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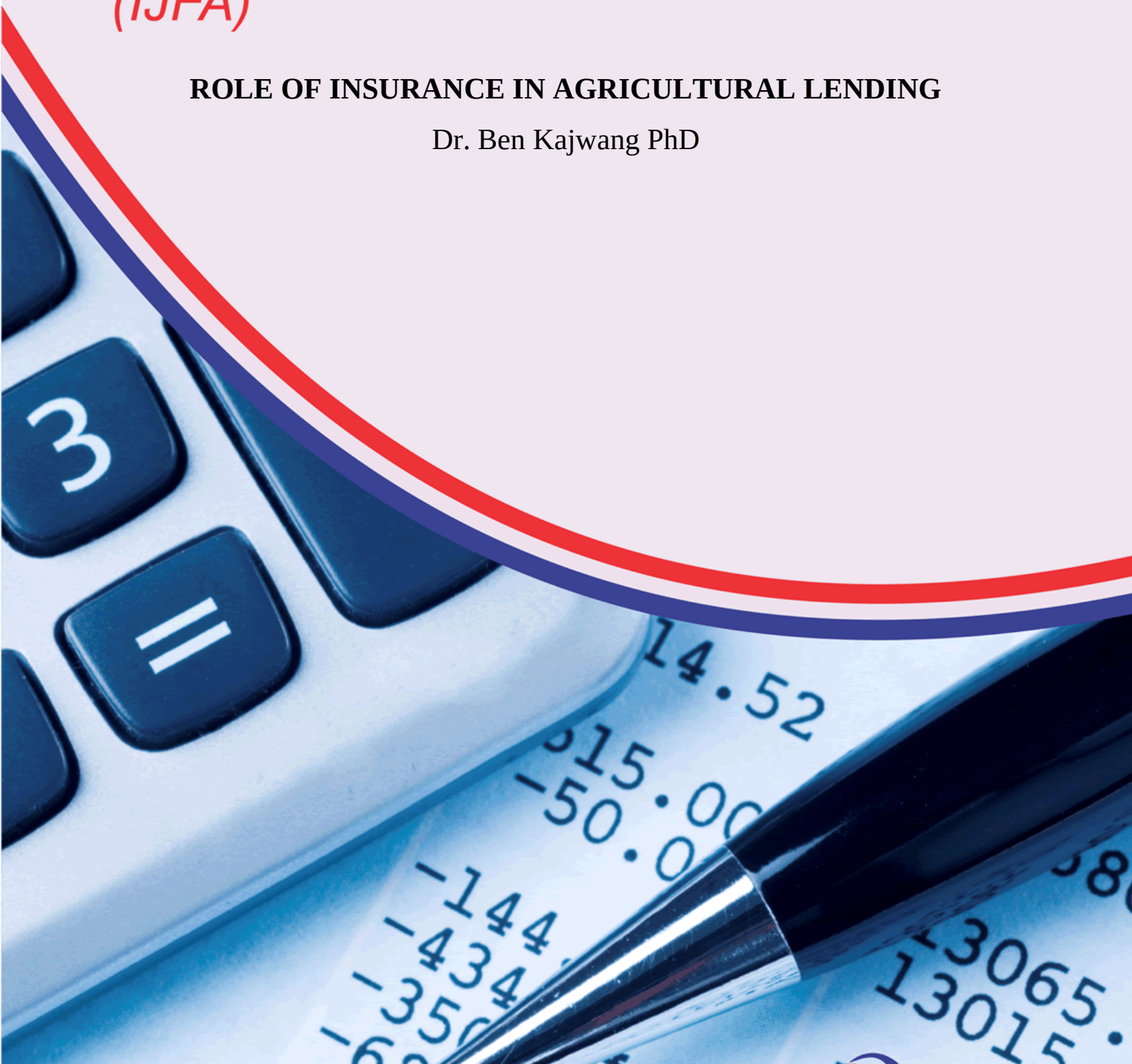

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ABSTRACT

Purpose: This paper examines the role of insurance in providing loans for agricultural sector. There are many agricultural hazards that cannot be insured on a financially sound basis; nonetheless, there is room for enhanced insurance coverage of farm assets, of the life and health of individuals living in rural areas, and of certain specific dangers that affect crop and livestock production.

Methodology: A desktop literature review was used for this purpose. Relevant seminal references and journal articles for the study were identified using Google Scholar. The inclusion criteria entailed papers that were not over 5 years old.

Findings: The insurance framework in agricultural lending that has been presented calls for the participation of policymakers and implementers in addition to marketing channels and micro users. Agricultural insurance penetration based on the research of both the demand and supply side and it might be used as a tool for lowering the level of physical risk.

Unique Contribution to Theory, Policy and Practice: It is necessary to have experts, researchers, and extension agents step up their guidance and supervision efforts. Because it was difficult to discover a source of long-term funding or sponsorships, international and regional technical assistance, expertise, and financial support were urgently required.

Keywords: *Insurance, Agricultural Sector, Risk, Borrowers.*

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INTRODUCTION

Agricultural production is inherently risky business, and farmers confront a number of risks connected to the market, the supply of inputs, the weather, and pests and diseases that affect their crops. Farmers have to worry about their ability to repay debt, meet overhead costs (such as land rents and taxes), and, in many cases, their ability to meet essential living costs for their families. This is because their income varies from year to year, making it difficult for them to predict how much money they will make (Lopulisa et.al, 2018). Agricultural lending institutions are likewise concerned about the hazards that are being discussed here. When faced with risky borrowers, lenders have a responsibility to take steps to minimize the likelihood of having low loan recovery rates during unfavorable years, even if this means maintaining a relatively low level of lending to the agricultural sector.

The presence of risk in agriculture is not a recent phenomenon; thus, farmers, rural organizations, and lenders have, over the course of many generations, evolved methods for mitigating risk and managing with its effects. The question of whether these traditional mechanisms of risk management are adequate or whether, given the highly covariate nature of many agricultural risks, public interventions such as crop insurance can provide a more effective alternative is an important one. Crop insurance is one example of such an intervention (SAKHNO et.al, 2020).

When determining whether or not to extend credit to farm borrowers, lenders take into account a variety of factors, both financial and non-financial, including the amount of studies that have been conducted that examine the decision-making process for agricultural lending. However, numerous credit evaluation procedures and approaches have been investigated, but there has been no success in reaching a consensus over which variable measures ought to be utilized when conducting an analysis of agricultural loan applications (Fang et.al, 2021). In addition, even though there have been a great number of studies conducted, the vast majority of them do not specifically investigate how financial institutions use credit bureau ratings when making loans to farm borrowers. Therefore, additional research relevant to the lender's assessment, particularly in relation to the decision-making process associated with agricultural loan applications, is required.

Insurance for agriculture, similar to the insurance for agriculture's fiancé, is typically customized on the basis of a number of criteria that are carefully evaluated by specialists in the agricultural industry. These professionals include transportation experts who evaluate the roads and the ease with which the crop can reach the market, meteorologists who are able to accurately predict the weather conditions for at least six months, agronomists who are able to give the ideal health condition of growing produce, and market professionals who are able to forecast the demand as well as the supply situation in the ideal market for the produce. Other professionals who are required include market professionals who are able to forecast the demand as well as the supply situation in the ideal market for the produce The farmer receives immediate benefits as a result of

crop insurance, and the likelihood of enhanced yields increases as a direct result of having crop insurance (Onyiriuba et.al, 2020).

Shkodra et.al (2018) made the observation that in order to have a beneficial impact on output for any particular crop, it requires top experts to combine concerns pertaining to finance, insurance, and agronomy. In other words, it means that the most up-to-date technology must be utilized in order to transmit real-time information regarding the unpredictability of the weather, the market prices of the agricultural products, and how this will affect the agricultural products that are currently being produced. With this in mind, Rozhkova (2021) has urged for partnerships between the many farming stakeholders, such as insurance companies, sources of funding, and communication companies. These partnerships would make it possible for relevant information to be quickly exchanged throughout the system. Historically, many potential investors were very hesitant to put their money into crop or animal farming due to the high probability of an entire farm being destroyed by a single weather-related event, such as an abrupt drought, an invasion of locusts or quails, or fires when the crop is dry and ready to be harvested (Kim et.al, 2022).

Crop insurance is available at relatively low premiums, making it accessible to a wide range of farmers, both large and small, regardless of the cost of input or the best projection of the crop's future price. Many different types of weather-related risks are included in this type of insurance, including the potential for low yields as a result of drought, hail, wildfires or lightning strikes, windstorms, and extreme rain (Ndegwa et.al, 2020). Crop insurance is available in other situations, such as when the crop is being stored and at risk of being damaged by fire, lightning, explosions, or flooding. Theft, damage, or loss of the product while in transportation is a concern for many farmers, who purchase transit insurance to protect their crops. Once the crop has been harvested and transported to its final destination, the dangers don't end. It must be stored in vast national storage facilities, where it is subject to further damage or theft, resulting in decreased quality and quantity (Hazell et.al, 2020). There is no doubt that crop insurance must involve a number of parties and stages because the crop has to go through a number of processes before it reaches the market. There is a lot of risk associated in bringing the wheat crop to market, which necessitates the cooperation of the farmer's lender and crop insurer (McIntosh et.al, 2018).

In a perfect world, any bank would be able to finance a project; yet, historically speaking, only certain banks have been known to finance farming ventures, notably crop and animal farming. In the early years of the country's independence, Kenya established specific banks for the purpose of providing financial assistance to farmers, particularly medium- to large-scale grain producers who mostly dealt with Kenya's stable staples such as maize, rice, beans, and wheat (Boehlje, 2019). However, during the later years, such banks as the Agricultural Finance Corporation (AFC) and the Agricultural Development Corporation (ADC) were politically exploited in a way that caused havoc, which ultimately led to inadequate financing for crop and animal farming as well as the failure of both institutions. However, other businesses, such as Syngenta, UAP Insurance,

Safaricom, and commercial banks, particularly Co-op Bank, KWFT, and Equity Bank, have developed programs that combine crop insurance with agricultural finance (Ndegwa et.al, 2020).

The relevance of crop insurance, according to McIntosh et.al (2018), is frequently exaggerated to the point where farmers neglect other strategies that could boost their income. An observation was made that some hazards could be reduced without incurring the large expense as required by insurance companies. Furthermore, it is clear that farmers are unable to forecast the impact of crop insurance, which is why they are so skeptical of it (Svetlana et.al, 2018). Crop insurance, on the other hand, is in high demand as the population of many countries continues to expand, resulting in an increased need for food. When it comes time to sell their products, every potential farmer will find themselves without any other options due to a lack of investment in fertilizer, crop irrigation, and crop insurance programs (Fang et.al, 2021). Significantly limiting farmer's capacity to generate accurate predictions once the decision to plant crop is decided and implemented is the increasing impact of climatic changes on farming activities. Additionally, farmers in some locations farm both crops and cattle, creating a decision quandary as to which assets should be insured against risk (Boehlje, 2019).

This research was carried out with the intention of providing a more in-depth understanding of the function that insurance plays in agricultural loans.

LITERATURE REVIEW

According to Fang et.al (2021), insurance arrangements supplement the on-farm efforts that are made to manage yield risks. It is possible to rationalize the purchase of insurance in the face of an uncertain future because individuals who are risk averse will place a value on the ability to transfer unfavorable outcomes. The term "first order insurance effect" refers to this type of influence. Because of the decreased requirement for self-insurance on the part of farmers, adoption of crop insurance may result in a shift in the composition of crops grown. It is impossible to evaluate the value of insurance without taking into account the potential influence that it could have on the risk-efficiency of net returns from the entire portfolio of farm-specific risky prospects. This is because the production plan is subject to change.

Constraints on available funds are likely to play a significant impact in decisions regarding insurance participation. On the one hand, households that are limited in their ability to obtain credit may place a higher value on the stability in income that is offered by insurance, due to the fact that they have less ability to adjust their spending after the fact (i.e. after adverse weather event). On the other hand, credit-constrained rural households may have limited finances available to them at the beginning of the production season, when decisions are made regarding the purchase of insurance. These funds might be used to purchase seeds, fertilizers, and other types of input materials. Even if the households in question are risk-averse and should benefit from insurance, the shadow value of liquid assets may be quite high during such periods, making the purchase of insurance an unattractive option (Ascui et.al, 2019). In addition, it is common practice for high-

return economic activity to call for substantial investments in the beginning. Because of this one element alone, the family is put in a more precarious position, as a year of drought results in a net income that is less than zero (McIntosh et.al, 2018).

When making decisions on approval, amounts of credit, and the need for servicing action, lenders placed a large amount of weight on the borrower's personal attributes and the financial facts provided by the borrower (honesty, integrity, and the ability to manage production). A survey was conducted by agricultural banks in the states of Illinois and Iowa in order to investigate credit evaluation procedures, risk assessment methods, and credit model consistency (Hazell et.al, 2020). According to what they discovered, during the farm financial crisis of the 1980s, lenders began employing approaches that were more formal and extensive in order to analyze the creditworthiness of agricultural borrowers (Miranda, 2022). Substantial research on credit risk assessment in agricultural lending has generated varied results about which elements to include in the construction and validation of credit scoring models. These models are used to determine how likely a borrower is to repay their debt.

The use of credit can also be an essential instrument for ensuring a steady income (Boehlje, 2019). To begin, in a more direct manner, farm households can borrow money to purchase food or other essentials when they do not have the income necessary, and they can repay the loan once they have harvested and sold their crops. Second, in a method that is more roundabout: farm households frequently make use of credit in order to increase their income from farming by purchasing the necessary inputs for farming (such as seeds, fertilizer, and equipment). They will be able to clear their debts once the harvest has been completed.

When there is insufficient property available as collateral, financial institutions may demand crop insurance as a condition for securitizing the loan's repayment. In this respect, crop insurance makes it easier to obtain credit, which in turn increases income (Svetlana et.al, 2018). In addition, the possibility of associated risks that impede the provision of credit is a prevalent issue for financial institutions that have loan portfolios that are restricted geographically. The presence of correlated risk presents lenders with a dual challenge: (a) the potential for much higher default rates among agricultural clients; and (b) additional liquidity problems as clients simultaneously draw down savings and increase demand for borrowing to cope with the disaster. Both of these challenges are exacerbated by the presence of correlated risk (Hazell et.al, 2020). The provision of crop insurance will, as a result, lessen the burden of lending restrictions placed on rural lenders.

As a result of powerful computer models that replicate a huge number of simulated occurrences, the risk of large losses from catastrophic events such as earthquakes and weather vagaries has been analyzed over several years. The long tail risks of casualty insurance can be estimated using actuarial procedures including triangulation. Insurance policies are purchased based on three factors: premium cost, expected utility and risk severity. To put it in a broader context, but still as part of the demand for insurance According to the 'certainty theory,' additional research has

suggested that consumers who are fearful of losing money are the ones who drive the need for insurance (Miranda, 2022).

According to the research carried out by Shaikh et.al (2019) a farmer's wealth, as measured by their net worth, has a significant role in determining whether or not they will invest in crop insurance. According to the findings of SAKHNO et.al (2020), other key indicators include the farm's age, size, off-farm income, and debt-to-asset ratio. The value of production, soil productivity, farm diversity, hedging contracts, and age were all connected to the amount of purchased crop income insurance coverage (Lopulisa et.al, 2018). The purchase of crop insurance was found to have a correlation with the usage of chemical inputs, relative risk aversion, and debt-to-asset ratio (Ndegwa et.al, 2020). Rozhkova (2021) found that the level of education of the farmer, their age, their debt-to-asset ratio, their participation in government programs, the value of their production, the productivity of their soil, their off-farm income, indemnity, hedging contracts, and the type of ownership all played a role in whether or not they purchased crop insurance coverage. The probability that a farmer would purchase crop insurance was lower if the farmer had a higher net farm income, meaning that farmers would prefer to save their money and self-insure rather than spend it on insurance (Onyiriuba et.al, 2020).

There are not many longitudinal crop insurance studies that examine the performance of individual farms over an extended period of time. For instance, Shkodra et.al (2018) estimate the degree to which enterprise diversification shifted as a result of increased use of crop insurance. Their methodology makes use of data from farm-level panels of the census in order to analyze changes over time in the enterprise diversification of individual farms. The time-invariant unobserved individual heterogeneity could be controlled by looking at the diversification decisions made by the same farms over a period of time. The adoption of crop insurance led to a little improvement in the level of specialization achieved by businesses and their overall level of production efficiency. According to List et.al (2020), and Boehlje (2019). research, the predicted efficiency benefits were far lower than the subsidies that were paid. Insurers must be able to meet their financial commitments in terms of claims and solvency by maintaining enough financial capital. Insurance companies' solvency risks are being assigned by rating agencies, which are attempting to modify their capital models and require more capital buffers. As a result, farmers have a difficult time grasping the insurance risk theory, which leads many of them to sign contracts without completely comprehending the implications (Ascui et.al, 2019).

According to a number of studies, the majority of farmers obtain their working capital from sources such as their own personal resources, cooperatives, or middlemen, in addition to financial institutions. The majority of farmers typically combine and employ many sources of funding for their working capital needs. It has been found that the combination model of sources of funding for working capital that is most beneficial for farmers is the combination of self-working capital and working capital gained from outside sources such as cooperatives, middlemen, and, to some

extent, banking sources. This model allows farmers to maximize their potential for financial gain. The majority of farmers, on the other hand, have a tendency to combine their own working capital with that obtained from non-banking sources more frequently. This is primarily because they are afraid of high banking rates and penalties for defaulting, which banks do not make very flexible in many cases (Kim et.al, 2022).

METHODOLOGY

A search of the relevant literature was incorporated into the work technique. The research was carried out with consideration given to previous theoretical literature, both that which had been published and that which had not. This study focuses mostly on conducting a literature review, specifically one that examines previous research on insurance in agriculture. The search through the body of literature was carried beginning in 2018 and ending in 2022. This conclusion was reached after doing an in-depth search using a mix of keywords in different databases. The authors conducted basic and advanced searches, respectively, on Google and the other database engines. The phrase "Insurance and agriculture" was what was utilized as the search term when looking through the data. The phrase "role of insurance in agricultural lending" was the subject of the initial search and the Google search that followed. These publications were used for this study in its entirety. The criteria for including the article or report were as follows: the article or report needed to be peer-reviewed; it needed to be written in English; it needed to indicate the purpose of the study; it needed to describe the method that was used; it needed to report the results of the study; and it needed to draw a conclusion. To know the role of insurance in agricultural lending, the articles were read several times to obtain a sense of the content.

CONCLUSION AND RECOMMENDATIONS

In certain nations, insurance for the agricultural industry has been an important part of the economy for a long time, while in others, it does not exist. The literature provides a variety of theories for this "patchwork" of agricultural insurance penetration based on the research of both the demand and supply side. These answers are based on the fact that the literature investigates both sides of the equation. This is mirrored in the public discourse concerning the availability and pricing of this form of insurance (List et.al, 2020). On the other hand, there appears to be a major knowledge vacuum about the implications of ongoing and upcoming risk patterns for the provision of agriculture insurance. Unless further preventative measures such as investments in agricultural defense and tougher building rules are undertaken, these trends are anticipated to represent a considerable challenge for the financial compensation of losses. These challenges are likely to be significant. It is anticipated that the effectiveness of risk prevention will play a key role in the future affordability and availability of agricultural insurance (Lopulisa et.al, 2018). Nevertheless, it is not at all evident how these two ways of thinking interact with one another or where the potential for future reform lies. Specifically, the subject of whether or not agriculture insurance

may be used as a tool for lowering the level of physical risk might benefit from additional empirical and theoretical research.

As climate change and mounting losses continue to worsen, relying solely on risk transfer is no longer a viable option. For any insurance policy, the risk transfer economic benefits and efforts to decrease risks might be weakened by moral hazard. A risk occurs, but the magnitude of a stakeholder's losses is determined by the decisions they make during and after an event (Fang et.al, 2021). A government insurance program might make it less urgent to prevent and decrease risk than if it didn't exist. Similarly, a consumer insurance plan might make them feel more secure than if they hadn't purchased it. Theoretically, risk-based pricing should reduce moral hazard and encourage people to minimize their exposure to risk. Limited examples of this in action are available (Hazell et.al, 2020). Because of concerns about affordability of , this may need to be temporarily tied to public financial assistance measures. It's evident that the insurance sector is engaging in a variety of additional actions to help promote disaster preparedness in the agricultural sector; however, it's unknown whether or not these activities are beneficial at the household level and whether or not they could be scaled up if they were found to be a success. In the context of property insurance, other players, such as property developers, home-builders, and mortgage providers, may need to consider the possibility for risk reduction.

Avoiding a scenario in which the decrease of risk is regarded as a trade-off with respect to affordability and availability is an essential lesson to take away from this. It seems that the more reasonable approach would be to think of these facets as being mutually supportive of one another. One could argue that efforts to reduce risk are essential in maintaining the insurability of these risks, particularly in the context of flooding and other extreme weather events, and that the ability to effectively adapt may actually become a condition for granting insurance cover in the future. Both of these arguments have merit.

In order to make a farmer more productive, profitable, and self-sufficient, it is required to establish a farmer group that can eventually become a farmer corporation. Farming-related services with the goal of boosting both productivity and sustainability. It is necessary to have experts, researchers, and extension agents step up their guidance and supervision efforts. Because it was difficult to discover a source of long-term funding or sponsorships, international and regional technical assistance, expertise, and financial support were urgently required.

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