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Agricultural Insurance in the Americas:



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A Risk Management Tool



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Inter-American Institute for Cooperation on Agriculture (IICA), 2012



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The Authors

PREFACE

There is increasing interest, throughout Latin America and the Caribbean (LAC), in exploring the issue of risk management and agricultural insurance. For example, a study conducted by the Inter-American Institute for Cooperation on Agriculture (IICA) showed that 75% of governments attach “high” or “very high” importance to this subject.¹ The study also indicates that countries in which agriculture played an important social and economic role were those that showed the greatest commitment to addressing risk management and agricultural insurance.

The concern among governments in these regions may be attributable in part to the impact of climate change (for example, more frequent severe weather events that result in a loss of production), changing conditions that affect farmers’ income, food security and the national economies, especially in relatively less-developed economies.

At its thirteenth meeting, the Inter-American Board of Agriculture adopted resolution 411, of September 1, 2005, whereby the Ministers of Agriculture of the Americas resolved:

1. To ask the Director General of IICA to promote and facilitate horizontal cooperation among the Member States, and the systematization and dissemination of successful activities in the area of agricultural insurance.
2. To urge the Member States to contribute to the exchange of information and experts.
3. To ask the General Directorate to establish partnerships with public and private financial institutions and financial organizations, with a view to coordinating and seeking complementary efforts among efforts to develop and strengthen the agricultural insurance market.

The Ministers of Agriculture of the Americas commitment to moving forward in addressing these issues was confirmed in their Declaration. They also, at the conclusion of their meeting in San José, Costa Rica in October 2011, called for efforts “promoting innovation in climate risk management and fostering national, regional and hemispheric initiatives as well as facilitating the identification and dissemination of best practices that reduce the vulnerability of the agrifood sector and of the rural milieu”.²

1. Vila, F; Otero, M; Hatch, D; García-Winder, M. 2011. *Gestión de riesgos y seguros agrícolas: relevamiento de necesidades, análisis de demandas y propuestas de líneas de acción*. San José, CR, IICA.

2. Meeting of Ministers of Agriculture of the Americas. 2011. *Declaration of Ministers of Agriculture of the Americas*. San José, CR.

It is in this context that we present the document titled “Agricultural Insurance in the Americas: A Risk-Management Tool.” Its purpose is to offer a conceptual characterization of the risks to agriculture and the potential for agricultural insurance to serve as a tool for mitigating the negative effects of adverse climate events.

This document describes the most important innovations in risk management and agricultural insurance, the institutions that deal with the issue and the information systems that provide input for their work. The data on individual countries provide a glimpse of the extent to which insurance coverage is provided or penetration of insurance, the types of coverage offered and the insurance and reinsurance companies that provide this type of service.

This publication is the first of a series of planned studies of the agricultural insurance market. We trust that it will help identify the countries’ needs for technical cooperation on this issue, especially in the case of relatively less-developed countries.

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I. INTRODUCTION

1.1. Risk management in agriculture

Agriculture is exposed to many types of risks that have the potential to affect production results. This is the case because:

- farming is an open-air activity that is vulnerable to natural phenomena that may in some cases be disastrous;
- like other economic activities, agriculture is subject to fluctuations in the market (changes in prices of products and inputs) and in commercial arrangements (sales contracts, for example)and;
- farming is subject to the risks inherent in the political, macroeconomic and social environment, such as changes in political administrations, government intervention (regulations, exchange rates, export and import permits), social conflicts and others.

To achieve a modern and vibrant agrarian economy, a country must be able to identify these challenges and respond adequately to them. In addition to taking all of these factors into account, this study focuses on climate-related hazards and the measures that can be taken to mitigate them, including, in particular, the adoption of agricultural insurance schemes.

Hazards are usually classified in terms of their intensity (the damage they cause) and their frequency. The matrix in Figure 1 shows the frequency (three possible levels) and the intensity

Figure 1.1. Frequency, intensity and consequences of risks.

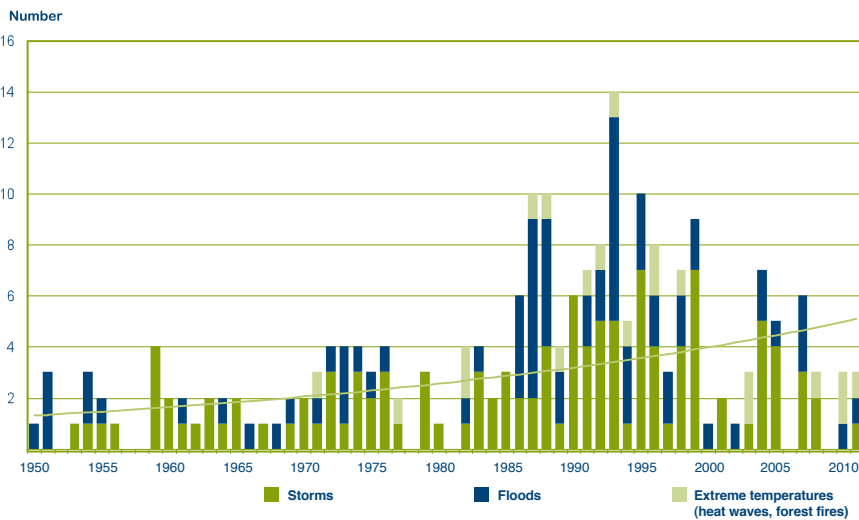
INTENSITY	FREQUENCY		
	Low	Medium	High
Low	Risk is manageable	Risk is manageable and transferable	Risk is manageable and transferable
Serious	Risk is transferable	Risk can be mitigated and transferred	Risk is manageable and transferable
Catastrophic	Risk is transferable	Risk can be mitigated and transferred	Activity is unviable

(also three levels) of adverse events and what happens when they intersect. Producers can manage the risks involved in low-intensity low-frequency events; in the case of high-frequency events of catastrophic intensity, however, production is no longer viable. When confronted with the less serious combinations, decision makers have one or more options (assuming the risk, reducing it or transferring it) for mitigating negative consequences and continuing production.

Climate change is clearly evident in the increasing frequency and intensity of “natural damages,” a trend that points to the need for governments, farmers and the insurance industry to be more proactive and adopt measures that enable farmers to recover from and resume production. Is it also advisable--and feasible--for farmers to take measures that will prevent crop loss and employ good farming practices such as periodic crop rotation and measures that enable farmers to recover. This need is accentuated by the rising global demand for food, even as the supply side becomes increasingly vulnerable to climate change.

The following chart shows the trend in major natural disasters from 1950 and 2010 (graph 1.1) and serves as an example of the impact of climate change.

Graph 1.1.
Major weather disasters during the period 1950-2010.



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Source: Munich Re.

1.2. The importance of risk management for agriculture and rural life in the Americas

The attention agricultural risk has attracted is evident in the action various international agencies have taken, as noted below.

The Action Plan on Food Price Volatility and Agriculture that was presented at the G-20 Summit held in November 2011 provides for risk assessment and development of risk-management tools and stresses the need for improvements in the operation of markets for agricultural products.³

In addition, the conference of experts from G20 think tanks that was held in 2012 stressed, among other issues, the importance of strengthening food security and mitigating commodity-price volatility, promoting sustainable development and green growth, and combating climate change.⁴

Other multilateral agencies have also dealt with the issue. The Economic Commission for Latin America and the Caribbean (ECLAC) reports that climate change, which is associated with increases in average temperatures, changes in precipitation patterns, rising sea levels, changes in extreme weather patterns, changes in the energy matrix, changes in soil quality and uses, and scarcity of water supply, is one of the major challenges facing humankind. The challenge of simultaneously adapting to new climatic conditions and participating in an international mitigation strategy will entail costs of such magnitude that climate change will heavily affect the nature of economic development in the decades ahead.⁵

The Department of Sustainable Development of the Organization of American States (OAS) focuses on reducing vulnerability and preventing and managing risk. Its program is geared toward developing local capacities, supporting risk assessment and preventive warnings and creating stronger local communities, to ensure that natural-disaster risk factors are included in land-use planning.⁶

In its paper on “Climate-Smart” Agriculture, the Food and Agricultural Organization of the United Nations (FAO)⁷ discusses several issues linked to the adoption of “climate-smart” agricultural practices that are designed to bring about significant changes in agriculture and make it possible to address the challenges of food security and climate change.⁸

3. Aranda Bezaury, L. 2011. *Participación mexicana en el G20*. México, MX, Secretaría de Relaciones Exteriores (SRE).

4. Camacho Gaos, C. 2012. *Alimentación y progreso: tarea del G-20*. Available at http://www.excelsior.com.mx/index.php?m=nota&seccion=opinion&cat=11&id_notas=816563.

5. ECLAC (Economic Commission for Latin America and the Caribbean, CL), IDB (Inter-American Development Bank, US). 2009. *Estudio regional de la economía del cambio climático en América Latina y el Caribe (ERECC-LAC)*. Santiago, CL. (Translator's Note: The English version of the study is only available in the Summary, found at http://www.cepal.org/publicaciones/xml/3/38133/02_Economics_of_Climate_Change_-_Summary_2009.pdf. The text quoted in Spanish is from the Uruguay study, found at http://www.eclac.cl/publicaciones/xml/6/44306/2010-419-W_330_Economia_cambio_climatico_URUGUAY_WEB.pdf

6. OAS (Organization of American States, US). 2005. *Mandates and guidelines of the program on Risk Management and Adaptation to Climate Change*. See: <http://www.oas.org/dsd/Spanish/Desastresnaturales/Mandatosdirectrices.htm>.

7. FAO (Food and Agriculture Organization of the United Nations, IT). 2010. “Climate-Smart” Agriculture: Policies, Practices and Financing for Food Security, Adaptation and Mitigation, Rome IT.

8. “Climate-smart” agriculture: an agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation) while enhancing the achievement of national food security and development goals.” (see: <http://www.fao.org/climatechange/climatesmart/en/>).

Among other things, it stresses the need to develop institutional capacities for disseminating climate-related information.

The aforementioned considerations reaffirm the urgent need to develop tools for improving risk management. The extensive body of literature on the subject deals at length with the concepts of adaptation, mitigation and transfer of risks.

The most widely used risk-transfer tool is agricultural insurance. The World Bank stresses that agricultural insurance helps producers to mitigate the financial impact of natural disasters and allocate their resources more efficiently.⁹ It recommends several steps for improving public intervention to deal with natural disasters that affect the agricultural sector and rural areas, including the following:

- a. Divide the risk of natural disasters into several levels according to frequency and exposure.
- b. Identify existing and alternative mechanisms for transferring financial risk aggregated by levels, as noted in step 1.
- c. For all types of natural disasters, especially in rural areas, draw up in advance and as explicitly as possible, rules spelling out when, where, for whom and for what purpose assistance will be provided by government and by international donors that support this type of cause.
- d. Update the regulatory framework for the insurance industry to ensure that new tools protect farmers who obtain this type of insurance while guaranteeing the industry's sustainability.

1.3. Obstacles to the effective delivery of agricultural insurance

As noted above, farming is exposed to weather-related conditions that cause loss of production and loss of income for farmers and agribusinesses. This in turn puts a strain on public finance because governments usually have to provide financial resources or waive certain taxes to help the victims.

Natural disasters are especially harmful to all small and medium-sized production units, which usually do not have the financial resources they need to deal with such hardships.

While very prevalent in North America, a number of studies show that risk-mitigation and transfer tools are not widely used in LAC countries' agrarian economies. This is evident in the high number of requests for support and efforts by government to intervene. Governments often have limited resources and no budget for dealing with weather-related losses.

9. Arce, C; Arias, D. 2012. *¿Es posible ofrecer seguros agropecuarios para pequeños productores centroamericanos en forma sostenible? Un enfoque de políticas públicas*. Washington, US, Banco Mundial LAC. Boletín En Breve n.o 174. Disponible en http://siteresources.worldbank.org/INTLAC/Resources/257803-1269390034020/EnBreve_174_Web.pdf.

One of the reasons for the limited use of tools for covering risk is the absence of policies on this subject and the relative lack of technical capacity of the public and private institutions involved. This may occur in part because of a lack of awareness among governments of the implications and effects of climate-related disasters and of information about tools that can be used to mitigate their impact.

To solve this problem, appropriate policies must be designed and implemented, and the roles of the public and private sectors must be defined, in terms of whether they should focus on production, on providing insurance or on other purposes. An effort must be made to promote greater interaction between the two sectors to create sustainable public-private partnerships (PPPs).

Other weaknesses that have been identified in the LAC countries are:

- There are no public policies for promoting the development of risk-management tools in general and of agricultural insurance programs in particular. When an agricultural insurance act has been adopted by consensus reached by the production and the insurance sectors, this type of tool becomes a long-term state policy.
- The technical capacity of public institutions for the development of agricultural insurance policies and programs or the design of other risk-management tools is limited.
- There is little coordination between public and private institutions in the development of risk-management tools.
- The public is largely uninformed about agricultural insurance; hence, demand is low.
- The scarcity and poor quality of information makes it difficult to analyze risks and design-responsive insurance products.
- There is a lack of research, development and innovation in the area of risk management, especially on agricultural insurance, that is designed respond to the special conditions of agriculture in the LAC countries.
- Most professionals in the field of agriculture have little knowledge of techniques and procedures for adequately dealing with weather-related risk, including agricultural insurance.

II. AGRICULTURAL INSURANCE

2.1. Agricultural insurance as a risk-transfer tool

Farmers know the risks they face better than anyone else, and on this basis, design strategies for minimizing the impact of weather-related hazards. Through their choices of crops, management practices (including risk-mitigation technologies) and marketing channels, farmers use their knowledge and experience to design and implement strategies for maximizing income and minimizing risk.

Thus, risk management entails managing strategies and tools to improve certainty in activities that are exposed to different external sources of risk that create a large gap between expectations and actual results.

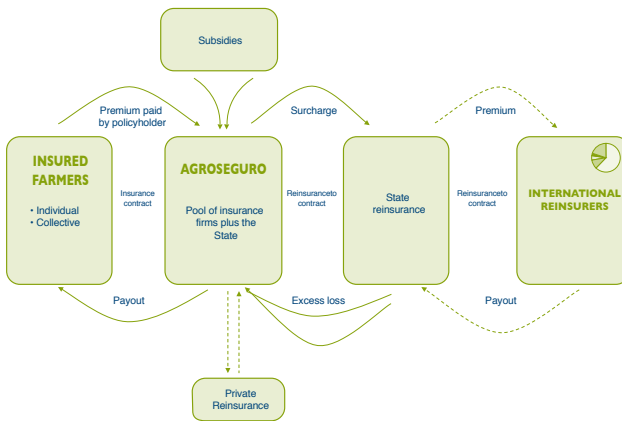
In this context, an especially important option, along with other strategies farmers adopt, is to transfer the risks created by catastrophic weather-related events that seriously affect production to companies that specialize in taking on and managing such risks. We are referring here to agricultural insurance underwriters.

An insurance program guarantees protection against damage (loss) in exchange for a series of fixed payments (premiums). When several farmers who are exposed to a similar risk join in contributing premium payments into a common fund set up to deal with a potential loss, this is known as the principle of “mutuality.”

Because insurance is designed to protect farmers’ properties by compensating them for insured losses, it is especially important to reduce the level of uncertainty regarding the possibility of adverse events disrupting their plans. Insurance serves this purpose, because it is based on statistical and actuarial criteria that vary depending on the type of insurance involved. These criteria are followed in determining the premiums, the insurance company charge to ensure it can meet its commitments.

Figure 2.1 below shows a diagram of the insurance process with its different components and how they are interrelated. The diagram is a simplified adaptation of the insurance system used in Spain.

Figure 2.1. Example of a public-private insurance scheme: Spain.



Source: Spain's Insurance Compensation Consortium (<http://www.consorseguros.es>).

Agricultural insurance begins (and ends) with the farmer, who contracts for insurance by paying a premium to a company, which assumes the risk that is being transferred. The company undertakes to indemnify the farmer in the event of a loss, and it does this on the basis of the conditions stipulated in the contract, known as the “policy.” In Spain, the commitment to indemnify the insured is undertaken by an entity made up of a group of insurance companies (Agroseguro) and by the government. Thus, the system is a “coinsurance” system, i.e., the risk assumed is based on each entity’s shares in the public-private consortium.

The next step entails assigning a portion of the insured risks to an international reinsurer or, in the case of Spain, to an entity called the Insurance Compensation Consortium, which acts as a reinsurer of the risks Agroseguro has assumed in particular coverage for extreme loss. This entity then assigns part of the risks it has assumed to the international reinsurance market (retrocession) to cover itself from potential losses.

Once the loss has been verified, the process of payouts to farmers begins. The insured farmer, as mentioned earlier, receives the indemnity for damages incurred according to the terms of the policy.

In Spain (as in many other countries), agricultural insurance is subsidized with premiums provided by the government, which vary according to certain criteria, such as whether farming is the farmer’s “chief occupation,” the contract is a collective one or the farmer is young.

As shown in figure 2.1, a public-private agricultural insurance system involves the participation of a large number of actors and can be very complex. It is imperative that the system established is sustainable and provide guarantees to the participants.

2.2 Loss ratio: an important indicator of agricultural insurance activity

The most commonly used indicator for evaluating the performance of an insurance or reinsurance company is the **loss ratio**. This index makes it possible to determine whether the price established for different insurance policies is correct; in other words, whether the premium provides adequate compensation for the claims made against the policies written during a given time period.

The loss ratio is calculated according to the following formula:

$$\text{Loss ratio} = \text{incurred losses} / \text{earned premiums}$$

The general rule is that this indicator should be lower than 1 and should remain relatively stable from one year to another, to obtain a balanced outcome (good performance by the insurer). In the agricultural sector this general rule may not always apply because a drought or excessive rain could create substantial losses within one year or over a multiple-year period. In this case, the payout would be much higher than the premiums earned.

Due to the increased frequency and severity of damages the loss ratio can far exceed 1.0. When this occurs the premiums must increase and become too expensive to the farmers. Therefore it becomes necessary to create public-private partnerships so the government also absorbs some of the risk to help mitigate premium increases and encourage the private sector to continue providing insurance.

Insurance operations are supervised according to the legislation in force in the country involved. Accordingly, the terms for obtaining coverage, the business practices and the financial solvency of insurance firms are regulated to protect the interests of the insured parties and the benefits covered by the insurance.

These general observations give an idea of the complex nature of insurance activities, especially when agricultural insurance is involved, owing to the catastrophic nature of the hazards covered, the amount of capital involved and the economic and social damages that affect a large number of farmers at the same time.

2.3. Climate change

There is no question that climate change has accelerated as is reflected in the increased frequency of adverse events and the extent of the damages caused. It is, therefore, especially important to adequately manage climate-related risk, particularly for farmers and governments.

Farmers must consider several issues. First, they must realize that climate change is occurring and that it makes farming a highly risky undertaking, which requires careful consideration of where and when to carry out their production activities. It also means they will need to take certain measures, including well-planned efforts to adapt to and mitigate damage to their farms or to transfer to insurance firms any risks, the effects of which they would not be able to attenuate, particularly in connection with especially serious events.

Governments face a different set of issues when catastrophic weather-related events require them to provide assistance—often with scarce resources—to victims and to repair damaged infrastructure. They must also adopt preventive measures to ensure that markets are not destabilized by the losses suffered and that agricultural production is sustained.

The abundant amount of literature on this subject shows how complex the issues are. And this complexity is quite likely at the root of the slow progress generally made by the LAC countries in developing tools for improving risk management, at both the entrepreneurial and the governmental levels.

When a weather disaster occurs, farmers normally react by asking for government help, and governments usually respond—based on their perception of the magnitude of the event and their economic capacity— with some type of emergency financial assistance. However, there is a better way to deal with such situations, although it involves several levels of decision making:

- a. **At the macro level:** recognize the complexity of the problem and recognize that it must be addressed from the social, economic and production perspectives, as well from the regulatory and/or institutional standpoints.
- b. **At the micro level:** adopt management procedures that expressly take into account the costs and benefits of the different risk-management options.
- c. **At the small-farmer level:** design tools for creating efficient local economic and social support networks.

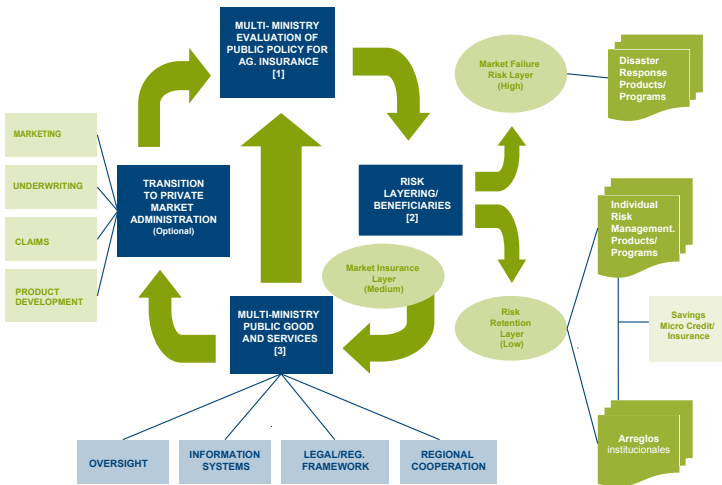
Such an approach, however, entails adopting public policies that usually must be developed over an extended period of time, bearing in mind, the institutional strengths and weaknesses of the agencies involved, the need to address the weaknesses (policy offices, weather services, regulatory agencies, technology development, etc.) and the fact that they must all be efficiently coordinated to build a genuine risk management and agricultural insurance system.

If farmers have the backing of an insurance policy, they will be in a better position to obtain credit financing, adopt new technologies and mitigate the risks to which they are exposed. This will in turn lead to improved productivity and a more profitable farming experience.

2.4 Development of the agricultural insurance market and types of insurance

Figure 2.2 shows the different stages of the design of public policies for development of the agricultural insurance market.

Figure 2.2. Stages in the design and implementation of agricultural insurance coverage.



Source: Adapted with permission. Arias and Covarrubias. 2006. Inter-American Development Bank.

Agricultural insurance includes different types of insurance for weather hazards; in broad terms, these may be classified as follows:¹⁰

- Traditional insurance
- Index-based insurance

Each type has its own special characteristics, but the main difference between the two lies in the manner in which damage is evaluated. In the case of traditional insurance, the procedure consists of directly evaluating the damage caused in the field as opposed to index-based insurance in which the damage is evaluated indirectly. The two categories apply different procedures. **Traditional insurance** may include:

- **Crop insurance against named perils.** This type of insurance involves assessing losses caused by one or several specific risks (named perils). Payouts are calculated by measuring the percentage of damage in the field; the evaluation is made by a loss adjuster (expert damage appraiser). This type of insurance is transparent and easy to understand because it follows well-defined data-measurement rules, and the insured amount has been previously determined. The most common named perils insurance is hail insurance, which has been available in several countries for more than 100 years.

10. World Bank. 2010. *Agricultural Risk Management Training: Weather Risk Management for Agriculture*. Washington DC, US. Available at <https://agrisktraining.org/login/index.php>.

- **Multi-peril crop insurance** (MPCI) is crop insurance that is based on yield-per-surface unit. For this coverage to be applied, a critical yield must be established. Insurance is activated when yields fall below that level. The insured yield is usually between 50% and 70% of the farm's average yield. If the yield is lower than the insured yield, the payout equals the difference between actual yield and insured yield. The insured amount is obtained by multiplying guaranteed yield by a pre-agreed price for the product. An important advantage of multi-peril crop insurance is that it covers all risks of damage except those that are specifically excluded. The main disadvantages are associated with adverse selection (the less efficient farmers are the ones who tend to use insurance), moral risk (farmers artificially inflate their losses) and the high cost of loss adjustment.

Index-based insurance compensates farmers based on the behavior of an indicator (index) that is indirectly related to losses in the field. Such insurance uses yield indexes for areas with similar risks, which involve several farmers, or they may use weather parameters or indirect indicators associated with the weather, such as the Normalized Difference Vegetation Index (NDVI). Index-based insurance includes:

- **Insurance based on area yield index.** These plans are based on estimates of yield in a given homogeneous area/region. Payouts are activated when the yield of the area/region falls below a pre-set threshold.
- **Weather index insurance.** These plans are based on time series weather variables, such as precipitation and temperature typically measured by weather stations on a daily basis. The insurance is structured so that payouts are received by the insured to the extent that the value used for the variable is either above or below a pre-specified threshold.

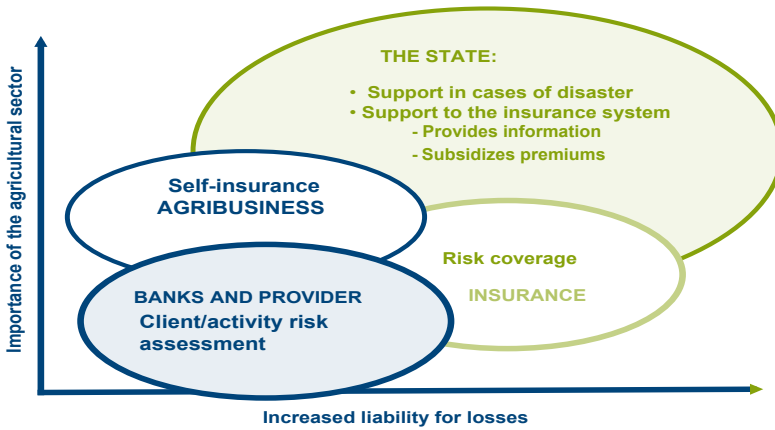
Another way to design insurance is by using the NDVI. This index makes it possible to estimate the state of vegetation based on remote-sensor measurements, to identify the presence of green vegetation on the surface and determine its spatial distribution, as well as changes it undergoes over time.

The behavior of vegetation is determined fundamentally by weather conditions. The index should be interpreted in terms of the crops' phenological cycles. Data stored in historic series relating to the behavior of the NDVI are used to identify thresholds or triggers that activate payouts when an event occurs that causes damage below the thresholds.

2.5. The role of the public and private sectors

Bearing in mind the risks to which agricultural activity is exposed, especially the social and economic implications of an adverse weather event, public and private actors often work together. Figure 2.3 shows the actors who are naturally involved in risk management and provision of agricultural insurance, the role played by each one and the extent of their responsibility.

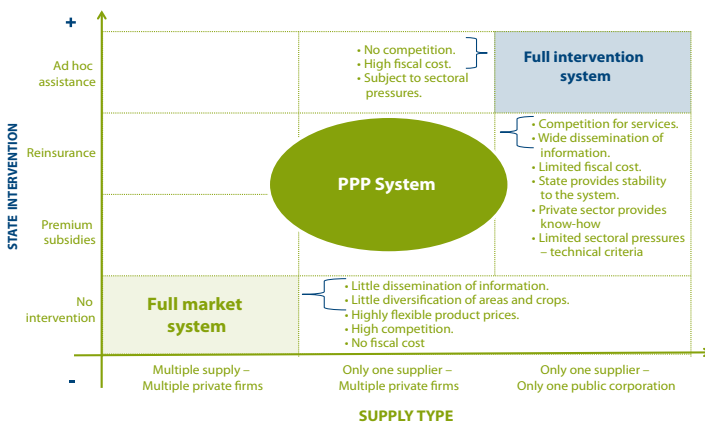
Figure 2.3. Actors involved in risk management and in the supply of agricultural insurance.



Public and private actors may participate to different extents and their participation may be coordinated in different ways (figure 2.4). Public-private projects are considered to be the best-suited and most efficient arrangements for ensuring that farmers’ needs are covered adequately over many years.

Figure 2.4. Agricultural insurance systems.

PPP takes advantage of public-private synergies



Source: J.J. Casado, Munich Re Group

Source: Casado, J.J. 2009. Presentation at international seminar held in Montevideo in 2009. Munich Re Group.

When possible types of government intervention are compared with the existing supply of insurance, certain unique features of each type of system stand out. Public programs or projects may range from ex-post assistance (following a loss), premium subsidies and reinsurance, to non-intervention. Generally, there are three types of insurance systems: wholly market-based systems, totally intervened systems and public-private cooperation systems.

Public systems: A system of full government intervention has a high fiscal cost and is subject to strong pressure from different sectors (each sector seeks to obtain benefits from the public sector). In countries with limited resources and high demand for social services, this system does not promote risk management among farmers because they know that the government will find a way to compensate them. Additionally, governments typically do not possess the technical capacity to fully understand and measure risk.

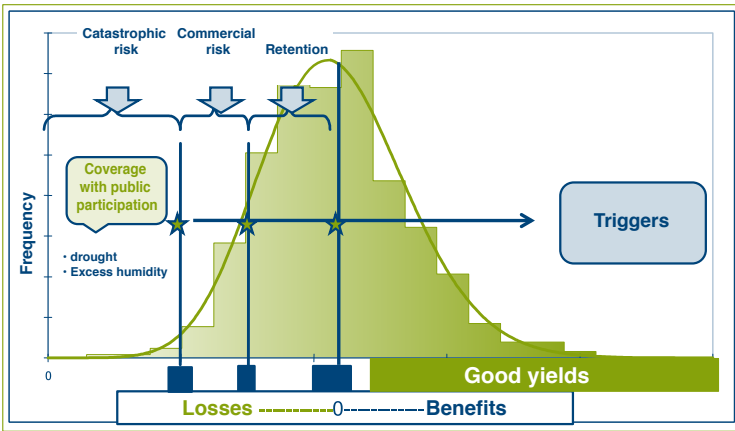
Private system: A system that relies solely on the market will have little to no government regulations and oversight. Additionally, the entire risk is borne by the private sector, making this approach much less attractive to that sector. Coverage, therefore, will be limited. Moreover, premiums would have to be so high that farmers would not be able to afford them.

Public-private system: A public-private system offers the best option for designing coverage to deal with risk in the farming sector. There are three major reasons for this: the fiscal and budgeted costs are limited; the government provides stability to the system by providing important resources and inputs (for example, sectoral and weather information); and the private sector provides know-how and assumes all or part of the risks within a stable framework with clear and permanent game rules.

This formula encourages insurance and reinsurance companies, which share the risks with the government. Market growth is promoted, because there is more information about the tool and greater competition for services, and possible pressures from different sectors are significantly reduced. This may be seen in the success of such systems internationally. The cases of Mexico, Spain and the United States, each with their own special features, attest to this.

The following is an example of how risk can be distributed between the production sector—which retains the portion of risk that is assumable (self-insurance)—commercial insurance and the public sector, in the event of less frequent and more disastrous weather events (figure 2.1). As mentioned above, the public sector may intervene in different ways: the government may assume part of the risk by establishing a special fund that is coordinated with the insurance; it may act as direct insurer of municipalities (as in Mexico); or, as is the case of Spain, an insurance compensation consortium may assume a portion of excess losses combined with a pre-determined portion assumed through reinsurance provided by the private sector.

Graph 2.1. Stratification of risk and distribution among different actors.

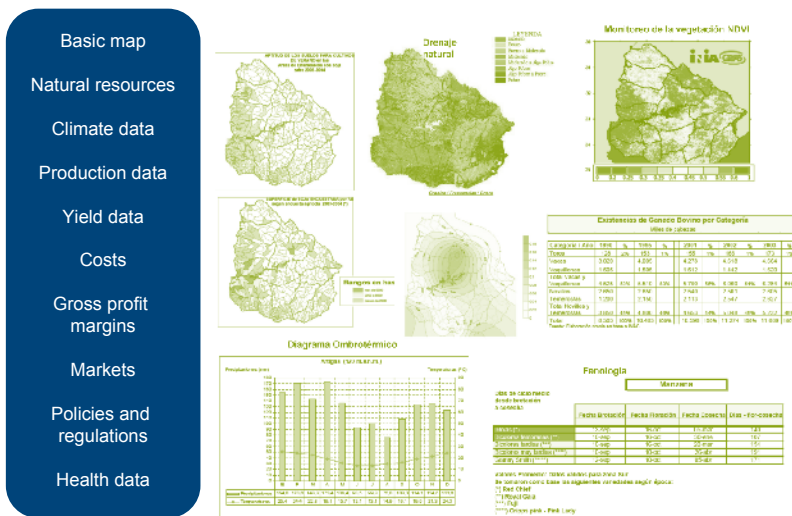


2.6. Information: an indispensable tool for agricultural insurance systems

Information is one of the most important aspects to consider in developing a risk-management system, especially in insurance system for agricultural activities; without information it is impossible to design coverage that is technically adequate and commercially viable. This information must be protected from manipulation, comprehensive and available to all participants.

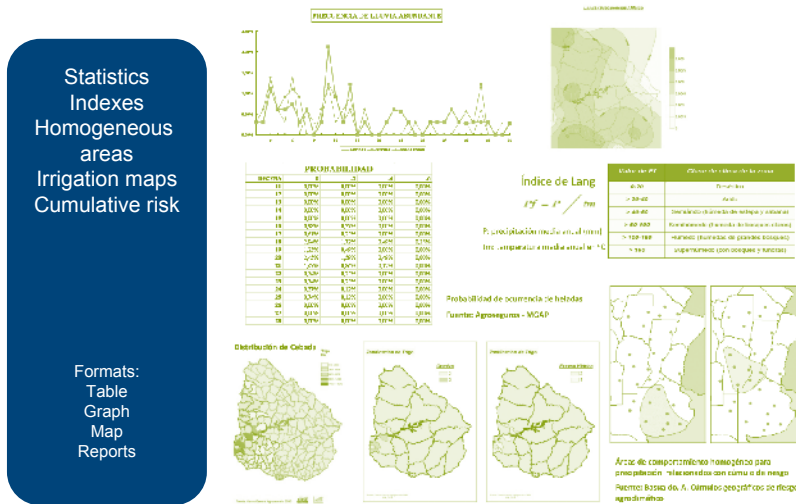
Figures 2.5 and 2.6 show the different types of data that are in play in the design of insurance coverage.

Figure 2.5. Data needed to implement an agricultural insurance system.



Source: Prepared by the authors with information from various sources in Uruguay.

Figure 2.6. Information needed for the design of agricultural insurance.



Source: Prepared by the authors with information from various sources in Uruguay.

The variety of data referred to in these figures clearly shows the importance of coordinating different sources of information in each country. Complete information systems are needed, which should include weather data, satellite image data, data on the phenology of crops or pastures, statistical information on trends in the area occupied by different categories of farms and their productivity, information on natural resources, information on cost and economic performance, etc.

These data must in turn be included in models that are specific to agrarian insurance techniques, to ensure that the information provided lays the foundation for an adequate design of coverage in the sector. To this must be added information on the property to be insured and the risk to be covered. This information may be summarized as follows:

- Information on the property insured
 - o Type of production (crops, livestock, forests)
 - o Physiological development timeframe for the category of production (to establish the period of vulnerability)
 - o Species, varietal
 - o Area
- Information on the risk
 - o Frequency and intensity
 - o Date of the event

III. THE AGRICULTURAL INSURANCE MARKET IN THE AMERICAS

3.1. General context in Latin America and the Caribbean

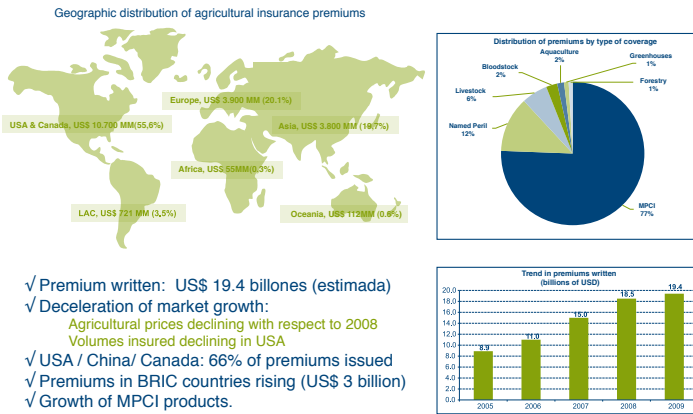
In general terms, the agricultural sector in Latin America may be described as follows:¹¹

- The agricultural sector plays a fundamental role in the economies of the region, as evidenced by the following indicators:
 - o Agricultural GDP/total GDP = 5.45%
 - o Agroindustrial GDP/total GDP = 25%–30%
 - o 17% of the economically active population works in the rural sector
- Latin America and the Caribbean have promoted major changes to modernize the agricultural sector, as shown by the following figures:
 - o The agricultural GDP of the region grew at a rate of 3.2% per year from 1995 to 2006.
 - o The capital stock of the agricultural sector rose by 31% between 1971 and 2006.
 - o The productivity of cereal crops rose by 29% between 1995 and 2006; during that same period, the productivity of oilseed crops rose by 10%.

In contrast to the size of the agricultural sector in the Latin American economies, agricultural insurance has played only a minor role in LAC: the region represents only 3.5% of agricultural insurance premiums written in 2009 (USD721 million) (figure 3.1).

11. Iturrioz, R. 2010. *El seguro agrícola en América: logros y desafíos*. In *Eleventh Congress of the Latin American Association for the Development of Agricultural Insurance* (2010, Cartagena CO). Washington, DC, US, World Bank.

Figure 3.1. Status of global insurance during 2009.



Source: Iturrioz 2010.

Many different public policy tools are used in the Americas. These range from specific legislation to ministerial decisions and public funds designed to promote the use of some form of coverage or provide ex post responses to especially damaging weather events.

Mexico is a good example of the modern tendency to seek ways for dealing with this issue through public-private partnerships. Mexico has enacted legislation and other policy tools to allow public sector participation in the development of risk management options and agricultural insurance in cooperation with the private insurance sector. Government support may include subsidies to insurance contracts or the creation of funds with public resources to supplement coverage offered by insurance companies. The government may also participate as a direct insurer or a reinsurer.

This study shows that some type of agricultural insurance is available in a little more than 70% of the countries considered (see sections 3.2 to 3.6). This insurance is designed to provide coverage for crops, especially through named-peril plans, although with considerable differences between countries. Coverage is also provided for livestock, forestry and aquaculture, although to a lesser extent. Seventy-five insurance firms are operating in the countries studied, and the volume of premiums written appears to be increasing.

In LAC, 85% of premiums sold are concentrated in Argentina, Brazil and Mexico, all of which have very large agricultural sectors that play an especially important role in the economy. These countries have a long-standing insurance tradition, as in Argentina, or specific public policies aimed at developing comprehensive tools for managing weather risks, as in Brazil and Mexico.

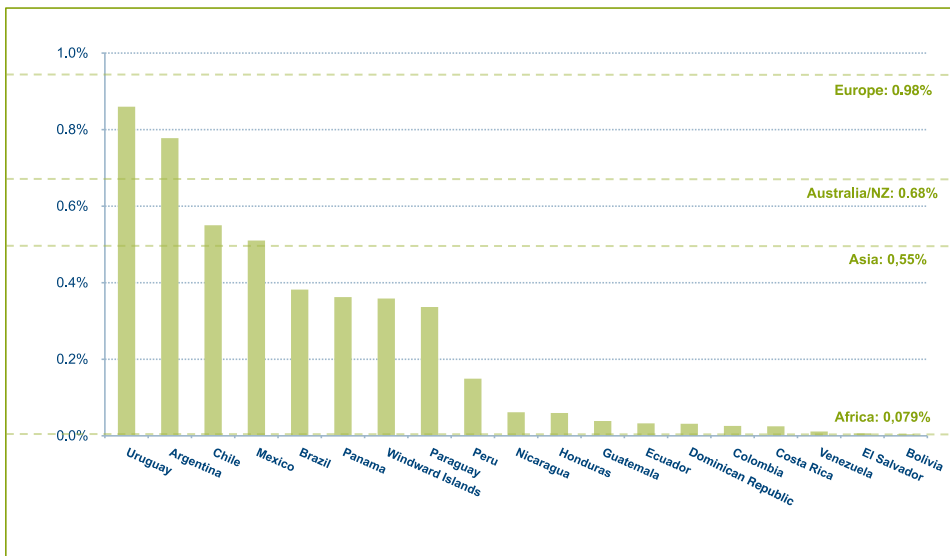
Argentina has passed an Agricultural Emergencies Act that deals with agricultural insurance. In Brazil, public policy tools for risk management have increased substantially over the last 10 years: the country has premium-subsidy programs, a fund for insurance emergencies and a strong back-up information system.

Mexico has the most highly developed coverage system in LAC. The public sector plays a very important role through the specialized agency, AGROASEMEX, which acts as a reinsurer for both private companies and insurance funds set up by farmers. This agency also provides direct coverage for municipalities through index-based insurance for the farming and livestock sectors (for forage crops). In 2009, to cover financial deviations arising from catastrophic weather events, AGROASEMEX drew up a portfolio consisting of three coverage systems that include municipalities as risk units.

Smaller countries whose agricultural sectors play an important socioeconomic role, such as Chile and Uruguay, also have significant weather risk coverage systems, and agricultural insurance seems to be on the rise.

Graph 3.1 shows the penetration of insurance in LAC, and figure 3.2 shows the influence of the government in the development of the agricultural insurance market.

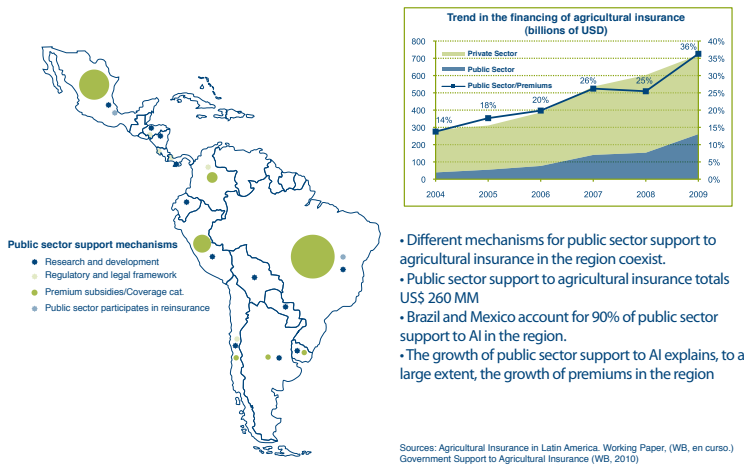
Graph 3.1. Penetration of agricultural insurance in LAC (premiums/agricultural GDP).



Source: Agricultural Insurance in Latin America. Working Paper, (WB, en curso) Government Support to Agricultural Insurance

Source: Iturrioz 2010

Figure 3.2. Economic share of the State in development of the agricultural insurance market.



Source: Iturrioz 2010.

In preparing the diagnosis of the agrarian insurance market in the Americas, the first task was to find quantitative information (production data, area with insurance coverage, policies sold, payments for losses, etc.) and qualitative information (public policies, institutional development, information sources) to accurately assess the situation. Gaining access to this information was not easy. The data are scattered, information is not systematized and, depending on the source, the data may be contradictory. Some exceptions include the Superintendency of Insurance of the Argentine Republic, which conducts a yearly survey among insurance companies and prepares a report on the most important aspects of agrarian insurance activity that can be compared from one year to another. Canada and the United States also conduct annual studies in a wide range of areas to assure the program is responsive.

Information obtained on the countries of the Americas, by regions, follows.

3.2 Southern Region

3.2.1. Argentina

Institutional framework for the application of public policies

The agency that is responsible for implementing public policy on agricultural risk management is the Ministry of Agriculture, Livestock and Fisheries (MAGyP), which works through the Agricultural Risk Office (ORA). This office is responsible for the analysis, management and development of proposals on risk management. It has the following duties:

- Develops, analyzes and disseminates tools for assessing and reducing agricultural risk in a comprehensive manner, and helps generate a suitable framework for expanding and diversifying the insurance market and coverage tools for the agricultural and forestry sector.
- Assesses risk factors that affect the agricultural and forestry sector (weather, economic and market factors) and generates tools and strategies for prevention, mitigation and transfer of agricultural and forestry risks, in coordination with public and private agencies concerned with these issues.
- Analyzes, develops and implements mechanisms for improving and increasing access to agricultural and forestry insurance, prioritizing types of production, regions and active risk-mitigation practices.
- Develops and proposes risk-transfer mechanisms for the agricultural sector.
- Provides training and technical assistance in the areas of assessment and management of agricultural risks.¹²

Another unit that deals with agricultural risk management is the office that is responsible for implementing the Agricultural Emergency Act of the Ministry of Agriculture, Livestock and Fisheries. The agency responsible for regulating and monitoring insurance activity is the Superintendency of Insurance, a unit of the Ministry of the Economy and Public Finance (<http://www.ssn.gob.ar>).

The Integrated System of Agricultural Information (SIIA) (<http://www.siiia.gov.ar/>), the National Agricultural Technology Institute (INTA) (<http://inta.gob.ar/>) and the National Weather Service (<http://www.smn.gov.ar/>) provides the Ministry, Livestock and Fisheries with information it needs for its work.

Agricultural insurance and risk management regulations

The Agricultural Emergencies Act No. 26,509 was adopted on 20 August 2009, (<http://www.colaboras.com/tema.php?tema=Texto-de-la-Ley-de-Emergencia-Agropecuaria---Ley-N%C2%BA-26509&id=97>). This Act created the National System for the Prevention and Mitigation of Agricultural Emergencies and Disasters within the Ministry of Agriculture, Livestock and Fisheries. The purpose of this system is to prevent or mitigate damage caused by weather events, earthquakes and biological or physical factors that significantly affect agricultural production or production capacity. The Act established the National Commission on Agricultural Emergencies and Disasters, as well as the National Fund for the Mitigation of Agricultural Emergencies and Disasters (FONEDA). The Fund's resources are exclusively allocated to finance programs, projects and actions of the National System for the Prevention and Mitigation of Agricultural Emergencies and Disasters.

12. Information taken from the following websites: <http://www.ora.gov.ar> and http://www.ora.gov.ar/segueros_evolucion.php.

Main features of the agricultural insurance market

Table 3.1 shows the status of agricultural insurance activities in Argentina during 2008 and 2010. A large number of insurance firms are operating in a competitive system without government support. In 2008 and 2010, more than 18 million hectares of land were insured by these companies; this was equivalent to 58% of the area planted in cereal and oilseed crops in 2008, and 65% of the area planted in 2010.

The volume of insured capital and the number of policies and premiums contracted were quite high with respect to other countries in Latin America. Also worthy of note is the ratio of losses covered and premiums written (loss ratio); specifically, 0.57 in 2008 and 0.81 in 2010.

Table 3.1. Argentina: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	28	29
Agricultural premiums written	Millions, USD	222	204
Hectares insured	Millions, hectares	18.3	18.9
Capital insured	Millions, USD	6183	6336
Policies written	Number	154 864	156 190
Payouts	Millions, USD	127	166

* Nominal exchange rate, official data supplied by the Central Bank of the Argentine Republic.
Source: Superintendency of Insurance of the Nation.

Table 3.2 shows the insured area and the number of policies written, by type of coverage. The main types of insurance offered are for named perils against hail and hail plus others;¹³ the number of hectares with multi-peril marginal coverage is 5%. Coverage for systemic risks, such as droughts and excessive rain, are not currently available as named coverage. Payouts for such events are made under the Agricultural Emergencies Act.

Table 3.2. Argentina: Area Insured and Policies Written by Type of Insurance, 2008 and 2010.

Years	2008		2010	
	Area insured (hectares)	Policies written (number)	Area insured (hectares)	Policies written (number)
1. Named perils, traditional coverage				
Hail	9 534 300	78 516	1 1497 652	77 425
Hail plus others (wind, frost, fire)	7 850 700	75 574	6 638 998	76 834
2. Individual multi-peril				
Loss of yields from all risks	915 000	774	804 783	359

Source: Superintendency of Insurance of the Nation.

13. Named perils are specific events that can cause damage to agricultural production, such as hail, frost, heavy winds and fires, among others.

Table 3.3 shows the production activities covered, planted area and insured area. Cereals and oilseeds account for 98% of the total insured area. Production activities that are especially important to the economies of the regions and beyond the pampas (cotton, vegetables, fruits, and livestock) have very limited coverage. In 2010, however, the insured area increased by around 3%.

Table 3.3. Argentina: Production activities covered, 2008.

Production activities with coverage	Area used for category (hectares)	Area covered (hectares)
Cereals	11 967 107	7 800 000
Oilseeds	19 216 171	10 200 000
Forage crops	ND	37 000
Tobacco	90 565	18 400
Perennials	ND	331 200
Totals	312 738,43	183 866,00

Source: Superintendency of Insurance of the Nation.

Insurance and reinsurance firms

Five of the 28 firms offering agricultural insurance account for 62% of the insured area and more than 63% of premiums written. These companies are (in alphabetical order): Allianz, La Segunda, Mapfre, San Cristóbal and Sancor. In 2008, two of these five insurance companies accounted for 37% of insured land and more than 40% of premiums written. Five other firms also participate in the market, although with lower percentages. Overall, these insurance firms cover the following risks: hail, hail plus others, multi-peril in agriculture, as well as fires on forest plantations. In 2008, five companies covered livestock risks; in 2010, this number had dropped to three.

Information on the main insurance companies may be found at the following web addresses:

- Allianz: <http://www.allianz.com.ar/agro>;
- La Segunda: http://portal.lasegunda.com.ar/portal/page/portal/PortalLaSegunda/PRODUCTOS_Y_SERVICIOS/SEGUROS_GENERALES/RIESGOS_AGRICOLAS
- MAPFRE Argentina: <http://www.mapfre.com.ar/>;
- Sancor Seguros: http://www.gruposancorsegueros.com/web/ES/home_agro.aspx
- San Cristóbal: <http://www.sancristobal.com.ar/SCSegurosInstNet/Contenido/aproductores.html>

The premiums assigned to reinsurance firms by insurance companies amounted to USD97 million in 2008, and this figure rose to USD101 million in 2010. The share of premiums assumed by reinsurers was approximately 44% in 2008 and nearly 50% in 2010. Among others, the following reinsurance firms operated on the Argentine market: Allianz Re, Hannover Re, Mapfre Re, Munich Re, Swiss Re. Three of these accounted for 75% of premiums assigned to reinsurance firms.

3.2.2 Brazil

Institutional framework for the application of public policies

The agency responsible for implementing public policies on agricultural risk in Brazil is the Ministry of Agriculture, Livestock and Supply (MAPA), which works through the Secretariat for Agricultural Policy (SPA) and, in particular, the Rural Risks Department and the Department for Coordination of Agricultural Insurance (<http://www.agricultura.gov.br/politica-agricola/seguro-rural>).

The agency responsible for regulating and monitoring insurance activities is the Superintendency of Private Insurance (SUSEP) (<http://www.susep.gov.br/principal.asp>).

Agricultural insurance and risk management regulations

The regulatory framework for rural insurance in Brazil is laid down in Act No. 10823, of 2003, which creates financial incentives for farmers and outlines general rules governing public entities, as well as their responsibilities, to ensure the proper management of insurance plans (http://www.planalto.gov.br/ccivil_03/leis/2003/L10.823.htm) and the decree regulating Act No. 10823 (d5121) (http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/decreto/d5121.htm).

Two other laws supplement this legislation, namely Act No. 126, of 2007, which promotes the opening up of the reinsurance market (http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp126.htm) and Act No. 137, of 2010, authorizing the federal government to participate in the fund for supplementary coverage of rural insurance risks in agriculture, livestock, aquaculture and forestry. The government takes action in response to weather disasters when the insurance market does not have the capacity to cover the payouts that are owed to insured farmers (http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp137.htm#art15).

Act No. 5969/1973 created the Program of Guarantees for Agricultural Activities (PROAGRO), an agricultural policy tool that enables rural producers to meet their financial obligations when they are affected by natural phenomena, plagues or diseases affecting their property, herds or plantations. This program also guarantees indemnification for any resources farmers have invested in their production activities. PROAGRO is administered by the Central Bank of Brazil.

In 2004, PROAGRO set up the PROAGRO MAIS program to help small farmers included in the National Program for the Strengthening of Family Agriculture (PRONAF) to obtain financing for their farming operations. Part of the rural financing and investment is granted from its own resources, as stipulated by the National Monetary Council (CMN) and Act No. 12058/2009.

Main features of the agricultural insurance market

Table 3.4 shows some important indicators of agricultural insurance activity in Brazil during 2008 and 2010. In 2008, seven private insurance firms participated in the agricultural (rural) insurance market; in 2010, six companies took part in that market. One insurance company accounted for 63% of total premiums sold.

Private companies issued an average of 56,000 policies during the two years mentioned, and for both years the total area insured was approximately 4.8 million hectares, i.e., 9% of total planted area. In 2010, losses were very low (24%).

Brazil subsidizes the value of premiums backed by a legal framework. This subsidy is on the order of 50% of total value of the premiums.

Table 3.4. Brazil: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	7	6
Agricultural insurance premiums written	Millions, USD	139	222
Hectares insured	Hectares	4 762 902	4 787 641
Capital insured	Millions, USD	3094	3941
Policies written	Number	60 120	52 880
Payouts	Millions, USD	ND	53

* Nominal exchange rate; official data supplied by the Central Bank of Brazil.

Source: Ministry of Agriculture, Livestock and Supply, Secretariat for Agricultural Policy, Department of Rural Risk Management.

Table 3.5 shows the number of hectares insured, capital insured and policies written under the PROAGRO and PROAGRO MAIS programs and private insurance. The average amount of capital insured by policies written under the programs is USD4742, while the amount covered by private insurance was USD51 463. Thus, coverage provided by PROAGRO and PROAGRO MAIS is aimed at small-scale producers.

Table 3.5. PROAGRO/PROAGRO MAIS: Indicators of Agricultural Insurance, 2008.

Data*	Unit	Private insurance	PROAGRO/ PROAGRO MAIS	Total
Hectares insured	Hectares	4 762 903	6 059 152	10 882 055
Capital insured	Millions, USD	3094	2975	6069
Policies written	Number	60 120	627 339	687 459

*Nominal exchange rate based on official data supplied by the Central Bank of Brazil

Source: Ministry of Agriculture, Livestock and Supply, Secretariat of Agrarian Policy, Department of Rural Risk Management.

A total of approximately 11 million hectares are insured by PROAGRO and PROAGRO MAIS plus private insurance; this amounts to approximately 20% of all planted land. In terms of crops covered, in 2008 and 2010, soybeans, maize and wheat accounted for 85% and 82% of total coverage. In 2008, these crops represented an area of 9.2 million hectares (see tables 3.6 and 3.7).

Table 3.6. Brazil: Insured Area by Crop (in hectares), 2008.

Product	PROAGRO and PROAGRO MAIS (hectares)	Private insurance (hectares)	Total (hectares)	%
Soybeans	1 834 529	2 929 170	4 763 699	44
Maize	2 464 230	781 671	3 245 901	30
Wheat	1 006 727	203 623	1 210 350	11
Rice	123 191	300 414	423 605	4
Coffee	169 839	7704	177 543	2
Grapes	8370	21 137	29 507	0
Apples	1761	22 581	24 342	0
Beans	131 259	29 052	160 311	1
Others	319 246	467 551	786 797	7
Total	6 059 152	4 762 903	10 822 055	100

Source: Ministry of Agriculture, Livestock and Supply. Secretariat of Agricultural Policy. Department of Rural Risk Management.

Table 3.7. Brazil: Insured Area by Crop Covered by Private Insurance (in hectares), 2010.

Product	Private insurance (hectares)	%
Soybeans	3 022 356	63.1
Maize	520 828	10.9
Wheat	385 009	8.0
Rice	400 956	8.4
Coffee	18 719	0.4
Grapes	25 116	0.5
Apples	20 669	0.4
Beans	30 383	1
Others	363 605	8
Total	4 787 641	100

Source: Ministry of Agriculture, Livestock and Supply. Secretariat of Agricultural Policy. Department of Rural Risk Management

Rural insurance covers: hail, drought, frost damage, excess rain, fire, flooding, wind and others.

Insurance and reinsurance firms

According to information provided by MAPA, seven insurance companies were active in 2008, covering 4 762 903 hectares and collecting premiums totaling USD139 million. In alphabetical order, these companies were: Aliança do Brasil, Allianz, Itau XL, MAPFRE, NOBRE, Porto Seguro and SBR. Information on these companies may be found at:

- Allianz Seguros: <http://www.allianz.com.br/Rural>
- Companhia de Seguros Aliança do Brasil: <http://www.bbseguros.com.br/alianca/rural.html>
- Mapfre Vera Cruz Seguradora S.A.: http://www.mapfre.com.br/site.aspx/condicoes_gerais_granizo
http://www.mapfre.com.br/site.aspx/condicoes_gerais_colheita_garantida http://www.mapfre.com.br/site.aspx/condicoes_gerais_multiriscos_rural
- Nobre Seguradora do Brasil S.A.: <http://www.nobre.com.br/agricola>
- Porto Seguro Companhia de Seguros Gerais:
http://www.portoseguro.com.br/porto-seguro/produtos/agricola.html?id=prod_agricola
- Seguradora Brasileira Rural (SBR): <http://www.brasileirarural.com.br/v2/>

3.2.3. Chile

Institutional framework for the application of public policies

The agency responsible for designing and implementing public policies is the Ministry of Agriculture (MINAGRI) <http://www.minagri.gob.cl/>, which receives technical advice from the Office of Agrarian Studies and Policies (ODEPA) (<http://www.odepa.gob.cl/util/Web.action;jsessionid=5606BEC42369779DFEBF9E8C853493A5>).

The Committee on Agricultural Insurance (COMSA), which was created by the Council of the Corporation for Development (CORFO) in 2000, is responsible for implementing policies on agricultural insurance. Its purpose is to promote agricultural insurance and to administer a government subsidy for copayment of agricultural insurance premiums. Resources for the subsidy payments and operational expenses of the Committee are provided from the budget of MINAGRI and are transferred annually to CORFO under a funds transfer agreement (<http://www.seguroagricola.com/>).

Subsidized insurance covers crops previously identified by COMSA; these crops fall under five categories: cereals, vegetables, legumes, industrial crops and seed crops.

The insurance covers the following named perils: agricultural drought (in the case of rain-fed crops), excessive or unexpected rainfall, frost, hail, snow and wind damage, all of which are caused by weather events. All events not described above are excluded from coverage, including losses from normal biological processes, poor agricultural practices, disasters, earthquakes, volcanic eruptions and overflowing rivers not attributable to excessive rain.

The agency responsible for regulating and monitoring insurance activities is the Superintendency of Securities and Insurance (<http://www.svs.gob.cl/sitio/index.php>).

Agricultural insurance and risk management regulations

In the context of Chile's economic policies and efforts to modernize the government, the Ministry of Agriculture undertook to create conditions that would be conducive to development of the agricultural insurance market in Chile. This was done to ensure that all farmers, regardless of gender, farm size, type of crop, geographic location or land tenancy system, would be able to receive compensation in the event of losses caused by bad weather. To this end, the government established a subsidy to provide for copayment of agricultural insurance premiums on behalf of farmers who took out agricultural insurance.

Several institutions supply information for the agricultural insurance system. In 2008, the Ministry of Agriculture set up the National Advisory Commission on Agricultural Emergencies and Climate Risk Management. This commission advises the Ministry on development of a strategy for managing agricultural emergencies and weather hazards; it helps identify the relevant lines of work and coordinates the National System of Agricultural Emergencies and Climate Risk Management.

The Ministry of Agriculture provides information on this subject on its website, under the section titled "Información agroclimática" (<http://www.minagri.gob.cl/agroclimatico/>).

Other institutions also provide information on risk management, including the Agricultural Development Institute (INDAP), the Agriculture and Livestock Service (SAG) and the Agricultural Research Institute (INIA).

In 2009, the government set up 100 new, publicly funded weather stations after it found that there were not enough weather stations in the different agricultural regions of the country.

In addition, a network of Automatic Weather Stations (EMA), which were online in real time, was set up. This network, known as AGROCLIMA, included stations in three institutions: the Agricultural Research Institute (INIA), the Chilean Weather Service (DMC) and the Fruit Growers Development Foundation (FDF). Thus, 225 automatic weather stations are now operating in real time.

Main features of the agricultural insurance market

Table 3.8 shows the important indicators of insurance activities in 2008 and 2010.

Table 3.8. Chile: Indicators of the Agricultural Insurance Market, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	2	2
Agricultural insurance premiums written	Millions, USD	4	13
Hectares insured	Hectares	68 366	100 721
Policies written	Number	12 129	18 764
Payouts	Millions, USD	3,9	3,9

*At the observed exchange rate, based on official data provided by the Central Bank of Chile.

Source: Committee on Agricultural Insurance (COMSA).

In 2008, the total area planted in annual crops was 711 366 hectares; of these 65 000 were insured (9% of the planted area). In 2010, 612 493 hectares of annual crops were planted, and somewhat more than 92 000 were insured (15% of the cultivated area). This indicates that, although the insured area increased from one year to another, insurance coverage is still far from reaching the total area of annual crops.

Table 3.9 shows planted area and insured area for the main crops, i.e., annual crops (cereals and industrial crops). In 2008, in addition to these crops, more than 5000 hectares of vegetables and more than 3200 hectares of perennial crops, mostly vineyards, were insured.

Table 3.9. Chile: Production Activities Covered, 2008.

Production activities covered	Area planted (hectares)	Area insured (hectares)	Area insured (%)	Premiums written (number)
Annual crops	643 733	65 104	10	12 041
Cereals	578 083	31 961	5.5	6240
Industrial crops	65 650	26 470	40.3	2187

Source: Agricultural Insurance Committee (COMSA).

Table 3.10 shows production activities and insurance coverage in 2010. The area planted in annual crops increased by around 27 000 hectares, which were covered by 6500 additional premiums. The area of vegetables that was covered doubled from 2008, to a total of somewhat more than 10 000 hectares (7745 policies). Vineyards increased from around 3000 hectares insured in 2008 to 6168 hectares in 2010 (197 policies).

Table 3.10. Chile: Production Activities Covered, 2010.

Production activities covered	Area planted (hectares)	Area insured (hectares)	Area insured (%)	Premiums written (number)
Annual crops	648 276	92 536	14	18 453
Cereals	568 725	46 223	8	7178
Industrial crops	79 551	33 239	42	2764

Source: Agricultural Insurance Committee (COMSA).

Insurance firms

Two insurance firms are currently operating in Chile:

- Mapfre: <http://www.mapfreseguros.cl/portal/>
- Magallanes: <http://www.magallanes.cl/MagallanesWebNeo/index.aspx?channel=8102>

3.2.4. Paraguay

Institutional framework for the application of public policies

The agency responsible for implementing public policy on agricultural risk management is the Ministry of Agriculture and Livestock (MAG) (<http://www.mag.gov.py>). The Risk Management Unit of the Ministry analyzes and coordinates the information produced by different entities. The Unit provides technical support for the design of Ministry policies (<http://www.bcp.gov.py>).

The agency responsible for regulating and monitoring insurance activities is the Superintendency of Insurance of the Central Bank of Paraguay. Its main objective is to verify, supervise and oversee the work of the entities under its control, to ensure that they have the financial and technical capacity needed to address the risks inherent in the business (for more information see <http://www.bcp.gov.py>).

In Paraguay, the insurance and reinsurance industry is governed by Act No. 827/96, on insurance, of 12 February 1996. Only corporations and branches of foreign corporations that have been authorized by the Superintendency of Insurance are allowed to carry out insurance and reinsurance operations.

Thirty-three insurance companies are currently operating in Paraguay (http://www.bcp.gov.py/index.php?option=com_content&task=view&id=118&Itemid=1); they are all authorized to offer property insurance. In 2008, six of these firms were providing agricultural insurance; in 2010, this figure rose to eight. Premiums and commissions are set by the companies in free competition.

The activities of insurance agents are covered by the same insurance act and monitored by the Superintendency of Insurance, which is responsible for keeping a record of insurance and reinsurance intermediaries, as well as of adjusters and external auditors.

Agricultural insurance and risk management regulations

The insurance and reinsurance industry is governed by Act No. 827/96, titled “On Insurance.” Paraguay does not have a specific provision for agricultural insurance.

Two entities are concerned with emergency systems or weather disasters: (1) the Risk Management Unit for the Agricultural Sector, mentioned above, and (2) the Secretariat of National Emergencies for other sectors (<http://www.sen.gov.py>).

Main features of the agricultural insurance market

Table 3.11 provides basic information on the performance of agricultural insurance activities in Paraguay in 2008 and 2010.

Table 3.11. Paraguay: Indicators of the Agricultural Insurance Market, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	6	7
Insurance premiums written	Millions, USD	3.8	4.5 (Est.)
Hectares insured	ha	781 000	ND

Source: Ministry of Agriculture and Livestock of Paraguay.

Table 3.12 shows the area devoted to agriculture, the area insured and the ratio between insured area and planted area in 2008. Although a large area is insured (781 000 hectares), the ratio between planted area and insured area (28%) shows that in Paraguay there is still ample margin for developing insurance activities. Crops that have coverage are mainly cereals and oilseeds, namely, soybeans, maize, wheat and sunflower.

Table 3.12. Paraguay: Production Activities Covered, 2008.

Production activities covered	Area planted (hectares)	Area insured (hectares)	Percentage of insured area/planted area
Cereals and oilseeds (soybeans, maize, wheat and sunflower)	2 800 000	781 000	28%

Source: Ministry of Agriculture and Livestock of Paraguay.

Insurance firms

Seven firms offer agricultural insurance in Paraguay:

- **Asepasa:** <http://yagua.paraguay.com/asepasa-aseguradora-paraguaya-s-a--801.html>
- **Atalaya:** <http://www.atalayaseguros.com/>
- **Garantía:** <http://www.migarantia.com.py/agricola.php>
- **Mapfre:** <http://www.mapfre.com.py/>
- **Sancor Seguros:** http://www.gruposancorseguros.com/web/ES/25_paraguay.aspx
- **Seguridad Seguros:** <http://www.seguridadseguros.com.py/v2/>
- **Tajy:** <http://www.tajy.com.py/home.php>

Two of the seven companies listed above accounted for nearly 78% of premiums written in 2008. Three companies that offered agricultural insurance accounted for approximately 84% of premiums written. These firms usually provide multi-peril insurance.

3.2.5. Uruguay

Institutional framework for the application of public policies

The agency responsible for implementing agricultural risk management policies is the MAGyP, working through the Office of Programming and Agricultural Policy (OPYPA). The duties of the Office are to advise ministry officials on the design of public policies for the agricultural, agroindustrial and fisheries sectors and on policies relating to the management, conservation and development of renewable natural resources. The Office also advises on, implementation of the policies adopted, and provides assistance in connection with measures and corrective action designed to avoid damage to the different sectors concerned (<http://www.mgap.gub.uy/portal/hgxpp001.aspx?7,7,204,O,S,0,MNU;E;2;17;63;6;MNU>).

The agency responsible for regulating and monitoring insurance activities is the Superintendency of Financial Services of the Central Bank of Uruguay (<http://www.bcu.gub.uy/Paginas/Default.aspx>).

The institutions that provide information to public and private agencies concerned with risk management and agricultural insurance are the National Agricultural Research Institute (INIA) and its Agro Climate and Information Systems Group (GRAS) (<http://www.inia.org.uy/online/site/951411.php>), which provides maps showing vulnerable areas, as well as agricultural statistics (<http://www.mgap.gub.uy/portal/hgxpp001.aspx?7,1,385,O,S,0,MNU;E;120;1;MNU> and <http://www.mgap.gub.uy/portal/hgxpp001.aspx?7,5,27,O,S,0,MNU;E;2;16;10;6;MNU>), and the National Weather Service (<http://www.meteorologia.gub.uy/>).

Agricultural insurance and risk management regulations

Uruguay does not have a specific law on agricultural insurance; however, there is legislation on risk management and agricultural insurance, including the following:

- Act No. 16426 of 14 October 1993, on Demonopolization of insurance. This Act provides for demonopolization of the State Insurance Bank and allows insurance companies to freely choose to provide coverage for all risks. It also creates an agency to oversee insurance and reinsurance activities, known as the Superintendency of Banking Entities and Financial Services (<http://200.40.229.134/leyes/ AccesoTextoLey.asp?Ley=16426&Anchor>).
- Act No. 17123 of 21 June 1999, exempting agricultural insurance and reinsurance from payment of the value added tax (VAT) (<http://www0.parlamento.gub.uy/leyes/ AccesoTextoLey.asp?Ley=17123&Anchor>).
- Act No. 17503 of May 2002 and Act No. 17844 of October 2004, amending it; these acts establish subsidies for insurance premiums for farms¹⁴ (<http://200.40.229.134/leyes/ AccesoTextoLey.asp?Ley=17503&Anchor> and <http://200.40.229.134/leyes/ AccesoTextoLey.asp?Ley=17844&Anchor>).
- Act No. 18362, of 6 October 2008, creating the Agricultural Emergency Fund, to help in cases of agricultural emergencies caused by extreme weather and sanitary and plant health events that decisively affect the viability of producers in a specific region or engaging in a specific type of farming (http://www.presidencia.gub.uy/_web/leyes/2008/10/ CM575__00001.PDF).
- Decree No. 829/008 of 24 December 2008, by which the executive branch lays down regulations for the Agricultural Emergency Fund (FAE) (http://www.presidencia.gub.uy/_web/decretos/2008/12/530__00001.PDF).

Main features of the agricultural insurance market

Table 3.13 provides basic information on the performance of the agricultural insurance market in Uruguay in 2008 and 2010.

Table 3.13. Uruguay: Indicators of the Agricultural Insurance Market, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	4	5
Agricultural premiums written	Millions, USD	7.3	9.6
Hectares insured	Hectares	960 031	1 090 072
Capital insured	Millions, USD	395	625
Losses compensated	Millions, USD	5.8	5.7

Source: Ministry of Livestock, Agriculture and Fisheries (MAGyP), Office of Programming and Agricultural Policy (OPYPA), Uruguay.

Tables 3.14 and 3.15 show coverage for the areas planted in cereals and oilseeds in 2008 and 2010. With regard to subsidized insurance for farms, the area covered in this sector for 2008 was 3200 hectares, and the amount of capital insured was estimated at USD13 million.

14. In Uruguay, establishments that engage in agricultural production (vegetables, fruits) and intensive livestock (poultry, swine) are called *granjas*.

The other sector that had significant coverage was forestry, with an insured area of approximately 600 000 hectares. This is a result of the forestry development policy implemented in the country since 1987, thanks to the enactment of a specific law providing for special tax and credit incentives; those applying for such benefits are required to take fire insurance.

Annual crop coverage is almost entirely for hail plus others (wind, frost, fire, etc.).

Cereals and oilseeds are the main crops in terms of insured area. The following tables show that the insured area was about 60% of the planted area for all crops considered. Thus, Uruguay is one of the countries with the highest rate of insurance coverage in Latin America.

Table 3.14. Uruguay: Production Activities with Insurance Coverage, 2008.

Production activities with insurance coverage (2008-2009 harvest)	Area planted (thousands of hectares)	Area insured (thousands of hectares)	Area insured (%)
Crops			
Wheat	475.5	364.7	77
Malting barley	129.9	79.9	62
Maize	87.5	47.0	54
Sunflower	55.1	29.0	53
Sorghum	68.1	35.5	53
Rice *	160.7	51.0	32
Soybeans	577.8	360.0	62
Total	1 554.6	967.1	62.2

* A high percentage of the area is under a mutual system that is not counted as insured area.

Source: Ministry of Livestock, Agriculture and Fisheries, Office of Programming and Agricultural Policy, Uruguay.

The distribution of insured area is relatively similar for the different crops, which might be an indication that many of the farmers growing them have chosen insurance coverage as a risk management tool.

Table 3.15. Uruguay: Production Activities with Insurance Coverage, 2010.

Production activities with insurance coverage (2010-2011 harvest)	Area insured (thousands of hectares)	Area insured (thousands of hectares)	Area insured (%)
Crops			
Wheat	404	277	69
Malting barley	61.9	46	75
Maize	104.9	54	51
Sunflower	4.3	2	47
Sorghum	49.1	20	41
Rice	170	139	82
Soybeans	1 007.6	535	53
Total	1802	1073	60

Source: Ministry of Livestock, Agriculture and Fisheries, Office of Programming and Agricultural Policy, Uruguay.

Insurance and reinsurance firms

The following five companies offer insurance in Uruguay:

- **Banco de Seguros del Estado (BSE):** <http://www.bse.com.uy/bse/>
- **Berkeley:** <http://www.berkeley.com.uy/>
- **Mapfre Uruguay:** <http://www.mapfre.com.uy/>
- **Sancor Uruguay:** http://www.gruposancorsegueros.com/web/ES/coberturasagro_uruguay.aspx
- **Surco Seguros:** <http://www.surco.com.uy/>

Berkeley began operating in Uruguay quite recently; therefore, there is no evidence indicating that it offered agricultural insurance in 2008 and 2010.

The companies that held the highest market share in 2008 were BSE, with 45% of premiums written, and Sancor, with 35% (see table 3.16). In 2010, Mapfre increased its share substantially, from 3.3% of premiums written in 2008 to 7.3% in 2010 (see table 3.17). The remaining companies remained fairly constant, in terms of market share, during the two years studied.

Table 3.16. Uruguay: Insurance Firms' Share of Premiums Written and hectares insured in 2008.

Insurance firm	Premiums written (%)	Hectares of crops insured
BSE	45	322 000
MAPFRE	3.3	149 000
SURCO	18	202 000
SANCOR	33.5	216 000

Source: Ministry of Livestock, Agriculture and Fisheries, Office of Programming and Agricultural Policy, Uruguay.

Table 3.17. Uruguay: Insurance Firms' Share of Premiums Written and Hectares Insured, 2010.

Insurance firm	Premiums written (%)	Hectares of crops insured
BSE	49	360 000
MAPFRE	7.3	93 000
SURCO	16	337 000
SANCOR	27	217 000

Source: Ministry of Livestock, Agriculture and Fisheries, Office of Programming and Agricultural Policy, Uruguay.

With regard to reinsurance, about 50% of premiums were assigned. The reinsurance companies with the largest share of the market were Munich Re and Swiss Re.

Table 3.18. Uruguay: Premiums Assigned to Reinsurance, 2008 and 2010.

Reinsurance	Premiums assigned to reinsurance (%)			
	2008		2010	
Periods	Millions, USD	Percentage of total amount insured	Millions, USD	Percentage of total amount insured
Total	3.5	48%	5.3	55%

Source: Ministry of Livestock, Agriculture and Fisheries (MAGyP), Office of Programming and Agricultural Policy (OPYPA), Uruguay.

3.3 Northern Region

3.3.1 Canada

Institutional framework for the application of public policies

The agency responsible for implementing public policies for agricultural risk management in Canada is Agriculture and Agri-Food Canada (AAFC), which works through the Production Insurance and Risk Management Division and the AgriInsurance Program (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1284665357886&lang=eng>).

AAFC is also responsible for regulating and monitoring agricultural insurance activities at the provincial level. Some of the provincial agencies in charge of insurance programs are:

- **Alberta: Agricultural Financial Service Corporation (AFSC):** <http://www.afsc.ca/>
- **British Columbia Ministry of Agriculture and Lands:** http://www.al.gov.bc.ca/production_insurance/
- **La Financière Agricole du Québec (FAQ):** <http://www.fadq.qc.ca/>
- **Manitoba Agricultural Services Corporation (MASC):** http://www.masc.mb.ca/masc.nsf/program_agriinsurance.html
- **Newfoundland and Labrador Crop Insurance Agency (NLCIA):** <http://www.nr.gov.nl.ca/nr/agrifoods/crops/prodinsur.html>
- **Nova Scotia Crop and Livestock Insurance Commission (NSLIC):** <http://www.gov.ns.ca/agri/ci/>
- **New Brunswick Department of Agriculture and Aquaculture (NBDA):** <http://www.gnb.ca/0027/Agr/0021/index-e.asp>
- **Ontario: Agricorp:** <http://www.agricorp.com/en-ca/Pages/Default.asp>
- **Prince Edward Island Agriculture Insurance Corporation (PEIAIC):** <http://www.gov.pe.ca/growingforward/index.php3?number=1001243&lang=E>
- **Saskatchewan Crop Insurance Corporation (SCIC):** <http://www.saskcropinsurance.com/>

Agricultural insurance and risk management regulations

The main regulations governing agricultural insurance programs are:

- The Farm Income Protection Act (<http://laws-lois.justice.gc.ca/eng/acts/F-3.3/>)
- Canada Production Insurance Regulations (<http://laws-lois.justice.gc.ca/eng/regulations/SOR-2005-62/page-1.html>)
- Guidelines for actuarial certification of methodologies for determining premium rates for agricultural insurance programs (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1239812263850&lang=eng>)
- Certification guidelines for determining probable yield for agricultural insurance programs (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1183485375641&lang=eng>).
- National certification guidelines for actuarial assessment of self-sustainability of agricultural insurance programs
- Certification guidelines for unit values and production values

Main features of the agricultural insurance market

The main mechanism for promoting the development of agricultural insurance in Canada is the AgriInsurance Program, which seeks to insure production and minimize the economic effects of production losses caused by natural hazards such as drought, floods, hail, frost, excessive humidity and diseases. It is supported with federal and provincial funds and contributions from producers under a cost-sharing system.

The program is administered and delivered to producers by the provincial agencies under pre-established agreements. The federal government, working through AAFC, has established certain requirements, such as actuarial rules to be followed by the provinces in calculating premiums and probable yields, to ensure that the program is financially self-sustainable. An agency of the Department of Agriculture is responsible for administering the AgriInsurance Program in each province.

Table 3.19 provides basic information on the performance of agricultural insurance activities in Canada in 2008 and 2010.

Table 3.19. Canada: Indicators of the Agricultural Insurance Market, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms: AgriInsurance Program	Number	1	1
Agricultural premiums written	Billions, USD	1.32	1.32
Hectares insured	Millions of hectares	26.8	26.1
Capital insured	Billions, USD	11.9	11.9
Policies written	Number (thousands)	272 629	262 126
Payouts	Millions, USD	618	937

Source: AgriInsurance Program. Approved statistics provided by individual provinces.

According to data provided by the AgriInsurance Program, cereals and oilseeds account for 78% of the value of insured production; special crops, 7%; forage crops and pastures, 6%; vegetables, 6%, and fruits, 2%.

Insurance and reinsurance firms

There are no private insurance companies in Canada. The entity responsible for insurance is the AgriInsurance Program.

The federal government provides agricultural reinsurance to five provinces: Alberta, Manitoba, New Brunswick, Nova Scotia and Saskatchewan. The benefits are provided through a mechanism for covering financial deficits in insurance operations.

3.3.2. United States

Institutional framework for the application of public policies

The agency responsible for implementing public policy on agricultural risk insurance is the United States Department of Agriculture (USDA). The branch of USDA responsible for managing the Federal Agricultural Insurance Program is the Federal Crop Insurance Corporation (FCIC), which was created in 1938. The Program is administered by the USDA's Risk Management Agency (RMA) (<http://www.rma.usda.gov/>).

The role of USDA-RMA is to help producers manage risk by offering effective market-based solutions. Its mission is to promote, support and regulate risk management to preserve and strengthen the economic stability of agricultural producers in the United States.

The Risk Management Agency has three divisions: (1) Insurance Services, (2) Product Management and (3) Risk Operations. The Insurance Services Division is responsible for implementing the insurance program, manages contracts with insurance companies and provides technical support. The Product Management Division supervises the products offered by the insurance companies, and the Risk Operations Division monitors compliance with the rules on the part of producers and insurance companies.

Agricultural insurance and risk management regulations

In 1938, the U.S. Congress adopted the Federal Crop Insurance Act, which set up the first Federal Crop Insurance Program. This early effort did not fully succeed due to the high cost of the program and poor participation of farmers.

In 1980, Congress passed another Federal Crop Insurance Act to make the program more accessible and increase producer participation. During this stage, the U.S. government and private insurance companies entered into public-private partnerships. The efficiency of the system whereby the private sector provided a supply of products, with regulatory and financial support from the federal government, laid the foundation for a new and innovative approach to the U.S. agricultural insurance program.

In 1994, Congress passed the Federal Crop Insurance Reform Act which radically restructured the agricultural insurance program. In 1996, the Risk Management Agency was created to administer the Federal Insurance Program.

In 2000, Congress enacted another key law, the Agricultural Risk Protection Act (ARPA). This Act includes provisions to facilitate access by farmers to different types of insurance, including income and protection insurance based on records of yields. The Act also increased premium subsidies to encourage producers to participate, and included provisions designed to reduce fraud, waste and abuse (additional information is available at <http://thomas.loc.gov/cgi-bin/query/z?c106:h.r.2559.enry> and <http://www.rma.usda.gov/regs/authorizing.html>).

Two fundamental laws support the program: the Farm Bill, which was adopted as the Food, Conservation, and Energy Act of 2008 (<http://www.nationalaglawcenter.org/assets/crs/RS22131.pdf>),

and the two reinsurance agreements (<http://www.rma.usda.gov/pubs/ra/>), which governs operational and financial relations between the government and the private insurance companies.

Main features of the agricultural insurance market

Table 3.20 shows the main indicators for the agricultural insurance market in the United States in 2008 and 2010. Premiums written totaled USD9.85 billion in 2008 and USD7.59 billion in 2010. Policies written totaled USD1.14 million during each of the years studied. Insured capital totaled USD90 billion in 2008 and USD78 billion in 2010.

Payouts in 2008 totaled USD8.6 billion, i.e., twice the amount of payouts in 2010. This represents 87% of the agricultural premiums written in 2008.

Table 3.20. United States: Indicators for the Agricultural Insurance Market, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	16	16
Agricultural premiums written	Billions, USD	9.85	7.59
Hectares	Millions of hectares	110	103
Capital insured	Billions, USD	90	78
Policies written	Number (millions)	1.14	1.14
Payouts	Billions, USD	8.6	4.2

Source: Risk Management Agency Department of Agriculture.

Tables 3.21 and 3.22 show covered activities in 2008 and 2009. Cereals and oil-seeds represent 80% of the insured area, 80% of premiums written and 81% of the amount subsidized.

Table 3.21. United States: Production Activities Covered, 2008.

Production activities	Area insured (millions of hectares)	Capital insured (billions, USD)	Premiums written (billions, USD)	Subsidies (billions, USD)	Payouts (billions, USD)
Maize	28.00	37.50	3.80	2.10	3.10
Soybeans	25.00	22.20	2.60	1.50	2.80
Wheat	20.00	8.70	1.60	0.90	1.10
Cotton	3.50	2.30	0.40	0.25	0.60
Barley	1.20	0.56	0.07	0.05	0.04
Other*	32.30	18.74	1.38	0.89	1.03
Total	110.00	90.00	9.85	5.69	8.67

* Includes other crops such as fruits, vegetables, beans, rice and berries.

Source: Author's compilation, based on data from the Risk Management Agency (RMA), Department of Agriculture (USDA).

Table 3.22. United States: Production Activities Covered, 2010.

Production activities	Area insured (millions of hectares)	Capital insured (billions, USD)	Premiums written (billions, USD)	Subsidies (billions, USD)	Losses compensated (billions, USD)
Maize	29.76	31.68	2.80	1.74	1.72
Soybeans	26.46	17.97	1.70	1.06	0.74
Wheat	18.63	6.42	1.12	0.68	0.56
Cotton	4.12	2.86	0.48	0.31	0.21
Barley	1.90	2.60	0.03	0.02	0.02
Others*	22.13	16.56	1.46	0.90	0.99
Total	103.00	78.09	7.59	4.71	4.24

* Includes other crops such as fruits, vegetables, beans, rice and berries.

Source: Author's compilation, based on data from the Risk Management Agency, Department of Agriculture.

Insurance and reinsurance firms

As of 2012, the following 16 companies were providing agricultural insurance in the United States:

- ***ACE American Insurance Company (Rain and Hail L.L.C.):*** <http://www.rainhail.com>
- ***Agrinational Insurance Company, Inc. (ADM Crop Risk Services):*** <http://www.admcrs.com>
- ***American Agri-Business Insurance Company:*** <http://www.armt.com>
- ***American Agricultural Insurance Company (American Farm Bureau Insurance Services, Inc.):*** <http://www.afbisinc.com>
- ***Austin Mutual Insurance Company (CGB Diversified Services):*** <http://diversifiedservices.com>
- ***Casualty Underwriters Insurance Company, Inc. Food and Fiber Risk Managers LLC (livestock only):*** <http://www.fafm.com/>
- ***Country Mutual Insurance Company:*** <http://www.countryfinancial.com>
- ***Everest Reinsurance Company (Heartland Crop Insurance, Inc.):*** <http://www.heartlandcropinsurance.com>
- ***Farmers Mutual Hail Insurance Company of Iowa:*** <http://www.fmh.com>
- ***Great American Insurance Company:*** <http://www.greatamericaninsurance.com>
- ***Hudson Insurance Company:*** <http://www.hudsoninsgroup.com>
- ***John Deere Insurance Company (John Deere Risk Protection, Inc.):*** <http://www.JohnDeereInsurance.com>
- ***NAU Country Insurance Company:*** <http://www.naucountry.com>
- ***Occidental Fire and Casualty Company of North Carolina:*** <http://www.agrilogic.com>
- ***Producers Agriculture Insurance Company:*** <http://www.proag.com>
- ***Rural Community Insurance Company (Rural Community Insurance Services):*** <http://www.rcis.com>

3.3.3. Mexico

Institutional framework for the application of public policies

The agency responsible for implementation of public policies on risk management and agricultural insurance is the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) (<http://www.sagarpa.gob.mx/Paginas/default.aspx>).

The objectives of SAGARPA, which is part of the executive branch of the federal government, are to maintain and improve rural financing and risk management schemes of the agriculture, fisheries, aquaculture and agroindustrial sectors and of the rural sector as a whole, and to strengthen the agrifood production and marketing chain. Its Risk Management and Prevention Program helps to deal with natural disasters in the agriculture and fisheries sectors. Its specific objective is to ensure that the rural sector has the necessary protection against losses caused by serious natural disasters affecting agriculture, aquaculture and fisheries.

The target population is made up of low-income producers who are unable to purchase public or private insurance for agriculture, aquaculture and fishing activities whose production assets suffer harm as a result of natural disasters. It also assists producers who, even though they are insured (by private companies or by insurance funds), wish

to obtain additional per-hectare insurance against natural disasters, to be able to resume production in the event of a natural disaster.

AGROASEMEX (<http://www.agroasemex.gob.mx/index.php/es/nuestrainstitucion>) is the entity responsible for applying agricultural risk management policies. It pursues the following objectives:

- To contribute to the establishment of a national risk management system for comprehensive protection of the rural sector.
- To establish itself as an effective public policy tool for promoting the participation of private and social agents in the agricultural insurance market.
- To establish itself as a reinsurance agency specializing in the agricultural sector.
- To establish itself as a development agency that is able to design new schemes for expanding market coverage.

Mexico also operates the Weather Contingencies Program (PAAC), whose purpose is to increase coverage in order to provide protection in the event of financial hardship arising from weather disasters. The target population is the states and municipalities to which SAGARPA assigns priority because of their vulnerability to weather phenomena in the agriculture sector.

Institutions such as the Agrifood and Fisheries Information Service (SIAP) (<http://www.siap.gob.mx/>) of SAGARPA deal with agricultural risk management.

AGROASEMEX began building the Agricultural Risk Information Service with the main objective of disseminating information on weather hazards in agricultural activity. Access to the system has been made possible thanks to a strategic partnership between AGROASEMEX and the National Statistical and Geographic Institute (INEGI) (<http://www.agroasemex.gob.mx/index.php/es/quehacemos/investigaciondesarrollo>).

Agricultural insurance and risk management regulations

The National System of Insurance for the Rural Environment (SINAMR) provides support for agricultural insurance arrangements entered into, with the backing of fiscal, federal or state resources, with duly authorized institutions (private insurance firms, mutual funds, agricultural insurance funds and AGROASEMEX). The legal basis for the work of SINAMR is:

- The Agricultural and Rural Insurance Funds Act (13 May 2005).
- The General Insurance Institutions and Mutual Funds Act.
- Internal regulations for insurance funds.

Among the measures taken to promote and regulate agricultural insurance activities is one that provides for subsidies to insurance premiums to expand coverage of agricultural insurance.

Insurance on livestock and animals is available to producers who contract for and pay the premium or fee for coverage of livestock operations, fisheries, bees and poultry, according to the terms established by the relevant regulations.

Finally, the regulations provide for insurance funds set up by farmers; these funds are authorized to offer coverage to their members. The federal government provides specific support for these funds, with the aim of:

- Supplementing administrative and operating expenses to improve the funds' self-management capacity and the quality of services they offer to their members and affiliates; and
- Bearing part of the cost of enhancing the professionalism of funds and of the agencies concerned.

Main features of the agricultural insurance market

Table 3.23 shows some of the main indicators of commercial agricultural insurance activities in Mexico during 2008 and 2010.

Table 3.23. Mexico: Indicators of the Agricultural Insurance Market, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	6	4
Insurance funds	Number	294	318
Agricultural premiums written *	Millions, USD	104	107
Hectares insured	Millions, hectares	1.89	2.08
Capital insured	Millions, USD	1529	1713

* Exchange rate provided by the Bank of Mexico.
Source: AGROASEMEX.

At the end of 2008, 1 894 838 hectares were insured. Of this area, 56.3% was covered by insurance funds and 43.7% by private insurance companies. Subsidies to the agricultural sector amounted to around USD42.8 million. Of this amount, 62.5% was provided by insurance funds and 37.5% by private insurance companies.

In 2010, 57% of the nearly 2.1 million hectares insured were covered by insurance funds and 42.5%, by private companies. Agricultural subsidies totaling around USD42.3 million were provided, of which 60.3% came from insurance funds and 39.7% from private companies.

Tables 3.24 and 3.25 provide information on the main crops insured in 2008 and 2010.

Table 3.24. Mexico: Main Crops Covered, 2008.

Production activity	Area insured (thousands of hectares)
Maize	479
Wheat	298
Sugar cane	248
Sorghum	235
Others	630
Total	1890

Source: AGROASEMEX.

Table 3.25. Mexico: Main Crops Covered, 2010.

Production activity	Area insured (thousands of hectares)
Maize	759
Wheat	382
Sugar cane	397
Sorghum	297
Others	265
Total	2100

Source: AGROASEMEX.

In 2008, 90.3% of the total area covered by insurance was planted, and seven crops, including maize, wheat and sorghum, accounted for 68% of the total amount insured. In the case of insurance funds, 78% of the area insured was planted in maize, sorghum and wheat; in the case of private insurance companies, 90.7% of the area insured was planted in sugar cane.

The insured area represented approximately 50% of the planted area. Catastrophic insurance provided by AGROASEMEX accounted for almost 77% of the 10.4 million hectares covered; the remaining 23% were covered by commercial insurance. Of the more than 2 million hectares covered by commercial insurance, almost 59% came from insurance funds and 41% from private insurance companies.

In Mexico, coverage is provided by both insurance companies and agricultural insurance funds through traditional insurance. In addition, AGROASEMEX offers coverage for catastrophic events, both to municipalities and to States, through parametric insurance. The following types of coverage are offered:

Traditional insurance: Protects investments ranging from soil preparation to harvesting. The following risks are covered:

Weather hazards

- Drought
- Excess humidity
- Frost
- Low temperatures
- Floods
- Hail
- Fire
- Hurricanes, cyclones, tornadoes, waterspouts and high winds
- Heat wave
- Excess soil moisture

Biological hazards

- Pests and predators
- Disease

Traditional hazards relating to emergence

- Impossibility of sowing
- Non-emergence
- Blocking

Mass insurance: catastrophic agricultural insurance based on climate seasons (parametric)

- Protects against deficit of or excessive rain according to requirements of the crop.
- Rain is measured at weather stations.
- The amount of insurance coverage is determined by the weather station, based on the area assigned to each one.
- Coverage is activated when the level of rain is lower or higher than the maximum protected at a given stage of the crop.

Catastrophic insurance by production area:

- Designed for areas where there are no weather stations, to supplement parametric insurance.
- Covers losses caused by drought, hurricanes, flooding, frost and hail.
- Protects 30%, 40% or 50% of average production.

Insurance and reinsurance firms

As of 2010, the following insurance companies were operating in Mexico:

- General de Seguros: <http://www.generaldeseguros.com.mx>
- Mutualidad Torreón: <http://torreon.goolocal.com.mx>
- Proagro: <http://www.proagroseguros.com.mx>
- Tepeyac: <http://www.mapfretepeyac.com.mx>

The primary reinsurance company is AGROASEMEX.

3.4 Andean Region

3.4.1. Bolivia

Institutional framework for the application of public policies

The Ministry of Land and Rural Development (MDRT) (<http://www.agrobolivia.gob.bo/>) is responsible for implementing public policies on agricultural risk management.

The Agricultural Insurance Institute (INSA) was created on June 26, 2011, as a government agency with budgetary, technical, financial, operational, administrative and legal autonomy under the leadership of the Ministry of Land and Rural Development. As the operational and regulatory arm of the Pachamama universal agricultural insurance system, INSA has jurisdiction over the entire Plurinational State of Bolivia.

INSA has been entrusted with the following responsibilities:

- To design, implement, monitor and assess an annual Pachamama universal agricultural insurance premium subsidy program, in collaboration with the Ministry of the Economy and Public Finance and autonomous territorial agencies, as a means of promoting the progressive application of the Pachamama universal agricultural insurance program.
- To administer the Pachamama universal agricultural insurance premium subsidy, as well as other funds allocated for disaster relief, in tandem with the creation of insurance products.
- To issue general and specific administrative and regulatory provisions.
- To approve and create insurance modalities or products tailored to the specific characteristics of regions and producers.
- To directly manage insurance modalities or products designed for the poorest producers.
- To engage the services of financial or other entities as a means of implementing such modalities or products.
- To adopt technical cooperation and operational agreements with public, private, national and international institutions, in order to fulfill the purpose of the Pachamama universal agricultural insurance program.
- To create and administer databases on the implementation of the Pachamama universal agricultural insurance program.

- To set insurance product rate ceilings; to establish and approve uniform agro-climate risk zones.
- To establish benchmark prices or price ranges as a basis for payout calculations.
- To approve the policies proposed by insurers.
- To approve the price or price-range percentages on which insurance payouts are based.
- To approve crop insurance timetables, as well as the minimum technical requirements applied to planting in each agro-climate risk zone, in order to ensure coverage.
- To approve damage verification systems by product or region, as well as expert assessment systems, performance indices, climate indices, combinations thereof or other indices.

Article 34 of the Act also provides for the creation of a state insurance company to underwrite the Pachamama universal agricultural insurance policy.

Insurance firms authorized by the competent authority and selected by INSA may also participate in risk coverage, within the framework established by law and by the regulations governing the country's insurance sector.

The Pension and Insurance Enforcement and Control Authority (<http://www.aps.gob.bo/>) is responsible for regulating the insurance sector.

The Vice-Ministry of Civil Defense (<http://www.defensacivil.gob.bo/index.php/home/1-latest-news/2139-coed-santa-cruz-recomienda-.html>) is responsible for disaster relief.

The Ministry of Land and Rural Development (<http://www.agrobolivia.gob.bo/>) and the Vice-Ministry of Civil Defense (<http://www.defensacivil.gob.bo/index.php/home/1-latest-news/2139-coed-santa-cruz-recomienda-.html>) are responsible for generating risk-management information.

Agricultural insurance and risk management regulations

On June 26, 2011, Bolivia adopted Act No. 144 (Collective Agricultural Production Revolution Act). The country's agricultural insurance system is established in chapter two of the Act. Article 30 provides for the creation of "the 'Pachamama Universal Agricultural Insurance Program' to insure agricultural production against adverse weather conditions and natural disasters, in the manner and form prescribed herein" (see <http://bolivia.infoleyes.com/shownorm.php?id=3120>).

Act No. 144 also states that agricultural insurance is to be implemented progressively, and that its beneficiaries are:

- "Indigenous *campesino* communities, intercultural communities and Afro-Bolivian communities engaged in collective production;
- Indigenous, intercultural and Afro-Bolivian families engaged in individual production;
- Farmers, be they physical or corporate persons."

Article 34 of the Act also provides for the creation of a state insurance company to underwrite the Pachamama universal agricultural insurance policy. Insurance firms authorized by the competent authority and selected by INSA may also participate in risk coverage, within the framework prescribed by law and by the regulations governing the country's insurance sector.

Article 35 provides for the creation of a program to subsidize Pachamama universal agricultural insurance premiums. This subsidy may cover premiums in their entirety for poorer farmers, enabling them to insure their crops against adverse weather conditions, natural disasters, pests and diseases.

The subsidy, which is financed by the state through the central government and the country's autonomous territorial entities, is designed to increase in proportion to the poverty of its beneficiaries. It is proportionally lower or nil for less poor farmers.

An executive order establishing regulations for the application of Act No. 144 was approved on August 2, 2011. The order provides for agricultural insurance for "municipalities with the highest levels of extreme poverty" (SAMEP). The purpose of SAMEP is to insure farmers in poorer municipalities against frost damage, flooding, drought and hailstorms (<http://www.fobomade.org.bo/public/uploads/docs/1278.pdf>).

Main features of the agricultural insurance market

Agricultural microinsurance is scheduled to become available in 2012 as part of the Pachamama universal agricultural insurance system.

Two private insurance firms are active in Bolivia: BISA Seguros y Reaseguros S.A. and Latina Seguros Patrimoniales S.A. The former offers coverage for soy production through a multi-peril policy titled grano seguro ("safe grain"). This policy, which has been in operation since 2006, protects production and investment in the oilseed sector and the entire production chain, providing coverage against rains, flooding, drought, forest fires, frost damage and hurricane winds.

For general information on the insurance sector in Bolivia, visit http://www.ratingspqr.com/archivos/publicaciones/SECTORIAL_BOLIVIA_SEGUROS_201011.pdf

Insurance and reinsurance firms

- BISA Seguros y Reaseguros S.A.: <http://www.bisaseguros.com/empresas.asp>
- Latina Seguros Patrimoniales S.A.: <http://www.latina-seguros.com.bo/multiriesgo.php>

3.4.2. Colombia

Institutional framework for the application of public policies

The Ministry of Agriculture and Rural Development (<http://www.minagricultura.gov.co/inicio/default.aspx>) is responsible for implementing public policies on agricultural risk management.

The Department of Trade and Finance of the Ministry of Agriculture and Rural Development is responsible for overseeing agricultural insurance programs. In addition, a National Agricultural Risk Department is to be created within the Ministry of Agriculture and Rural Development.

The Office of the Insurance Commissioner (<http://www.superfinanciera.gov.co/AseguradorasIntermediarios/aseguradoras.htm>) is responsible for regulating the insurance sector.

Agricultural insurance and risk management regulations

The main regulations on agricultural insurance in Colombia are as follows:

- Act No. 69, enacted in 1993, which provides for the establishment of agricultural insurance in Colombia and creates the National Agricultural Risk Fund (http://www.secretariasenado.gov.co/senado/basedoc/ley/1993/ley_0069_1993.html).
- Ministry of Agriculture and Rural Development Resolution No. 053, which establishes crops eligible for coverage and agricultural insurance programs to be enacted in 2012 (http://www.minagricultura.gov.co/archivos/resolucion_nro53_2012.pdf).
- National Agricultural Insurance Credit Commission Resolution No. 003, which approves the country's Annual Agricultural Insurance Plan and its agricultural insurance premium incentive (http://www.minagricultura.gov.co/archivos/Resolucion_No3_2011.pdf).

Main features of the agricultural insurance market

Table 3.26 contains a list of relevant agricultural insurance indicators for Colombia in 2008 and 2010. It should be noted that, as of 2010, insured land represented approximately 1% of overall cultivated land, which was 4.8 million hectares.

Table 3.26. – Colombia: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	3	3
Agricultural premiums written	Millions, USD	6.5	8.2
Hectares insured	Thousands of hectares	39 864	45 740
Capital insured	Millions, USD	95	136
Policies written	Number	6076	10 597
Payouts	Millions, USD	2.3	2.9

* Based on the weighted average for purchase and sale of U.S. dollars published by the Bank of the Republic of Colombia.
Source: Ministry of Agriculture and Rural Development, Colombia. National Agricultural Risk Fund.

According to data compiled by the Ministry of Agriculture and Rural Development, the country's primary insured crops are bananas (40%), corn (23%), rice (12%), cotton (9%) and tobacco (8%). The remaining 8% consists of sorghum, peanuts, plantains and forest species.

Colombia possesses a type of multi-peril insurance against excessive or insufficient rain-fall, strong winds, flooding, frost damage, hailstorms, landslides and climate-related avalanches. New regulations also cover natural and biological risks, which are regulated specifically for each crop by the Ministry of Agriculture and Rural Development.

While three companies offer agricultural insurance in Colombia, only one offers agricultural and livestock insurance and adheres to the government's program. The other two firms provide livestock insurance.

The National Agricultural Risk Fund has been in operation since 1993, under the management of the Agricultural Credit Fund (FINAGRO). The National Agricultural Risk Fund provides funding for the Annual Agricultural Insurance Plan, which subsidizes up to 60% of net premium value. The subsidy is applied in full for each farmer at the beginning of the policy's term. Thirty-one billion Colombian pesos (approximately 16 million USD) have been allocated to the Annual Plan for the 2012 fiscal year.

In 2011, the Government of Colombia, acting through the Ministry of Agriculture and Rural Development, began promoting the use and expansion of agricultural insurance. The subject was addressed in several articles of the 2010-2014 National Development Plan Act.¹⁵ A number of resolutions were also passed to strengthen the institutional framework of the country's agricultural insurance program.

These changes are expected to promote the development of the agricultural insurance market, encouraging local and international insurance firms to underwrite policies in the country and attracting international reinsurance firms to Colombia.

15. 2010-2014 National Development Plan, articles 72-77.

Beginning on January 1, 2012, any agricultural loan granted by FINAGRO to finance short-cycle crops, as well as the planting or renewal of coffee plantations, is accompanied by the requirement that the land in question be insured against natural and biological disasters, as defined by the Ministry of Agriculture and Rural Development. The financial intermediary—and, when applicable, the Agricultural Guaranty Fund (FAG)—must be included as beneficiaries, in proportion to the coverage granted.

Beginning on January 1, 2013, this provision will also apply to medium- and late-yield crops, as well as livestock.

Insurance and reinsurance firms

The following insurance firms are active in Colombia:

- Liberty Seguros: <http://www.libertymutualgroup.com/omapps/ContentServer?pagename=LMDGroup/Views/LMG&ft=3&fid=1138356720016&ln=es#LA>
- MAPFRE-Colombia: <http://www.mapfre.com.co/es/web/mapfre-empresas/proteccion/agropecuarios>
- QBE Seguros: <http://www.qbe.com.co/empresa.asp>

3.4.3. Ecuador

Institutional framework for the application of public policies

The Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) is responsible for implementing public policies on agricultural risk management, through the Vice-Ministry of Agriculture and Livestock — specifically, the Agricultural Insurance Office (UNISA) (<http://www.agricultura.gob.ec/?p=2818/unisa>).

The National Agricultural Insurance System went into effect in January 2010. The system is designed to operate under the supervision of the Agricultural Insurance Office, mentioned above (<http://www.magap.gob.ec>).

The Superintendency of Banks and Insurance is responsible for regulating the insurance sector in Ecuador (<http://www.superban.gob.ec>).

Main features of the agricultural insurance market

While four companies are licensed to offer agricultural insurance, only one is active in the market. Table 3.27 contains a number of relevant indicators on the agricultural insurance market in Ecuador in 2008 and 2010. In 2008, premiums totaled USD1.24 million; in 2010, they totaled USD1.75 million. Insured capital in 2008 totaled USD33 million, compared to USD45 million in 2010. Policies also increased, rising from 3220 in 2008 to 5144 in 2010.

Named peril and multi-peril policies provide coverage against hailstorms, hurricane winds, frost damage, excess humidity, flooding, pests, uncontrollable diseases and fire damage.

Table 3.27. Ecuador: Agricultural Insurance Market Indicators, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms*	Number	1	1
Agricultural premiums written	Millions, USD	1.24	1.75
Hectares insured	Thousands of hectares	41 000	51 000
Capital insured	Millions, USD	33	45
Policies written	Number	3220	5144
Payouts	Millions, USD	0.79	0.87

*While there are four registered insurance firms in the country, the only firm active in the market is QBE/Seguros Colonial.
Source: Latin American Association for the Development of Agricultural Insurance (ALASA).

The National Agricultural Insurance System

In January 2010, the Ministry of Agriculture, Livestock, Aquaculture and Fisheries, acting through the Center for Agricultural Studies and Policy (CEPA), created a “National Agricultural Insurance System.” The System operates under the supervision of the Agricultural Insurance Office.

Agricultural insurance is mandatory for farmers who receive loans from the National Development Bank (BNF). It covers operating costs, as well as investment in crops such as cotton, rice, peas, bananas, cacao, coffee, sugarcane, onions, corn, wheat, potatoes, tomatoes, African palm and soybeans, among others. It also covers investment in the livestock, aquaculture and forestry sectors. Farmers who purchase insurance become eligible for credit, and are thus able to expand their planting operations and improve their farms. Two types of insurance are provided: commercial insurance and disaster insurance.

Commercial insurance covers costs, outlays and expenditures financed by the National Development Bank. The government subsidizes 60% of the agricultural insurance policy; farmers cover the remaining 40%. A premium fund has been created within MAGAP to cover the cost of the subsidy, with the government allocating USD18 million for that purpose during the 2010–2012 period. Coverage is provided for climate-related risks such as drought, flooding, frost damage, hailstorms and winds. The subsidy is offered individually to farmers who belong to legally constituted organizations. It is also provided through private insurance firms under contract to the government. The firms currently providing this service are Seguros Colonial (privately owned) and Seguros Sucre (government-owned).

Disaster insurance is designed to protect large areas of farmland from climate-related contingencies. Its beneficiary is the government, which activates relief programs for victims in the event of a disaster. It is implemented in the country’s highland, coastal and interior regions, and is intended for small farmers who are highly vulnerable to adverse weather conditions.

Insurance firms

- QBE/Seguros Colonial: http://www.qbe.com.ec/productos_se_campo.asp
- Seguros Sucre: <http://www.segurossucre.fin.ec/>

3.4.4. Peru

Institutional framework for the application of public policies

The Ministry of Agriculture (<http://www.minag.gob.pe>) is responsible for implementing public policies on agricultural risk management in Peru. The Superintendency of Banks and Insurance (<http://www.sbs.gob.pe>) is responsible for regulating the insurance sector.

The National Civil Defense Institute (<http://www.indeci.gob.pe>) and the National Disaster Risk Management System (SINAGERD) are responsible for handling emergencies or climate-related disasters.

Agricultural insurance and risk management regulations

The main regulations on agricultural insurance in Peru are as follows:

- Act No. 28 939 (22/12/2006), creating the Rural Guaranty Fund.
- Act No. 28 995 (01/04/2007), broadening the objectives of the Rural Guaranty Fund and renaming it the Rural Guaranty and Agricultural Insurance Fund (FOGASA).
- Act No. 29 148 (13/12/2007), on the implementation and operation of FOGASA.
- Ministerial Resolution 720-2008-AG (20/08/2008), approving the general and special conditions governing agricultural insurance.
- Supreme Decree No. 019-2008-AG (21/09/2008), approving the rules of operation of the agricultural insurance trust.
- Supreme Decree No. 008-2009 (19/03/2009), approving the trust agreement between the Ministry of Agriculture and Livestock (MINAG) and Corporación Financiera de Desarrollo S.A. (Financial Development Corporation, or COFIDE) for the administration of the agricultural insurance fund.
- Ministerial Resolution No. 513-2009-AG (08/07/2009), approving the insurance copayment table for the 2009-2010 crop.
- Supreme Decree No. 011-2010-AG (13/09/2010), authorizing MINAG to charge the cost of agricultural insurance during the 2010-2011 crop to its institutional budget.
- Emergency Decree No. 076-2010 (24/11/2010), authorizing MINAG to transfer up to 40 000 000 soles to FOGASA to insure the 2010-2011 crop.
- Ministerial Resolution No. 0786-2010-AG (17/12/2010), approving the table for application of agricultural disaster insurance for the 2010-2011 crop.

Main features of the agricultural insurance market

Table 3.28 contains a number of relevant indicators on the agricultural insurance market in Peru in 2008 and 2010.

Table 3.28. Peru: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	1	2
Agricultural premiums written	Millions, USD	4.5	11.6
Hectares insured	Thousands of hectares	196 000	490 069
Capital insured	Millions, USD	90.1	77.5
Policies written	Number	ND	ND
Payouts	Millions, USD	ND	33.8

*Based on the exchange rate published by the Central Reserve Bank of Peru for the years 2008 and 2010.

Source: Author's research, based on data from Asociación Peruana de Empresas de Seguros (Peruvian Insurance Association, or APESEG) and other sources.

Two companies provide agricultural insurance in Peru: La Positiva and MAPFRE Peru. As shown above, the number of premiums written, the number of hectares insured and the amount of capital insured increased between 2008 and 2010.

Agricultural insurance in Peru is subsidized by FOGASA, an agency attached to the Ministry of Agriculture. In 2012, the government allocated approximately USD10 million to FOGASA, to reduce the exposure of farmers in vulnerable areas to climate variations during the 2011-2012 crop.

After FOGASA has received insurance requests from the country's various regions, insurance firms file subsidy requests and issue policies accordingly. Regional Agricultural Offices are responsible for compiling the necessary data and submitting them to MINAG and FOGASA.

Agricultural disaster insurance in Peru is designed to benefit small farmers living in extreme poverty. It is offered in rural communities, for crops such as rice, corn, potatoes and cotton. Coverage includes drought, excessive rainfall, strong winds, frost damage and flooding. Producers organize themselves collectively to receive insurance. Payouts are awarded when the aggregate yield obtained by farmers is lower than that specified in the policy. The cost of coverage does not exceed USD25 per hectare.

In 2008, an area-yield index insurance scheme was implemented as a pilot project for cotton farmers in the Ica Valley. Under this system, payouts are awarded when the average yield of the insured crop in a community is lower than the yield established by the policy.

Insurance and reinsurance firms

Two firms offer agricultural insurance:

- La Positiva: <http://www.lapositiva.com.pe/generales/jerarquia/77/seguero-agropecuario-agro-positiva/77>
- MAPFRE Peru: http://www.mapfreperu.com/site/_inner/contenido.aspx?id=60

In 2010, both companies captured a similar share of the market. Each accounted for approximately 50% of premiums and insured land area.

3.4.5. Venezuela

Institutional framework for the application of public policies

The Ministry of the People's Power for Agriculture and Land (MAT) is responsible for implementing public policies on agricultural risk management in Venezuela (<http://www.mat.gob.ve>).

The Superintendency of Insurance, an autonomous, unincorporated technical agency attached to the Ministry of Finance (<http://www.sudeseq.gob.ve>) is responsible for regulating the insurance sector.

Agricultural insurance and risk management regulations

The main regulations on agricultural insurance in Venezuela are as follows:

- Official Gazette No. 5990, Special Edition, dated Thursday, July 29, 2010. Legal content: Insurance Act.
- Official Gazette No. 39 813, dated December 5, 2011. Legal content: Institutional Regulations of the Superintendency of Insurance.
- Official Gazette No. 39 862, dated February 10, 2012. Legal content: Reprinting of the Institutional Regulations of the Superintendency of Insurance.
- Official Gazette No. 5890, dated July 31, 2008. Legal content: Agricultural Credit Act.
- Executive Order No. 251: Act on the National System of Reciprocal Guarantees for Small and Medium-sized Industry.

For more details, visit <http://www.tsj.gov.ve/gaceta/gacetaoficial.asp>.

Main features of the agricultural insurance market

Table 3.29 contains a number of relevant indicators on the agricultural insurance market in Venezuela in 2008 and 2010.

Table 3.29. Venezuela: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	5	3
Agricultural premiums written	Millions, USD	0.40	1.30
Hectares insured	Hectares	20 000	ND
Capital insured	Millions, USD	ND	ND
Policies written	Number	ND	ND
Payouts (agricultural and livestock insurance)	Millions, USD	0.17	0.21

*Exchange rate: 4.30 Bs/USD.

Source: Superintendency of Insurance (www.sudeseq.gob.ve).

Although six companies offer agricultural insurance, the Venezuelan market is dominated by three firms, two of which account for more than 90% of the agricultural insurance market.

Agricultural insurance is distributed through financial agents, such as banks or producers' associations. Intermediaries participate in the distribution process. No specialized private distribution systems exist for small producers.¹⁶

As shown in table 3.29, agricultural insurance in Venezuela is very small: less than 1% of the country's cultivated farmland is insured. Market development is also limited: agricultural premiums in 2010 totaled approximately USD1.13 million.

Multi-peril insurance policies are available for annual and perennial crops—mainly corn and sorghum. Coverage includes excessive rainfall, flooding, drought, wind, fire damage, pests and diseases. Insurance covers from 50% to 65% of a farmer's crop, depending on historical production levels, geographic location and crop type.

Livestock insurance covers all risks, including accidental death and death by disease. The maximum annual insurable amount per animal is USD25 000.¹⁷

16. No information is available on the public sector.

17. Iturrioz, R; Arias, D. 2010. *Agricultural Insurance in Latin America. Developing the Market*. Washington, D.C., U.S., World Bank.

Insurance firms

Agricultural insurance can be obtained from private firms such as:

- American International, C.A. de Seguros
- Canarias de Venezuela, C.A. Seguros
- Mapfre Venezuela: <http://www.mapfre.com.ve/Default.aspx?tabid=111>
- Multinacional de Seguros
- Occidental de Seguros
- Seguros Caracas, de Liberty Mutual

3.5 Central Region

3.5.1. Costa Rica

Institutional framework for the application of public policies

In its “Pillar of Competitiveness” section, the Costa Rican 2010-2020 State Policy on the Agrifood Sector and Rural Development provides for financing and insurance for the development of the agrifood sector. The issue is defined as essential to comprehensive development. The Policy also states that the availability and requirements of financing and insurance must be in line with the cycles and characteristics of production in the agrifood sector.

The Policy also addresses the difficulties agricultural entrepreneurs face in investing capital and covering the operating costs of innovation, notwithstanding the availability of funding in the country’s banking sector. Since funding restrictions appear to be many, efforts are being made to facilitate access to the country’s banking system and, more generally, to encourage public and private commercial banks to become more actively involved in the sector, with the support of the National Insurance Corporation (INS).

INS is responsible for providing insurance services, addressing the needs of customers, consumers and intermediaries in both the local and regional markets and promoting hazard prevention (<http://www.ins.go.cr/>).

The Ministry of Agriculture and Livestock of Costa Rica (MAG — see <http://www.mag.go.cr/>) is responsible for overseeing state policy in the agrifood and rural development sector during the 2010-2020 period.

The General Superintendency of Insurance is responsible for regulating the insurance sector (<http://www.sugese.fi.cr/>).

Agricultural insurance and risk management regulations

- Comprehensive Crop Insurance Act (No. 4461, dated November 10, 1969). Establishes a crop insurance system to encourage the planting of staple grains and other crops. Gained significant momentum during the 1980s, thanks to state funding and the requirement of insurance as collateral. Support declined in later years.

([http://www.pgr.go.cr/scij/scripts/TextoCompleto.dll?Texto&nNorma=38102&nVersion=40172&nTamanoLetra=10&strWebNormativa=http://www.pgr.go.cr/scij/&strODBC=DSN=SCIJ_NRM;UID=sa;PWD=scij;DATABASE=SCIJ_NRM;&strServidor=\\pgr04&strUnidad=D:&strJ](http://www.pgr.go.cr/scij/scripts/TextoCompleto.dll?Texto&nNorma=38102&nVersion=40172&nTamanoLetra=10&strWebNormativa=http://www.pgr.go.cr/scij/&strODBC=DSN=SCIJ_NRM;UID=sa;PWD=scij;DATABASE=SCIJ_NRM;&strServidor=\\pgr04&strUnidad=D:&strJavaScript=NO)
[avaScript=NO](http://www.pgr.go.cr/scij/scripts/TextoCompleto.dll?Texto&nNorma=38102&nVersion=40172&nTamanoLetra=10&strWebNormativa=http://www.pgr.go.cr/scij/&strODBC=DSN=SCIJ_NRM;UID=sa;PWD=scij;DATABASE=SCIJ_NRM;&strServidor=\\pgr04&strUnidad=D:&strJ))

- Insurance Market Regulation Act (http://www.casadelosriscos.com/documentos/8653%20_SE-GUROS.pdf)

Main features of the agricultural insurance market

Agricultural insurance is supplied by INS, through multi-peril policies that offer coverage against excess humidity, volcanic eruption, failure to harvest due to excessive soil moisture, hailstorms, lightning damage, flooding, weeds, drought (applicable only to dry-land crops), tremor and earthquake, hurricane winds, predators/pests and uncontrollable diseases, extreme temperatures and inadequate sunlight. The insured amount is based on direct crop production costs, from planting to harvest.

Table 3.30 contains a number of relevant indicators on the agricultural insurance market in Costa Rica in 2008 and 2010. An increase can be observed for all indicators between 2008 and 2010. Rising premiums were accompanied by a significant increase in payouts.

Table 3.30. Costa Rica: Agricultural Insurance Market Indicators, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	1	1
Agricultural premiums written	Millions, USD	1.4	2.5
Hectares insured	Hectares	16 900	24 398
Capital insured	Millions, USD	21	34
Policies written	Number	397	595
Payouts	Millions, USD	99 777	2 884 669

Source: National Insurance Institute, Technical Services Center, Crop and Livestock Insurance Unit.

Harvest insurance is subsidized by the government of Costa Rica, through INS. Premium subsidies are equivalent to 50%, on average, for crops such as rice, beans, palm oil, plantains, corn and pineapple, among others. Insurance subsidies are determined by crop type and farm size. The government's insurance program includes more than 20 short-cycle crops, as well as perennials. Ninety percent of producers are small- and medium-scale farmers, grouped into cooperatives or associations.

Insurance and reinsurance firms

Until 2008, the only provider of agricultural insurance was the National Insurance Corporation (<http://portal.ins-cr.com/portal.ins-cr.com/Empresas/SegurosCo/SeguroCosechas/>). That same year, however, the agricultural insurance market was opened, as part of a government strategy to attract private insurers and expand the range of insurance services available in the agrifood sector.

This move provided access, not only to harvest loss insurance, but also to post-harvest loss, on-farm production investment loss and indexed insurance, among others.

A comprehensive review of INS harvest insurance is currently underway, to ensure that it meets the needs of the country's production sector, reduces risk and is accompanied by financing. The possibility of offering collective insurance at lower cost, as well as other services to support production, is also under consideration.

3.5.2. El Salvador

Institutional framework for the application of public policies

The Ministry of Agriculture and Livestock (*MAG* – <http://www.mag.gob.sv/>) is responsible for implementing public policies on agricultural risk management, in conjunction with other state agencies.

The General Superintendency of Finance (<http://www.ssf.gob.sv/>) is responsible for regulating the insurance sector.

Agricultural insurance and risk management regulations

- Insurance Corporation Act, dated October 10, 1996. Regulates the creation and operation of insurance firms and insurance brokers, to safeguard consumer rights and facilitate the development of the insurance sector (<http://www.ssf.gob.sv/descargas/Leyes/Leyes%20Financieras/Ley%20de%20Sociedades%20de%20Seguro.pdf>).

Main features of the agricultural insurance market

Agricultural insurance was introduced to El Salvador in 2001, as a result of the damage caused by hurricane Mitch and the El Niño phenomenon. The government responded by creating an insurance subsidy program to revitalize cotton production. The program subsidized 50% of premium charges.

Two insurance firms are active in the country, offering multi-peril insurance, investment insurance and individual crop insurance. Agricultural insurance programs in El Salvador have also been supported by international insurers—primarily the Mexican firm PROAGRO.

Table 3.31 contains a number of relevant indicators on the agricultural insurance market in El Salvador in 2004 and 2006 (no updated quantitative information is available for 2008 and 2010).

Table 3.31. El Salvador: Agricultural Insurance Market Indicators, 2004 and 2006.

Data	Unit	2004	2006
Agricultural insurance firms	Number	2	2
Agricultural premiums written	Millions, USD	ND	0.2
Hectares insured	Hectares	2289	4700
Capital insured	Millions, USD	ND	2.7
Policies written	Number	ND	ND
Payouts	Millions, USD	ND	ND

Sources: Inter-American Development Bank (IDB). 2005. *Los seguros agrícolas: evolución y perspectivas en América Latina y el Caribe*. Washington, D.C., U.S.; and Iturrioz, R; Arias, D. 2010. *Agricultural Insurance in Latin America. Developing the Market*. Washington, D.C., U.S., World Bank.

Market penetration is low because not even 1% of cultivated land is insured. It may be inferred that no significant change has occurred in recent years, given the lack of government incentives and the negligible development of the agricultural insurance market in El Salvador.

Multi-peril insurance covers a percentage of the expected harvest. Farmers may insure 50%, 60% or 70% of their expected crop. Investment insurance is also a useful option. This type of insurance protects direct investment against adverse weather conditions, as well as biological and other risks. The insured sum is determined by the amount of capital directly invested by the producer. The policy covers the investment made until the date of the loss.

Individual crop insurance protects individual plants from damage caused by adverse weather or biological conditions. The insured amount is determined by the value of each of the plants the farm produces. A deductible of 5% to 10% is applied to the insured amount. This type of insurance is usually applied to crops with high commercial value, such as bananas, avocados and other perennials. If a loss occurs, the farmer is compensated for the value of the plant—established at the moment the policy is signed—multiplied by the number of plants affected or damaged.

Insurance firms

- Aseguradora Pacífico S.A.: <http://www.pacifico.com.sv/>
- Seguros e Inversiones S.A. (SISA): <https://www.sisa.com.sv/site/otros-diversos.html>

3.5.3. Guatemala

Institutional framework for the application of public policies

Public policies on agricultural risk management are implemented by the Ministry of Agriculture, Livestock and Nutrition (MAGA), through its Department of Analysis, Strategic Information and Risk Management (<http://www2.maga.gob.gt/institucional.html>).

The Superintendency of Banks (SIB) (<http://www.sib.gob.gt/web/sib/inicio>) is responsible for regulating the insurance sector.

Another important organization representing the sector is the Guatemalan Insurers Association (AGIS) (<http://www.agis.com.gt>).

Information is provided by the National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH) (<http://www.insivumeh.gob.gt/inicio.html>).

Agricultural insurance and risk management regulations

Regulations on agricultural insurance or risk management include the following:

- Act No. 473 – Insurance Corporation Act:
<http://es.scribd.com/doc/534582/DECRETO-LEY-NUMERO-473-Ley-de-Empresas-de-Seguros>
- Government Accord No. 133-2005, MAGA – Creation of Guate Invierte
- Government Accord 25-69, Ministry of the Economy—Regulations to Act 473, “Insurance Corporation Act”
- Congressional Decree 32–90, on the Insurance Corporation Act
- Congressional Decree No. 473

Main features of the agricultural insurance market

Three firms offer agricultural insurance in Guatemala. Only two are active, however: Agromercantil and G&T Continental. The latter possesses a larger share of the market. Modalities include variable performance-based investment insurance, individual crop insurance, production guarantees, livestock insurance, poultry insurance and aquaculture insurance. Variable performance-based investment insurance is the most common. This type of insurance compensates farmers for the difference between the insured yield of their crop and the actual yield obtained following an adverse event. Public and private firms are currently focused on weather-indexed insurance.

The government of Guatemala also supports the agricultural insurance market through the DaCrédito program, which consists of a trust that is designed to facilitate access to credit for small and medium-sized producers. It includes a guaranty fund (to facilitate access to credit for small producers) and harvest insurance (the trust covers a high percentage of premium costs).

DaCrédito guarantees up to 80% of loans granted by financial entities to businesses who submit production plans to obtain financing. It also covers up to 70% of agricultural insurance premium costs. The most important credit and insurance agency is Financiera G&T Continental, which is reinsured by the Mexican firm PROAGRO.

More than 25 crops are insured in Guatemala, including fruits such as mangos, lemons, peaches, avocados, oranges, watermelons, papayas and blackberries. Other insured crops include corn, pumpkin seeds, rice, coffee, wheat, beans, broccoli, garlic, onions, peppers, potatoes, tomatoes, carrots, cucumbers, peas, cabbage, string beans and lettuce.

Table 3.32 contains a number of relevant indicators on the agricultural insurance market in Guatemala in 2008 and 2010.

Table 3.32. Guatemala: Agricultural Insurance Market Indicators, 2008 and 2010.

Data*	Unit	2008	2010
Agricultural insurance firms	Number	1	2
Agricultural premiums written	Millions, USD	1.28	0.8
Hectares insured	Thousands of hectares	ND	ND
Capital insured	Millions, USD	14	8.5
Policies written	Number	1452	457
Payouts	Millions, USD	0.3	0.18

*Refers only to the insurance operations of DaCrédito
Source: DaCrédito Program (<http://www.dacredito.org.gt>).

Insurance and reinsurance firms

Insurance firms:

- Columna Compañía de Seguros, S.A.: http://www.seguroscolumna.com/index.php?option=com_content&view=article&id=289&Itemid=239
- Seguros Agromercantil S.A.: <http://www.bam.com.gt/index.php/seguros/seguros-empresas>
- Seguros G&T S.A.: <http://www.segurosgyt.com.gt/seguros/gyt/gytCot01>

Reinsurance firms:

- PROAGRO (Mexican reinsurance firm which operates jointly with insurer G&T).

3.5.4. Honduras

Institutional framework for the application of public policies

Public policies on agricultural risk management are implemented by the Secretariat for Agriculture and Livestock (SAG), through the Agricultural Insurance Committee (CSA). As an intersectoral agency attached to SAG, CSA is responsible for overseeing the country's National Agricultural Insurance Development Policy. The Committee operates within the framework of the National Plan and the National Competitiveness Strategy (see <http://www.sag.gob.hn>).

SAG includes a Risk Department (URA), which is responsible for collating all information on agricultural risks and, by extension, for helping to develop risk management strategies for the agricultural sector. The department is attached to the Technical Secretariat of the Agricultural Insurance Committee (see <http://www.sag.gob.hn/ura/>).

The URA is currently being strengthened. It was created by Executive Order PCM-M-025-2009, which also created the CSA.

The Superintendency of Insurance and Pensions, of the National Banking and Insurance Commission, is responsible for regulating the insurance sector.

Agencies which provide information to SAG include the following:

- The Permanent Commission on Contingencies (COPECO) (<http://www.copeco.gob.hn>).
- The Secretariat for Natural Resources and the Environment (SERNA) (<http://www.serna.gob.hn/>).
- The Central American Early Warning System (SATCA) (<http://www.satcaweb.org/>).
- The National Weather Service (<http://www.smn.gob.hn>).

Agricultural insurance and risk management regulations

The main regulations on agricultural insurance and risk management in Honduras are as follows:

- Executive Order PCM-025 -2009 – creation of the Agricultural Insurance Committee (CSA) and the Agricultural Risk Department (URA).
- Decree 151–2009, dated December 26, 2009 – Act on the National Risk Management System (SINAGER).
- Decree 39–2008, dated May 15, 2008 – Article 7, “Insurance Premium Subsidy.”

Main features of the agricultural insurance market

Table 3.33 contains a number of relevant indicators on the agricultural insurance market in Honduras in 2008 and 2010.

Table 3.33. Honduras: Agricultural Insurance Market Indicators, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms *	Number	3	2
Agricultural premiums written	Millions, USD	1.6	1.3
Hectares insured	Thousands of hectares	ND	ND
Capital insured	Millions, USD	ND	ND
Policies written	Number	ND	ND
Payouts	Millions, USD	3.80	0.80

* Agricultural insurance firms: Atlántida, Equidad, Interamericana de Seguros. In 2008, HSBC-Seguros stopped issuing agricultural insurance policies.

Source: Report of the National Banking and Insurance Commission (CNBS) to SAG and the Honduran Insurance Chamber (CAHDA). Data obtained from <http://cahda.org/financial.php>

Insurance and reinsurance firms

The following firms provided agricultural insurance services in 2008 and 2010:

- Equidad: <http://www.segurosequidad.hn/productos.aspx>
- Interamericana de Seguros
- Seguros Atlántida: http://www.segurosatlantida.com/cms/index.php?option=com_content&view=article&id=48&Itemid=144

3.5.5. Nicaragua

Institutional framework for the application of public policies

The Ministry of Agriculture and Forestry (MAGFOR – <http://www.magfor.gob.ni>) is responsible for implementing public policies on agricultural risk management.

The Agricultural Insurance Committee (CAS), an intersectoral agency attached to MAGFOR, is responsible for overseeing agricultural insurance development. The mission of CAS is to serve as a liaison between insurance firms, individual farmers and livestock owners, associations or organized groups of farmers and ranchers (agricultural, forestry and fishery cooperatives) and governmental and non-governmental organizations (associations, foundations, groups of cooperatives, federations, private enterprise and other organizations) involved in agricultural production.

The Superintendency of Banks and Other Financial Institutions (SIBOIF – <http://www.siboif.gob.ni>) is responsible for regulating the insurance sector.

A number of agencies provide climate-related data; the Nicaraguan Institute for Territorial Studies (INETER – <http://www.ineter.gob.ni/#>) is one example.

The National Disaster Prevention System (SINAPRED – <http://www.sinapred.gob.ni>) is responsible for dealing with weather-related emergencies or disasters.

Agricultural insurance and risk management regulations

Executive Order No. 41-2009, which created the Agricultural Insurance Committee (CAS), was approved on June 9, 2009. The Order established the objectives of the Committee and the functions of its board of directors. ([http://legislacion.asamblea.gob.ni/Normaweb.nsf/\(\\$All\)/A57950972BB8B69A06257656007BF1E8?OpenDocument](http://legislacion.asamblea.gob.ni/Normaweb.nsf/($All)/A57950972BB8B69A06257656007BF1E8?OpenDocument)).

Main features of the agricultural insurance market

Table 3.34 contains a number of relevant indicators on the agricultural insurance market in Nicaragua in 2008 and 2010. Microinsurance became available in September 2011, with the introduction of a “life microinsurance policy” issued by the Nicaraguan Insurance and Reinsurance Corporation (INISER). Seguros Latin American Financial Services (LAFISE) has also begun providing agricultural insurance services. Insured crops include peanuts and irrigated rice.

Table 3.34. Nicaragua: Agricultural Insurance Market Indicators, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	1	2
Agricultural premiums written	Millions, USD	88 972	20 589
Hectares insured	Thousands of hectares	2066	276
Capital insured	Millions, USD	1.55	0.50
Policies written	Number	16	23
Payouts	Millions, USD	104 564	ND

Source: Nicaraguan Association of Private Insurers (ANAPRI).

Weather Index Agricultural Insurance Program

In 2006, INISER implemented a Weather Index Agricultural Insurance Program. The program’s first initiative was a project to benefit peanut farmers belonging to the APROMANI Association. In 2008, it was expanded to include irrigated rice, corn and sesame.

The Weather Index Agricultural Insurance Program has also formed a strategic partnership with the Nicaraguan Institute for Territorial Studies (INETER), which manages the country’s network of meteorological stations. INETER supports the program by providing historical data and activating new stations.

The Program operates in conjunction with MAGFOR, which is responsible for coordinating agricultural policy and statistics and providing agricultural information. It also works with the commercial banking sector, to obtain loan portfolio information and financial data pertaining to crops (financial contractual parameters), place products and promote market development. In addition, the program has formed a partnership with reinsurer Partner Re, to provide advisory support for the strategic planning of the sector's growth. In addition, it receives support from the FIDES Project Apoyo al desarrollo del mercado de seguros agropecuarios en Centroamérica ("Support for the Development of the Agricultural Insurance Market in Central America"), which is financed by Inter-American Development Bank (IDB), the World Bank and the Central American Bank for Economic Integration (CABEI).

Insurance firms

- Instituto Nicaragüense de Seguros y Reaseguros (INISER): <http://www.iniser.com.ni/>
- Seguros Latin American Financial Services (LAFISE):
<http://www.seguroslafise.com.ni/seguros/inicio.html>
<http://www.elnuevodiario.com.ni/economia/48044>

3.5.6. Panama

Institutional framework for the application of public policies

The Agricultural Insurance Institute (ISA – <http://www.isa.gob.pa/>) is responsible for implementing public policies on agricultural risk management.

The Superintendency of Insurance and Reinsurance (<http://www.superseguros.gob.pa>) is responsible for regulating the insurance sector.

Plans and activities in the sector are coordinated by the Superintendency of Insurance and Reinsurance (SSRP), an agency attached to the Ministry of Commerce and Industry. This role differs significantly from the oversight and control exercised by SSRP over private insurance firms.

Agricultural insurance and risk management regulations

- Act No. 34, dated April 29, 1996 – “providing for agricultural insurance and the creation of the Agricultural Insurance Institute.”
- Act No. 25, dated July 19, 2005 – “establishing an insurance guaranty program.”
- Agricultural Insurance Institute regulations (applicable to agricultural, forestry, supplemental and surety insurance).
- Code of Commerce of Panama.

Main features of the agricultural insurance market

Table 3.35 contains a number of relevant indicators on the agricultural insurance market in Panama in 2008 and 2010.

Table 3.35. Panama: Agricultural Insurance Market Indicators, 2008 and 2010.

Data	Unit	2008	2010
Agricultural insurance firms	Number	1	1
Agricultural premiums written	Millions, USD	2.32	2.45
Hectares insured	Hectares	28 872	26 003
Capital insured	Millions, USD	98.34	60.99
Policies written	Number	ND	ND
Payouts	Millions, USD	1.13	3.21

Source: Agricultural Insurance Institute.

Insurance is available for the following crops: corn, sorghum, kidney beans, old cocoyam, new cocoyam, pineapple, plantains, onions, hot peppers, watermelons, cantaloupes, squash, tomatoes, potatoes, paprika, bananas, annatto, coffee, sugarcane, citrus crops (oranges, lemons), papaya, tobacco, cassava and forest species.

Forest plantation insurance is a new alternative for farmers involved in reforestation. This type of insurance covers on-site investment losses suffered in the management and maintenance of a forest plantation.

Livestock insurance is also available in Panama for risks such as electrical discharge, snake bites, dystocia and asphyxiation, among others. Coverage against loss of functional capacity in male and female breeding stock is also available.

Insurance and reinsurance firms

- Instituto de Seguro Agropecuario: <http://www.isa.gob.pa/>

3.6. Caribbean Region

3.6.1. Background: importance of agriculture to the Caribbean Region

Agriculture, representing primary crop and livestock production, fisheries and forestry, was responsible for generating on average close to 6.29% of GDP in the Caribbean Region in 2010.¹⁸ There were some significant differences among countries, ranging from 1% in various Caribbean island nations, to more than 20% in a few countries, notably Haiti (20.3%) and Guyana (30.2%).

Small-scale farming and other agricultural activity also constitute an important sector for generating jobs and income in rural areas, especially among the marginalized, resource-

18. World Bank. 2010. *Agriculture insurance in Latin America: developing the market*. Report n.o 61963-LAC.

constrained and poor. The percentage of persons working in agriculture ranges from less than 10% of total employment, as in the case of the Bahamas, to more than 30% in countries such as Haiti, Dominica and Guyana.

However, the real contribution of the agriculture sector, broadly defined to include post-farm activities in food, beverage and non-food production, has been shown to be greater than what has been computed in traditional national accounting, which only records the value added of the primary phases of production.

Taking its full role into consideration, agriculture's contribution in the Caribbean is significant to economic growth, employment, small business development and income generation, particularly in the rural areas, in foreign exchange earnings from exports and in food and nutrition security, among others. These multifunctional roles are particularly critical during periods of recession.

Over the last 10 to 15 years, however, the steady decline in the sector's performance has limited its capacity to mitigate the negative impact of the economic crisis and contribute to recovery. This has had a disproportionate effect on the Caribbean's poor¹⁹ and is also evident in the increasing dependence of Caribbean countries on food imports to satisfy their dietary needs. In fact, the region's agriculture and food import bill increased from USD1.1 billion in 2001 to USD1.6 billion in 2005 – an increase of more than 45% over 5 years. This situation was exacerbated by the global food crisis in 2008, which clearly illustrated the region's extreme vulnerability to market volatility occasioned by either shortages, sharp increases in prices or a combination of both factors.

Revitalizing agriculture in the Caribbean is a top priority for the region. This must be accomplished within a reality of relatively small and largely inefficient production units that represent the farming sector in most countries, thereby limiting the possibilities for economies of scale. Generally low levels of public sector investment in agriculture infrastructure and services in recent years have constrained the recovery and growth process, with negative impacts on productivity and profitability of agricultural enterprise. With respect to the agricultural enterprises themselves, the difficulties encountered in mitigating/transferring high risks, including weather variability inherent in agricultural production in the Caribbean, has been a particularly debilitating problem. For the past two decades, inadequate agricultural insurance, which transfers risk from low income producers to international reinsurers, continues to be a major contributing factor to the declining performance of agriculture in the Caribbean.

3.6.2 The Caribbean region with respect to weather-related disasters

The geographic location of most countries in the Caribbean region within the Atlantic Hurricane Belt makes them particularly vulnerable to the effects of weather-related hazards. These hazards include tropical cyclones (hurricanes) of severe intensity, with high winds and excessive rainfall, and increasingly, high variability and unseasonal weather such as heavy rainfall and droughts with adverse impacts, as indicated in an increase in the category and numbers of hurricanes, as shown in Table 3.36.

19. World Bank. 2011. *High Food Prices, LAC responses to a new normal*.

Table 3.36. Major Hurricanes in the Caribbean from 1970 – 2008.

Category of Hurricane	1970-1979	1980-1989	1990-1999	2000-2008
Category 3	9	7	11	10
Category 4	3	7	12	12
Category 5	3	3	2	7
Total	15	17	25	29

Source: *Current Situation and Outlook for Agricultural Risk Management in the Caribbean*. Caricom Secretariat, 2010.

Losses from these weather-related disasters are likely to be exacerbated by the region's vulnerability to the effects of climate change, including sea level rise and increases in major hurricanes due to the increased probability of severe weather events in the Caribbean. According to the IDB²⁰, based on the ubiquitous vulnerability of the Caribbean region to meteorological hazards, priority should be given to enhancing country and regional risk management performance, through the design and implementation of integrated disaster risk management (IDRM) plans including risk identification, prevention and mitigation, financial risk management, including agricultural insurance, and institutional strengthening for preparedness and response.

Within the last decade, disasters resulting from natural hazards have had devastating impacts on the socio-economic and environmental landscape of the Caribbean, severely disrupting the livelihoods of many small- and medium-sized producers and processors. Hurricanes are the most prevalent meteorological hazards, causing significant economic damage to the agriculture sector in some countries of the Caribbean region by selected disasters in recent years. Table 3.37 (ECLAC reports).

20. IDB Presentation at Regional Write shop to Prepare Hurricane, Drought and Flood Management and Mitigation Plans for the Agriculture Sector in January 17-19, 2012, St George's, Grenada.

Table 3.37. Damage to the Caribbean Agriculture Sector.

Country	Disaster	Year	Estimated Value (\$US million)
Dominica ^a	Luis, Iris y Marilyn	1995	30
Grenada ^b	Iván	2004	37
Guyana ^c	Floods	2005	54.5
	Floods	2006	22.5
Belize ^d	Dean	2007	54
Jamaica ^e	Dean	2007	57
St. Lucía ^d	Dean	2007	17
St. Lucía ^f	Thomas	2010	56

Source: *a* Dominica Banana Marketing Corporation (DBMC). 1995. *Annual report*. *b* OECS. 2004. *Grenada – Macro socio economic assessment of the damages caused by hurricane Ivan*. *c* UNDP. 2009. *Enhancing gender visibility in disaster risk management and climate change in the Caribbean - country assessment report for Guyana*. *d* ECLAC. 2007. *Belize and St. Lucia macro socio economic assessment of damages and losses caused by hurricane Dean*. *e* Planning Institute of Jamaica. 2007. *Assessment of the socio-economic and environmental impact of hurricane Dean on Jamaica*. *f* ECLAC. 2011. *St. Lucía – Macro socio economic and environmental assessment of the damages and losses caused by hurricane Thomas. A geo-environmental disaster*.

On average, six natural hazards leading to disasters occurred in the region annually during the period 1970-2008, with a higher incidence in Haiti and the Dominican Republic. The region experiences, on average, one major hurricane and numerous tropical storms per annum, as indicated by Carby²¹ in 2011. Rasmussen²² notes that disasters from these natural hazards can lead to imbalances that spark economic crises and an increased incidence of poverty. For example, Hurricane Tomas in 2010 destroyed 80% of the banana crop in St. Lucia, as well as a significant proportion in St. Vincent, leaving many thousands of small scale farmers with no income for months, and relying on income support from the government.

Given these existing vulnerabilities, and in light of the projected impacts of climate change and variability on the peculiar vulnerabilities of Small Island Developing States (SIDS) within the Caribbean, the need to urgently integrate disaster risk management (DRM), including risk transfer tools in the agriculture sector, is an absolute imperative for development.

3.6.3. Evolution of agricultural insurance in the Caribbean

Background

Risk response measures in the Caribbean for agricultural activities may be categorized as severely inadequate. The traditional risk management strategies, which have included financial solutions such as the use of savings and access to loans; agronomic solutions such as crop diversification and use of drought resistance-low yielding cultivars and species; and government intervention, such as the provision of relief to affected communities, have proven to be neither robust nor efficient in preventing serious economic loss and allowing

21. MCII 2011: *Demand for Weather –related Insurance and Risk management Approaches in the Caribbean*

22. Rasmussen, T. 2004. *Macroeconomic implications of natural disasters in the Caribbean: IMF Working Paper WP/04/224*.

speedy recovery. With respect to government interventions, public expenditure on catastrophic disasters generally incurs high administrative costs, while addressing only a portion of incurred losses. This often involves significantly long waiting periods and is quite inefficient in its execution, often resulting in significant loss of confidence and motivation among the agricultural community.

Given the costly, inefficient and ineffective reconstruction processes following catastrophic events in the Caribbean, there has been limited concerted effort to develop a comprehensive program of risk management. The agricultural sector remains highly vulnerable in the aftermath of a disaster and to the risk of future such events. In this regard, mitigating high risks, inherent in the sector, through agricultural insurance is an essential requirement for development and investment.

Challenges in Agricultural Insurance for the Caribbean

In 2011, a survey was undertaken to investigate the potential for weather-related micro-insurance in the Caribbean.²³ According to the results, although 42% of respondents experienced losses from extreme weather events in the past 10 years, insurance is under-utilized, (43% of rural residents and 46% of lower income groups had no insurance). The survey also indicated that less than 10% of respondents used insurance as a coping mechanism for emergencies. This contrasts to some 90% of respondents using other coping mechanisms, including sale of assets and reliance on public and/or family support. The reasons cited for lack of uptake were the unavailability of insurance, high costs and negative experiences with insurance companies. The 2011 study reported that 50% of respondents believe insurance is not relevant or too expensive, with 27% stating that they did not have insurance because of a lack of trust in insurance companies.

Despite these survey results, recent disasters demonstrate, not only the potential for developing cost effective insurance as a means of reducing disaster impacts, but also the need to improve delivery of existing insurance mechanisms.

In the context of the region's high exposure to catastrophic perils such as hurricanes and excessive rainfall, the lack of sustainable agricultural insurance in the Caribbean, generally speaking, has been largely as a result of the following:

- limited fiscal capacities to fund major disaster reconstruction for low-income communities and public properties;
- insufficient vulnerability reduction measures taken for property and physical assets;
- limited reserves of domestic insurance capital and limited interest;
- technical challenges in the design of appropriate products and delivery mechanisms for small diversified producers and;
- technical difficulties in modeling damages to yields.

23. *Demand for Weather related insurance and risk management approaches in the Caribbean*, MCII (Munich Climate Insurance Initiative) and German Development Corporation (GIZ), 2011.

These domestic factors are closely linked to the characteristics of the international insurance markets which, in turn, have had significant impacts on local risk management practices. These impacts have included (1) past premium rate volatility, which has limited insurance coverage to only middle/higher income sectors; (2) lengthy past delays in rate adjustments and capacity replenishments following global disaster events; (3) a high level of reinsurance provided to local insurers with accompanying commissions remitted, which tend to increase incentives for maintaining high premiums; and; (4) proportionately higher insurance costs for catastrophic-level risks, given the insurer's need to retain high and costly levels of capital to fund such eventualities (so called 'catastrophe loading').

3.6.4. History of Agricultural Insurance in the Caribbean Region

Despite the challenges in the Caribbean, agricultural insurance as a risk-transfer mechanism has been attempted in a few countries, as briefly described below.

Jamaica

Until 2004, insurance coverage was offered for bananas, coconuts and coffee. Indemnity was provided to banana producers for losses sustained as a result of windstorm. This program was managed by a board, which administered a Banana Insurance Fund. The Coffee Industry Crop Insurance Scheme was set up under a trust deed in 1992 to provide coverage for farmers against certain natural disasters with premiums of USD1.5 collected from producers for each box (27.22 kg) of Blue Mountain coffee and USD0.9 per box for low-land coffee. Coffee, a competitive agricultural export commodity for Jamaica, has been encountering substantial problems with insurance and reinsurance arrangements. Partly due to these problems, the coffee insurance program was terminated in 2005 and to date (2012), there is still no coverage for climate risks due to loss of interest of the reinsurance market. Insurance for coconuts was provided via the Coconut Board, which had access to reinsurers to cover itself. The coverage was provided on a per-tree basis. A tree was insured for a maximum of USD8.00 at a rate of USD0.075 for every USD1.5 of coverage. The number of trees to be insured was left to the farmer's discretion.

Windward Islands of Dominica, St. Lucia, St. Vincent and Grenada

From as early as 1959, there have been numerous attempts to provide insurance for the agriculture sector through the provision of disaster relief funds, as well as through traditional crop insurance. A traditional insurance scheme, established from 1959 to 1979 ultimately failed due to a lack of separation of insurance funds; abuse of the system; low deductions from producers, low provision for benefits; high claims paid out; difficulties in obtaining reinsurance; and the lack of agricultural insurance experience. A disaster relief system was established in Dominica for banana production from 1979 to 1987, and the Windward Islands Crop Insurance (1988) (Ltd) (WINCROP) was established in 1988 for banana production in Dominica and St. Lucia, in 1996 for St. Vincent and in 2000 for Grenada. WINCROP is the only company currently offering agricultural insurance in the English-speaking Caribbean.

Dominican Republic

Agricultural insurance was first introduced in the Dominican Republic in 1984 by Aseguradora Dominicana Agropecuaria, CA (ADACA), a majority government-owned entity, to provide crop and livestock insurance as collateral for the loans given by Banco Agrícola de la República Dominicana to subsistence farmers. Most policies were issued on a collective basis, linked to group loans. Unfortunately, ADACA ceased operation in 1997, due mainly to the withdrawal of support from the Banco Agrícola. In 2002, Aseguradora Agropecuaria Dominicana (AGRODOSA) re-launched crop insurance in the Dominican Republic, beginning with rice.

3.6.5. Existing Agricultural Insurance initiatives

Windward Islands

WINCROP was established in 1987 with the main objective of providing crop insurance and to obtain reinsurance against any and all insurance risks assumed. It was incorporated in Dominica in 1988 where the head office is located, as a company limited by shares with branch offices in St. Lucia (1988) and in St. Vincent (2000).

WINCROP is the only company in the English-speaking Caribbean offering an agricultural crop insurance product to provide crop insurance for damages and losses to banana and plantain holdings in the Windward Islands of Dominica, Grenada, St. Lucia and St. Vincent, as a result of windstorms (localized windstorms, tropical storms and hurricanes) and volcanic eruptions.

Government support for the establishment of WINCROP was provided in two phases. The first phase was the enactment of the special crop insurance legislation of the Windward Island Banana Insurance Act of 1988: Chapter 78-50 and the Insurance Act: Chapter 78-49.²⁴ The Act made provisions for the establishment of WINCROP and for windstorm insurance coverage to be provided to banana-exporting producers against windstorm, and volcanic coverage for all banana and plantain holdings. This has never been enacted into law in St. Lucia and, therefore, insurance is not compulsory there. The second phase was through the provision of start-up capital by the governments, through the relevant Banana Growers Association, to establish WINCROP's paid-up share capital. Contributions were based on 1987 export production levels, as shown in Table 3.38.

24. See <http://www.dominica.gov.dm/laws/1997/act14-1997.pdf> y <http://www.dominica.gov.dm/laws/chapters/chap78-49.pdf>.

Table 3.38. Funding among the Banana Grower Organizations (BGOs).

Banana Grower Organizations (BGOs)	USD	%
Dominica Banana Marketing Corporation (DBMC)	330 970	26.06
St. Lucia Banana Corporation (SLBC)	552 612	43.50
St. Vincent Banana Grower's Association (SVBGA)	336 194	26.47
Grenada Banana Cooperative Society (GBCS)	50 373	3.97
Total	1 270 150	100.0

Source: WINCROP. 1998. Annual Report.

The agricultural insurance product offered by WINCROP: The WINCROP banana policy is a standard damage-based indemnity policy that was specifically designed to be simple and transparent, and to operate at low cost for large numbers of smallholder banana growers who cultivate, on average, 1 hectare or less of bananas. The policy protects against physical damage by wind to the banana plants, defined as snapping, toppling and uprooting of the plant, as well as leaf stripping.

The sum insured is established on the basis of each grower's three-year rolling average banana production, based on deliveries to the Banana Growers' Association. The premium is deducted at source by the banana companies and paid to WINCROP. Sample damage-count loss assessment procedures are used to estimate the percentage damage to the total number of banana plants insured, and this percentage damage is applied to the sum insured.

The premium rate is 0.009US¢/lb. for Dominica and St. Lucia, and 0.006US¢/lb. for St. Vincent and Grenada. The benefit (payout) rate is 0.0373¢/lb. for all islands. The deductible for every loss is 20%, and 80% assessed damage is taken as a constructive total loss. The premium rate was increased in 2008 but has otherwise remained constant. The increase was affected by WINCROP due to an increase in administrative expenses; not on the recommendation of the re-insurers.

Claims Processing. Following an adverse event, the growers have a 10-day period to provide notification of a claim, whether verbal or written. In some cases, if a claim is submitted a few days after the deadline, it may still be accepted. Notification is also broadcast by the local media through which growers are instructed to submit their claims. Provisions are made for the process of arbitration if the grower does not accept the assessment. For the past 15 years, the policy on all islands has maintained a standard 20% deductible for every loss. This high deductible is required to maintain premium rates at affordable levels for farmers.

The actuarially-determined premiums for windstorm coverage are high, ranging from 20% on the most exposed northern islands, to 11% on the least exposed southern islands in the Windward chain. In view of the high premium rates, the banana growing organizations (BGOs) have traditionally maintained the sums insured at about 35% of the full production

costs for bananas. In the event of windstorm damage, the indemnity amount therefore covers only the basic cost to reestablish the banana holding.

Table 3.39 shows WINCROP's market volume for 2008 and 2010. As the table indicates, WINCROP premiums fell from USD395 941 in 2008 to USD328 596 in 2010.

Table 3.39. Agricultural Insurance Market Quantitative Data 2008 and 2010.

DATA	UNITS	2008				2010			
		Dominica	St. Lucia	St. Vincent	Total	Dominica	St. Lucia	St. Vincent	Total
Insurance Premiums	USD	159 071	132 842	104 028	395 941	66 632	130 982	130 982	328 596
Hectares covered	Hectares	720	2485	1620	4825	840	2237	2170	5 247
Liabilities	USD	74 980	277 060	46 062	398 102	15 197	288 852	38 572	342 621
Policies issued	Quantity	600	1497	1251	3348	726	1347	1676	3749
Claims paid	USD	23 996	26 870	17 744	68 610	96 627	675 475	574 765	1 346 867

Source: Prepared using data from a hemisphere-wide survey on insurance companies conducted by IICA in 2010, and data gathered by WINCROP in 2011.

Re-insurance. The re-insurance premium is based on the annual average production, and this figure is calculated by taking the average crop production over the last 36 months. The premium is paid in 4 installments over the policy period, which commences on June 1 of each year.

Coverage for the year, which ended on May 31, 2011, was based on an estimated crop of 23 185 tons and a three-year average of 15 898 tons. The sum insured for 2010/2011 was USD1 907 225, net of 20% deductible and, of this amount, WINCROP retained the first layer of USD257 094 and reinsured the balance of USD1 650 131 at a cost of USD165 000, subject to a minimum of 85% if output was not achieved. The quoted premium was equivalent to a rate of 10.85% of the net liability (sum insured), 8.68% of the reinsured liability and 61.61% of the original gross premium. The overall reinsurance accounts for 1987–2009 show that reinsurance premiums paid totaled USD14.2 million (34.6% of the total collected), and reinsurance claims totaled USD7.5 million, or 26.3% of total paid out by WINCROP. The retention rate is set by the reinsurers, and is currently at USD257 094, based on a premium of USD55 000, as indicated in Table 3.40.

Table 3.40. WINCROP Reinsurance Companies for 2008 and 2010.

Reinsurance Periods	Premiums (%)			
	2008		2010	
Reinsurance Companies	USD	%	USD	%
1. Partner Re	52 476	40	22 148	40
2. Swiss Re	35 421	27	14 950	27
3 Hannover Re	43 292	33	18 272	33
Total	131 189	100	55 370	100

Source: Prepared using data from a hemisphere-wide survey on insurance companies conducted by IICA in 2010, and data gathered by WINCROP in 2011.

Haiti

Microinsurance Catastrophe Risk Organization (MiCRO) was founded in 2011 through equity investments by Mercy Corps, an international development non-governmental organization (NGO), and Fonkoze, Haiti's largest micro-finance institution, and with donor support from the UK's Department for International Development (DFID), through a Trust Fund hosted at the Caribbean Development Bank (CDB). Further information on MiCRO can be found on its website, www.microcatrisk.org.

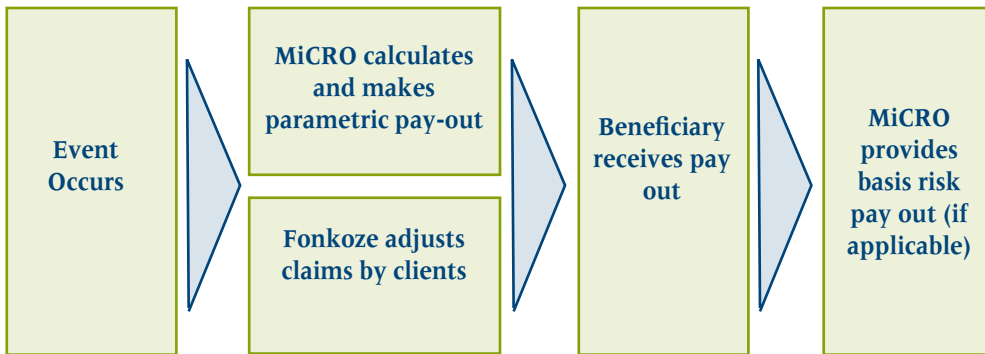
MiCRO's technical team is led by Caribbean Risk Managers (CaribRM), a specialist catastrophe risk management consultancy, which operates the Caribbean Catastrophe Risk Insurance Facility, the world's first multi-national catastrophe risk insurance facility, on behalf of the member Caribbean governments. Swiss Re, provides reinsurance capacity and technical support; Guy Carpenter, a reinsurance broker, provides further analytical and administrative support.

In early 2011, MiCRO launched its first micro-insurance program in Haiti, providing protection from natural catastrophe risk to Fonkoze. MiCRO provides a unique blend of parametric and basic risk insurance to Fonkoze, which in turn provides catastrophe guarantees to its micro borrowers. In the first year of operations, MiCRO's hybrid insurance product enabled Fonkoze to provide risk protection to all of its 60 000 micro-borrowers. Almost 7000 received over USD1.8 million in benefits from the program during 2011, following a number of devastating rain events as well as the effects of two passing hurricanes.

All of Fonkoze's group-lending clients are covered by compulsory catastrophe insurance, which protects each client whose means of doing business is destroyed by a natural catastrophe such as rain, wind or earthquake. Clients submit their claims through their solidarity centers and loss adjusters provide the following payout (see process in Figure 3.3).

- Write-off of the client's existing Fonkoze loan balance;
- USD125 cash payment and;
- A new loan to re-capitalize the business when the client is ready.

Figure 3.3. Disaster insurance payment process.



Source: CaribRM. 2011. *Introduction to MiCRO: Launch in Haiti*.

Within a year of its launch, MiCRO was recognized for its innovation by the global insurance industry in winning The Review’s “Company Launch of the Year” award, and by the global development community as one of the finalists in Mercy Corps’ 2011 Innovations and Impact Award²⁵.

Dominican Republic

Institutional structure for the implementation of policies in the Dominican Republic

The institution of Public Policy Implementation and Agricultural Risk Management is the Ministerio de Agricultura de la República Dominicana: (<http://www.agricultura.gob.do/Inicio/tabid/36/language/es-DO/Default.aspx>)

The regulatory agency and controller of insurance is the Superintendencia de Seguros: (<http://superseguros.gob.do/portal>)

The main insurance company of Dominican Republic is Aseguradora Agropecuaria Dominicana S.A (AGRODOSA)

Two reinsurers also operate in the country: Swiss Re and Hannover Re.

25. “The Review”, founded in 1869, provides timely and incisive coverage of the global reinsurance, insurance and insurance linked securities markets.

The regulatory instruments are as follows:

- Ley n.º 146-02 sobre Seguros y Fianzas: (<http://competitividad.org.do/marco-juridico-del-sector-agropecuario-dominicano/>).
- Ley n.º 157-09 sobre el Seguro Agropecuario: (<http://competitividad.org.do/wp-content/uploads/2009/05/ley-no-157-09-sobre-el-seguro-agropecuario-en-la-republica-dominicana.pdf>).
- Ley de modificación de artículos de la Ley n.º 157-09: (<http://www.camaradediputados.gov.do/masterlex/mlx/docs/2E/2/EAA/21A3.pdf>).

Main issues of the agricultural insurance markets

Table 3.41 shows a few relevant indicators for the agricultural insurance market in Dominican Republic during 2008-2010.

Table 3.41. Dominican Republic: Agricultural Insurance Market Indicators in 2008, 2009 and 2010.

Data*	Units	2008	2009	2010
Number of agricultural insurance companies	Quantity	1	1	1
Insurance premiums	Millions, USD	ND	ND	ND
Hectares covered	Hectares	22 296	25 508	25 670
Liabilities	Millions, USD	40	122	112
Policies issued	Quantity	6254	ND	8482
Claims paid	Thousands, USD	427 201	351 211	324 035

* The rate used was the average exchange rate for 2008 and 2010 circulated by the Central Bank of the Dominican Republic.
Source: AGRODOSA.

The main crops and products insured in the Dominican Republic are rice, beans, bananas, plantains, cassava, onions, peppers, avocados and chicken. Insurance is also available for agricultural equipment and infrastructure (greenhouses and irrigation systems), along with debtor's life insurance. The types of agricultural insurance on offer are multi-risk and yield insurance schemes.

Aseguradora Agropecuaria Dominicana (AGRODOSA)

AGRODOSA is the only insurer that offers harvest insurance in the Dominican Republic. It is a public-private enterprise, but operates along strictly commercial lines and is subject to private insurance regulations. Its objective is to develop agricultural insurance to offer protection, stimulate agricultural activity and guarantee investments in the sector. It offers multi-risk policies that afford protection against the effects of reductions in expected rice and pea harvests. It also offers multi-risk policies for banana and plantain harvests. Table 3.42 provides a breakdown of the agricultural activities covered by AGRODOSA in 2008.

Table 3.42. AGRODOSA Farm Activities covered in 2008.

Farm activities covered	Type of coverage based on risk and coverage	Area (Hectares)	Area Insured (hectares)	Area Insured (%)	Premiums (%)
1.Crops					
1.1 Annual					
• Rice	Harvest	152 267	16 172	11	11
• Peas	Harvest	55 908	946	1,7	1,7
• Onion	Harvest	3478	-	-	-
1.2 Perennial					
• Banana & Plantain	Harvest	696 700	5172	0,7	0,7
• Avocado	Harvest	1107	-	-	-
• Pepper	Harvest	-	-	-	-
• Cassava	Harvest	15 916	-	-	-

Source: Prepared with data taken from a survey on insurance companies conducted by the IICA Office in the Dominican Republic in 2011, and data gathered by AGRODOSA in 2011.

The government played an active role in formulating the agricultural insurance law and in the AGRODOSA start-up. The government supports agricultural insurance through the provision of crop insurance premium subsidies (the government contributes from 25 to 50% of the premiums of the producers). In 2009, the government spent approximately USD1.25 million on subsidies for crop insurance premiums.

The most important delivery channel is the Banco Agricola, which is the main financing institution for the rural sector. Recently, other channels, such as agents, farmers associations and cooperatives have grown in importance. The specialized delivery channel for small and marginal farmers is the Banco Agricola. No livestock insurance product is being offered at this time.

In 2010, AGRODOSA offered multi-risk insurance for the agricultural activities of all the crops insured, as shown in Table 3.44:

Table 3.43. AGRODOSA microinsurance programs (2008 and 2010).

Period:	2008		2010	
	Premium Cost USD	Number of Policies Issued	Premium Cost USD	Number of Policies
Micro-insurance 1. Life Insurance	-	-	5370	11 943
Micro-insurance 2. Micro Loans and Machinery	29 164	101	23 351	66
Micro-insurance 3. Micro-Insurance for Harvest	5393	6153	6517	6388
Micro-Insurance 4. Animal Production Insurance	-	-	115 257	2
Micro-Insurance 5. Winter conditions	-	-	57 502	83

Source: Prepared with data taken from a survey on insurance companies conducted by the IICA Office in the Dominican Republic in 2011, and data gathered by AGRODOSA in 2011.

In 2010, AGRODOSA offered multi-risk insurance for the agricultural activities of all the crops insured, as shown in Table 3.44:

Table 3.44. Farm Activities Covered by AGRODOSA (2010).

Farm activities covered	Type of coverage based on risk and coverage	Area (hectares)	Area insured (hectares)	Area insured (%)	Premiums (%)
1. Crops					
1.1 Annual					
• Rice	Harvest	186 565	16 009	8.6	8.6
• Peas	Harvest	48 565	1783	3.67	3.67
• Onions	Harvest	2360	0.63	0.02	0.02
1.2 Perennial					
• Bananas & Plantains	Harvest	216 754	7253	3.3	3.3
• Avocados	Harvest	503 610	543	0.001	0.001
• Peppers	Harvest	1197	44	3.7	3.7
• Cassava	Harvest	-	1.26	-	-
2. Forestry	-	20 360	7.55	0.04	0.04

Source: Data submitted by AGRODOSA, 2011 and the Ministry of Agriculture in the Dominican Republic 2011.

The crop insurance program implemented by AGRODOSA is reinsured in the international market through a quota share reinsurance treaty.

3.6.6 Opportunities for Agricultural Insurance in the Caribbean

After a long hiatus in the Caribbean, agricultural insurance is re-emerging as a topic of interest to governments and other policy makers, insurance companies and development finance institutions, as well as producer organizations and rural residents. A number of factors are responsible for this renewed interest and include the following:

- Vulnerability of the Caribbean to increasingly volatile and extreme weather patterns as a result of climate change, leading to an increase in frequency and costliness of natural disasters.
- The potential reduction in administrative expenses due to the promising advances in information and communication technologies (ICTs), remote sensing technologies, connectivity and computing power, telecommunications and probabilistic risk modeling techniques, has encouraged the private sector to re-think its strategy to agricultural insurance.
- High demand for affordable insurance, although the findings of a survey indicated that many low income individuals consider insurance to be too expensive or do not trust insurance companies. But this does not negate the demand for affordable insurance. The same 2011 insurance study found that 57% of interviewees exhibited a moderate to high/very high demand for an affordable insurance product (ex. premiums at 5–6% of the sum insured), if available.
- Availability of capable institutional support from recent experiences of the Caribbean Catastrophe Risk Insurance Facility (CCRIF), and Department for International Development (DFID) in the UK government. DFID was the initial funder of CCRIF in 2007, the world's first parametric and first multinational catastrophe insurance program for governments. In 2011, DFID renewed its interest in reinsurance and launched MiCRO, the Caribbean's first parametric catastrophe insurance mechanism targeted at low income groups, including micro credit holders and farmers.
- Potential to reduce poverty and improve the incomes of rural communities through the promotion, development and establishment of sustainable risk transfer instruments such as agricultural insurance, to reduce economic shocks, has been established globally, and can significantly transform and reposition agriculture in the Caribbean.

While traditional insurance has not made a significant contribution to the overall development of agricultural insurance in the region, there may be opportunities for local and regional insurers, as well as international reinsurers, to play a more active role, once a better understanding of the risk is obtained. However, there have been significant developments across the globe in non-traditional insurance products, namely "index insurance" products, which have shown great promise as a tool to reduce the severe effects of weather-related events. Index-based products offer an opportunity for the development of agricultural insurance across the region, lowering the requirements for subsidies that support traditional agricultural insurance systems throughout the developed and developing world.

This mirrors DFID's experience with developing a catastrophe microinsurance product in Haiti for Fonkoze, Haiti's largest micro-credit institution for the poor. Fonkoze's research, after the first year of operations in 2011, indicates its clients are satisfied with the insurance currently available, citing it as one of the reasons they have joined Fonkoze micro-credit programs.

Introduction of Index-based Insurance Products: Index-based instruments (as well as hybrid instruments that have characteristics of both index-based and traditional indemnity insurance) provide an opportunity for small farmers and their communities to adapt to the risks created by climate change, and buffer to some extent risks that threaten wider national and regional food and economic security. These tools can also be used to manage risk at a portfolio level, notably to enable financing institutions to better hedge their default exposure to agricultural loan portfolios. This will become increasingly important as the various agricultural initiatives will increase the demand for agricultural credit, as producers move from subsistence farming (with little or no need for credit) to semi-commercial and commercial farming. By increasing the creditworthiness of farmers, agricultural insurance can also enhance access to credit.

It is recognized that insurance will not be able to provide a solution for all of the agricultural risks in the region, and that some of these may prove to be uninsurable. Indeed, a combination of mitigation, risk transfer and coping will be needed to effectively manage risk, and agricultural insurance must form part of a comprehensive disaster risk management framework. In addition, the structural heterogeneity, both among and within countries in the Caribbean, reflects different policy needs and expectations and raises significant challenges in administration, including finance and legislation, and in governance of agricultural institutions across the region. This diversity also reflects the challenges of integrating small producers into already established productive and commercial chains, and in the promotion of public-private alliances to encourage coordination.

The countries of the Caribbean Region are now giving serious consideration to the introduction of insurance products as a risk transfer mechanism within the agricultural sector.

3.6.7 Institutional support in the Caribbean Region

In January 2005, President Jagdeo's proposal entitled "Strengthening Agriculture for Sustainable Development," informally dubbed the "Jagdeo Initiative," was endorsed by members of the agri-business sector, the forum of Ministers of Agriculture and the 2005 Heads of Government Conference. In June 2007, Caribbean heads of government met at a special meeting of donors and, among other actions, agreed that the Jagdeo Initiative would be implemented over the next 2 years. The Jagdeo Initiative called for major interventions to alleviate the key binding constraints including:

- the operation of a disaster fund within an "Agricultural Modernization Fund";
- the provision of incentives to general insurance firms to insure farm assets; and
- the development of a multi-peril insurance scheme with regional insurance companies.

In 2008, an attempt to institutionalize an oversight and management system for enhancing implementation of the Jagdeo Initiative resulted in the establishment of an Agriculture Disaster Risk Management Technical Management Advisory Committee (ADRMTMAC), with responsibility for the establishment of the TMAC for the Development of an Integrated Regional Risk Mitigation (Natural Disasters) and Relief (Including Agricultural Insurance) Strategy for the Caribbean Region. The ADRMTMAC system was established in response to what may be described as the lack of a systematic, well-coordinated institutional mechanism for implementation and follow-up, (coupled with) low levels of resource mobilization and allocation which continues to hinder progress.

The Caribbean Community (CARICOM) Secretariat, by means of the ADRMTMAC, coordinated the Caribbean Symposium on Disaster Risk Management – Agricultural Insurance in Antigua and Barbuda, in close collaboration with the Ministry of Agriculture of Antigua & Barbuda and IICA. The symposium brought together 107 stakeholders from regional and international agencies including the International Bank for Reconstruction and Development (IBRD), the Caribbean Development Bank (CDB), the United Nations Food and Agriculture Organization (FAO), the Caribbean Disaster and Emergency Management Agency (CDEMA), and attracted financial resources from the Government of Australia Aid Program and the European Union (EU). The symposium determined the main tenets of an overarching agricultural sector risk management strategy for the Caribbean, with a focus on agricultural insurance. It was resolved and agreed at the symposium that the critical steps towards the achievement of the overall objectives would include:

- The establishment of a regional program for disaster risk management for the agricultural sector in the Caribbean;
- The design and implementation of a regional catastrophic risk facility for the agricultural sector in the Caribbean; and
- Government support for existing private sector insurance and reinsurance entities in the Caribbean, utilizing the experiences gained in the present initiatives such as WINCROP and CCRIF and other related ventures.

3.6.8 Current initiatives and future plans

Current initiatives: Climate Risk Adaptation and Insurance in the Caribbean

The Munich Climate Insurance Initiative (MCII), in partnership with the Caribbean Catastrophe Risk Insurance Facility (CCRIF), MicroEnsure and Munich Re, have received support from the German government to undertake the project titled “Climate Risk Adaptation and Insurance in the Caribbean.” The program is intended to expand the range of adaptation options related to disaster risk reduction and micro insurance for vulnerable people in the Caribbean. The role of each partner is as follows:

- MCII bridges the results of the program to policy making processes such as the United Nations Framework Convention on Climate Change (UNFCCC) climate negotiations;
- MicroEnsure is the world’s premier micro insurance broker;
- CCRIF is a regional risk management institution;
- Munich Re is a leading Global Reinsurer.

The overall aims of the program are as follows:

- To overcome barriers and catalyze solutions to address middle level weather-related risks (return periods of 10–20 years), and facilitate public safety nets and public-private partnership insurance solutions for vulnerable people;
- To explore ways to link these insurance solutions to Disaster Risk Reduction (DRR) for catalytic adaptation benefits;
- To demonstrate the value of a regional facility for achieving these aims.

The goals will be achieved in two Modules: Operational and Policy:

The *Operational Module* will develop and implement micro-insurance policies combined with disaster risk reduction methods in the Caribbean, while the Policy Module will share lessons learned and strategic insights from policy-makers.

There will be two insurance products designed for this program, namely the Livelihood Protection Policy and the Loan Portfolio Policy. These insurance policies are parametric, which means that the policy is activated once the specified trigger (e.g. wind speed, rainfall, earthquake) is exceeded, entitling the insured to a payout.

Livelihood Protection Policy. The Livelihood Protection Policy will cover low income persons from varying occupations who are adversely affected by mid-level and extreme weather events. Perils covered will be wind and excess rain, and trigger notification will be given via text message.

Loan Portfolio Policy. The Loan Portfolio Policy will cover national-level financial institutions (development banks, credit unions, cooperatives, etc.) with nationally distributed portfolios of weather exposed loans. Perils covered will be wind and excess rain and trigger notification will be internet based or via electronic mail.

The program is intended to last for a period of 3 years, from 2011 to 2014 and the target countries are Jamaica, St Lucia, Grenada, Guyana and Belize. The first phase of the program will focus on Jamaica, Grenada and St. Lucia, with the program being implemented in Guyana and Belize in the following phases. It is expected that, by 2014, the program will be sustainable enough to ensure its continuity and explore the possibility of implementing it across the Caribbean Region.

Future plans: WINCROP/MiCRO PROPOSAL

Despite the challenges of establishing a regional program, individual countries have expressed a desire to examine and pursue all options in designing and creating country and sub-regional agricultural insurance schemes. In September 2010, the government of Dominica made a formal request to CDB, on behalf of WINCROP, for a feasibility study to explore the extent to which WINCROP could expand its operations to cover the entire agricultural sector in the region. In October 2010, an action plan for regional agricultural insurance development, crafted by the ADRMTMAC, under IICA's leadership, was adopted by the CARICOM's Ministerial committee for Trade and Economic Development (COTED). COTED

has approved and endorsed that the CARICOM Secretariat (ADRMTMAC), with technical support from IICA, mobilize resources for implementation of the action plan. The demand for agricultural insurance was given greater importance by the devastation wreaked on the banana sector in the Eastern Caribbean (St. Lucia and St. Vincent) by Hurricane Tomas in late-October 2010, an event which severely impacted WINCROP (the only active insurance mechanism for agriculture in the CARICOM region at the time) and threatened its survival and sustainability.

MiCRO has committed financial support from DFID, alongside ongoing technical and financial support from the CDB. It has a highly qualified technical team with both Caribbean and international experience, supported by regional experts at IICA, FAO and other institutions. MiCRO's strategy is also aligned with the regional CDM strategy.

MiCRO's immediate objective would be to provide WINCROP with a solid reinsurance solution which:

- maintains the farmer product in its current state, supported by WINCROP's existing operational infrastructure for distributing the product and assessing claims;
- provides cost-efficient transfer of the majority of the risk held by WINCROP via a parametric reinsurance policy backed by Swiss Re and designed specifically to replicate, as closely as possible, actual losses; and
- provides a unique basis risk policy which is designed to cover most of the difference between the parametric policy payouts and actual WINCROP losses.

The cost-efficient removal of risk from WINCROP's balance sheet should allow the company to grow its operational and sales capacity and expand its offerings to other countries and other crops. In the medium term, MiCRO's objective would be to support WINCROP in:

- expanding the WINCROP offering to banana farmers in Jamaica and Belize;
- expanding the crop types for which WINCROP can provide coverage (including nutmeg, coffee, cocoa and rice); and loan portfolios;
- building the political will to ensure the long-term sustainability of WINCROP as a regional risk management service provider that supports the viability of the Caribbean agricultural sector in the face of increasing global competition and extreme weather events caused by climate change.

The development of response mechanisms for the agriculture sector at the national and regional levels represents, therefore, a powerful strategy for building resilience to natural hazards, contributing to alleviating rural poverty and to the development of a sustainable pathway for the agriculture sector in the Caribbean Region.

IV. CONCLUSIONS

4.1. Lessons learned

To contribute to the formulation of proposals, a summary of the most important aspects of the experiences considered is provided below. Special attention is paid to the most successful experiences.

4.1.1. Political/institutional considerations

One common feature in all of the experiences considered is the participation of different stakeholders with shared interests and responsibilities that vary depending on their role in the development of the sector. Their actions are informed by the risks associated with agriculture. The following section is intended to clarify the roles of the actors involved, as well as the choices they must make.

Farmers generally adopt a straightforward approach to selecting risk management strategies. These range from measures in the field (good agricultural practices, risk-reduction technologies, etc.) to “self-insurance” (for example, the decision to save during a good harvest to offset possible losses during later harvests) and the transfer of risks beyond their control to firms which specialize in absorbing them —namely, insurance companies.

Financial entities and input providers that offer credit to farmers do so based on their clients’ credit history, as well as the inherent risks of the activity to be financed. Certain guarantees are required, and the creditor agrees to an established level of risk, which is reflected in the interest rate of the loan. When a farmer purchases an insurance policy, the right to collect the payout, should a loss occur, is ceded to the financial entity. This should be reflected in the interest rate, which is based on the “risk” of default—such as would occur, for example, in the event of an adverse weather event—and serves to secure the loan.

The insurance industry offers coverage based on risk assessments by region and product. Premiums must be set at a rate that allows insurance firms to cover the capital at risk and still remain in operation. Premiums are usually calculated generically, although price reductions may be offered based on commercial loyalty (on the part of the farmer), use of risk-reduction technologies or application of good agricultural practices.

The role of the government in this regard must be considered from different perspectives. Its protective role in the face of catastrophic events is paramount, given its social responsibility toward victims. Appropriate mechanisms, such as national or regional emergency committees, are key to ensuring that such situations are addressed as effectively and efficiently as possible.

To fulfill its role, the government must be capable of generating climate-risk-management data. This is where the meteorological, statistical, technological and other types of information

generated by government agencies come into play. Unfortunately, these data tend to be scattered, and are therefore useless from a risk-management perspective. One of the pressing tasks at hand is the efficient coordination of data sources. Adequate information is the single most important factor in bringing about a change of attitude among public and private stakeholders. It is the only path from crisis management to risk management.

In terms of the economic role of the state as a mitigator of adverse weather events, countries employ a variety of tools, from the creation of emergency funds (which may or may not be linked to insurance systems) to direct intervention by the government as an insurer or reinsurer. The establishment of some type of link between financial aid and insurance seems to be the most effective approach. The Mexican model may be instructive in terms of determining the role of the government in agricultural insurance. The new role of AGROASEMEX as a direct reinsurer or insurer of governments and municipalities, using index insurance for catastrophic events, is one example. The assumption of risks that are less likely to be realized but have a greater potential to cause devastation is not only an efficient form of ex-ante intervention, but also a direct incentive for the involvement of private insurance firms, because it relieves them of responsibility for catastrophic damage.

The public sector also plays an economic role by offering premium subsidies to stimulate the agricultural insurance market. The catastrophic nature of agricultural risks is reflected by the fact that premiums are expressed as percentages (other risks, such as those covered by vehicle and home insurance, are expressed as fractions of a thousand). Given the high cost of premiums and the apparent absence of a “culture of insurance” among farmers, the government would be well advised to cover a portion of premium costs, to encourage farmers to acquire insurance. Subsidies can be implemented in a variety of ways. Spain offers one interesting example. Subsidies in that country vary, depending on whether farming is a “main occupation,” whether or not the farmer belongs to a collective, and whether he or she is below a certain age, among other criteria.

Another way of influencing the insurance market through subsidies is to focus on poor, small-scale farmers. While this may be a viable approach, it should be noted that, from an insurance-theory and business perspective, insurance policies should target the largest possible pool of farmers (i.e., farm sizes), bearing in mind the law of large numbers and the principle of mutuality.

The lack of a “culture of insurance” among large-scale farmers, coupled with the absence of incentives for them to invest in such financial tools, hinders the implementation of one of the basic principles of insurance: that which says that risk should be diluted to the highest degree possible, to allow for payouts when necessary. Because aid programs should target the poorer sectors of the population, it may be advisable to enact financial support mechanisms for an established term. For example, gradually declining premium subsidies could be offered for a five-year period, to facilitate access to insurance for medium-scale farmers, if nothing else. The objective would be to create the aforementioned “culture,” thus proving to farmers that, rather than being an unnecessary expense, insurance is an input that protects their income.

4.1.2. *Technical/commercial considerations*

Agricultural stakeholders—particularly those who must deal with agricultural risks—can be brought together in a variety of ways. International experience has shown that the most effective way of ensuring the sustainability of a climate-risk coverage system is to establish policies that transcend any one administration. Spain offers one example of this approach. In that country, thanks to the adoption of the Agricultural Insurance Act, a solid system is in place which allows, among other things, for joint public and private participation. An insurance board (Agroseguro), comprised of representatives from several private insurance firms and the government, serves as a risk-management pool, operating on a co-insurance basis. Insurance is voluntary; the same policies are sold at the same price, and risk is assumed in proportion to each board member’s stake. The Spanish system also features an Insurance Compensation Consortium, an entity attached to the Ministry of Finance, which reinsures the pool, covering hazards that exceed the established limits.

Mexico has also established a public-private insurance management system, with well-defined roles for each sector and a unique system of farmer-supported insurance funds that are authorized by law to operate as insurers and subject to state evaluation.

Given the examples described above, it would appear that a public-private system is the most effective approach to designing and implementing risk coverage tools for the agricultural sector.

The market-based system is characterized by low differentiation between insurance tools for different crops and regions, flexible prices, high competition and a non-existent tax burden. In Argentina and Uruguay, where agricultural insurance is widespread, priority is given to targeted (non-systemic) risks. These are risks that can be assumed by the insurance sector without state support; for example, hailstorms and related events (strong winds, frost damage, fire damage, etc.). Save for a few exceptions, neither systemic events (such as drought or excess rainfall) nor the activities of small-scale farmers are covered. The same is true of activities with high administrative or commercial costs, or those that involve risking large amounts of capital (for example, capital-intensive production activities).

Insurance firms are understandably inclined to avoid clusters of risk (for example, small- or medium-scale farmers involved in capital-intensive production activities close to market), and are reluctant to cover extensive enterprises exposed to systemic risks. Such is the case with stock raising, which involves—among other things—the simultaneous exposure of large quantities of capital to systemic risks. Designing an appropriate coverage system for such activities requires an enormous investment in data-generation and analysis infrastructure.

State-run systems, on the other hand, are characterized by an absence of competition, with all the supply limitations, high fiscal costs and exposure to sectoral demands—many of which lack any technical or commercial basis—this entails.

Public-private systems are characterized by the following:

- (a) Low fiscal cost;
- (b) Long-term stability;
- (c) Limited exposure to sectoral pressures because farmers are included, in one way or another, in the design and management of the system.

4.2. Some suggestions for the development of agricultural risk management systems

The findings of an IICA technical report, commissioned to identify agricultural risk-management needs in LAC—particularly with regard to the design and implementation of agricultural insurance—can be summarized as follows:

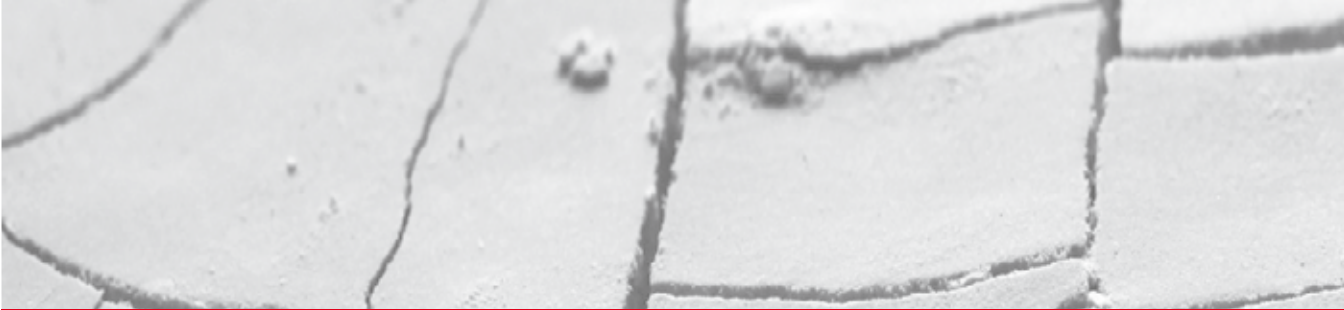
- a. Training in agricultural risk management is needed, and special attention should be paid to the diffusion and exchange of national and international experiences.
- b. Risk management tools should be designed, based on a comparative analysis of successful international experiences.
- c. Assistance should be provided for the design of specialized units or agencies, as well as the training of human resources.
- d. Assistance should be provided to institutions for the design and implementation of pilot agricultural insurance projects.
- e. Tools should be evaluated for consistency, and their impact on beneficiaries should be assessed.

Regional and international inter-institutional technical networks are also needed to coordinate efforts to design and develop agricultural risk-management tools, approaching them as regional public goods.

The slow progress observed is probably attributable, not only to the complexity of agricultural risk management and insurance, but also to a dearth of information on the subject. Training is lacking, and few academic and research programs in LAC thoroughly address production risks, or their economic and social consequences.

If these shortcomings are addressed, countries may find themselves better equipped to, using cogent arguments, persuade the public and production sectors of the importance of agricultural insurance to the stability of farmers' incomes, and, hence, to the development of the sector.

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