as allowed by insurance regulation including acquisition, administration and general costs are also calculated to arrive at 3% insurance premiums rate. The current 3% of premium rate constitutes a flat average rate which will be appropriate provided the whole rice field in all 34 provinces of 6.5 million ha is insured at the same time. If the pilot projects the 3% rate is applied to small area of rice field and without risk selection then the insurance company would definitely run in loss. This has happened during the pilot project implementation with very volatile results and overall deficit underwriting ratio of 166%. To give some idea on the data of total rice field acreage with the respective harvest failure from year 2008-2013 each every province in Indonesia, please see Table 35 below.

To formulate an equitable rates commensurate to historical risk exposure, the harvest failure data from 2003-2012 was further reviewed and analyzed. Through an "as if" underwriting ratio analysis, risk zones over the rice field at each and every regency area can be identified. With discretionary judgment the identified area exposures are classified into 5 zones each of which has a rate based on its specific exposure. Tables 35 and 36 show the variable rates based on per zone category.

The above variable rates will be one of important element in the subject of improving the rice crop insurance guidelines. The rating structure is based on simple formulation without taking into account other variables as usually required for scientific and comprehensive rating studies such as geo data, area affected, weather research, historical yields, and its applicability and relevant to rice product. The divisional risk zones over 34 provinces all over Indonesia can be seen in Figure 12.

From the action plan as presented in Table 37 below, there are several institutions involved in the pilot project directly and indirectly. Among those stakeholders in the agricultural insurance program execution, there are at least four important parties involved in the partnership of agriculture insurance program. The Ministry of agriculture as the program initiator and the ultimate accountable institution, the insurance company as the program executor; the farmers or group of farmers as the insured party with whom insurance company have contractual relationship; and the provincial/regency agricultural offices as the steering and executing officials in their respective territories. A plan of pilot project studies has been developed in which a set of function and coordination roles established at central and local levels to secure the pilot study's implementation.

Table 35. Data of Rice Field Acreage & Rice Damage 2008-2013

No.	Province	Flood, Drought, Pest & Disease			Flood, Drought, Pest & Disease		
		2008			2009		
		Rice Field	Damage	Ratio	Rice Field	Damage	Ratio
		(ha)	(ha)	(%)	(ha)	(ha)	(%)
1	NAD	407,366	7,262	1.78%	232,363	1,690	0.73%
2	Sumatera North	764,777	2,363	0.31%	782,969	832	0.11%
3	Sumatera West	436,632	903	0.21%	453,869	3,196	0.70%
4	Riau	125,087	3,567	2.85%	80,216	16,502	20.57%
5	Jambi	156,960	2,192	1.40%	155,248	21,587	13.90%
6	Sumatera South	742,810	1,511	0.20%	756,286	6	0.00%
7	Bengkulu	135,709	369	0.27%	149,394	3,637	2.43%
8	Lampung	498,572	12,598	2.53%	546,909	–	0.00%
9	Kep. Bangka Belitung	12,647	–	0.00%	5,001	–	0.00%
10	Kep. Riau	177	–	0.00%	135	–	0.00%
11	DKI Jakarta	1,314	–	0.00%	344	N/A	0.00%
12	Jawa West	2,003,736	89,387	4.46%	1,982,368	25,247	1.27%
13	Jawa Central	1,830,695	27,869	1.52%	1,621,726	312	0.02%
14	DIY Yogyakarta	147,822	239	0.16%	112,779	9,370	8.31%
15	Jawa East	2,033,180	22,278	1.10%	1,549,261	2,914	0.19%
16	Banten	431,157	15,597	3.62%	384,969	37	0.01%
17	Bali	182,222	7	0.00%	143,283	671	0.47%
18	Nusa Tenggara West	430,280	462	0.11%	306,900	4	0.00%
19	Nusa Tenggara East	155,749	1	0.00%	256,063	3,862	1.51%
20	Kalimantan West	383,468	5,408	1.41%	276,644	36	0.01%
21	Kalimantan Central	243,215	98	0.04%	240,172	2,919	1.22%
22	Kalimantan South	518,404	1,794	0.35%	446,671	10	0.00%
23	Kalimantan East	108,886	286	0.26%	81,726	1	0.00%
24	Sulawesi North	121,440	–	0.00%	141,810	4	0.00%
25	Sulawesi Central	201,814	1,305	0.65%	214,843	19,422	9.04%
26	Sulawesi South	898,095	5,100	0.57%	808,078	134	0.02%
27	Sulawesi South East	104,963	227	0.22%	110,210	8	0.01%
28	Gorontalo	46,636	319	0.68%	42,555	–	0.00%
29	Sulawesi West	71,366	802	1.12%	72,731	–	0.00%
30	Maluku	22,596	3	0.01%	16,962	–	0.00%
31	Maluku North	22,717	1	0.00%	13,628	–	0.00%
32	Irian Jaya West	8,548	9	0.11%	8,658	1	0.01%
33	Papua	37,962	268	0.71%	26,039	185,371	711.90%
	Indonesia	**13,287,002**	**202,225**	**1.52%**	**12,020,810**	**297,773**	**2.48%**

Table 35. *(continued)*

No.	Province	Flood, Drought, Pest & Disease			Flood, Drought, Pest & Disease		
		2010			2011		
		Rice Field	Damage	Ratio	Rice Field	Damage	Ratio
		(ha)	(ha)	(%)	(ha)	(ha)	(%)
1	NAD	302,715	1,819	0.60%	384,529	2,659	0.69%
2	Sumatera North	747,271	467	0.06%	774,083	512	0.07%
3	Sumatera West	467,945	5,766	1.23%	468,992	222	0.05%
4	Riau	182,821	13,585	7.43%	220,110	1,088	0.49%
5	Jambi	135,912	269	0.20%	167,448	28,059	16.76%
6	Sumatera South	862,889	39	0.00%	818,865	1,023	0.12%
7	Bengkulu	141,064	2,078	1.47%	137,557	23,194	16.86%
8	Lampung	588,990	–	0.00%	608,579	–	0.00%
9	Kep. Bangka Belitung	5,477	–	0.00%	12,271	–	0.00%
10	Kep. Riau	284	–	0.00%	436	–	0.00%
11	DKI Jakarta	1,755	N/A	0.00%	1,414	N/A	0.00%
12	Jawa West	2,151,501	3,229	0.15%	1,982,416	15,915	0.80%
13	Jawa Central	1,674,749	604	0.04%	1,800,640	552	0.03%
14	DIY Yogyakarta	193,358	4,607	2.38%	162,740	3,544	2.18%
15	Jawa East	2,352,505	850	0.04%	1,752,389	479	0.03%
16	Banten	527,194	51	0.01%	427,677	85	0.02%
17	Bali	170,555	1,217	0.71%	145,678	3,999	2.75%
18	Nusa Tenggara West	468,472	12,895	2.75%	426,009	22,494	5.28%
19	Nusa Tenggara East	139,070	2,999	2.16%	216,654	617	0.28%
20	Kalimantan West	424,100	47	0.01%	477,769	4,169	0.87%
21	Kalimantan Central	280,718	12,747	4.54%	247,452	5,650	2.28%
22	Kalimantan South	463,778	58	0.01%	515,842	258	0.05%
23	Kalimantan East	117,951	236	0.20%	113,980	2	0.00%
24	Sulawesi North	121,542	44	0.04%	143,092	28	0.02%
25	Sulawesi Central	202,680	10,466	5.16%	209,929	2,865	1.36%
26	Sulawesi South	1,058,162	4,639	0.44%	931,915	21	0.00%
27	Sulawesi South East	120,825	102	0.08%	121,396	24	0.02%
28	Gorontalo	66,088	6	0.01%	60,645	–	0.00%
29	Sulawesi West	96,273	25	0.03%	87,105	–	0.00%
30	Maluku	11,223	–	0.00%	25,922	–	0.00%
31	Maluku North	17,974	–	0.00%	16,706	–	0.00%
32	Irian Jaya West	2,939	8	0.27%	12,309	1	0.01%
33	Papua	27,506	113,954	414.29%	20,359	132,787	652.23%
	Indonesia	**14,126,286**	**192,807**	**1.36%**	**13,492,908**	**250,247**	**1.85%**

Table 35. *(continued)*

No.	Province	Flood, Drought, Pest & Disease			Flood, Drought, Pest & Disease		
		2012			2013		
		Rice Field	Damage	Ratio	Rice Field	Damage	Ratio
		(ha)	(ha)	(%)	(ha)	(ha)	(%)
1	NAD	438,855	10,205	2.33%	419,183	5,218	1.24%
2	Sumatera North	769,174	844	0.11%	742,968	2,744	0.37%
3	Sumatera West	481,666	865	0.18%	487,820	468	0.10%
4	Riau	134,495	453	0.34%	118,518	987	0.83%
5	Jambi	155,828	4,106	2.63%	153,243	2,067	1.35%
6	Sumatera South	787,385	14	0.00%	800,036	1,780	0.22%
7	Bengkulu	149,574	1,202	0.80%	147,680	125	0.08%
8	Lampung	648,297	–	0.00%	638,090	1,510	0.24%
9	Kep. Bangka Belitung	10,055	–	0.00%	10,232	–	0.00%
10	Kep. Riau	400	4	1.00%	379	–	0.00%
11	DKI Jakarta	2,351	N/A	0.00%	1,744	N/A	0.00%
12	Java West	1,971,891	20,216	1.03%	2,029,891	5,117	0.25%
13	Java Central	1,788,513	130	0.01%	1,845,447	7,657	0.41%
14	DIY Yogyakarta	150,625	9,191	6.10%	159,266	115	0.07%
15	Java East	1,925,625	7,224	0.38%	2,037,021	12,605	0.62%
16	Banten	417,993	–	0.00%	393,704	8,525	2.17%
17	Bali	148,309	729	0.49%	150,380	7	0.00%
18	Nusa Tenggara West	412,773	134	0.03%	438,057	709	0.16%
19	Nusa Tenggara East	193,441	946	0.49%	222,469	347	0.16%
20	Kalimantan West	444,334	136	0.03%	464,898	58	0.01%
21	Kalimantan Central	285,627	14,145	4.95%	247,473	540	0.22%
22	Kalimantan South	504,810	212	0.04%	479,721	2	0.00%
23	Kalimantan East	126,877	600	0.47%	102,912	518	0.50%
24	Sulawesi North	128,577	741	0.58%	127,413	38	0.03%
25	Sulawesi Central	227,107	26,119	11.50%	224,326	1	0.00%
26	Sulawesi South	952,690	1,790	0.19%	983,107	19,375	1.97%
27	Sulawesi South East	128,339	95	0.07%	132,945	11,040	8.30%
28	Gorontalo	55,857	–	0.00%	56,894	12	0.02%
29	Sulawesi West	83,466	–	0.00%	91,195	–	0.00%
30	Maluku	18,709	–	0.00%	24,399	33	0.13%
31	Maluku North	14,846	–	0.00%	19,281	–	0.00%
32	Irian Jaya West	33,025	2	0.01%	7,523	1	0.02%
33	Papua	8,072	213,442	2,644.23%	41,111	15	0.04%
	Indonesia	**13,599,586**	**313,545**	**2.31%**	**13,799,326**	**81,616**	**0.59%**

Table 36. Variable Rates based on Risk Zones

Zone	Category	Variable Rates
Zone 1	Very low exposure	2%
Zone 2	Low exposure	3%
Zone 3	Moderate exposure	4%
Zone 4	High exposure	5%
Zone 5	Very high exposure	7%

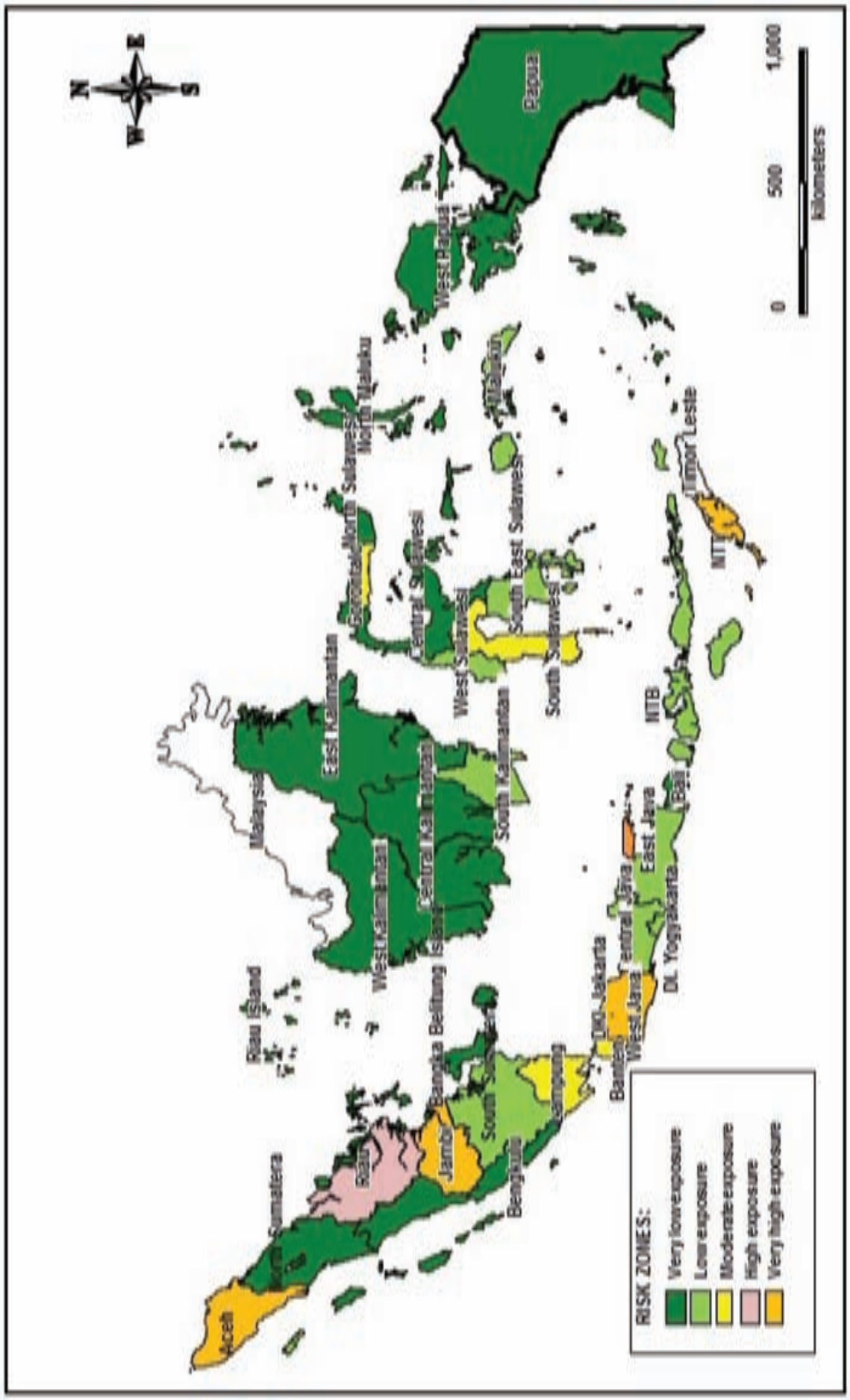


Figure 12. Map of Agricultural Risk Zone

As described in the action plan, there are at least four expected outcomes from rice crop insurance pilot study, namely (a) positive mindset changing process of stakeholders in agricultural risks management, from production-oriented to production and protection-orientated; (b) gradually improved awareness of farmers and local public services on the importance of farming and crop protection from probable losses caused by unavoidable perils; (c) increasingly improved attitudes on managing and exercising better skills in rice farming; and (d) integrated crop insurance in food crops' farming system at which the premium cost is included in the production cost.

Table 37. The Action Plan for Rice Crop Insurance Pilot Project

No.	Activities	Method of implementation	Output	Institutions involved
1.	Advocating and socializing the assessment results on agricultural insurance development (food crops) at central level and regional level (province/regency).	Meetings, coordination, and program and activity synchronization.	Understanding about the importance of agricultural insurance/ food crop insurance; strengths and weaknesses; cooperation and supports from related stakeholders.	*At central level:* Higher level or first echelon institutions under Ministry of Agriculture, National Development Planning Agency, insurance institutions, research institutions, including NGOs and universities. *At regional level:* Local government offices at province and regency levels, including Regional Development Planning Agency farmer's groups, insurance institutions, research institutions, including NGOs and universities.
2.	Formulation of crop insurance model to provide technical and implementation procedures	Meetings and discussions, professional consultations, and writing the draft of mechanisms and procedures	Availability of reference to implement food crops insurance	Research teams and insurance institution's personnel.
3.	Recruitment and training of selected representatives from related institutions and other stakeholders for the implementation of food crops insurance	Identification of personnel to implement and formulation of technical steps to carry out	Trained human resources who are appointed to undertake the pilot study of agriculture/food crops insurance	Local government offices, specifically designated officials of Regional Development Planning Agency, agriculture offices, research teams, insurance institution's personnel, and leaders of farmer's groups
4.	Implementation stage of the food crop insurance pilot study	Selection of the location, identification of participant farmers, and implementation arrangements	Early phase, mid phase, and final phase of the implementation of crop insurance pilot study	Local government offices, specifically designated officials of Regional Development Planning Agency, agriculture offices, research teams, insurance institution's personnel, and leaders of farmer's groups
5.	Monitoring and evaluation (M&E) of the pilot study	Using criteria and indicators as assessment tools to monitor and evaluate the implementation: early, mid, and final phases of the project	Results of the Monitoring and Evaluation for improvement of the project	Local government offices, specifically designated officials of Regional Development Planning Agency, agriculture offices, research teams and insurance institution's personnel
6.	Further development of agricultural insurance	Extension of agricultural insurance coverage and participant farmers (locations and crops)	Extended area and coverage of agricultural insurance (locations and high economic value crops)	Local government offices, specifically designated officials of Regional Development Planning Agency, agriculture offices, research teams, insurance institution's personnel, and leaders of farmer's groups.

CHAPTER 4
The Rice Crop Insurance Structure

4.1 Background

Rice Crop Insurance is designed to provide basic protection against loss of or damage to rice crop caused by floods, drought and certain (named) pest and disease. This basic coverage is referred to as the basic cover. Other risks such as earthquake, volcanic eruption, tsunami, fire, theft, rebellion, riots, looting, and other extraordinary events, including crop destruction by the authorities in the public interest, are not included in the risks covered. Risks affecting the community or a large area or related to political events is generally classified as "fundamental risks" or national disaster and is usually at the responsibility of the state under disaster protection system.

The compensation system is an agreed value of IDR 6,000,000 (approx USD 550) that is equal to the cost of inputs for rice production in the unit area of 1 hectare. This insurance model is known as "indemnity based insurance". This model is different from a more advanced model where compensation system based on crop yields in units of tonnage or nominal value of the rupiah (yield index-based insurance) or a system that calculates the damages based on imaging results recorded with the device mounted on a weather station and is called weather index-based insurance. Both models will be the areas of Agriculture Insurance Working Group to carry out a desk top study and formulate in time when the data, information and infrastructure needed has supported for that purposes.

4.2 The Pilot Project Structure

The rice crop insurance as part of the agricultural insurance system to be implemented by the Ministry of Agriculture is on the basis of the Law No. 19/2013 where there is provision on protection to farmers in the form of insurance. To facilitate the farmers including the payment of the premium, a subsidy scheme is under the proposal preparation to the Ministry of Finance. It is expected that a specific budget item for the insurance premium subsidy will be agreed that there will be certainty to satisfy at least one factor that would secure the program implementation sustainability. The issue on the premium subsidy by the government is crucial for the government to undertake, for strategic reason of the importance of food security for social, economy and political resilience. As seen from the following figure 13 on the Rice Crop Insurance program mechanism, the government of the Ministry of agriculture is the authority who hold and implement the program whereas the insurance transaction is separately and independently carried out by the parties involved i.e. the farmers as represented by the farmers group and the insurance company. The premium subsidy will be arranged between the Ministry of Finance directly with the insurance company, upon proof of required data and document including the insurance policies. The following figure is drawn to explain shown how the basic mechanism of the rice crop insurance program.

For the purpose of the pilot project implementation, there is a question of how in the meantime a contribution to the premium subsidy can be obtained. This has subsequently been resolved by a partnership with state-owned fertilizer companies under its GP3K Program (Corporation-Based Rice Production Improvement) who agreed to pay the 80% premiums on behalf of the farmers.

The structure of the rice crop insurance transaction during the pilot project then can be shown in Figure 14 with the involvement of the state-owned fertilizer companies in the picture.

Figure 13. Mechanism of Rice Crop Insurance Program

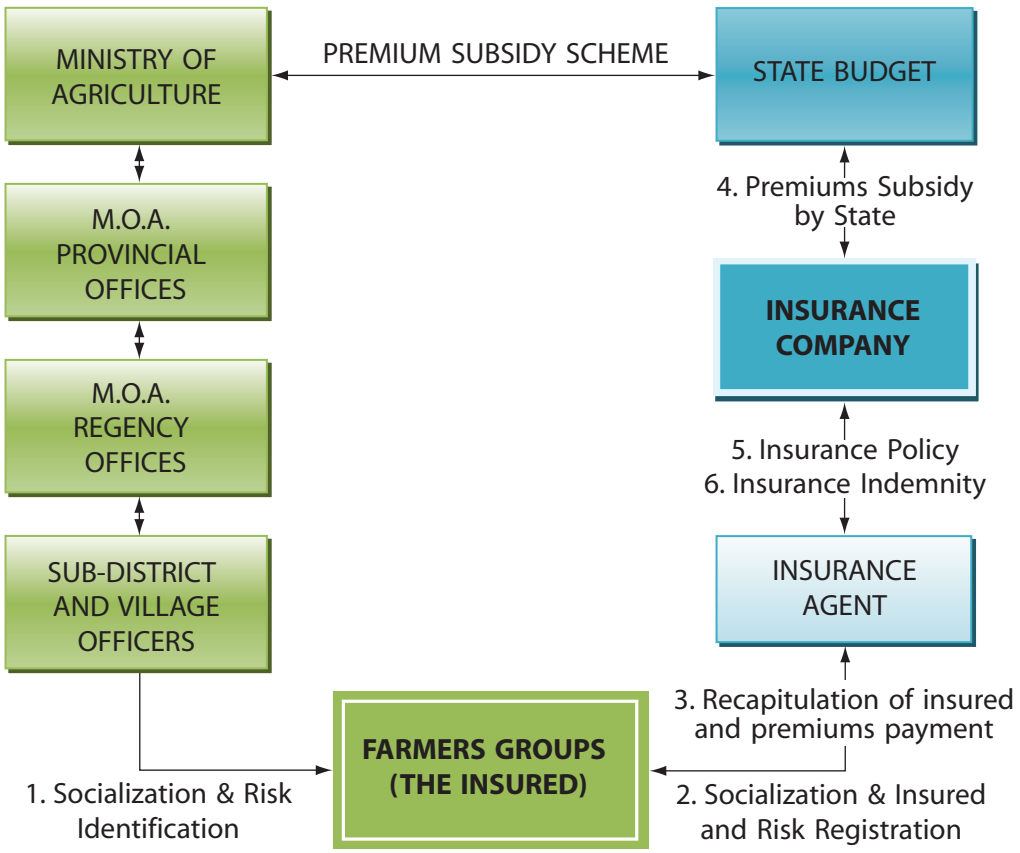
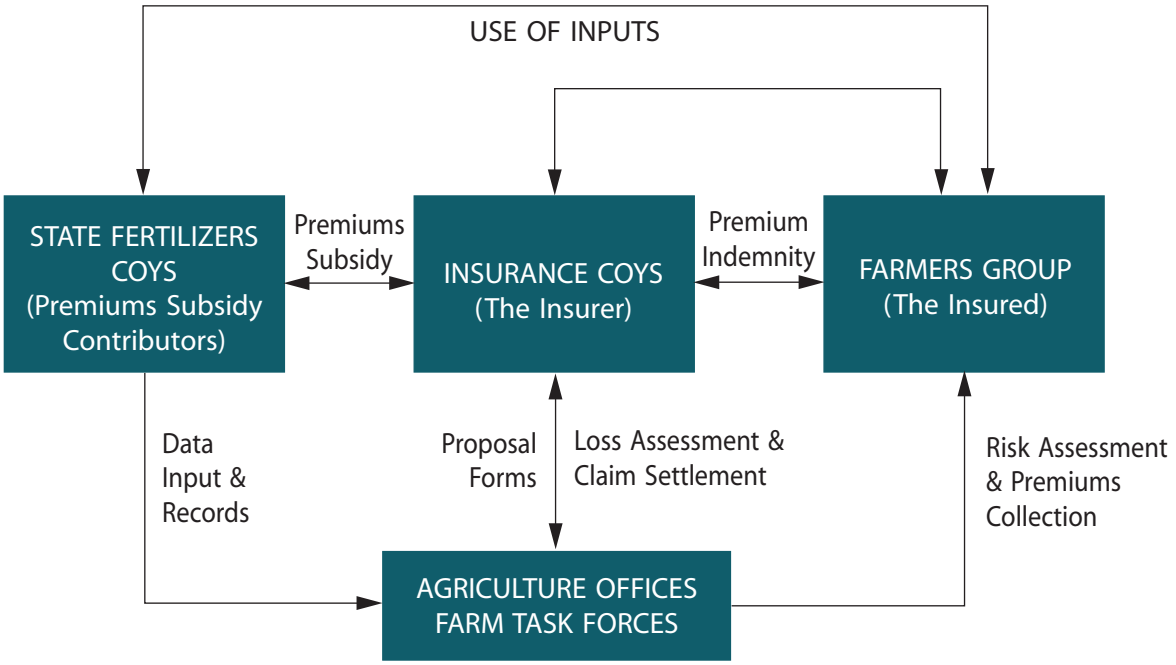


Figure 14. Rice Crop Insurance Program Pilot Project



4.3 The Features of the Rice Crop Insurance Scheme

The rice crop insurance scheme is specifically designed as a protection system to small holder farmers. In consideration of the financial capacity of these farmers, the government facilitates on the payment of the premium as a subsidy. The subsidy design is to start with 80% and gradually reduced by 20% every year and finish by year 5. This proposition is based on justification that by year 5, farmers have already ability to self finance the insurance.

The technical features of rice crop insurance covers the followings areas:

a. The Insured

- Farmers of rice cultivators who are members of active farmer groups community organization;
- They cultivate rice farms not more than 2 ha in acreage irrespective of locations;
- They are willing to follow good farming practices as recommended by local agriculture office.
- They are willing to follow the terms and conditions of the insurance policy, particularly to pay part of the premium payable.

b. Subject Matter of Insurance

- The rice farm land is tilled fields and farmers have clear boundaries and size.
- Rice fields are in the vast expanse of rice fields.
- Wet land that meets the requirements of technical standards including irrigation.

c. Any one Policy

Unit of risk or "any one risk" defined per farmer group consisting of number of farmers involved in the organization of farmer groups and enroll as participants of insurance. Farmers groups are the policyholder and get the insurance policy together with the attached policy schedule containing details of the data of each participating farmers.

d. Period of Insurance Coverage

Period of insurance coverage is applicable to the paddy planting season, starting on the estimated planting and harvest times.

e. Risks Covered

- Flood which is water inundation over rice farmland during the growth of rice plants at some depth and time, causing damage leading to decrease in production.
- Draught which is insufficient of water required during the growth of rice plants to an extent causing damage leading to decrease in production.
- Pest and disease which are organisms that can attack, damage, interfere with growth or cause death of rice plants. Note that pests covered include 5 species (stem borer, brown plant hopper, rat, and armyworm), disease includes 5 species such as blast, brown spots, tungro, stem rot, and pygmy empty.

f. Sum Insured

IDR 6,000,000.-/ha or approx USD 550. This amount is agreed to be sufficient to capitalize a rice planting every one season to cover the labor cost required to cultivate the land, seeds provision, fertilizers and pesticide supplies and maintenance of rice growth, etc.

g. Insurance Premiums

The cost of insurance is the premium payable by the insured to obtain insurance protection. With insurance premiums already paid, then the insurance contract becomes enforceable and claims will be processed by the insurer. At the moment the premium rate is 3% of the sum insured of IDR 6,000,000 or IDR 180,000/ha or approx USD 15.00. The variable rates studies have been completed in that rate will be based on degree of exposures as divided into 5 zones. Please see Chapter 3 for detailed discussion.

h. Premium Financing Sources

The financing of insurance premiums by farmers can be obtainable from one or any combination of the following sources:

1. State budget through the subsidy scheme at scale under preparation.
2. Partnership through Corporate Social Responsibility (CRS) program of state-owned or private enterprises, and the like,
3. Banks, when farmers get financing loan from banks or other financial institutions where the premium is included in the credit ceiling,
4. Farmers own funds, when they have already had financial capacity.

As mentioned earlier, that for the trial stage, subsidized insurance premiums can be procured through programs such as state-owned fertilizers companies or through other donor agencies such as Japan International Agency (JICA), until the passing of the Law on protection and empowerment of farmers which provide the government subsidy through the state budget.

i. Definition of Rice Crop Damage

Rice crop insurance program does not use the term "*puso*" (harvest failure) as currently used in the program of BP3, but instead using the phrase "damage to and/or loss of" for reason of not subjected to being connected with regulations related to the *puso*. Thus, the provision of the 75% franchise limit that applies in BP3 has not been final and still to be reformulated by considering the conditions prevalent in the practice of insurance such as "own risk" (deductible) in percentage or in nominal amount.

j. Provision for a Claim

All claims will be entertained by the insurance company subject to:

i. Premiums have been paid according to the terms and conditions of the policy.
ii. Any damage to and/or loss of rice farm insured must be caused by floods, draught, or named pests and disease.
iii. Damage/loss occur during a period of insurance coverage.
iv. Damage/loss adjustment is based on the provision of loss adjustment.

k. Filing Claims

In the event of flood, drought or pest and disease outbreak that possibly causes damage or loss to rice farm insured, the farmers/farmer groups shall immediately called local agriculture extension workers and the insurance office to notify and propose for field inspection. The extension workers and the insurance claim officers will coordinate to take necessary action to control and adjust the loss.

To file a claim, the affected farmers through the farmer groups shall prepare the followings:

i. Complete the Claim Form provided by the insurance company.
ii. Attach a copy of the insurance policy along with the policy schedule.

iii. Attach a report on the outbreak of damage that was signed by local agricultural extension officer.

iv. Attach photos of the damage.

v. Submit the above documents to the insurance company or through their appointed Insurance Agent as soon as practicable.

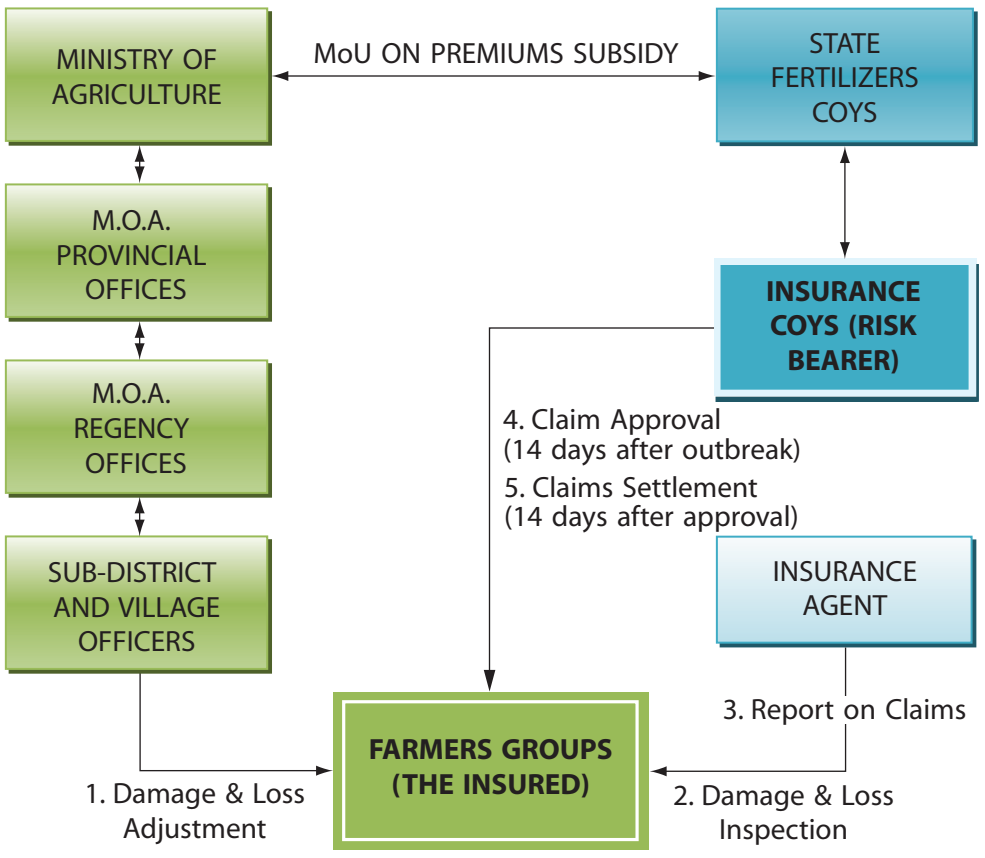
l. Adjustment of Loss

- Loss adjustment is based on an examination on damage intensity employing assessment of sample taken from 5 points of a diagonal lines on each rice farm plot, to arrive at percentage of damage intensity and acreage.
- The loss adjustment output is communicated to the affected farmers for acceptance, before it being put into the claim reports
- The loss recoverable under the insurance policy is when the damage intensity reaches 75% as per applied criteria, and the acreage of such damage reaches 75% of total size of each rice farm plot. That is termed as the "75% franchise" or deductible.

m. Approval and Payment of Claims

Claim approval confirmation shall be given by the insurance company as soon as practicable after the submission of the claim report. The insurance company will confirm their approval on claims in writing. Within 14 working days from the written approval of the claim, the payment of claims shall be made by the transfer to the account of each farmer claimant. The Figure 15 below shows how claim is processed.

Figure 15. Claims Processing



4.4 The Pilot Project Reviewed

This review activity is conducted in the form of a supervision, and therefore, is not attempted to deeply study the application of rice crop insurance pilot project. As a general review on the implementation of the current pilot project, this activity is directed to learn and find out various associated issues to draw a number of recommendations along with policy implications. The main issue is related to procedure and mechanism. Lesson learned from such application is enabling recommendations for improvement. The Ministry of Agriculture is the institution to take opportunity on such recommendations in the attempt to expand the pilot projects in better shape of implementation procedures and mechanisms. The Directorate of Agricultural Finance of MoA is the direct institution target to obtain benefits from this pilot project's implementation review. This strategic institution is responsible to prepare policy improvement for agricultural and food crops insurance scheme. This institution is also expected to design various agricultural insurance models for other high economic value agricultural commodities as well as its responsibility to disseminate the schemes with other stakeholders. These important tasks are appropriate with the institution's mandate on the allocation of national agricultural development budget.

A pilot project usually based on the current performance of farm, including the area size, willingness of the farmers, the availability of insurance company, procedure to follow, agreed mechanism, role of other related institutions, etc. Such pre-condition in the crop insurance concept cover the following aspects (Pasaribu, et al., 2010):

a. Availability of database (data on area size, production, deficiency of production, number of events causing crop damage, etc.).
b. Ability of the farmers to manage their respective farms (capacity of group leader, knowledge about administration issue and insurance scheme, etc.).
c. Framer's knowledge about farm and agribusiness (involvement in farm activities, accessibility to various information, etc.).
d. Availability of insurance institution/insurance company to run agricultural insurance scheme with knowledge about competence and capital issues, human resource capacity and the operation of available infrastructure along with capacity of reinsurance.
e. Support from the local government institutions to implement insurance scheme, coordination and cooperation initiative among the stakeholders, etc.

For rice crop insurance scheme implementation, several characteristics are required, such as the availability of:

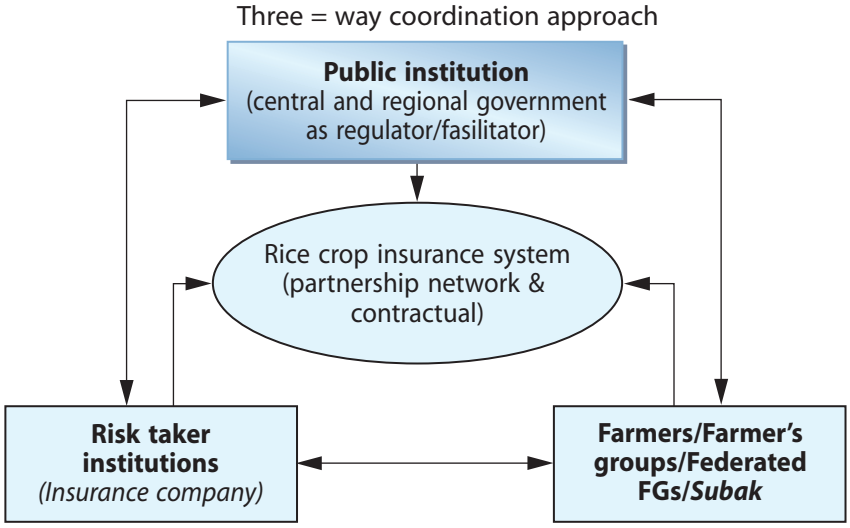
a. A number (a lot of) farmers.
b. Farm management is under control of extension workers or competent officials.
c. Financial support according to the local government policy.
d. Commitment from all related stakeholders at local level.
e. Collective management to avoid unexpected problems in the implementation of the scheme.

In the context of he abovementioned pre-condition, additional explanation is needed as in pre-condition (a) since landholding is small, a land consolidation is important to reconsider in order to meet economic-feasible of area size for insurance scheme. Meanwhile for pre-condition (b), (c), and (d), the active role of stakeholders with positive participation is highly required. In this regard, information network is suggested from the early stage of planning and implementation of rice crop insurance policy. The role of farmers/farmer's groups in this level would be instrumental, specifically in fulfilling the administration documents and other technical matters within the rice crop insurance scheme system, as required by the pre-condition (e).

The action plan associated with this implementation review covers two main issues, namely: (1) Technical guidance books for the implementation of agricultural/rice crop insurance system, and (2) The issuance of legal documents as basic ground of insurance system which support agricultural insurance activity. The Technical guidance books is important to avoid any differences, especially in the implementation stage. The availability of legal document is necessary to have support from other stakeholders at local level as well as the financial support for implementation.

Approach to local government and insurance institutions is required to ensure their role in the pilot project. All three poles of the actors to carry out agricultural insurance system are expected to initiate interaction and communication for improved coordination among the involved institutions. The government as regulator and fasilitator develop an approach with insurance company as the risk taker and policy publisher, and with the farmers as beneficiaries who are expected to be active within the insurance partnership network. The interaction of the so called three-way coordination between the main insurance actors are highly expected to gear the role of insurance toward the protection of the farm and the farmers from farm damage or harvest failure (see Figure 16). This description should be considered as the conceptual framework of the agricultural/rice crop insurance system.

Figure 16. The Coordination of the Related Partners



4.5 Activity Coverage

The main purpose of pilot project is to testify whether the technical formulation of rice crop insurance schemes can be understood by farmers as potential party insured, by the insurer as insurer of the risk and by the agriculture ministry officials in regional offices. With the pilot, feedbacks will be obtained and is very important for the improvement and refinement of the program. Directorate General of Agricultural Infrastructures at the Ministry of Agriculture initiated a coordination meeting with representatives from several provincial/regency offices, state-owned fertilizer companies, and the state owned insurance company.

The pilot project in fact was parallelized with the commitment of state owned fertilizers companies to the Ministry of Agriculture to assist farmers to pay the 80% of the premiums. This commitment was in lines with the supply of fertilizers by those state owned fertilizer companies to the farmers in every location who have already been their permanent customers. There are 4 state owned fertilizer corporations namely (1) PT Pupuk Sriwijaya in Palembang, South Sumatera, (2) PT Pupuk Kujang, in Kerawang, West Java, PT Petrokimia Gresik, in Gresik, East Java and (4) PT Pupuk Kaltim, in Samarinda, East Kalimantan. Those farmers joining the rice crop insurance program were facilitated financially to

pay the 80% of the premiums. The payment of the premium is subject to the farmers have paid the 20% and the insurance policy has been issued on their behalf. The 80% premiums were remitted directly to the Insurance company nearest branch office.

The target acreage of rice farm subjected to the pilot project I in wet season of October 2012 to March 2013 was as 1,000 ha in East Java and 1,000 ha in South Sumatera. The take-up of the target in those location was very low which is 471 ha in East Java, and 152 ha in South Sumatera. For the pilot project II in wet season of October 2013 to March 2014, East Java target was 1,500 ha achievable at 1,436 ha whereas South Sumatera with 1,000 ha target achieved 766 ha. This showed increased take-up with quite significant amounts. On the other hand during the pilot project III in dry season commencing April 2014 to September 2014, in East Java, a target 1,500 ha was achieved 874 ha, whereas South Sumatera was discontinued due to severe loss ratios. In replacement of South Sumatera, the pilot project III was extended to West Java with 1,000 ha target but achievable only 123 ha. The low take-up from West Java was again due to the farmers generally viewed the rice crop insurance program as something new, unfamiliar yet and therefore unattractive. The target acreage and the actual take up from every pilot project which overall ended up with only 48% in total (Table 38).

Table 38. Target Acreage and Actual Acreage Pilot Project I, II & III as per November, 2014

Pilot Project	Regency	Province	Period of Cover	Target Acreage (ha)	Actual Acreage (ha)	Ratio
I	Oku Timur	South Sumatera	**Oct 2012 - Mar 2013**	1,000	152	15%
	Tuban	East Java	**Oct 2012 - Mar 2014**	500	320	64%
	Gersik	East Java	**Oct 2012 - Mar 2013**	500	151	30%
		Sub Total		**2,000**	**623**	**31%**
II	Oku Timur	South Sumatera	**Oct 2013 - Mar 2014**	1,000	766	77%
	Jombang	East Java	**Oct 2013 - Mar 2014**	750	734	98%
	Nganjuk	East Java	**Oct 2013 - Mar 2014**	750	702	94%
		Sub Total		**2,500**	**2,202**	**88%**
III	Nganjuk	East Java	**Apr 2014 - Sep 2014**	500	251	50%
	Jombang	East Java	**Apr 2014 - Sep 2014**	500	270	54%
	Jombang	East Java	**Apr 2014 - Sep 2014**	750	226	30%
	Cirebon	West Java	**Apr 2014 - Sep 2014**	1,000	123	12%
	Lumajang	East Java	**Okt 2014 - Mar 2015**	750	127	17%
		Sub Total		**3,500**	**997**	**28%**
		Grand Total		**8,000**	**3,822**	**48%**

Table 39 describes the premiums income generated from the total take-up and as earned by the insurance company.

Table 39. Underwriting Result and Loss Ratio Pilot Project I, II & III
as per November, 2014

Pilot Project	Regency	Premium	Claims	Underwriting Result	Loss Ratio
			(IDR)	(IDR)	(%)
I	Oku Timur	27,360,000	43,680,000	(16,320,000)	160%
	Tuban	57,600,000	480,000,000	(422,400,000)	833%
	Gersik	27,180,000	–	27,180,000	0%
	Sub Total	112,140,000	**523,680,000**	**(411,540,000)**	**467%**
II	Oku Timur	137,880,000	207,000,000	(69,120,000)	150%
	Jombang	132,120,000	105,540,000	26,580,000	80%
	Nganjuk	126,360,000	–	126,360,000	0%
	Sub Total	396,360,000	**312,540,000**	**83,820,000**	**79%**
III	Nganjuk	45,180,000	3,000,000	42,180,000	7%
	Jombang	48,600,000	5,880,000	42,720,000	12%
	Jombang	40,680,000	22,260,000	18,420,000	55%
	Cirebon	22,140,000	208,200,000	(186,060,000)	940%
	Lumajang	22,860,000	67,800,000	(44,940,000)	297%
	Sub Total	179,460,000	**307,140,000**	**(127,680,000)**	**171%**
	Grand Total	**687,960,000**	**1,143,360,000**	**(455,400,000)**	**166%**

Rice crop insurance pilot project also produced valuable lessons especially in the context of insurance claims. Some farmers in the two provinces suffered from floods. The insurance policy states that each farmer of 1 ha rice farm is entitled to indemnity compensation of IDR 6 million should it totally damage. The insurance policy also stipulates that insurance claims will be processed immediately after being reported and will get cash compensation within 14 working days. The data show that approximately 87 ha of the total 623 ha or almost 14% of the land area of the insured suffer harvest failure and thus they filed insurance claims.

Experience shows that the incidence of harvest failures due to flood were reported to be processed and insurance compensation was received in cash (by bank transfer) within 14 days. However, some farmers also had not filed this claim properly and immediately which caused delay in claim settlement (more than 14 days). This experience is admitted as important subject for the provision and improvement of the policy terms and conditions of the rice crop insurance scheme in the future.

CHAPTER 5

The Constraints and Challenges of Rice Crop Insurance

5.1 Background

The government pursue the optimism to introduce rice crop insurance scheme to protect the farmer's interests against harvest faulure. The scheme has gone under a series of pilot tests Ministry of Agriculture invite insurance institutions to take their role and expand their business in agricultural sector because of potential porfolio in such industry. In this context, rice crop insurance is developing. Since 2012 till date, a series of rice crop insurance is being implemented in a pilot project in two rice producing provinces, namely East Java and South Sumatera provinces. Although this pilot project was only carried in limited scale and in almost the same regency locations, there is eagerness to know about the implementation performance and understanding on the constraints associated with different angels. For this purpose, a supervision to visit the pilot project locations and meet the farmers and other stakeholders was set up aiming at learning and understanding the problems and issues, with eventually find the solutions or improvements to be made on the encountered problems.

The monitoring of the current insurance scheme activities for better future implementation by the Ministry of Agriculture has been facilitated by National Development Planning Agency in a initiative cooperation with Japan International Cooperation Agency (JICA) for Indonesia. This report is prepared from data and information gathered from field visits, discussions, and observations to finally provide conclusion along with suggestions and policy implications for the expansion of the pilot study as well as the suggestions to conduct studies on other related aspects. Discussions with stakeholders at regional level also attempted to prepare themselves on the application of rice crop schemes in the next planting season.

The general objective of this supervision activity is to conduct a review on various phenomena, achievement, and dynamic of the application of rice crop insurance scheme. More specifically, the objective of this review is to support a basic study toward properly making some directions, improvements, and recommendations in connection with the extension project of JICA's technical assistance under Sub-Project 2: Project of Capacity Development for Climate Change Strategies in Indonesia on rice crop insurance program. The recommendations would be the main part of policy implications in respect to agricultural/rice crop insurance development.

5.2 The Pilot Program Review

Upon execution of pilot project I, II and III the latest two which were contributed by JICA for the subsidy part of the premiums, a monitoring and evaluation was carried to by way of site inspection to the locations in two regencies in East Java. Based on the results from the monitoring and evaluation, a review on implementation activity was prepared. It should be noted as one of the reasons why specific locations being elected to join the pilot project. The reason of shifting from one regency location to the other regency location within one province was to learn the application of the pilot project in different agro-ecological system. By the fact, one regency will differ from the neighboring regency historically because of the geographical situation with the existence of river flows across the area that ensure water supply and better irrigation. Also the different in landscape and surrounding environment. All these evolutionally have influence on various factors to the agricultural condition, including tradition and local

custom and usage. Eventually the different agro ecological system really brings issues which is not simple to comprehend. At least diverse perception, response and reaction can be felt during the interaction and the implementation of the program.

The implementation of rice crop insurance pilot project currently conducted in East Java and South Sumatera provinces have been able to secure the following aspects being testified to support the program viability.

a. The applied form or model of the insurance scheme.
b. The institutional structure involved in the scheme, including assessment on the active role of related stakeholders.
c. The financial mechanism that satisfy insurance scheme transaction work as per the requirement.
d. The target of rice farm acreage, the process of site location, and the achievement level of the scheme.
e. The problems and constraints in the implementation process of the insurance scheme.
f. The gap between the target expected and target achievement, as referred to by the level of understanding, responses and actual utilization of the program.

This review is implemented by visiting a number of crop insurance study locations, conduct focus discussions along with field observations to exactly understand about the implementation of rice crop insurance. Through such understanding, direction to improve the next rice crop insurance would be better prepared. The descriptive type of analysis is used to explain the current condition and level position of the pilot projects. Technical meeting with relevant stakeholders during the implementation of the review is used to enrich the final report for better application of rice crop insurance in the future. The expected output of this review is the availability of data, information and knowledge about the implementation of rice crop insurance which is delivered in the form of supervision and review report. Recommendations covered in the report include:

a. Type of insurance scheme appropriate for paddy/rice crop.
b. Formulation of more equitable premium rates based on different risk exposures, and other associated terms such as sum of insured, amount of indemnity, etc.
c. Fairness of loss adjustment method and calculation mechanism for rice farm damage, including the reporting system and procedure.
d. Institutional structure at farmer's level to support the application of rice crop insurance scheme in more effective and efficient ways.
e. Feasible financial support for rice crop insurance both in premium subsidy and in socialization and dissemination.
f. Identification and confirmation of new locations as the expansion of pilot sites for rice crop insurance scheme and other agricultural commodities.

The continuation of rice crop insurance scheme is highly expected not only by the farmers but also by local agricultural officers. This kind of protection is emphasized by respondents' answer to the question about the scheme's continuation during group interviews. The stakeholder's understanding about rice crop insurance application is growing and expanding. Farmer's demands are also increasing, such as the need to cover field damage of less than 75% franchise and wider insurance coverage, while the farmers agree to lift up the 80% subsidy and are willing to pay the total premium. This is interesting trend and need to be thoroughly considered in the program application of future insurance design.

It has been experience of success in the pilot project, yet with some constraints identified that could potentially block the smooth way of the project. Aside from the capacity of field officers to work with

the farmers, the capability level of the executing insurance underwriters should be enhanced in the next pilot project application. It is obvious that the insurance company's human resource need to improve expertise in agricultural knowledge and, hence, the availability of insurance loss adjuster to inspect farm damage inspection is also very essential.

5.3 The Issues and Constraints

There have been a number of constraints in the field which have direct and indirect relation with agronomic matters. The insurer could also consider other companies specializing in loss adjustment/ damage inspection as alternative to help improve the performance of rice crop insurance. Another constraint found in the field is the level of understanding about rice crop insurance application. The government officials have their own level of understanding compared to that of the farmer's knowledge. However, both sides need to have additional interactive communication for which socialization events with applied problem solving are highly required. Moreover, the socialization materials should include an understanding about the Law No. 19/2013 on the protection and empowerment of the farmers, the technical implementation guidance, and other related application issues, including the outbreak control and claim mechanism. There are opportunities to expand the program; however, the shortage of resources should be another constraint on this issue. The next rice crop insurance implementation would be best considering variation of its application which will allow different schemes and enhance insurance knowledge through the pilot study.

Potential prospect was also emerged during the discussions with stakeholders. In addition to rice crop insurance, other agricultural commodities are requested to be included in similar scheme. In general, stakeholders are looking at the positive prospective of agricultural commodities to be protected through insurance schemes in favor of the farmers. This is also considered as potential opportunity for both farmers and the insurance companies.

A synthesized rice crop insurance program is important to deliver for stakeholders and decision makers, both at regency and provincial levels, to make up their understanding and to suggest the inclusion of rice crop insurance activities in their respective agricultural development plan. The consequence of such inclusion for local government is that there will be budget allocation for agricultural/rice crop insurance activities. Such allocation would be in line with the planned agricultural development program and more specifically on the protection of the farmers and their farms facing the impact of global economic phenomenon.

Insurance is also considered as activity medium for education. Farmers are given additional knowledge on how to maintain their farm at highest performance as possible. The indication of certain pest or disease infestation, for instance would be observed and immediately communicate with his/her fellow farmers within the farmer's group as well as with field officer instead of keeping it alone as self-constraints to be resolved. Insurance scheme should allow intensive communication with other parties and try as much to save the plant. Important to keep in mind that there is no one expect the damage of the area insured. The revenue should always be higher than the value of money received from insurance payout. Farmers have discussed the possibility of indemnity variation during the interview session.

The claims recoverable under the rice crop insurance policy is when the intensity damage reaches 75% and its coverage reaches 75% of the rice farm area per plot. Such provision was responded that 75% as too high or hardly hit. Many farmers therefore proposed this "franchise" be reduced to say 60%, 50% or even to 25%. This request, to some extent, shows farmer's understanding on the scheme implementation and their eagerness to know more about the insurance aspects while they are willing to accept the insurer's roles on rice farm protection. Such proposal is considered sensible and need further analysis. Assuming that a franchise is reduced to 50%, farmers will obtain full indemnity of

IDR 6,000,000/ha and still earn 50% of the harvested area. Such a situation is not in line with the original idea where the rice crop insurance is to compensate the cost of average production of IDR 6,000,000/ha. In this case a damage of 74% for example, with undamaged of 26%, farmers will still harvest about 26% which is more sufficient for a cost of replanting. It should be noted that the original objective of rice crop insurance program is to provide a capital to farmers for replanting in an amount equals to average cost of production of IDR 6,000,000.

Other farmer's proposal options perhaps are related to 'days of planting', such as the farm to be insured after 30 days of planting. On the other hand, the rice crop insurance scheme contains "time excess" of the first 10 days of planting during which no claim could be made. On that basis, the insurance coverage starts from the 11th day up to the day of harvest time. The proposal of 30 days where risk (planting) has been running to be insured could not be accommodated, but it might be considered for 15 days risk running as an example to make alternative rooms with logic arguments of insurance scheme.

The summary of stakeholders' responses is important to consider in preparing detailed plan of operation of agricultural insurance framework. Table 40 provides the linkage between the responses and necessary actions based on measured indicators for certain objectives.

Table 40. Summary of respondent's responses on measured indicators, East Java Province, 2014

No.	Measured indicators	Objectives	Respondent's responses	Action plan
1.	Perception on indemnity-based rice crop insurance	To know the level of official's understanding about farmer's protection and empowerment	1. Different level of understanding 2. Officials at provincial and regional levels require intensive socialization 3. Farmers understand technicality but need more explanation about the implementation procedures in respect to different proposed insurance perils	1. Schedule of socialization events need to be prepared for officials at different levels, both at provincial and regional levels 2. Materials to be synthesized include rice crop insurance procedures and specifically on claim's mechanism, message from Law No. 19/2013, and elaboration of technical implementation guide 3. Description on other prospective options are necessary
2.	Preparation for application	To capture any constraints during the preparation activities	1. Special efforts are required during registration process to collect 20% premium payment from the farmers 2. The farmer's group could transfer the payment to the insurer's bank account 3. There is a need to explain in a more detail about the insurance policy to the farmers to get familiarity of such insurance scheme	1. Registration is an important part in the whole process of the scheme. Insurance agent's involvement is required to follow on the procedures. 2. Transfer of premium payment and further explanation about the insurance policy are considered as part of educating the farmers
3.	Implementation stage	To understand problems associated with technical and non-technical application procedures	1. Officials and field officers take their roles in the implementation stage with minimum communication with the insurer 2. Farmers are relying the implementation to the field officers, namely extension and pest officers, but	1. Intensive contacts and the level of communication with district officials, field officers, insurer's personnel, and agricultural insurance working group should be intensified following various constraints to be resolved during the implementation stage

Table 40. *(continued)*

No.	Measured indicators	Objectives	Respondent's responses	Action plan
			sometimes short of intensive contacts	2. Government financial support is required especially for the operational costs of field officers
4.	Suggestion for improvement and prospect of rice crop insurance	To know the officials' vision to improve rice crop insurance scheme for agricultural/rice crop insurance sustainability	1. Agricultural/rice crop insurance activity has been included in the local government's medium-term economic development 2. Other agricultural commodities that are eligible to be insured are encouraged	1. Rice crop insurance is continued; variation of the scheme could be discussed among the stakeholders 2. Future prospects of farm protection are subject to the decision by the appropriate parties; cattle and specific horticultural crops are suggested to be insured

5.4 The Challenges and the Policy Implication

In the framework of the introduction of agricultural insurance, rice crop insurance in particular, there are variety of issues and challenges include institutional, technical, operational and financial aspects:

a. Institutional Challenge

Agriculture insurance is considered to be a new product in Indonesia. Demand and supply of agricultural insurance are still very low. Risks associated with agricultural sector have never been considered as potential market by general insurance suppliers. Currently, with the Ministry of Agriculture's initiative, rice crop and livestock insurance policy wordings has been approved by the Monetary Services Authority as marketable insurance products. This initial product of agriculture insurance will be in the market for insurance companies especially for state-owned company to execute the scheme as national program.

b. Technical Challenges

The insurance industry relatively does not have enough exposure to the practice of agriculture insurance at the international level, so there is little knowledge about the types of risks, scope of coverage, calculation of premium rates, claims handling and various operational aspects of agriculture insurance. The difficulties faced by the insurance companies therefore include lack of adequate and accurate statistical or historical data in agricultural sector in many respects such as area size, production and productivity, exposure of damage and harvest failures by location, etc. These data and information would be absolutely vital for the insurance companies also the Ministry office to calculate the exposures and come up with adequate and equitable rate of premium.

c. Operational Challenges

The operational challenge includes company's lack of capacity in rural areas. Most insurance companies have branch offices in some provincial capitals but not so having sales outlets in the districts or sub-districts. On the other hand, most rice farmers own less than 1 hectare of land or 0.3 ha in average small holder farmers. This means that the cost of insurance's administration and delivery will definitely be very expensive. Therefore, the concept of insurance sales should be directed to target the farmers' groups instead of individual farmer. Wherever possible, the target of any one risk could be any one sub-regency as the smallest unit of risk.

d. Farmers Financial Challenges

It is already a common fact that farmers are poor people in the sense that they do not have financial capital to start planting during crop growing season and it is difficult for them to pay the insurance premium. Thus, access to financing facility is very important for farmers. The government has provided a number of loan programs with interest subsidies. In these various low interest credit facilities, insurance premium as cost of risk factor is not included in the credit program. The issue of farmers' inability to finance agricultural businesses also become critical for the implementation of rice farm insurance program. Under Law No. 19/2013, the Ministry of Agriculture is taking all efforts in convincing the Ministry of Finance that "subsidy" for premiums needs to be approved and included as a specific item in the state budget.

e. Insurance Financial Challenges

In general, insurance underwriters are hesitant to take role in the agricultural insurance sector investment because of the view that this class of business is classified as high cost and high risk. The insurers should consider how to gain understanding and access to gain support from national and international markets. Without the access to risk transfer through reinsurance mechanism, the insurers will be exposed to catastrophic losses such as floods and droughts. If such disaster occurs, it is inevitable that the insurers will not be able to meet the claims. To overcome such situation, the crop and livestock insurance scheme may be implemented by way of farmer cooperatives or mutual insurance scheme such as in Japan.

f. Inherent Climate Changes Impacts and Challenges

Weather is one of the most pervasive production risks to agriculture, impacting all aspects of the agricultural supply chain. In developing country like Indonesia, where significant proportion of the population are reliant on rain-fed agriculture, weather risks remain one of the major constraints limiting commercialization and development of the agricultural sector. Agriculture technology such as new crop varieties, inputs, production techniques and management practices can, in some cases, minimize production risks; however, farmers will continue to be affected by many uncontrollable weather related events – including excessive/insufficient rainfall and extreme temperatures – that can severely impact the quality and level of yields produced (Bryla and Syroka 2007).

Risk management products such as insurance are considered important as they can provide greater access to financial services, such as credit and savings, and encourage the use of new technologies or activities with higher expected incomes. Farmers could benefit from investing in agricultural activities if the risks affecting these investments, such as weather, could be managed. In response to these challenges and encouraged by the development of the international weather risk market in the developed countries such as the US and Europe, the Ministry of Agriculture began working on the rice crop insurance scheme starting with the indemnity based and going forward on yield index-based and weather index based modeling.

CHAPTER 6
Conclusion

The government of Indonesia through the ministry of agriculture without exhaustive introduces continuously various program policies for agricultural development. Among the breakthrough policy is the application of agricultural insurance scheme to protect the farmer's assets, activities and interests. Expected outputs obtained from such agricultural insurance application among others are: (a) farmer's protection from sudden and unexpected losses due to farm/crop damage or harvesting failure, (b) farm management and risk control improvement, (c) increase of farm/crop harvest production and productivity, (d) better insight and knowledge of empowerment, (e) improve regional economic movement as the business grows and link with local insurance company), and (f) develop job opportunity.

In the wet season of 2012 through 2014, three pilot projects of rice crop insurance were executed in two rice producing centers of East Java and South Sumatera. Farmers are in general positively accepted the scheme as shown during the implementation of the pilot project, of course with various level of perception and understanding as indicated by varied response and reaction. Lessons learned from such pilot project is essentially valuable and would be used to improve, modify or enrich the existing program structure, procedure and mechanism. Interesting to know that approximately out of the total target acreage of 8,000 ha, the 3,822 or 48% was achieved. Also very important to note that the total generated premium income of IDR 687.9 billion could not pay the claims amounting to IDR 1,143 billion. In other word, the insurance company carrying the risk have to make a loss of IDR 455.4 billion or a loss ratio of 166%. On the side of the insured farmers, those who suffered the rice damage and claiming to the insurance company have successfully gained the benefit of joining the rice crop insurance program that the claim was paid within the stipulated time limit.

The above fact and figures are in no way neglected for a serious review of the program. In one side, the pilot projects have proved benefiting certain farmers and ended up with deficit to the insurance company. It was understood as one of the reason that during the pilot there was no risk selection or in other word there has been an adverse selection of risk on the part of the insurer and the limited scale-up also mean that the law of large number was far from sufficient to constitute a stable homogenous risk, but a very volatile risk exposure instead. A comprehensive program review become very essential in order that the rice crop insurance program can really benefit to both the insured farmers at the demand side and the insurance company at the supply side. It is widely acknowledged that a goo agricultural insurance system will in the long run become a self-sustainable protection system. It also proved that a government subsidy scheme will be even cheaper to the government in the long run, when the insurance as a self-sustainable protection system work well.

One significant effort having been achieved by the Working Committee of Agricultural Insurance at the Ministry of Agriculture recently was the construction of risk exposure zones and come with variable rating structure. Based on this improvement in rating formulation, the 3% flat rate should be replace by variable rates ranging from 2% for the very light exposure zones to 7% for the very high exposure zones. This improvement should be followed by similar review and improvement on other aspects of the rice crop insurance program including terms and condition of the insurance policy. Similarly such a review should also apply to other agricultural insurance program for livestock which currently is undergoing the same trial project.

Further lessons learned from the implementation of the pilot project is apparently poor understanding about agricultural/rice crop insurance of both farmers and officials at local level. Different understanding

in agricultural insurance has been considered as one of the main constraints in the application of rice crop insurance. Lack of communication and coordination between the stakeholders was probably due to diverse understanding and asymmetry information about agricultural insurance. Low intensity of socialization, irregular coordination on agricultural protection, and institutional ego with different source of financial supports is among the reasons on such poor cooperation between the stakeholders at local level.

To a certain extent, the pilot project has successfully worked and there is no reason that similar pilot project should not be expanded and conducted in many locations. The five locations visited and intended for similar project are proposed for the next application of rice insurance scheme. Wider coverage of rice crop insurance could provide better learning process of the scheme. Agricultural/rice crop insurance is widely accepted by the farmers, the local officials, and other interested parties and their cooperation is highly required.

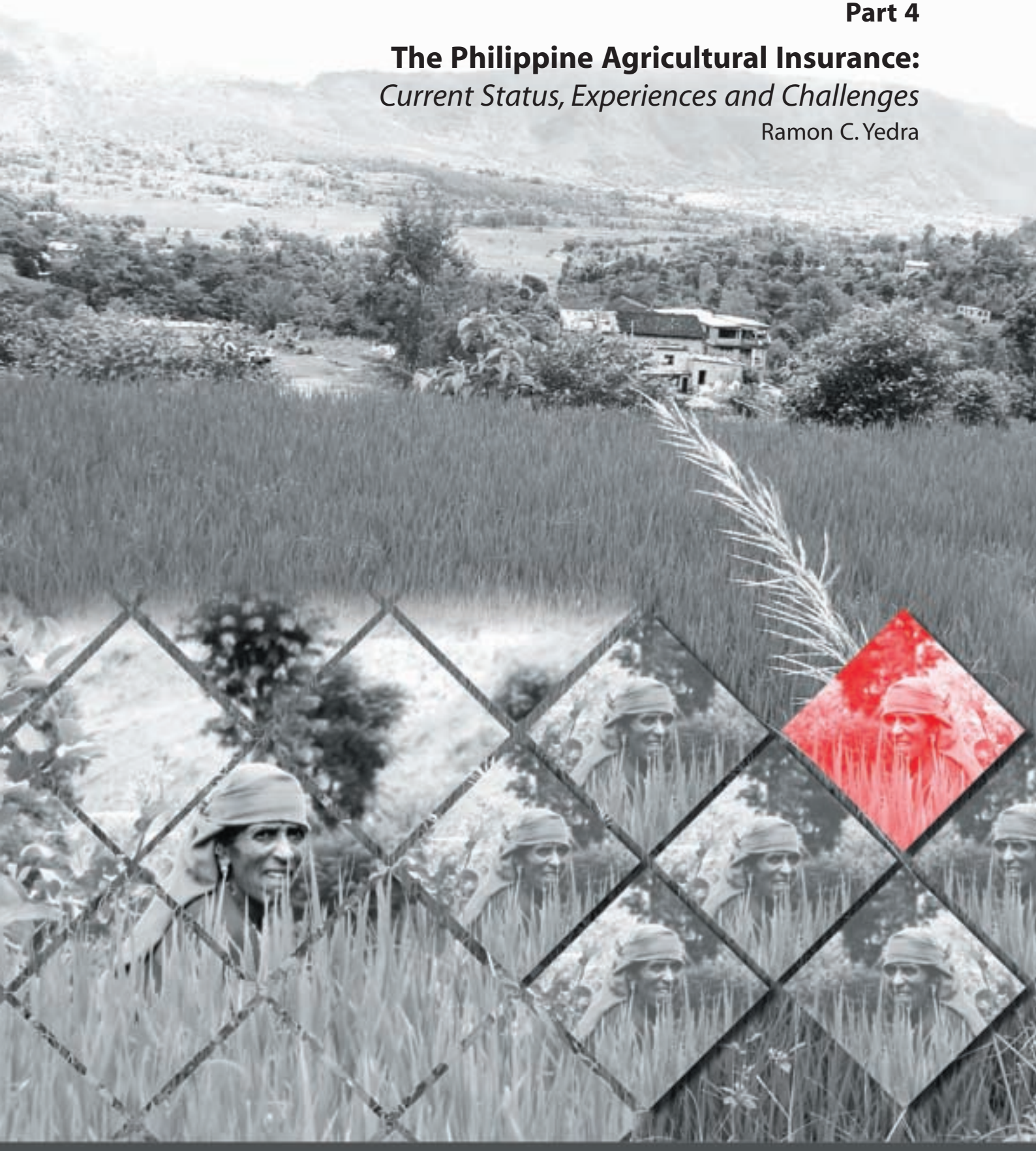
Agricultural insurance is considered as means of mitigation efforts to reduce the impact of global climate change. Rice crop insurance as in the current pilot project educates the farmers to apply good agricultural practices. Farmers are encouraged to carry out local specific farm management and apply recommended crop practices, such as adaptive crop varieties, efficient use of water, balance fertilizer application, etc., for sustainable productivity. With acceptability of crop insurance scheme as mitigation options, wider commodities, larger areas, and higher farmers would enjoy benefits within better environment and friendly agricultural practices.

The rice crop insurance pilot study is conducted by the Ministry of Agriculture in partnership with the State-owned Fertilizers Companies (2012-2013 planting season) and cooperation between the Ministry of Agriculture (MoA), National Development Planning Agency (Bappenas) and Japan International Cooperation Agency (JICA) for 2013-2014 planting season and onwards under the JICA's Project of Capacity Development for Climate Change Strategies in Indonesia. The authors' gratitude is extended to those organizations for the use of some materials from this collaborative study, however the content of this paper is the author's responsibility and not necessarily represents views of the above mentioned institutions.

Part 4

The Philippine Agricultural Insurance:
Current Status, Experiences and Challenges

Ramon C. Yedra



CHAPTER 1
Introduction

1.1 Background

Risk in agriculture remains a formidable challenge among farmers and rural finance institutions. Producers face myriad of risks arising from pests and diseases and vagaries of nature that affect production yields and farm incomes. In the Philippines, agricultural losses due to natural calamities are huge as agriculture contributes 11% of the economy and provides livelihood to 31% of the population. The situation has been exacerbated by climate change characterized by more frequent and longer droughts during the dry season and excessive rainfall and strong typhoons during the wet season. From 2000 to 2012, natural disasters in the Philippines affected more than 71 million individuals. Agriculture was the most affected sector by natural disasters with estimated total damages of Php 106.85 billion ($ 2.51 billion) or 58% of the total economic damages (SEPO, 2013). The crops subsector, in particular, had the largest economic damages due to the combined impacts of tropical storms, floods and droughts. In 2013, the country was hit by the strongest typhoon in decades (typhoon "Haiyan") which affected 16 million people with estimated Php 18 billion ($ 0.42 billion) damage to agriculture (NDRRMC, 2014).

While farmers can manage small recurrent risks through the use of appropriate farm management practices such as pest management and improved technologies, they are not in a position to manage the less frequent but more severe losses arising from adverse events. In a country like the Philippines with high risk exposure to natural calamities, agricultural insurance is particularly important as this provides protection to farmers in incurring heavy financial losses. Agricultural insurance also serves as incentive to lenders to extend more credit to farmers as insurance reduces credit risk and can serve as substitute collateral. Thus, an agricultural insurance system accessible to agricultural producers is deemed important in ensuring farmers' welfare and in promoting sustainable rural finance.

The objective of this study is to have an updated review of the state of agricultural insurance in the Philippines. The specific objectives are: (a) to assess the performance of the Philippine agricultural insurance program and (b) to identify major challenges in attaining sustainability of agricultural insurance in the Philippines.

1.2 Organization of the Report

This report is divided into three sections. The first section provides the brief description of the macro-environmental context. These include brief description of: (a) socio-economic condition, (b) rural financial system in the Philippines, (c) state of micro-insurance industry and (c) weather related risks in agriculture. The second section assesses the performance of the agricultural insurance program in the country and analyzes prospects of its viability. The third section identifies key challenges for attaining sustainability and continued growth of agricultural insurance in the Philippines and makes recommendations.

CHAPTER 2
Macro-environment

2.1 Socio-Economic Condition

The Philippines is a lower middle-income country with a Gross Domestic Product (GDP) of $ 272 billion in nominal terms and ranked 40th in GDP size among 192 countries as of 2013 (World Bank, 2014). With a population of 98.39 million, its per capita Gross National Income (GNI) is $ 3,270. Recent years showed respectable growth of the economy with an average of 6.3% GDP growth from 2010-2013. From 3.7% growth in 2011, the Philippine GDP rebounded with 6.8% growth in 2012 and 7.2% in 2013. As of second quarter of 2014, the economy grew by 6.4%. Agricultural sector grew by 3.6% in 2012 but slowed down to 1.2% in 2013 primarily due to the impact of natural calamities.

The services sector dominates the Philippine economy, accounting for 58% of GDP followed by industrial sector accounting for 31%. The agricultural sector contribution to the GDP continues to drop from 14% in 2006 (down from 23% in 1982) to 11% by 2013 (NSCB, 2014). Agricultural GDP has varied somewhat in recent years because agriculture in the Philippines is highly susceptible to the effects of drought and typhoons. But while agriculture's share of the GDP has declined over the years, it remains an important sector as it provides employment to 31 percent of the active labor force (PSA, 2014).

About 32% of total land area of the Philippine archipelago is agricultural land. Farmland is about 4.94 million hectares which is 51% of the total agricultural land area (9.67 million hectares). Rice and corn are the Philippines' principal food crops, with rice being the staple food. Rice is produced extensively on the islands of Luzon and Mindanao and in the Western Visayas, while maize is primarily produced in Mindanao. There are 4.82 million farms, 54% of which are coconut farms (2.6 million), 45% are rice farms (2.15 million) and 30% are corn farms (1.46 million). The Philippines is the world's second-largest producer of coconut products after Indonesia. Value of total agricultural exports in 2013 was $ 6,318 million equivalent to 12% of total Philippine exports. Top export commodities are: coconut oil (15%), fresh bananas (14%), tuna (11%) and pineapple products (7%).

Total GVA in agriculture and fishing was PhP 1,293 billion ($ 30.3 billion) in 2013 (PSA, 2014). Crops contributed 50% of which rice contributed 21% and corn at 6%. Poultry and livestock contributed 24% which is a significant increase from 13% in 2006. With its 7,107 islands (roughly 2,000 of which are inhabited), the Philippines has a diverse range of fishing areas. The share of fisheries in total GVA in agriculture slightly increased from 15% in 2003 to 19% in 2013.

Table 41. Key Socio-Economic Indicators of the Philippines

Key Indicators (2013)	
Population (projected)	98.39 million
Population growth	1.7%
Number of families	21.43 million
Rural population (% of total population)	55%
Gross Domestic Product (GDP)	$ 272 billion
Gross National Income (GNI)	$ 321 billion
Per capita GDP	$ 2,765
Per capita GNI	$ 3,270

Table 41. *(continued)*

GDP composition by sector (2013)	
Agriculture	11.2%
Industry	31.6%
Services	57.2%
GVA in agriculture	$ 30.3 billion
Employed (economically active population)	38.12 million persons
Agricultural employment	11.84 million persons
Share of agriculture in employment	31%
Inflation rate (%)	3%
Poverty Incidence, in % of families (2009)	20.9%
Annual per capita poverty threshold	Php 11,686 ($ 274)
Exchange rate (Php: US$)	42.69

Sources: Philippine Statistics Authority (PSA), Worldbank Database

2.2 Rural Financial System

The Philippine formal financial system is composed of the following categories: (1) banking institutions, (2) non-bank financial intermediaries, and (3) non-thrift institutions listed in Table 42. The banking institutions are classified into the following, pursuant to the General Banking Act of 2000: (a) universal banks and commercial banks; (b) thrift banks, composed of (i) savings and mortgage banks, (ii) stock savings and loan associations, and (iii) private development banks; (c) rural banks; (d) cooperative banks; (e) Islamic banks and (f) specialized government banks. Non-bank financial intermediaries include finance companies, non-stock savings and loan associations.

The *Bangko Sentral ng Pilipinas* (Central Bank) is responsible for implementing monetary policy and prudential supervision and regulation of the banking system. The Securities and Exchange Commission (SEC) oversees the conduct of the stock and bond markets, and, to the extent that banks and nonbank financial intermediaries (NBFIs) participate in these markets, the SEC works with the Central Bank in supervising and regulating the activities of the latter institutions. Increasing financial sophistication has led to greater diversification in the conduct of business in the financial services sector.

Total resources of banks (Figure 17) as of June 2014 amounted to Php 10,277 billion ($ 241 billion) with universal and commercial banks accounting for 90%. Universal and commercial banks are generally urban-based, e.g. an estimated that 50% of the 5,547 bank offices of universal and commercial banks are in Metro-Manila while the rest are mostly in other major urban cities. In 2014, total amount of banks' agricultural loans was Php 4,853 billion ($ 114 billion). While universal and commercial banks' loans to agriculture constitute 67% of the total agricultural loans, their agricultural loans account only for 3.6% of their total loan portfolio.

The rural and cooperative banks with 2,110 bank offices remain as the major retail-suppliers of agricultural loans for small farmers allotting 25% of their total loan portfolio to agricultural loans. The state-owned **Landbank** is the principal wholesaler of agricultural loans to these financial institutions and to cooperatives. In terms of loans granted, **Landbank** accounts for about 14% of the total agricultural loans while the combined share of the rest of total 36 universal and commercial banks is about 24% of the total agricultural loans granted. Table 42 shows the assets and loans granted by Philippine banks.

Figure 17. Philippine banking system

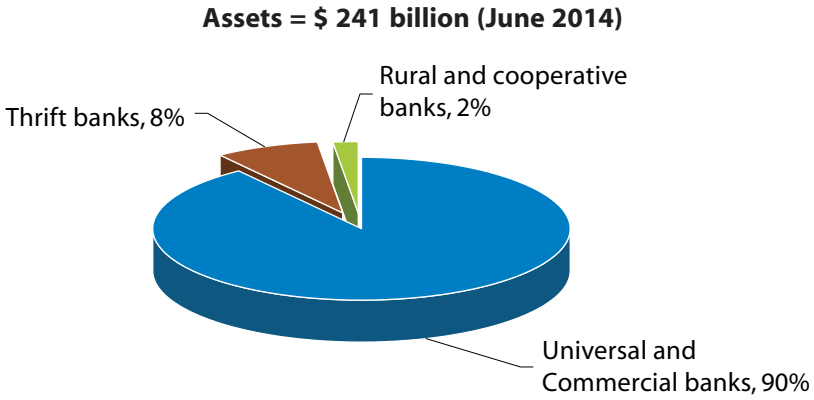


Table 42. Assets, total loans and agricultural loans of the banking system (June 2014)

Bank category	Number	No. of bank offices	Assets (Php B)	Total loans (Php B)	Agri-loans (Php B)	% of Agri-loans to total loans
Universal and commercial banks	36	5,547	9,251	4,161	148	3.6%
Thrift banks	70	1,808	819	554	40	7.2%
Rural and cooperative banks	558	2,101	207	138	34	24.9%
Total	664	9,456	10,277	4,853	222	4.6%

Source: Bangko Sentral ng Pilipinas (BSP)

Apart from rural and cooperative banks, non-formal financial institutions are important sources of credit in rural and agricultural areas. Non-formal financial institutions consist of cooperatives and non-government organizations. These institutions are required to register with the Cooperative Development Authority (for cooperatives) and Securities and Exchange Commission (SEC) for non-stock non-profit NGOs but are not regulated with regard their savings and lending operations. As of December 2013, there were 23,672 registered operating cooperatives in the Philippines, of which 14,722 are multi-purpose cooperatives and 2,959 credit cooperatives (CDA, 2014). Most multi-purpose cooperatives however have likewise savings and lending operations. The total resources of cooperatives stood at Php 267 billion ($ 6.25 billion) with a total of 12.7 million members of which, 2.7 million individuals are members of credit cooperatives while multi-purpose cooperatives have 7.7 million members.

2.3 Micro insurance

The Insurance Commission (IC), a government agency under the Department of Finance, supervises and regulates the operations of insurance and reinsurance companies. These include corporations, cooperative societies and mutual benefit associations that sell life and non-life insurance products and services. Authorizations and licenses of private insurance companies need to be renewed annually. The PCIC is not under the supervision of the IC.

In 2014, the IC granted licenses to 97 insurance companies consisting of four composite insurer companies (combined life and non-life), 26 life insurance companies, 66 non-life and one reinsurer (IC, 2014). Also issued licenses were 28 mutual benefit associations (MBAs), 17 of which are micro-insurance organizations. The combined premium production by the private insurance companies continued to rise over the years with Php 198 billion ($ 4.64 billion) by end of 2013, 37% more than the

previous year. Aggregate assets amounted to Php 892 billion ($ 29.45 billion), 19% higher than the previous year. Of these assets, a total of Php 550 billion ($ 12.9 billion) were placed in fund investments such as government securities, stocks, real estate, short-term investments and other investments permitted under the provisions of the Insurance Code. Share of life insurance companies on total assets is about 83%.

Under IC Memorandum Circular 1-2010, micro-insurance has been defined as "an activity providing insurance, insurance like and other similar products and services that meet the needs of the low income sector for risk protection and relief against distress, misfortune or other contingent events." A micro-insurance product is where the amount of premium or fees computed on daily basis does not exceed 5% of daily minimum wage for non-agricultural workers and maximum sum of insured benefits does not exceed 500 times of the daily minimum wage of non-agricultural workers. Based on current daily minimum wage (Php 446, as of 2014), this means premium should not exceed Php 13,380 per month ($ 313 per month) and sum insured should not exceed Php 233,000 ($ 5,223).

There are 17 micro-insurance MBAs licensed (increase of 11 new licensed MBAs since 2009), 80 insurance products approved, 54 life insurance products and 26 non-life insurance products (Portula, 2013). Estimated penetration rate of licensed micro-insurance organizations is about 23% of the total population with 7.8 million insured individuals. Thirty-five commercial insurance companies are likewise into micro-insurance and 34 rural banks are licensed agents.

The largest among the micro-insurance organizations is *CARD-MBA*. As of September 2014, CARD-MBA has 2.06 million members with 10.3 million insured individuals in 45 provinces (CARD, 2014). Total assets amounted to Php 5.6 billion, total premium income stood at Php 1.34 billion and net income after taxes was Php 246 million as of December 2013. The CARD-MBA extends a wide range of micro-insurance services to its member-clients such as: basic life insurance, loan redemption (credit life insurance), and retirement savings plan. In 2006, CARD set up a separate legal entity for non-life micro-insurance services, CARD-Insurance Agency (CAMIA). As of September 2014, CAMIA has total assets of Php 173 million and has sold Php 106 million worth of insurance plans. The piloting of crop micro-insurance product is still at an early stage of implementation, which as of September 2014 has Php 1.7 million enrolled plans and Php 0.38 million claims payment or 22% loss ratio. The major clients of CARD-MBA and CAMIA are loan clients of the CARD Group of Microfinance Institutions (CARD-Bank, CARD-NGO).

Micro-ensure (Philippines) is a licensed insurance broker affiliated with the *Micro-ensure* global network founded by Opportunity Intern*ational in* 2002. It started operations in the Philippines in 2007. It provides micro-insurance services by working with Microfinance Institutions covering 1.5 million clients in 50 provinces through a wide range of products that cover losses related to personal accident, natural death, calamity and weather. Micro-ensure developed a unique Weather Index Based Insurance (WIBI) product where it partners with an input supplier (Madrid, 2014). A sack of fertilizer is equivalent to one unit of WIBI insurance at premium cost of Php 35 ($ 0.80) per unit insurance. The term of coverage is 120 days. In 2012, it insured 1,064 clients of whom 277 filed claims. In 2013, Micro-ensure earned Php 126 million premium income. The bulk (75%) of the income came from life insurance while less than 1% came from WIBI crop insurance.

2.4 Weather-related Risks in Agriculture

The Philippines is known as one of the most natural hazard-prone countries in the world. The 2014 World Risk Report of the United Nations University Institute of Environment and Human Security (UNU-EHS) ranked the Philippines as second most exposed to risk among 171 countries in the world, with a risk index of 28.25% (UNU-EHS, 2014). The risk index uses four indicators to define countries at risk to natural disasters namely, exposure, susceptibility, coping capacities and adaptive capacities. The high risk-index ranking of the Philippines is due to its high exposure to natural hazards such as

typhoons, floods and other hazards that occur slowly over a long period of time such as drought and sea level rise but which are becoming more frequent due to climate change. The Philippines in fact is the country most exposed to tropical storms in the world. Due to its geographic circumstances, the Philippines has unusually high exposure to these natural hazards.

The climate of the Philippines is tropical and is strongly affected by monsoon (rain-bearing) winds, which blow from the southwest from approximately May to October and from the northeast from November to February, although there is considerable variations in the frequency and amount of precipitation across the archipelago. From June to December typhoons often strike the archipelago. Most of these storms come from the southeast, with their frequency generally increasing from south to north. On the average, 19 to 20 typhoons enter the Philippine area, with the months of June to November averaging approximately three typhoon strikes per month. Luzon is significantly more at risk than southern areas. Typhoons are heaviest in central Philippines (e.g. Samar, Leyte), south Luzon (Bicol region, eastern Quezon province), and northern Luzon (e.g. Batanes Islands) and when accompanied by floods or high winds they may cause great loss of life and property. In addition to high winds, a major damaging element of tropical cyclones is storm surge.

From 1990-2014, there were a total of 485 natural disaster events (average of 19 annually), of which, 460 are weather-related events. Of these events, 125 are due to floods (average of five annually) and 286 are due to typhoons (average of 11 annually). During the past 25 years, tropical storms affected a total of 144 million people (455,200 people per event and 5.7 million people annually), floods affected a total of 28 million people (227,380 people per event and 1.1 million people annually), droughts affected 6.5 million people (819,150 people affected per event). Total estimated damage of weather-related disasters amount to $ 22 billion in the last 25 years (EM-DAT, 2014). Table 43 shows the summary of the number and impact of weather-related natural disaster events from 1990 to 2014.

Table 43. Weather-related loss events in the Philippines (1990-2014)

Event	Number of events	Total Number affected	Total Damage ($ '000)	Average per event	
				Number Affected	Damage ($ '000)
Drought	8	6,553,207	64,453	819,151	8,057
Flood	125	28,422,566	3,791,126	227,381	30,329
Storm surge	11	125,931	2,617	11,448	238
Tropical storm	316	143,843,387	18,276,583	455,201	57,837
Total	460	178,945,091	22,134,779		

Source: EM-DAT: OFDA/CRED International Disaster Database

Compared to other countries, Philippines had the most number of weather-related loss events among affected countries in the world over a 20 year period (1993-2012). In 2012, the Philippines ranked second among the top most-affected countries based on Climate Risk Index (CRI) with CRI score of 10.33. The CRI, developed by *Germanwatch*, is an indicator of level of exposure and vulnerability to extreme weather events (Kreft, 2014). This rank may move up in 2013 due to typhoon "*Yolanda*" (Haiyan) which to date is the single event with the most extensive damage with 16 million people. Table 44 shows the number of events and economic losses from 1993-2012 of five Asian countries included in top ten countries most affected by weather-related loss events.

Table 44. Number of weather related events and economic losses, by country (1993-2012)

Country	Losses (million US$ PPP)	Losses (% of GDP)	Number of events
Philippines	736.3	0.29	311
Bangladesh	1,832.7	1.16	242
Vietnam	1,637.5	0.91	213
Thailand	5,410.1	1.29	193
Mongolia	327.4	3.68	25

Source: Kreft and Eckstein (2014). Global Climate Risk Index 2014. page 6.

Impact of natural disasters on agriculture

From 2000 to 2010, the total agricultural area affected by typhoons, floods and droughts in the Philippines has been on an increasing trend. The total area increased from 683,440 hectares in 2000 to 977,208 hectares in 2010 (Israel, 2012). The affected area was at its lowest in 2002 at 200,940 hectares and at its highest in 2006 at 1,461,608 hectares.

From 2000 to 2010, the total value of agricultural damage, by commodity, affected by typhoons, floods and droughts in the Philippines amounted to a total of Php 107 billion ($ 2.5 billion). The crops with the most damage were rice, corn and high value cash crops. Other commodities with most damage included vegetables, coconut, abaca, sugarcane, tobacco, fisheries products, and livestock. While generally increasing, the total damage to agriculture decreased from 2000 to 2002, increased in 2003 to 2004, fell in 2005, rose in 2006, declined in 2007, increased in 2008 and 2009 and decreased again in 2010. The total damage to agriculture due to typhoons, floods and droughts were lowest in 2002 and highest in 2009.

From 1991-2000, the average annual loss in rice production due to natural calamities was estimated to be 3.3%. The loss due to typhoon and floods was an average of 2.6% while due to drought was 1.5%. In recent years, this appeared to increase. Israel and Briones (2012) estimated the average annual losses due to natural calamities, using three year data period (2008-2010) to be 4.2% of production output for rice. For other crops, the estimated production losses are: (a) corn at 5.9%, (b) high-value crops at 3%, (c) sugarcane at 1.9% and (d) coconut at 0.1%.

CHAPTER 3
Philippine Agricultural Insurance Program

3.1 Creation and Mandate of Philippine Crop Insurance Corporation

Agricultural insurance in the Philippines is essentially a government program implemented by a specialized state-owned corporation – the Philippine Crop Insurance Corporation (PCIC) – created for the purpose of developing and implementing an agricultural insurance system.

PCIC was created in 1978 under Presidential Decree (PD) 1467 as the specialized corporation of the government mandated to "provide insurance protection to farmers against losses arising from natural disasters as well as plant diseases and infestation, initially to *palay* crops and later on to other crops." At that time, the government has just implemented its rice self-sufficiency program ("*Masagana 99*"), thus the emphasis for rice crop insurance. The insurance system was viewed as necessary to cushion the effects of recurrent natural disasters to farmers resulting to heavy crop losses, loss of income as well as erosion of credit standing with lending institutions. Under this law, participation in rice crop insurance is mandatory to all farmers obtaining production loans under the government's supervised credit program and optional for self-financed farmers. To initially capitalize the corporation, the assets of the Agricultural Guarantee Fund were transferred and absorbed by the PCIC. The Agricultural Guarantee Fund was an earlier program set up by the government in 1971 to provide loan guarantees to rice farmer-borrowers under its supervised credit program. The authorized capital of the corporation was Php 750 million and paid-in capital of Php 250 million, of which an initial Php 150 million came from the Agricultural Guarantee Fund.

PD 1467 was later amended in 1980 by PD 1733 which allowed all lending institutions participating under the supervised credit program of the government as underwriters of the corporation. In 1995, these previous laws were amended and consolidated under Republic Act 8175 providing the new charter of the PCIC.

Among the expanded coverage and mandate under this law are: (a) inclusion of other non-crop agricultural assets such as machineries, equipment, transport facilities that can be extended with insurance coverage; (b) expansion to other insurance lines (other than crop insurance) and other areas of agriculture to address insurance needs of target sector; (c) authority to seek re-insurance protection whenever deemed necessary; (c) increased authorized capital to Php 2 billion with Php 1 billion to be fully subscribed by the government; (d) authority to issue bonds and borrow funds from local and international lending institutions up to five times the value of its authorized capital stock.

The law likewise spelled out the provision on premium subsidy to be shouldered by the government. Under the law, premium rate and sharing among the farmers, lending institutions and the government can be determined by the Board of Directors of PCIC provided that the government share in the premium cost – in a form of subsidy – shall be only for 'subsistence farmers' (defined as those tilling seven hectares or less) and for insurance coverage against unforeseen and unavoidable risks such as typhoons, droughts, outbreaks of pests and diseases. But while the premium rate and cost sharing for rice and corn insurance is determined by the Board, it is however subject to the approval of the President of the Philippines. The premium rates for other crops and for livestock can be set by the Board.

The PCIC is not supervised or regulated by the Insurance Commission. Thus, the premium rates and insurance products that PCIC decides to implement do not have to pass through approval and licensing by the Insurance Commission unlike private insurance companies which need prior approval by the Commission before launching any insurance product.

3.2 Description of Insurance Products

*Insurance products over the year*s. The crop insurance program was implemented nationwide beginning 1981 with rice as the only covered crop. Corn was added the following year. Other crops and non-crop insurance packages were added over the years (Table 45).

Table 45. Insurance products of PCIC over the years

Insurance package	Coverage	Implementation date
Crop insurance	Rice Corn Tobacco High value crops	1981 1982 1991 1993
Non-crop agricultural assets	Building, machinery, equipment, transport facilities, other infrastructures	1996
Livestock insurance	Mortality of animals (cattle, carabao, swine, goat, poultry, game fowls, others)	1988
Term Insurance	Life insurance, accident insurance, loan protection plan for farmers and fisherfolk	2005
Inland fish structures	Fishponds, fish cages, fish pens (for losses caused by forced majeure)	2011
Index based insurance	Weather index based insurance and Area based yield index insurance (pilot stage)	2011

Source: PCIC

Rice and Corn Insurance. Rice and corn insurance are the "traditional lines" of PCIC. Two types of insurance coverage are offered: (a) multi-peril (multi-risk cover) – which provides coverage for crop loss due to natural disasters (typhoon, flood, drought, earthquake, volcanic eruption) as well as pest infestation and plant diseases; and (b) natural disaster risk – which provides coverage for crop loss due to natural calamities. Covered risks are specifically specified. Excluded risks are losses arising from fire, theft, strong winds or heavy rains not caused by typhoons, and other avoidable risks. The insurance covers the cost of production inputs as per farm plan and budget of the farmer subject to prescribed ceilings plus an additional cover (at the option of the farmer) of up to 20% of the cost of production inputs to cover portion of the expected production yield. For rice, the ceilings are: Php 41,000 per ha for inbred varieties and Php 50,000 per ha for hybrid varieties. For corn, the ceilings are Php 40,000 per ha for hybrid varieties and Php 28,000 per ha for open-pollinated varieties. The period of coverage is from seeding or transplanting up to harvesting.

Eligible farmers are: (a) any borrowing farmer or group of farmers who have obtained production loans from any lending institution participating in any government sponsored credit program; (b) any self-financed farmer or group of farmers who agrees to be supervised by the PCIC accredited agricultural production technician. For rice farmers, the farms must be irrigated. Rainfed farms are also eligible but only during wet season.

The amount of claim is based on the verification and loss assessment. The indemnity is based on the stage of cultivation at the time of loss, actual crop production inputs already applied and percentage yield loss. The loss categories are: (a) total loss – if loss is 90% or more, (b) partial loss – if loss is more than 10% and below 90% and (c) no loss – if loss is assessed to be less than 10%.

The premium rates vary according to geographical area, cropping season and risk classification. The current variable premium rates were set and approved by the President of the Philippines in 2000. The premium cost is shared among the farmer, lending institution and the government for borrowing farmers and between the farmer and the government in case of self-financed farmer. The national composite premium rates and cost sharing for rice borrowing farmers for different risk categories are shown in Table 46. For self-financed farmers, the farmer's share increases equivalent to the lending institution's share for borrowing farmers thus, self-financed rice farmers pay additional 2% more for multi-peril insurance and additional 1.5% more for natural disaster cover compared to the premium paid by borrowing farmers.

Table 46. Average premium rates and cost sharing-rice insurance (borrowing farmers)

Type of insurance	Low risk	Medium risk	High risk
Multi-peril (multi-risk cover)			
Farmer's share	1.46	2.91	4.37
Lending Institution	2.00	2.00	2.00
Government	5.90	5.90	5.90
Total	9.36	10.81	12.27
Natural disaster cover			
Farmer's share	1.12	2.23	3.35
Lending Institution	1.50	1.50	1.50
Government	4.22	4.22	4.22
Total	6.84	7.95	9.07

Source: PCIC

On the average, borrowing–farmers pay premium rates ranging from 1.46%, 2.9% and 4.37% for low risk, medium risk and high risk categories for multi-peril rice insurance. Lending institutions pay 2% regardless of risk category. The government's premium subsidy is on the average about 55% for multi-peril rice insurance, while the farmer's share is 27% and lending institution's share is 18%.

Total premium rates for multi-peril rice insurance ranges from 9.36%, 10.81% and 12.27% for low risk, medium risk to high risk category. The premium rate of multi-peril rice insurance is about 2.5% to 3.5% higher than premium rate for *natural disaster peril* insurance. For corn insurance, total average premium rates ranged from 16.45%, 19.27% and 22.1% for low risk, medium risk and high risk categories. Premium rates to be paid by borrowing corn farmers range from 2.83%, 5.65% and 8.48% for low risk, medium risk and high risk categories.

High value crops. The amount of insurance cover is up to the cost of production inputs including a portion of the value of yield (at the option of the farmer) of up to 20% of the cost of production inputs. The high value crops eligible for cover are commercially grown crops such as abaca, ampalaya, asparagus, banana, cabbage, carrot, cassava, coconut, coffee, sugarcane, etc. The insurance coverage is multi-peril which includes any, all or combination of risks due to natural calamities (typhoons, drought, flood, earthquake, volcanic eruption), plant diseases, pest infestation and accidental fire. Excluded risks are theft and robbery, fire not of accidental in nature, and avoidable risks due to neglect of the assured. The coverage is on annual basis for long term crops and from planting to harvesting in case of short-term crops.

The premium rates are based on a per project basis and based on the pre-coverage evaluation of the type and number of risks sought for coverage as well as other factors such as specific location specific agro-climatic condition, type of soil, terrain, farm management practices and production and loss records. The premium rates range from 2% to 7% of the sum insured subject to deductible and

co-insurance provisions. The premium cost is solely borne by the farmer and without any government subsidy. The insured may assign the insurance policy to the lending institution where it borrowed. The amount of indemnity is based on the assessed loss based on the actual production inputs already applied, pro-rated cost of harvested crops and percentage of yield loss.

Livestock insurance. PCIC initiated livestock insurance when it joined the pool of private livestock insurers in 1988. Insurance cover is provided to livestock such as cattle, carabao, horse, swine, goat, poultry, game fowls and other animals. The insurance policy covers mortality due to accidents, diseases and/or other specified risks. The covered risks are specifically identified diseases and accidental events. Excluded risks are avoidable risks (e.g. due to mismanagement), theft, robbery, confiscation, emergency slaughter, and loss due to disasters (earthquakes, typhoons, volcanic eruptions, etc.) and other animal diseases not included in the covered risks. The cover is up to the insurable age of the animal.

The program has varying premium rates depending on the sum insured, type of livestock farm (e.g. commercial or backyard), animal insured, and age of the insured animal upon acceptance. For backyard growers of cattle and carabao, the premium rates ranges from 5% (5 yrs old or younger) to 6% (9 yr old animal) if the sum insured is up to Php 9,000 per head and from 6.5% to 7.5% if the sum insured is Php 15,000 per head. For commercial cattle raisers, the premium rates range from 5 to 7% for Php 15,000 per head to 8 to 15% for Php 25,000 to Php 30,000 per head. If the farmer wishes to include other diseases not covered in the policy, an additional premium rate of 0.75% of the sum insured is added per disease included. The premium cost is fully shouldered by the farmer.

Index-Based Insurance. PCIC is currently piloting a weather-index based insurance (WIBI) and an area based yield index insurance (ABYI) which were initiated in 2011. The WIBI is implemented with support from the UN-ILO under the Project "Strengthening the Philippines Institutional Capacity to Adopt to Climate Change". The main feature of the WIBI is that the insurance contract responds to a parameter (e.g. amount of rainfall) at a defined weather station during an agreed time period. All policyholders within a defined geographical area receive payouts based on the same contract and measurement at the same weather station thus eliminating the need for on-field loss adjustment. Payouts are triggered when a particular measurement (e.g. cumulative rainfall) has been met. The WIBI is being piloted for rice (irrigated and rainfed) and corn crops in two municipalities. The pilot project is now on its fifth cropping cycle.

The ABYI on the other hand is a pilot project in collaboration with the *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)* for irrigated rice in three National Irrigation Systems covering around 208 hectares piloted in three municipalities of Leyte province in Central Philippines. AYBI makes payout when the average yield of a clearly defined geographical unit falls within a critical threshold.

Special Projects (Free Insurance Programs). Starting 2012, the government released funds to PCIC for special insurance projects that provide full subsidy support for the premium cost. These include: (a) Department of Agriculture (DA)-Rice Production Program (Php 150 million in 2012, Php 124 million in 2013), (b) Department of Agrarian Reform (DAR) – Agrarian Reform Beneficiaries (ARB) Agricultural Insurance Program (Php 1 billion in 2013), (c) Agricultural Insurance Program for Basic Sectors in Agriculture – (Php 1.187 billion in 2014). These programs extend free agricultural insurance targeting particular sets of beneficiaries.

The DA insurance program targets rice farmers participating in the "*Sikat Saka*" program (a credit program of the DA implemented by the Landbank) and 'Third Cropping' Project (rice planting intensification project). The DAR program targets the agrarian reform beneficiaries participating in its Agricultural Production Credit Program (also implemented by Landbank) and other credit and capacity building programs. The Insurance Program for Basic Sectors targets all farmers and fisherfolk listed in the national government's registry system called "Registry System for Basic Sectors in Agriculture (RSBSA)". The recent free insurance programs were part of the national government's program on inclusive growth under the present Aquino Administration.

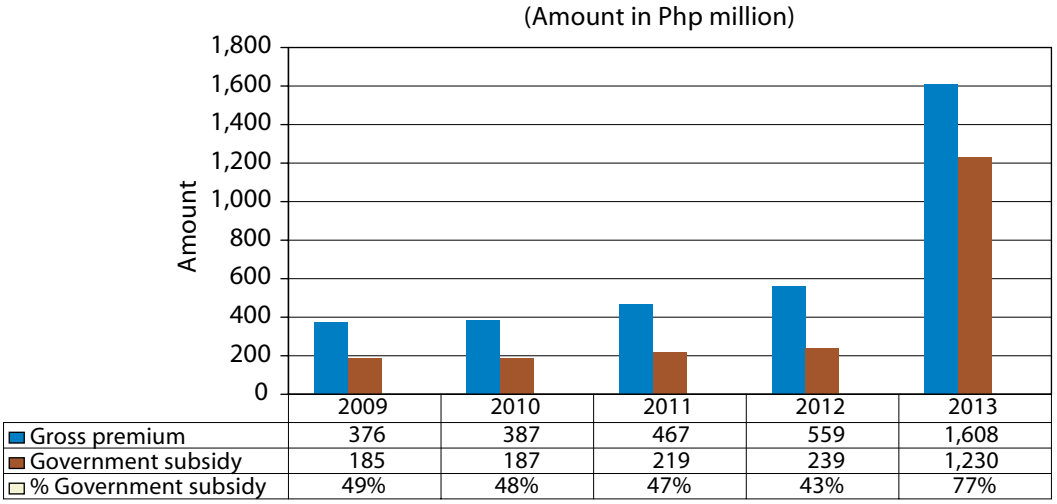
Under the DAR program, the insurance coverage is up to three hectares and for three types of insurance (crop insurance, livestock insurance and accident and life insurance). The free insurance is good for up to two cropping seasons only. Under RSBSA insurance program, the free insurance is for crop insurance lines, livestock insurance, fisheries insurance and non-crop agricultural assets. Seventy provinces out of the 75 provinces are covered by the Program. The lending institutions don't share in the premium cost. However, service fees are charged for underwriters (lending institutions) of rice and corn insurance lines equivalent to 5% of the premium cost for farmer's and lending institution's share in the premium under the regular crop insurance programs.

3.3 Performance Analysis

3.3.1 Government Funding Support

Government financial support to PCIC comes in the form of subsidy for the insurance premium. PCIC does not receive subsidy to cover administrative costs so it has to earn from its operations to cover operating expenses. The subsidy funds are allocated through the annual budgetary appropriations. The funds extended to PCIC from 2009-2013 are shown in Figure 18. The biggest allocation was in 2013 when the government released a total of Php 1.3 billion for premium subsidy. Excluding 2013, the share of government subsidy received is on the average 47% of the gross premium.

Figure 18. Government premium subsidy (2009-2013)



	2009	2010	2011	2012	2013
Gross premium	376	387	467	559	1,608
Government subsidy	185	187	219	239	1,230
% Government subsidy	49%	48%	47%	43%	77%

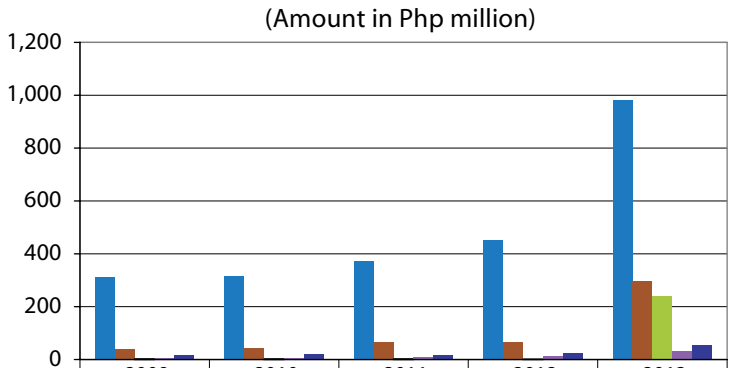
In addition to the regular premium subsidy, PCIC was granted special program funds (Php 150 million in 2012 and Php 1.124 billion in 2013) in support of the national government's thrust on inclusive growth and climate change mitigation. The funds were earmarked for the provision of free insurance to: (a) farmers/fisherfolk affected by typhoon Haiyan, (b) agrarian reform beneficiaries availing loans from Agrarian Production Credit Program and (c) rice farmers participating in the Food Self Sufficiency Program of the Department of Agriculture.

In 2014, PCIC was again granted budget appropriation under General Appropriations Act the amount of Php 1.187 billion to cover full cost of premium cost of subsistence farmers and fisherfolk listed under the government' registry system for following types of insurance: crop, livestock, fisheries, non-crop agricultural assets.

3.3.2 Profile of Insurance Business

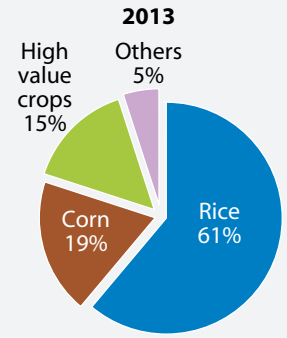
Rice and corn insurance (traditional lines) remain the major product lines of PCIC. Until 2012, the share of rice and corn insurance in total premium earnings was 94% with rice insurance constituting 82% of the income earned and corn constituting 18%. In 2013, there was a significant jump in the share of high value crops (164% increase in volume of business). The share of high value crops to the total premium income increased from an average of 0.5 % during 2009-2012 to 15% in 2013. The share of rice and corn insurance thus slightly declined to 80% by 2013. There was significant increase in total volume of business beginning 2012 (Figure 19). Annual growth increased from 3% in 2010 to 20% in 2012 and further increased to 188% in 2013.

Figure 19. Premium income by type of insurance (2009-2013)



	2009	2010	2011	2012	2013
Rice	313	317	373	454	982
Corn	40	43	65	67	298
High value crops	2	2	2	1	242
Livestock	4	4	9	13	33
Others	17	21	18	23	55

Box 10. Share on total premium income by type of insurance (2013)

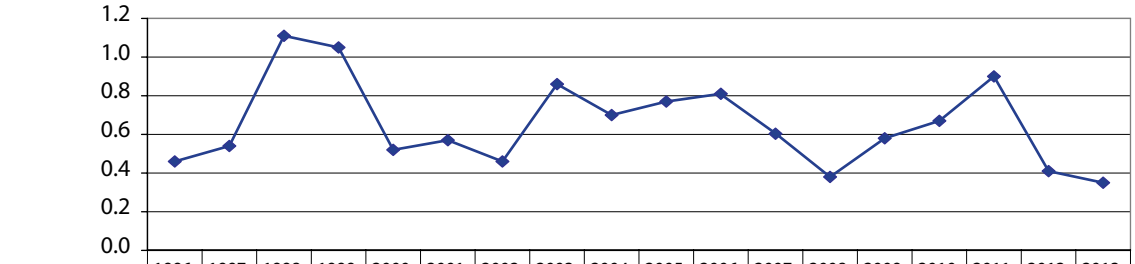


The jump in volume of business in recent years can be attributed to the expansion of credit programs of the government. Bulk of insurance clients consists of borrowing farmers thus the volume of insurance business largely depends on partner lending institutions of PCIC. The government made it compulsory for rice and corn farmers participating in its credit programs to be insured by PCIC. Landbank which is the main arm of the government in extending production loans to farmers remains the major sales delivery channel of PCIC for its insurance products. The biggest jump in volume of business in 2013, on the other hand, can be attributed to the expansion of the free insurance program of PCIC funded by the government.

3.3.3 Profitability and Prospects of Financial Viability

Loss ratio (the ratio of total claims to total gross premiums) is a common measure of determining operating performance for insurance products. If the ratio is more than 1, the insurance program is considered to be not a viable proposition. From 1996 to 2013, rice and corn insurance (major business lines of PCIC) had loss ratio of less than 1 except for two years (1998 and 1999). If these two years were excluded, the average loss ratio is 0.63 and if these two exceptional years are included, the average loss ratio over the 17 year period is 0.69. Figure 20 shows the loss ratio trend of rice and corn insurance lines.

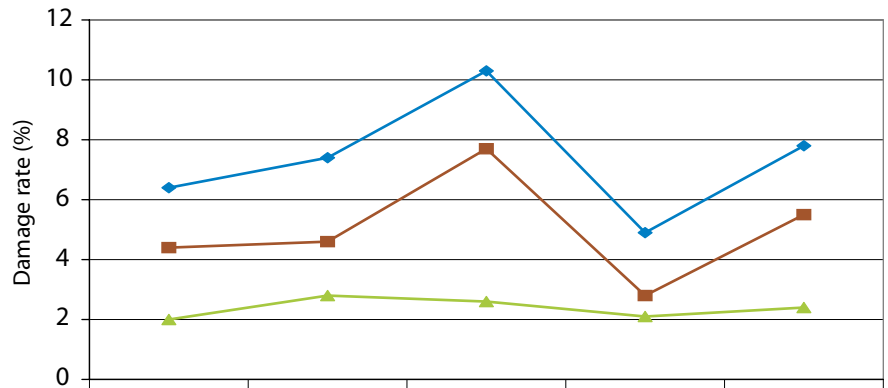
Figure 20. Loss ratio of rice and corn insurance (1996-2013)



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Loss Ratio	0.46	0.54	1.11	1.05	0.52	0.57	0.46	0.86	0.70	0.77	0.81	0.60	0.38	0.58	0.67	0.90	0.41	0.35

Damage rate (ratio of claims over amount of coverage) in rice and corn insurance programs ranged from 5% to 10% or an average of 7.4% during the last five years (2009-2013) which is a slight decrease from the 8% average damage rate during the earlier periods (1981-2000). These figures are below the average premium rates (ranging from 9.4 to 12.2% for rice) as currently set by PCIC which means the current premium rates can fully cover expected loss. By cause of loss, 67% of claims are due to natural calamities and 33% due to pests and diseases. Figure 21 shows the damage rate trend of rice and corn insurance.

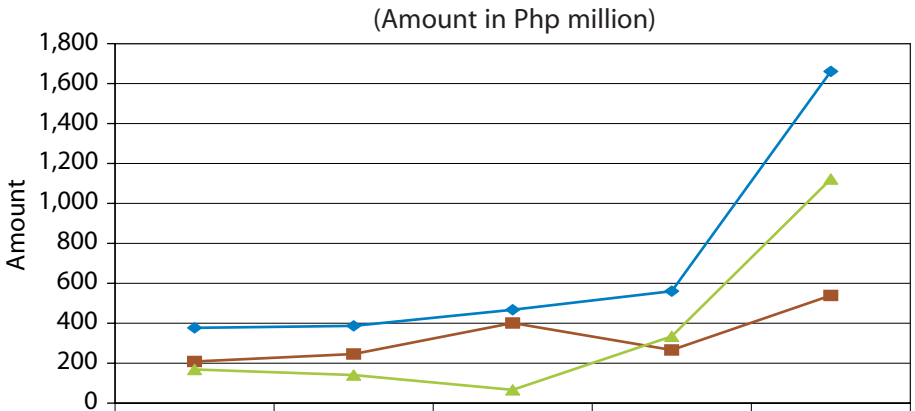
Figure 21. Damage rate of rice and corn insurance (2009-2013)



	2009	2010	2011	2012	2013
Total damage rate	6.4	7.4	10.3	4.9	7.9
Natural calamities	4.4	4.6	7.7	2.8	5.5
Pest and diseases	2.0	2.8	2.6	2.1	2.4

Underwriting profit measures the profit derived from providing insurance exclusive of income derived from investments. PCIC's underwriting profit from 2009 to 2013 showed increasing trend although the annual growth fluctuated from negative 53% in 2011 to a high 235% in 2013 (Figure 22). Underwriting profit to gross premium income fluctuated from a low 14% in 2011 to a high 58-59% in 2012 and 2013. Average underwriting profit to gross premium is the five year period (2009-2013) is 49%.

Figure 22. Underwriting profit trend, all insurance lines (2009-2013)



	2009	2010	2011	2012	2013
Premium income	376.8	386.8	467.7	560.6	1,661.1
Claims paid	208.3	246.0	401.3	226.1	539.1
Underwriting profit	168.4	140.8	66.4	334.5	1,122.1

Cost efficiency

Administrative and operating (A&O) expenses as percentage of gross premium is on a declining trend as business volume increased. The A&O costs to gross premium decreased from an average of 53% (2009-2012) to 15% in 2013 as gross premium income doubled. The average during the entire five year period (2009-2013) is 45% which is marked improvement compared to previous years (e.g. 2003-2007) of as high as 97%. Marketing cost is minimal, ranging from 2 to 18% of gross premium. Table 47 shows the cost structure.

Table 47. Administrative cost structure of PCIC (2009-2013)

Particulars	2009	2010	2011	2012	2013	Average
Gross premium (Php million)	376	387	467	559	1,608	679
Marketing costs (Php million)	49	66	86	24	36	52
Administrative costs (Php million)	154	169	188	191	202	181
Cost structure (in %)						
Marketing cost/premium	13%	17%	18%	4%	2%	11%
Administrative cost/premium	41%	44%	40%	34%	13%	34%
Total A&O cost/premium	54%	61%	59%	39%	15%	45%

Source: PCIC financial reports

Investment Income

Normally, premium rates are set to cover expected loss plus expense load. The PCIC however, as a matter of policy, has set premium rates for rice and corn insurance lines to cover only the expected loss (pure premium). The premium rates for all other crops and for livestock, on the other hand, cover both pure premium and expense load. This strategy was employed so as not to put burden on the premium on rice and corn insurance, the target market of which are considered "subsistence" farmers. Earnings from investments were supposed to cover the expense load (administrative and operating costs). Thus, PCIC was authorized by law to invest its surplus funds in securities and/or other instruments.

Over the five year period (2009-2013) however invested funds averaged about only about Php 584 million, which is about 60% of capital fund. This amount is already a marked improvement compared to previous years. The average income from invested funds is 6.3. Ratio of investment earnings over

operating expense was on the average only about 20%. The strategy thus of funding the operating expenses out of other earnings has not worked simply because PCIC did not have large surplus funds to invest.

Re-insurance

Re-insurance is a strategy normally employed to protect a primary insurer against severe losses thus helping the primary insurer to manage its risk capacity. In case of PCIC, it entered into agreements with private re-insurers for "*stop-loss*" scheme for the rice and corn insurance lines. The agreement was for the re-insurer to absorb the losses if damage rate reaches an '*attachment point*'. For rice, the first layer absorbed by the re-insurer was if damage rates exceeds 10% up to 15% and second layer was if the rate exceeds 15% up to 22%. For corn, the 'attachment point' was if the damage rate exceeds 12% up to 15% and second layer if the damage rate exceeds 15% up to 22%.

From May 2010 to April 2011, PCIC paid a total premium of Php 22.53 million for a total insurance coverage of Php 3.172 billion or a rate of 0.7%, for rice insurance. For corn, it paid 1.27% for the first layer and 1.6% for the second layer. No re-insurance claims have been filed by PCIC for both rice and corn since actual damage rates have not exceeded the attachment point

Prospects of Financial Viability

The improved administrative cost efficiency coupled with of loss ratio of 0.40 in 2012 resulted to the first net income of PCIC in decades. Prior to this, PCIC perennially incurred net losses. The registered net income in 2012 was Php 143 million which further increased by 288% in 2013 to Php 555 million.

A 'combined' ratio (loss ratio plus expense ratio) measures the extent by which an insurance program's premium income can meet both indemnity claims and operating expenses. A combined ratio of less than 1 indicates prospects of financial viability. With improved cost efficiency, PCIC attained a 'combined ratio' of less than 1, i.e., 0.79 in 2012 which improved further to 0.50 in 2013, the best ratio that PCIC has attained in decades (Table 48).

Table 48. Combined ratio, with and without subsidy, of PCIC insurance lines (2009-2013)

Particulars	2009	2010	2011	2012	2013	Average
Expense Ratio	0.54	0.61	0.59	0.39	0.15	0.45
Loss Ratio*	0.58	0.67	0.90	0.41	0.35	0.58
Combined Ratio with Subsidy	1.12	1.28	1.49	0.79	0.50	1.03
% Government subsidy	49%	48%	47%	43%	77%	0.53
Combined Ratio w/o subsidy	2.20	2.47	2.81	1.39	**2.12**	**2.20**

*** Note:** Loss ratio of rice and corn insurance lines was used while for expense ratio and % government subsidy, the figures were computed based on all insurance lines of PCIC.

If the cost efficiency level achieved in 2012 to 2013 is maintained, then PCIC's agricultural insurance program has clear prospects of financial viability. However, it is to be noted that premium was heavily subsidized in 2013 (77% of gross premium income came from subsidy). Excluding the premium subsidy, the combined ratio would have been 2.1. This means that PCIC still needs subsidy to continue operations. But if it is able to continue the cost efficiency level achieved in 2013, the government share in the premium can be reduced to pre-2013 level without jeopardizing financial viability.

3.3.4 Operational Efficiency

PCIC has made conscious efforts to improve its operational efficiency in delivering insurance services. Previously, PCIC has a negative public image due to much delayed claim payments (e.g. it took months

to process claims) and tedious documentary requirements both in insurance application and claims payments.

PCIC undertook organizational development efforts to improve its operations. These included re-tooling of personnel, improved Management Information system, conduct of staff training and development. In 2011, PCIC obtained ISO (*International Organization for Standardization*) Certification after series of trainings for its key personnel on quality management system with assistance from Development Academy of the Philippines (DAP), a state-owned management development institute. Improved operations management systems were installed. The certification covered the management system in the provision of agricultural insurance. The certification is a recognition that PCIC has achieved the quality standard on management and delivery of insurance services at the Head Office and its field offices. PCIC's performance in 2013 as to quality of service delivery is shown in Table 49. Its timeliness in processing of claims is on the average 17.46 days while number of complaints received over total number of clients was 1.95%.

Table 49. Operational efficiency performance of PCIC, selected indicators (2013)

Performance Measure	Indicator	Achievement
Customer satisfaction on underwriting processing	Number of complaints over total number of insurance applicants	0.02%
Customer satisfaction on claims processing	Number of complaints over total number of claims processed	1.95%
Claims processing response time	Total number of days of processing over total number of filed claims	17.42 days

Source: PCIC

3.3.5 Penetration rate

Number of farmers enrolled in agricultural insurance significantly increased in recent years. Number of clients enrolled in the program increased by 25% in 2011, 30% in 2012 and 127% in 2013. The outreach of 394,000 farmers in 2013 has been the largest outreach of PCIC to date. Penetration rate, in terms of number of farmers reached, is about 6% of the total farmers. Penetration rate to total borrowing farmers is about 14%. It is to be noted though that actual penetration rates are lower than these figures since the reported number of farmers is based on number of policy contracts. A farmer may have bought two contracts a year. By cultivated area, the highest coverage of PCIC crop insurance was 506,207 hectares, also in 2013. Highest penetration rate of rice insurance in terms of coverage area is 12% while corn insurance coverage is 2% (Table 50).

Table 50. Penetration rate of PCIC insurance (2009-2013)

Insurance line	2009	2010	2011	2012	2013
Number of Farmers					
Rice	90,574	88,843	109,158	136,339	305,330
Corn	6,165	8,595	12,393	20,027	44,893
High value crops	2,238	1,131	1,230	1,221	22,173
Livestock	5,070	5,672	7,832	13,575	19,404
Total	106,056	106,251	132,624	173,174	393,813
% Penetration rate (number of farmers)*					
Total number of farmers	1.6%	1.6%	2.0%	2.6%	6.0%
% Penetration rate (area coverage)					
Irrigated rice	4.6%	4.7%	5.4%	11.5%	12.3%
Corn	0.4%	0.5%	0.6%	1.4%	2.3%

* Based on estimated number of farmers (6.61 million total farmers, 2.95 million rice farmers, 2 million corn farmers) sourced from the RSBSA (2014) data. RSBSA is the national government's Registry System for Basic Sectors in Agriculture.

3.3.6 Index-based Insurance

The *Weather-Index Based Insurance (WIBI)* pilot project was initiated on July 2010. The WIBI products developed were for the following: (a) Rice crop – (i) rainfed – low rainfall cover, excess rainfall cover; (ii) irrigated rice – excess rainfall cover; and (b) Corn crop – low rainfall cover, excess rainfall cover. To date the Project has completed five crop cycles. The Project enrolled a total of 345 policy contracts covering 1,116 hectares and Php 18.76 million insurance coverage. Amount of claims to date is Php 1.44 million or damage rate of 7.7% for the entire five cycles. This damage rate is comparable with the damage rate of multi-peril crop insurance which averaged 7.4% during 2009-2013. The pilot project is still on-going.

The *Area Based Yield Index (ABYI)* on the other hand was piloted in three national irrigation systems in the province of Leyte covering around 208 hectares involving 175 rice farmers. The project was initiated in July 2011 and in the product testing stage. The product was pilot tested for crop cycles (July-November 2011 and January to May 2012). Damage rate is low at about 2%. However the project was suspended due to the devastation brought by typhoon Haiyan which directly hit the pilot areas.

3.3.7 Comparative Performance vs Other Asian Countries

Most countries that implement agricultural insurance have government subsidies. Out of 29 countries surveyed by World Bank in 2008, 19 countries had subsidies (Mahul and Stutley, 2010). The subsidies are either or both subsidies on the premium and on the operating expenses. Among these 19 countries, premium subsidies on crop insurance among Asian countries ranged from as low as 6% (India) to as high as 63% (Iran). The Philippines crop insurance program is among 16 countries (out of 29) with loss ratio of less than 1.0. However, in that survey (covering 2003-2007), Philippines had the highest administrative cost efficiency (more than 90%) among the 19 countries with government subsidy.

Administrative cost efficiency of the Philippine agricultural insurance has significantly improved since then, with the average administrative cost efficiency during 2009-2013 down to 45%. It can be noted though that when PCIC was able to double its business volume in 2013 compared to previous years' average business volume, administrative cost efficiency dropped to 15%. With an average loss ratio of 0.63 (average for the past 17 years), its combined loss ratio (ratio of claims plus operating expenses over premium) would be about 0.78 which would place PCIC among the good performing insurance programs.

Table 51 shows the comparative loss ratios and premium rates of crop insurance programs of Asian countries. The Philippines crop insurance has the highest premium rate while its loss ratio is second lowest among the five Asian countries. The loss ratio is the ratio of claims paid over the gross premium. A loss ratio of 1.0 (or 100%) means that premium can fully cover the indemnity payments. The "producer loss ratio" here refers to the computed loss ratio if government subsidy on premium is excluded.

Table 51. Comparative loss ratios of crop insurance, by country

Country	Period covered	Average premium rates (%)	Loss ratio (%)	Subsidy (% of premium)	Producer Loss ratio (%)
India	2003-2007	3	314	6	336
Iran	2003-2007	n.d.	151	63	405
Japan	2003-2005	3.5	90	51	184
Korea	2003-2007	7.8	74	30	108
Philippines					
	2003-2007	11.6	73	49	142
	2009-1013	11.6	58	53	129

Note: Except for Philippines (2009-2013), all figures were sourced from World Bank Survey 2008 as reported in Mahul and Stutley (2010), *Government Support to Agricultural Insurance*, pp. 132, 193. The ratios in Philippines (2009-2013) were computed based on PCIC data.

CHAPTER 4
Challenges and Prospects for Attaining Sustainability

The Philippines agricultural insurance program performance had clearly improved in recent years. With improved administrative cost efficiency, expanded business volume and manageable loss ratio, the program registered net profits beginning 2012. Its continued viability and growth however hinges on addressing key institutional challenges.

Adequacy and Consistency of Government Funding Support

In 1995, when the law (Republic Act 8175) that re-defined the charter of PCIC was passed, the government was supposed to provide funding support consisting of: (a) state reserve fund for catastrophic losses in the amount of Php 500 million to answer for the proportion of all losses in excess of risk premiums under the Corporation's crop insurance program for small farmers; (b) national government shall release within 10 years the cumulative arrearages from 1981-1995; (c) provide the government's share on premium through annual budgetary appropriations. The government justified premium subsidy support for 'subsistence' farmers as they would not be able to pay the high cost of premium.

To date, after 19 years has lapsed since the passage of the law, the Php 500 million reserve fund has not been released by the national government. Furthermore, the government has been perennially remiss in remitting both the cumulative arrearages and in meeting required share on premium subsidy of the current years. Over the years until 2011, the national government has released about fifty percent of the required premium subsidy share for the year. Government funding support only markedly improved starting 2012 when the amount released was equal to the amount of premium share required. The funding further improved in 2013 when funding received (Php 1.18 billion) was three times the amount of premium share required. In 2014, the government has likewise released Php 1.187 billion premium subsidy support to PCIC and attaining the net income of at least equal the level attained in 2013 is most likely. But even at this markedly increased level of funding in 2013, penetration rate is very minimal at 6% of total farmers.

With improved fiscal position, the government can afford the continued provision of subsidy and increased funding support to PCIC for its agricultural insurance program. The current political administration has been supportive of the increased funding support to PCIC. Agricultural insurance has been viewed to contribute to the national development goal of inclusive growth. The same level of funding support in 2014 has been committed and recently approved by Congress to be extended by 2015. But as per track record of the national government over the last 17 years, the level of funding support has not been consistent and adequate to expect PCIC to provide insurance to a much larger number of farmers. Adequate funding support for PCIC continues to be a major challenge.

Need for innovative insurance products

A **GIZ** (2010) study on demand on insurance against natural calamities in the Philippines noted affordability as the most important single factor that will determine whether a rural family will purchase a natural calamity insurance or not. Pricing is the most important issue among rural households with farming households inclined not to pay higher premiums compared to non-farming households. Further,

the rural households prefer more frequent payouts of benefits and would prefer lesser amounts of benefits if these would mean higher premiums. The findings underscore that need for low priced insurance products that offer flexible terms of payments, lesser requirements and preferably bundled with other products and services (e.g. production loan, savings). These findings confirm the need for more innovative insurance products other than the existing costly traditional products.

Currently, PCIC is piloting index-based insurance products. For its weather-index rice insurance, the average premium rate is about 4.3% compared to the average 10.8% for traditional rice insurance. However, an evaluation of the pilot insurance products has yet to be conducted to assess its viability potential. Some MFIs have also reported piloting 'micro-agricultural insurance' products. Developing new accessible, affordable agricultural insurance products remains a challenge.

Catastrophic losses

Over the last 17 years, PCIC experienced three times when its loss ratio was highest (0.9 in 2011, 1.0 in 1999 and 1.10 in 1998). Damage rates for rice insurance were highest in those years, e.g. 18.5% in 1998 and 10.9% in 2011. In 2011, claims due to typhoons and floods increased by 256% from the previous year. Claims due to typhoons and floods constituted 72% of the total claims during the period. Loss ratio was 90% in that year which was the highest since 2000. It is to be noted that in that year, the country was hit by two disastrous tropical storms in years – Typhoon "Sendong" ("Washi") and Typhoon "Pedring" ("Nesat") which affected 10.3 million. Mindanao which used to be the least affected by calamities had 5 million people affected. That year also had the highest number of natural disasters, 431 events which was 50% more than the average since 2005.

In 2013, claims in rice and corn insurance due to typhoons and continuous monsoon rains have increased by 140% from the previous year. Claims due to these events constituted 59% of the total claims of rice and corn insurance. It was during the later part of the year (November 2013) that the country was hit by super typhoon "Yolanda" ("Haiyan") which affected 16 million people. As extreme weather events appear to be more frequent in recent years, catastrophic losses continue to pose threat to the viability of the agricultural insurance program.

Penetration rate

While financial performance improved, penetration rate continues to be a major weakness of the Philippine agricultural insurance program. The highest number of farmers reached so far is only 6% of total number of farmers and 14% of total borrowing farmers. The number of enrolled farmers doubled in 2013 but this was largely due to the free insurance program funded by the national government. The main marketing strategy remains to be bundling the insurance product with the production loans of farmers with lending institutions. Landbank and other government credit programs made it mandatory for all farmer borrowers of their credit programs to enroll in PCIC's agricultural insurance.

The penetration rate was boosted by the 'free insurance' program launched beginning 2012. As the subsidy likewise covers the lending institution's share in the premium, lending institutions other than Landbank such as private rural banks and Microfinance Institutions enrolled their loan borrowers to the PCIC insurance programs. But once this full subsidy is removed, it remains to be seen whether the private lending institutions will continue to voluntarily avail of PCIC insurance. The challenge of insuring a larger number of farmers under a cost sharing scheme remains.

Private sector participation

In recent years, micro-insurance organizations have started to recognize the demand for crop insurance among its target market (low income families) and have initiated pilot 'micro-agricultural insurance' products which are low cost and affordable to low income farmers. However, the total share of sold crop

insurance plans of these very few private micro insurance organizations (e.g. CARD and *Micro-ensure*) is miniscule. These organizations similarly face the challenge of designing low cost but viable crop insurance products. But apart from this, the private sector is constrained to participate aggressively as there are no clear government incentives to entice them to go into agricultural insurance which is more costly to operate. *Micro-ensure* for instance is proposing to the government to consider tax incentives for micro-agricultural insurance providers. The micro insurance sector has grown exponentially in the recent years. CARD-MBA alone has achieved 25% penetration rate (2 million individuals insured). The challenge for the government is how to engage micro insurance organizations and other private insurers in agricultural insurance.

CHAPTER 5
Conclusion and Recommendations

The performance of the Philippines agricultural insurance program has markedly improved in recent years. The program has exhibited financial profitability. Loss ratio has been manageable in spite of increasing number of devastating natural calamities. Administrative cost efficiency dramatically improved to a low 15% in 2013. If these performance trends continue, the agricultural insurance program indeed has clear prospects of attaining continued viability.

There are however institutional challenges that need to be addressed to ensure sustainability and growth. Among the recommendations to address these challenges are as follows:

Ensure adequate funds to support agricultural insurance. The national government needs to implement measures that would strengthen the capital base of PCIC and ensure full remittance of the required premium subsidy. The government should re-assess its 100% premium subsidy scheme and continue the program under a reduced subsidy share to broaden the benefits of the subsidy. The government needs to provide a large capital fund to enable PCIC to generate investment earnings to adequately cover its overhead costs. This will ease the burden on the premium. The reserve fund for catastrophic losses which was stipulated in the law needs to be set-up.

Review premium rates. PCIC needs to review current premium rates to determine if downward adjustments can still be made. While loss ratio improved as a result of the adoption of variable premium rates (i.e., rates vary per geographical area, crop season and risk classification), conditions might have changed since these premium rates were set 14 years ago. Risks due to particular pests and diseases may no longer be needed to be covered due to improved adoption by farmers of crop management practices and technologies. The damage rate of rice and corn insurance has exceeded premium rate only once in the past 17 years. A review of current premium rates – particularly of multi-peril crop insurance – may be done to check if it is possible to reduce rates without sacrificing actuarial soundness.

Continue developing new innovative products. The key in attaining wide patronage is having insurance products that satisfactorily meet the demand requirements of target clients. Affordability is a key feature that must be met. Insurance schemes that have the potential of addressing this concern should be developed. The pilot index-based insurance projects as well as developing new products should continue to be vigorously pursued. Product research and development capability of PCIC (and other potential private insurance organizations) must be strengthened.

Work out public-private partnerships. Currently, crop insurance is virtually solely provided by PCIC. The micro-insurance sector which has grown tremendously in recent years has the potential of reaching out to a large number of low-income farming households. PCIC needs to forge tie-ups with micro insurance organizations and other private insurers in implementing risk sharing schemes for agricultural insurance.

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