

Agricultural Insurance Feasibility Study in the Caribbean

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Executive Summary

CARICOM consists of 15 member countries in the Caribbean region, each unique in its geographical size, agricultural sector, and production system. Most of the member countries are small in size and population, and all countries are exposed to various risks. Disaster events such as hurricanes, floods, storms, excess rainfall, and droughts occur regularly in the region affecting agricultural producers. Currently there are no established agricultural insurance programs at the country level, and the national governments (as evidenced by a deep dive into Grenada and Guyana) do not have action plans in place for the introduction of agricultural insurance programs. At the same time, the governments of these countries understand the importance of agricultural insurance as an effective risk management instrument to support agricultural producers recovering after disaster events.

The review of the agricultural sector in Grenada and Guyana revealed that countries in the Caribbean region each have differing needs with regard to agricultural insurance. This is due to differences in agricultural production practices, variations in crop mix, different sizes of crop and livestock farms and different risk exposure. Therefore, one single regional agricultural insurance program or a set of standard insurance products may not suit the needs of the individual countries in the Caribbean region.

In order to fully undertake an agricultural insurance program in any country, a large amount of data is required on agricultural production and weather. Although some required data is available, it must be arranged in the data sets which can be used for risk profiling, insurance product design and premium rate calculation. Work can be challenging and labor-intensive for individual countries to undertake. Despite the variation within the region, CARICOM can play a leadership role in the data collection and processing activities for all its member states. When these activities are undertaken at the regional level, it will help to identify issues with data and develop procedures for data sets compilation for agricultural insurance purposes for CARICOM member states.

Many of the Caribbean countries including but not limited to Jamaica, Trinidad & Tobago, Dominica, and St. Vincent and the Grenadines have reasonably developed insurance sectors with strong insurance supervision in place. The countries specialize in specific crop types depending on their terrain (e.g., nutmeg and other spices in Grenada; rice and sugar in Guyana), but for the most part, the crop and livestock farms' size remains very small (i.e. less than one hectare in Grenada and less than 6 hectares in Guyana, on average). The small farm size may pose a challenge for the introduction of agricultural insurance programs. The national governments are supportive of agricultural insurance in general and can play a role in ensuring that program development and introduction is successful and includes support from the private sector. All these factors must be considered when designing agricultural insurance programs in the countries in the Caribbean region. CARICOM assistance will be instrumental in knowledge accumulation and sharing between the countries in the region.

CARICOM proved to be an effective intergovernmental organization promoting economic integration and cooperation among its members. In addition to coordinating data collection, review, and knowledge-sharing, CARICOM may consider initiating a regional agricultural insurance program for the entire Caribbean region, which will address the varying needs of each Member State. A regional agricultural insurance program can be implemented through the Caribbean Catastrophe Risk Insurance Facility (CCRIF) which is a multi-country risk pool, established in 2007, offering parametric insurance instruments to Caribbean and Central American governments to manage

disasters like tropical cyclones, earthquakes, excess rainfall, etc. CCRIF has technical capacity and specific insurance knowledge and skills which can be used for initiating a regional agricultural insurance program to assist governments in managing risks in the agricultural sector.

A regional agricultural insurance program will provide various benefits for CARICOM Member States, including:

- a) lower reinsurance rates if the country specific programs are pooled together and reinsured as a regional program;
- b) quicker introduction of insurance program after technical capacity in the area of agricultural insurance is developed in the region through CARICOM;
- c) standard approaches to insurance products design which will have a positive impact on reinsurance capacity availability;
- d) premium rate setting can be completed by the fewer actuaries using standard actuarial methods;
- e) the accumulated regional experience will allow for knowledge sharing between Member States, on establishing country-specific agricultural insurance program review and the adoption of the necessary actions to enhance the agricultural insurance program's performance;
- f) more efficient use of loss adjustment resources which is critical in the aftermath of disaster events.

CARICOM can be a leader in building the agricultural insurance technical capacity, exchanging lessons learned and providing advisory support to the national governments and insurance sectors. CARICOM can take steps to improve the enabling environment for agricultural risk management and to allow for the identification of solutions that have the best chance of being feasible and effective in the context of the Caribbean region. This may include legislative action on agricultural insurance to be verified and adopted by each member state, with an overall goal of detailing each national government's agreed support to the agricultural insurance sector.

The initial steps required to introduce agricultural insurance programs may include the following actions:

- a) the development of agricultural risk profiles for individual countries;
- b) development of a strategic action plan to introduce agricultural insurance programs in the individual countries based on the agricultural sector specifics and risk management needs;
- c) assessment of the local insurance market capacity and identifying the most suitable model for an agricultural insurance program for each country;
- d) adoption of a plan for the development of a regional agricultural insurance program to pool risks from different countries for effective reinsurance solutions under the CARICOM leadership;
- e) establishment of a regional training program on technical aspects of agricultural insurance for capacity building in the region.

Key recommendations suggested to the Caribbean countries and CARICOM include the introduction of a coordination unit to provide technical support on agricultural insurance aspects to the member states; foundation of a regional agricultural insurance company or a facility to accumulate risks from the member countries and reinsure the whole regional agricultural insurance program at the international reinsurance market; organization of regular events like conferences to inform the member states on the development of agricultural insurance programs in the region as well as to sharing the international experience on agricultural insurance. It is also recommended to implement a permanent training program on technical aspects of agricultural insurance which can be established at the insurance training institutions in Jamaica or in Trinidad and Tobago, for example.

Conditions of Success

Based on an analysis of agricultural insurance programs worldwide (examples included in Annex 3), the following conditions of success were identified as critical aspects required for any country to develop and manage a successful agricultural insurance program.

| Condition | Detail |
|--|---|
| Legal environment and government support | A special law on agricultural insurance or legislative acts exists to regulate agricultural insurance. Legislation recognizes index and/or parametric insurance to be implemented in the country at farm level. |
| Insurance supervision | Regulatory regime defines agricultural insurance as a separate risk class or sub-class (soft class) with strong supervision capacity. This designation is necessary to collect information about agricultural insurance operations. |
| Agricultural sector priority | Agricultural production is a priority area for the government – food security, export revenues, rural development and employment, increase of commodity production using new technologies. |
| Government support programs to the agricultural sector | Government provides different types of subsidies to agricultural producers and utilizes risk management instruments to protect public expenditures for supporting agriculture. |
| Government support to agricultural insurance | Government provides long-term support to an agricultural insurance program. This often includes the presence of a strategic plan for agricultural insurance development, with a clear idea of the model of how an agricultural insurance program can be introduced and managed. |
| Availability and storage of agricultural production and weather data | Historical agricultural production and weather data is available in electronic format. Actual data is collected and stored according to the established procedures or protocols. |
| Minimum size of commercial agricultural production | Reasonable number of farms (hundreds) produce commodities for domestic and export markets. The annual value of agricultural production is greater than 5 million USD. |
| Established insurance sector | Insurance companies offer various insurance products and have risk appetite for new insurance products. |
| Insurers' technical capacity | The insurance companies have knowledge and skills to offer agricultural insurance products – product design, underwriting, loss assessment and claims handling. |
| Financial institutions working with agricultural sector | Financial institutions offer loans to agricultural producers and require additional risk management instruments for loan repayment risk management. |

These conditions of success have been applied and analyzed in Grenada and Guyana based on the fieldwork, however, the same conditions apply generally across countries. These same conditions of success can be used as a model to assess other CARICOM countries to evaluate each country as agricultural insurance programs are developed in the region. Should CARICOM undertake the development of a regional agricultural insurance program as recommended above, each country must be assessed according to these conditions to determine the knowledge, regulatory, and miscellaneous gaps that exist which may impact the success of any program that is introduced.

As an example of another regional intergovernmental organization consisting of many island nations that is working to implement and promote agricultural insurance, a separate section of the report provides an overview of the activities currently being undertaken to promote agricultural insurance in the Association of Southeast Asian Nations (ASEAN) region. This section provides an overview of the ASEAN agricultural insurance setting and recommends certain actions to be implemented differently in the Caribbean region to achieve a higher level of cooperation between countries in the introduction of agricultural insurance programs.

Annex 2 provides an overview of key factors for successful agricultural insurance programs based on the international practice, with additional recommendations on the arrangement of the programs with government support, use of standard insurance products, and recommendations on government support measures.

Annex 3 is dedicated to the overview of the main models of the agricultural insurance arrangements practiced in the countries with the established programs. This section discusses the advantages and the challenges of each model reviewed with the recommendations to CARICOM and member countries.

Introduction

The United States Agency for International Development (USAID) Mission for the Eastern and Southern Caribbean (USAID/ESC), which serves 11 countries in the Caribbean, is working with CARICOM via a joint food security action committee to address worsening food and nutritional security in the region. Responding to CARICOM's priority of addressing food, fuel, and price shocks in the region, impacted by the war in Ukraine, USAID/ESC engaged Improving Economies for Stronger Communities (IESC) through the USAID-funded Farmer-to-Farmer Leader with Associate award to carry out this study starting in January 2023. The consultant team engaged for this study consisted of Roman Shynkarenko, team lead, and Candice Ramessar, local facilitator.

This study included a deep dive of the status of agricultural insurance in the Eastern and Southern Caribbean, with a focus on Grenada and Guyana, in order to determine the feasibility of insurance models for the Caribbean.

The assignment included desk research of publicly available information and data, and review of other sources of information followed by fieldwork in Grenada and Guyana to collect additional information and feedback from key stakeholders in the public and private sector.

Key stakeholders in each country were identified in Guyana and Grenada who may support the development of agricultural insurance programs. In order to collect information and feedback on the status of agricultural insurance from key stakeholders, the Consultant team conducted meetings in Guyana and Grenada in June 2023.

Methodology

In order to recommend activities for CARICOM member states and CARICOM to undertake to advance agricultural insurance in the region, a review of agricultural insurance activities in Guyana and Grenada was completed using a multi-stage approach.

Initially the Consultant collected the publicly available relevant data and information. This included the review of the information available from Internet-based resources, and the information, studies, presentations, reports, and other sources provided by Farmer-to-Farmer program implemented by IESC.

The Consultant collected additional information and data during the fieldwork in Guyana and Grenada during June 2023. This included information obtained during meetings with selected key stakeholders, including:

- Farmers;
- Farmer organizations;
- Government agencies – Insurance regulator, Ministry of Agriculture, Ministry of Finance, and other relevant agencies;
- Financial institutions offering loans to farmers;
- Insurance companies.

Literature Review

There is little information available online that provides an overview of agricultural insurance activities in the Caribbean region, especially Grenada and Guyana. However, the information available for review provided important context on past initiatives undertaken and relevant context to be considered in the development of agricultural insurance programs.

The Inter-American Institute for Cooperation on Agriculture (IICA) published the Proceedings of the Symposium on Disaster Risk Management which was conducted on June 16-19, 2010. In the publication, IICA highlighted the importance of agricultural insurance for the Caribbean region. IICA pointed out that the region had limited technical capacity of trained policy makers, policy advisors, public technicians, private insurance companies, development banks, and producer organizations in planning, developing, implementing, and monitoring risk mitigation measures for agricultural production and marketing, which has significantly impacted the establishment of sustainable and profitable disaster risk management schemes in the Caribbean.¹ This publication provides information about severe risk events in Grenada and Guyana, including hurricanes and flood events.

The publication included recommendations for good disaster risk management practices to be pursued. These recommendations are still valid now and include²:

1. Support sustainable institutional structures and good governance by capacity enhancement;
2. Promote risk identification, monitoring, and early warning programs for the agriculture sector in the Caribbean region;
3. Promote and support the improvement in capacity of technical and physical risk mitigation;
4. Building resilience in the agriculture sector by promotion of innovative, knowledge and public awareness of the agriculture sector;
5. Design and implement risk sharing and risk transfer mechanisms for the agriculture sector;
6. Encourage capacity enhancement in preparedness, effective response, and sustainable recovery for the agriculture sector in the Caribbean region.

In March 2013, The World Bank published a technical note on The Agricultural Insurance Market in the Caribbean.³ This document concluded that the lack of agricultural insurance instruments in the Caribbean was the result of several factors. Government officials and members of the financial and agribusiness sectors were unaware of the potential benefits and limitations related to agricultural insurance instruments. Insufficient technical capacities in the public and financial sectors to design and administer agricultural insurance contracts further constrained the development of general insurance instruments.

In May 2010, the World Bank published a report 75652 “Guyana Agricultural Insurance Component Pre-Feasibility Study Report”. In this report, the analysis of the agricultural sector of Guyana is provided with the recommendations developed for potential solutions for an agricultural insurance program. Most of findings and recommendations remain valid in 2023, including:

¹ Proceedings of the symposium on Disaster Risk Management (2010, June 16- 19: Jolly Beach, Antigua and Barbuda) / IICA – Port of Spain: IICA, 2010. ISBN 978-92-9248-301-2

² see footnote 21

³ number 183, ref number 76205

- Data is extremely important for the introduction of an agricultural insurance program, but it lacks in Guyana;
- An appropriate Paycheck Protection Program (PPP) framework must be introduced to promote agricultural insurance;
- There are needs for amendments to the insurance regulatory framework;
- Guyana has a complex landscape for agricultural insurance, including small farm size, specific weather patterns and risk profile, different insurance needs for various types of agricultural assets (crops and livestock) and types of farmers, etc.;
- Careful selection of insurance solutions should be made, including individual level named, multi-peril and area-yield index products and meso level products, etc.

This report specifically highlights the needs in training and developing agricultural insurance technical competencies in Guyana with the specialists at the government agencies, financial institutions, and insurance companies to be equipped with the relevant knowledge and skills for effective introduction of agricultural insurance program. FAO report “Situation Report for Jamaica, Grenada and Saint Vincent and the Grenadines” published in 2018, provided an analysis of the agricultural sector in Grenada with the recommendations for the introduction of the agricultural insurance program. The suggested starting point was “to focus on capacity building and on the implementation of specific sectoral programmes that would allow the local communities and governments to familiarize themselves with the operation of agriculture insurance.” Such a starting point could then gradually lead to the development of more comprehensive strategies that would suit the context of the country.

FAO recommended initially piloting a nutmeg insurance product, as it is the largest export crop in the country with an annual value of over US \$10 million. FAO suggested focusing on catastrophe protection of the nutmeg trees, rather than on seasonal crop production losses. Such an approach should assure that “farmers could be provided with a safety-net mechanism that would allow to cover the potential clearing, planting and reestablishment costs of the tree plantations, and also potential business interruption compensation to cover for the loss of income that would follow the destruction of nutmeg trees.” “Appropriate additional investigations could assess the possibility of complementing the named-peril indemnity approach with an indexed wind-speed protection layer that would automatically trigger an initial payout in case of major catastrophes. Appropriate mapping of nutmeg acreage and tree counts could also allow the scheme to be transparent and objective and, therefore, more attractive for insurers and international reinsurers”.⁴

FAO’s recommendation to implement broader capacity building activities for the benefit of the various stakeholders interested in agricultural insurance is important to consider, as it will result in wider acceptance of the program and a pathway for development in the future.

⁴ FAO report on agricultural insurance

Grenada Case Study and Profile

Grenada is a small country consisted of a series of islands located in the Caribbean, roughly in-between Trinidad and Barbados.⁵ Due to the terrain of the nation being formed mostly due to volcanic activity and movement, the physical geography of Grenada is comprised of mountains, covered over by plenty of rainforests thanks to the tropical climate, alongside dry lowlands, and coastal mangroves.⁶

Grenada hosts a reputation for being hot and humid throughout the year, yet consisting of slightly cooler or warmer seasons, alongside dry and wet rain seasons. December to March tend to stay slightly cooler and drier, while temperatures during June to November are warmer and receive higher levels of precipitation. Average rainfall falls to around 1500mm annually.⁷

Similar to other islands in the Caribbean region, Grenada is susceptible to hurricanes, storms, landslides in mountainous regions, flooding, etc. These issues are closely linked with climate change, and the influence of rising sea levels and rainfalls with increased intensity.⁸

The most prominent natural disasters in recent history were Hurricane Ivan and Hurricane Emily during 2004 and 2005, respectively. Hurricane Ivan had a particularly harsh impact, destroying a significant number of nutmeg trees during that time and costing US \$44.6 million in damages to the agriculture sector.⁹ Later in 2005, Grenada was hit by Hurricane Emily. While this natural disaster was not as destructive as the previous Hurricane Ivan, farmers, crops, and livestock still suffered with fruit trees destroyed, fields flooding, river erosion, damage to infrastructure, and other effects.¹⁰ This event caused agricultural damages of ECD \$45 million, equating to over \$16 million USD.¹¹

Grenada's economy is currently dominated by the tourism industry; however, agriculture is still heavily dependent on for food supply and export purposes, those mostly being spices, cocoa, various tropical fruits, etc. Their largest export is nutmeg, which they are known for being one of the largest nutmeg growers, second only to Indonesia and still producing around a third of the world's supply.¹²

Agricultural Sector in Grenada

⁵ <https://www.countryreports.org/country/Grenada/geography.htm>

⁶ <https://grenadaembassyusa.org/grenadas-geography/>

⁷ <https://www.climatestotravel.com/climate/grenada>

⁸ <https://climateknowledgeportal.worldbank.org/country/grenada/vulnerability#:~:text=The%20major%20natural%20disasters%20that,or%20through%20cliff%20side%20erosion.>

⁹ https://cimh.edu.bb/~monthly/CarAgMet2/impacts/Grenada_Gren/1/Ivan_impact.htm#:~:text=On%202007%20September%202004%20Hurricane,a%20breakdown%20of%20these%20losses.

¹⁰ <https://www.eird.org/isdr-biblio/PDF/Grenada%20Macro-socio-economic%20Emily.pdf>

¹¹ <https://reliefweb.int/report/grenada/hurricane-emily-sitrep-5-hurricane-emilys-toll-caribbean-emerging>

¹² <https://odinland.vn/grenada-economy/?lang=en>

The agricultural land in Grenada was reported at 11,003 hectares by FAOStat in 2021. About half of this area is used for production of major crop types like coconuts, nutmeg, mace, cardamom, cocoa beans, and bananas. Other crop types are grown in an area of less than 500 hectares.

Table 1. Crop production in Grenada in 2021 (FAOStat)¹³

| Crop type | Area in hectares | Production (tons) |
|-------------------------------------|------------------|-------------------|
| Coconuts, in shell | 2,027 | 7,215 |
| Nutmeg, mace, cardamoms, raw | 1,485 | 705 |
| Cocoa beans | 986 | 703 |
| Bananas | 958 | 3,253 |
| Other crops (35 crops) | 5,574 | 33,550 |
| Total | 11,003 | 45,426 |

Agricultural activities in Grenada are commonly carried out on small scale with local farms having the size of roughly 2.54 acres (1 hectare). Out of the 10,000 farmers in the country, only one third are women and approximately 80% of women are farming less than 0.2 ha of land. A large portion of smallholders are part-time farmers using traditional technologies and approaches that regard agriculture as an additional source of income. Farmers also belong to the oldest age groups, with low entry of young men and women. Employment in agriculture has been a last resort for all poor but it is no longer appealing for younger generations. Fishery activities in poor communities are largely artisanal and small-scale in nature, harvesting a tropical multispecies stock.¹⁴

The agricultural acreage is devoted to roughly 25% nutmeg production, followed by 13% focusing on miscellaneous fruits, vegetables, and root crops.¹⁵ Different data sources note varying amounts of agricultural area dedicated to nutmeg, highlighting the difficulty in collecting data on agricultural activities in Grenada.

Nutmeg, mace, and cardamom are examples of some of the most highly exported and widely grown spices in Grenada. In 2020 alone, with 1,379 ha of produce harvested, these crops produced 656 tons of spices. Bananas and cinnamon are also a large part of the agriculture sector in Grenada. Yet again in 2020, 2,458 tons of bananas were produced after 724 ha were harvested, while 83 tons of cinnamon were gathered from 125 ha.¹⁶ These are examples of some of the most highly exported agricultural products from Grenada.

In Grenada, nutmeg and mace are mandatorily exported by the Grenada Cooperative Nutmeg Association (GCNA). GCNA purchases nutmeg and mace from producers, prepares the product for export and ships it to international markets. Cocoa exports are also handled through a dedicated statutory body: the Grenada Cocoa Association (GCA). All nutmeg and cocoa producers are required to be registered members of the respective associations, which provide them with critical services: technical assistance, input supply, price setting, purchasing of product from producers,

¹³ <https://www.fao.org/faostat/en/#data/QCL>

¹⁴ IFAD County Strategy Note Grenada 2021

¹⁵ [https://agricarib.org/grenada-](https://agricarib.org/grenada-2/#:~:text=Agricultural%20Production&text=25%25%20%E2%80%93%20cocoa%20and%20nutmegs,1%25%20%E2%80%93%20livestock)

[2/#:~:text=Agricultural%20Production&text=25%25%20%E2%80%93%20cocoa%20and%20nutmegs,1%25%20%E2%80%93%20livestock](https://agricarib.org/grenada-2/#:~:text=Agricultural%20Production&text=25%25%20%E2%80%93%20cocoa%20and%20nutmegs,1%25%20%E2%80%93%20livestock)

¹⁶ <https://www.fao.org/faostat/en/#data/QCL>

fermenting and drying, credit, manufacturing of value-added products and exporting to overseas buyers. Minor spices, such as cinnamon, cloves, allspice, etc., are exported through the Minor Spices Cooperative Marketing Society (MSCMS). Other products not exported by the statutory bodies mentioned above are traded by the Marketing & National Importing Boards (MNIB). MNIB is active in exporting fresh produce but also in importing commodities (sugar, milk, rice, etc.). In addition, MNIB engages in value-adding activities by processing and retailing part of the products that it purchases, and it also operates lending and saving schemes for its clients.¹⁷

The information about the livestock sector in Grenada is scarce. According to the Environmental statistical unit of the Central Statistical Office (under Ministry of Finance) the number of livestock in the country is limited. Although hundreds of farmers keep agricultural animals, the number of animals per farm is very low, (eg. 3 cows per farm, 5 sheep, 6 goats, 9 pigs, etc.). Such structure of the animal sector is not attractive to the insurance sector if to consider insurance products for individual farmers. It may be more reasonable to use disaster management instruments targeted at the rural population and communities to protect livestock farmers from the negative impact of severe weather. In view of this finding, this report will concentrate on crop insurance only.

Table 2. Statistical data on the livestock sector in Grenada¹⁸.

| Livestock | 1995 | | 2012 | |
|-----------|--------------|------------------|--------------|------------------|
| | No. of Farms | No. of Livestock | No. of Farms | No. of Livestock |
| Cattle | 1,750 | 4,368 | 673 | 1,973 |
| Sheep | 3,299 | 13,052 | 2,173 | 10,912 |
| Goats | 1,896 | 7,004 | 2,445 | 12,736 |
| Pigs | 1,090 | 5,338 | 575 | 4,638 |
| Rabbits | 696 | 3,982 | 518 | 5,013 |
| Chicken | 3,641 | 81,688 | 1,213 | 77,388 |

Source: 2012 Agriculture census, Ministry of Agriculture, CSO Ministry of Finance and Energy

Insurance Sector in Grenada

The insurance business in Grenada is regulated in accordance with the Insurance Act, CAP 150 of the 2010 Continuous Revised Edition of the Laws of Grenada. The Grenada Authority for the Regulation of Financial Institutions (GARFIN) is a Statutory Body created by Parliament by way of the Grenada Authority for the Regulation of Financial Institutions Act No. 5 of 2006. GARFIN regulates the activities of insurance companies, pension funds, betting companies, credit unions, money service companies and other non-bank financial services institutions.

The general insurance business is conducted according to seven risk classes, including property, motor vehicles, pecuniary loss, personal accident, marine, aviation and transport, liability and health insurance. The general insurance market is dominated by property insurance with shares in the total market premium amounting to EC\$55 million in

¹⁷ Situation Report for Jamaica, Grenada and Saint Vincent and the Grenadines, FAO, 2018

¹⁸ Compendium on environmental statistics, 2020, Source - <https://unstats.un.org/unsd/envstats/Compendia/GrenadaCompendium2020.pdf>

2021 or 53% of the total GI premium. Motor vehicle insurance is the second largest GI segment with the premium amounting to EC\$35 million or 34% of the total GI premium in 2021.

As of March 2023, there are 26 companies licensed to conduct insurance business in Grenada under the Insurance Act CAP 150. The general insurance sector comprises of 14 insurance companies of which one is a composite company (offering both general and life insurance) and one is an Association of Underwriters. The life insurance sector comprises of 12 companies of which one is a composite company and two are under judicial management and cannot write any new business.¹⁹

Out of 26 registered and licensed insurance companies in Grenada, 14 are incorporated as external companies, 3 insurers are locally owned, while 9 insurance companies are subsidiaries or members of regional insurance groups. There are 10 registered insurance agent companies that can offer insurance services only as the appointed agents by a specific insurance company (tied-agents). There are 18 insurance broking companies in Grenada. Individuals working as insurance sales representatives (85 in 2021) must be registered at GARFIN and they can work only for a specific insurance company after they register their affiliation at GARFIN. There is only one loss adjustment company registered in Grenada – Global Consultants. There are no registered actuaries in Grenada.

The underwriters are not subject to registration by the insurance regulator. According to GARFIN and representatives of insurance companies, there is lack of experienced underwriters in Grenada. The insurance products are usually designed by the insurance company staff using examples from other jurisdictions or the insurance products are designed by the main office (in case of external and foreign owned insurance companies).

Any insurance products must be approved by GARFIN prior to being offered on the market. Any modifications of the insurance product also require the approval of the insurance regulatory agency. There is no specific regulation in respect to index or parametric insurance. The new parametric or index insurance products must be approved by GARFIN and the insurance regulator feels comfortable to approve such type of insurance products because they have sufficient authority to make such regulatory decisions.²⁰

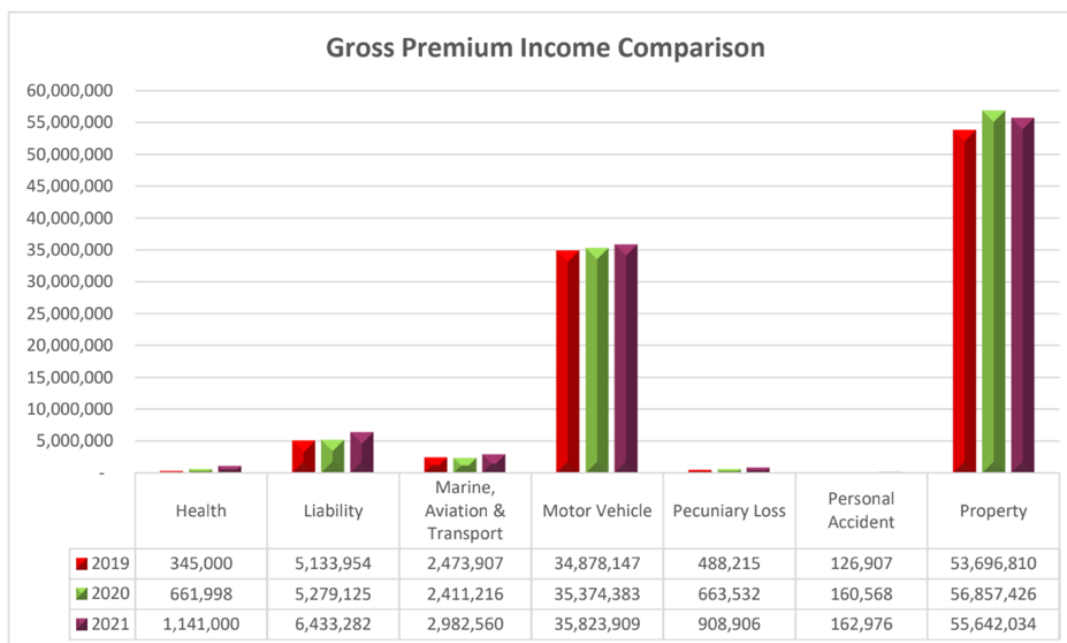
According to GARFIN, gross premium for the insurance industry amounted to EC\$152.3 million in 2021. General insurance companies collected EC\$103.1 million in premiums while the life insurance sector wrote \$49.2 million in premiums. The insurance sector survived COVID-19 turbulence reasonably well with the total market premium increasing in both 2019 (EC\$144M) and 2020 (EC\$149M).²¹

¹⁹ <https://www.garfin.gd/index.php/regulated-sectors/insurance>

²⁰ Comments received during a meeting with GARFIN on June 16, 2023

²¹ Insurance Supervisor report 2021, <https://www.garfin.gd/index.php/publications/supervisor-of-insurance-reports>

Graph 3. General Insurance market structure according to the risk class premium.²²



According to the regulator and insurance companies, the general insurance companies currently do not offer agricultural insurance products.²³ Although there is no separate risk class for agricultural insurance, the insurance companies can underwrite agricultural policies under property insurance class.

In 2021, the general insurance market claims were settled at a total of EC\$17 million with the loss ratio of 16.5%. According to GARFIN, the GI market loss ratio in 2020 was 13.4% and in 2019 it was 13.9%.²⁴ These loss ratios are relatively low and indicate potential significant profits for the insurance companies. It is possible the insurers maintain additional reserves for future catastrophic losses, remembering the disastrous 2004 and 2005 years, but more information on this must be collected to verify. In the international insurance practice, the loss ratios for the countries with developed insurance markets are considered reasonable, within the range of 60-70%.^{25,26} The loss ratios may differ for different insurance business lines and the loss ratios are usually lower in the countries with developing insurance markets.

Motor vehicle insurance had the highest total claim sum (EC\$11.8 million) paid to the customers with the loss ratio of 34% in 2021. Property claims amounted to EC\$2.2 million with a loss ratio of 4% in the same year.

²² see footnote 14

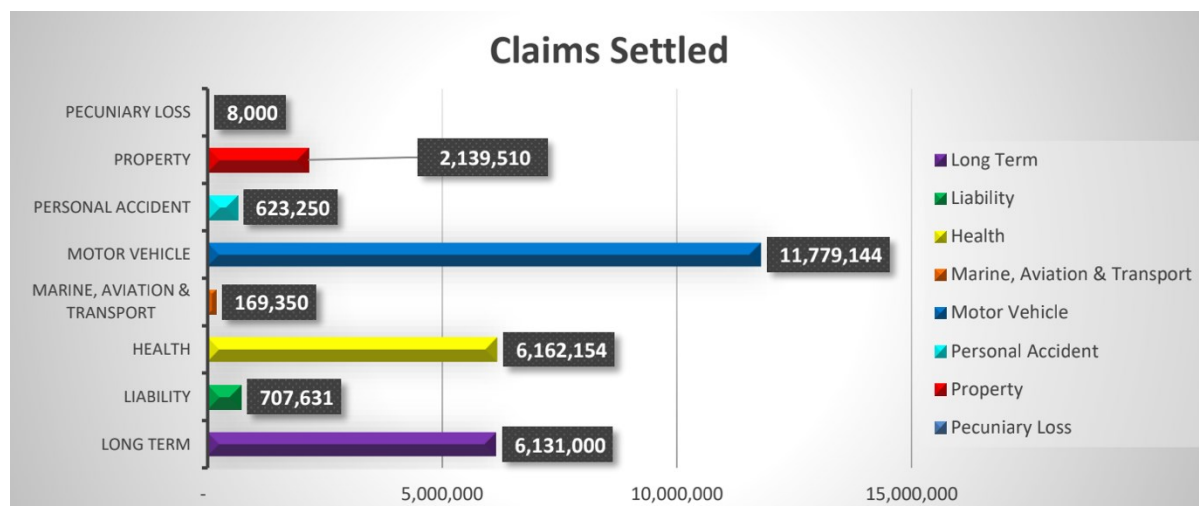
²³ meeting conducted by the Consultant during the country mission on June 12-16, 2023

²⁴ loss ratio is a key insurance performance indicator which is calculated dividing the claim sum by the premium sum. It is also often referred to as a net loss ratio.

²⁵ <https://www.squareone.ca/resource-centres/insurance-glossary/loss-ratio#:~:text=The%20loss%20ratio%20is%20often,60%2D70%25%20is%20common.>

²⁶ <https://www.apra.gov.au/news-and-publications/apra-releases-general-insurance-statistics-for-march-2022>

Graph 4. Claims settled by the insurance companies in Grenada in 2021 (ECD)²⁷



Grenada's insurance sector lacks loss adjustment capacity. The regular claims are addressed by the trained in-house staff. The large and complex claims are managed by the insurance companies using loss assessors outsourced from other countries, including Jamaica, Trinidad and Tobago, USA (Miami) and even the UK. If the agricultural insurance program were introduced in Grenada, the insurance sector would need access to qualified agricultural loss adjusters which would not be easy to get in the Caribbean region. The best option may be to contact international loss adjustment companies (e.g. Crawford), however such companies' resources may be limited.

The key factor of the quality loss adjustment for agricultural insurance products is the availability of loss adjusters within 7-10 days after the risk event when the assessors must visit the farms that experienced crop damage. This timeframe is required to understand the capacity of plants to recover after a risk event. Farm visits occurring too early or too late after the risk event may not allow even experienced loss adjusters to objectively assess crop damage when it occurs. The timeliness of the loss adjustment visit is even more critical for livestock and aquaculture insurance, for which the assessment must be done as soon as possible. With no current loss adjustment capacity in Grenada, it is questionable if the loss assessors may be outsourced from other countries in a timely manner.

Current Status of Agricultural Insurance in Grenada

The Consultant found no evidence of an established agricultural insurance program in Grenada. The analysis of GARFIN documents and publicly available web information indicated that there are no agricultural insurance products currently offered in Grenada.

Grenada has limited options for developing a full-scale national agricultural insurance program with significant potential for the insurance sector. This is mostly due to the limited agricultural production area of 11 thousand hectares, and the lack of ability to greatly expand production area as Grenada is an island nation. Although the

²⁷ it is recommended to check claims data on health insurance with GARFIN.

increase of productivity may help in increasing agricultural insurance volumes if developed, the agricultural insurance program will remain small according to international standards.

According to GCNA and GCA, the cocoa and nutmeg sectors have an annual turnover of EC \$20 million (\$7.4 million USD).²⁸ At a hypothetical 5% premium rate, this will generate only EC \$1 million (\$370,000 USD) of premium to the insurance companies. This may be an interesting additional business line for the local insurance companies with the cross-sales options to increase the general insurance business premium pool, but it will be a challenging undertaking to seek the coverage capacity at the international reinsurance markets.

Due to the natural limitations in agricultural production and correspondently limited options for increasing the agricultural insurance premium pool in Grenada, it may be more practical to pool agricultural insurance premiums from several Caribbean states and to reinsure the regional Caribbean agricultural insurance program at the international reinsurance markets.

Recent Agricultural Insurance Activities in Grenada

Grenada is a member of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) which is the first multi-country risk pool in the world. The Government purchases parametric insurance from CCRIF every year with the premium financed by donors (Canada, EU, etc.).²⁹ Since 2019, the Government of Grenada has collaborated with the government of Saint Lucia to buy a separate parametric insurance product for the fishery sector (COAST) which covers earthquakes, tropical cyclones, and excessive rainfall. This insurance product was introduced with the support of the World Bank and US Department of State.

In 2014, Grenada launched the Livelihood Protection Policy (LPP).³⁰ This new insurance product is designed to protect low-income people, including smallholder farmers, against extreme weather risks. The product was developed by the “Climate Risk Adaptation and Insurance in the Caribbean” project implemented by the Munich Climate Insurance Initiative (MCII) in partnership with CCRIF. This insurance product is reinsured by a global reinsurer Munich Re.

LPP provides protection against heavy rain and high winds. According to CCRIF, LPP is offered in Grenada through Trans-Nemwil Insurance Limited in collaboration with Grenada Co-Operative Bank Limited and Granville Co-Operative Credit Union. This insurance company currently operates in Grenada under the name of Guardian General Insurance (OECS) Limited which offers insurance services in 21 countries in the Caribbean region. Additional information about the performance of this specific insurance product in Grenada was unavailable at the time of this study, which may be an indicator of uptake of the product, however, additional research would be required to further assess the performance of LPP.

²⁸ web-meeting on June 13, 2023

²⁹ Meeting with the Ministry of Finance on June 12, 2023

³⁰ <https://www.ccrif.org/node/530>

The insurance products offered by CCRIF provide coverage to the government with the latter deciding how to use the payout money if the insurance policy was triggered. These insurance instruments are not agriculture specific, and the disaster events' triggers are not designed to provide protection to specific crop types.

LPP was designed by CCRIF with the option to be purchased as a group policy (e.g. by credit unions or other micro finance organizations) or as an individual policy.³¹ In 2023, the CORP-EFF insurance company (registered in Dominica) applied for a general insurance license in Grenada and started a massive public awareness and marketing campaign to sell LPP to individuals. This product was recently registered by GARFIN. Several organizations mentioned the LPP public campaign during stakeholder meetings, however no stakeholders indicated an understanding of what this new insurance product is, or which insurance company is behind it. GARFIN representatives suggested that individual LPP policies may be sold to farmers but due to the product design (parametric concept), the product is not agriculture or crop specific.

According to the CCRIF website, this risk facility has paid 260 million USD to customers (national governments) in the Caribbean region under the parametric insurance program during 2007 - 2022. Out of this sum, most of the payouts were due to tropical cyclone events (144 million USD), with 49.2 million USD paid for earthquakes and 66 million USD for excess rainfall events.³² According to CCRIF, no compensation has been paid to Grenada to date due to a lack of qualifying events and claims.

FAO is currently implementing the project "Creating an enabling environment for agri-insurance provision in three Caribbean countries" which was initiated in response to a request from Jamaica, Grenada and Saint Vincent and the Grenadines. In 2018, FAO published a "Situation Report for Jamaica, Grenada and Saint Vincent and the Grenadines" with "recommendations for these 3 countries on the potential actions to be taken to improve the enabling environment for agricultural risk management and to allow for the identification of solutions that have the best chance of being feasible and effective in the context of the three countries".

The recommendations for Grenada outlined in the report included the development of a nutmeg insurance product as the entry point for promoting the adoption of agricultural risk management products. This recommendation was based on the economic importance of this crop for the country and farmers. FAO suggested the development a named peril insurance product using the WINCROP insurance model for bananas which was offered by Windward Islands Crop Insurance company from 1987-2009.³³

FAO's recommendation on the nutmeg insurance product is currently being implemented with the Grenada Cooperative Nutmeg Association (GCNA) as key stakeholders representing the interests of nutmeg farmers. GCNA provides data sets on nutmeg production and farmer registration information necessary for insurance product development. However, product development activities were delayed due to COVID-19 pandemic and, according to FAO consultants responsible for product development, this insurance product is still in the major development phase. In 2023, FAO plans to implement mapping of nutmeg farms in Grenada with support from the Ministry of

³¹ https://unfccc.int/files/adaptation/groups_committees/loss_and_damage_executive_committee/application/pdf/20160202_term_sheet_example.pdf

³² <https://www.ccrif.org/about-us>

³³ The WINCROP program was implemented in Grenada for the banana sector. Out of 98,432 claims paid during 1987-2009, only 497 claims were paid to Grenadian farmers with a total payout sum of EC \$346,399 or 0.4% of the total claim sum paid (EC \$76.9 million) under this insurance program in four participating countries.

Agriculture, finish data analysis, and finalize this insurance product documentation. The current version of the product is based on a hybrid structure which includes a named-peril indemnity component and a parametric (index) insurance component. The parametric component will provide coverage against strong wind perils (tropic cyclones) to insure nutmeg trees while the indemnity component will provide more comprehensive coverage against several listed perils.

FAO considers that the nutmeg insurance product may provide potential positive outcomes to demonstrate the advantages of the suggested insurance program for the whole agricultural sector in Grenada. In order to conduct a detailed analysis of the suggested insurance product, further information is required including the specifics of peril coverage, sums insured or limits of liability, deductibles, triggers, payout structures for parametric component and the principles of loss assessment for an indemnity insurance component.

Analysis of Findings from Grenada

Overview

The following information is a summary of information gathered during stakeholder meetings in Grenada in June 2023 with key actors in the public and private sector. The government agencies recognize the importance of agricultural insurance, but there is no strategic approach to introducing an agricultural insurance program in the country. The Ministry of Agriculture is cooperating with FAO on piloting a nutmeg insurance product but there is no indication when this product will be finalized and offered to the farmers.

The private insurance sector is interested in new insurance products; however, agricultural insurance is viewed by insurers as risky and potentially loss-making. Insurers do not currently have agricultural insurance specialists but are willing to learn more about agricultural insurance.

Public Sector

The Ministry of Finance is working on building resilience to natural hazards in Grenada.³⁴ There are current activities focused on building resilience to climate change in cooperation with the World Bank. The government of Grenada has established specific fiscal rules for disaster financing and set up reserve funds to address possible disaster events. The government purchased disaster risk management capacity via parametric insurance offered by the Caribbean Catastrophe Risk Insurance Facility (CCRIF). The premium for CCRIF insurance policy is financed by donors (EU, Canada).

The government passed a National Disaster Management Act in 1984, the basis for the establishment of the National Disaster Management Agency (NADMA). This agency has the capacity to conduct the disaster damage assessment after disaster events and provide the loss assessment data to the government.

³⁴ Meeting on June 12, 2023

The government of Grenada, and specifically the Ministry of Finance understand the importance of agricultural insurance, which should be an integral element of the National Disaster Risk Management Framework. At the same time, the government is not sure if the insurance sector could provide agricultural insurance without government support. The Ministry of Finance responded positively during the meeting to the option of subsidizing agricultural insurance and assured that if the program could be introduced in Grenada, it would be possible to allocate funds for supporting agricultural insurance.

The Meteorological Service of Grenada (Weather Service) operates one traditional (manual weather station) which is located at the international airport of Grenada. There are also 27 automatic weather stations with 19 of them collecting synoptic weather data. The Weather Service has over 30 years of weather data going back to 1985. According to the Weather Service, hurricanes, droughts, and excessive rains are the main extreme events for the agricultural sector in Grenada. According to the Weather service, there were at least 2 significant drought events recently – a severe drought in 2009-2010 and a moderate drought in 2016-2017. The main crops susceptible to climate events are corn, bananas, and vegetable crops. The Weather Service cooperates with the Caribbean Institute of Meteorology and Hydrology as well as with the World Meteorological Organization (WMO).³⁵

The Ministry of Agriculture is working with FAO and the World Bank on agricultural insurance, specifically for cocoa and nutmeg production. They are supporting the current initiative to map all cocoa and nutmeg farms throughout the country. The Ministry of Agriculture works together with the cocoa and nutmeg associations (GCA and GCNA) and expects mapping work to be completed by the end of 2023. The mapping initiative will help the government and association to identify the acreage and plantation boundaries of cocoa and nutmeg farms.

It is possible that agricultural insurance may expand to other crops if nutmeg and cocoa insurance is successfully introduced. The Ministry of Agriculture corresponds with the insurance companies occasionally, but they expect the initial work to launch new crop insurance products to be completed by FAO and the World Bank. The Ministry of Agriculture has good working relations with the Ministry of Finance, and it is expected that it would be possible to allocate funding for supporting agricultural insurance if it would prove to be effective.

The government has recently prioritized the agricultural sector and is working with the World Bank to invest US\$10 million to reduce food insecurity. The main objective of this work is to increase productivity of major crops grown in Grenada. Within the agricultural sector, this work will address farm machinery modernization, development of cold storage facilities, introduction of new livestock breeds, development of hydroponic and greenhouse facilities as well as improving road access to the farms.

During the meetings in Grenada, the Consultant found that the government officials understand the importance of risk management instruments for agricultural sector. The key issue remains the technical capacity of the local stakeholders, including the government and insurance sector, to develop a viable action plan, to allocate the roles between the different stakeholders and to implement the adopted workplan. The technical capacity of the local insurance companies is critical for the implementation of pragmatic agricultural insurance programs that will be sustainable in the future.

³⁵ Information obtained during a meeting on June 12, 2023

The Ministry of Agriculture supervises extension services, which is a part of the ministry structure, with funding from the state budget. There are about 300 people working in the extension service who can support the potential agricultural insurance program if introduced. The extension service people may be engaged as a sales force for educating farmers on the basics of agricultural insurance and sell crop insurance policies, or as crop surveyors and loss adjusters providing the necessary services to the insurance companies; however, further training is required for extension workers in order to undertake this activity.

The insurance regulator (GARFIN) recognizes the importance of agricultural insurance for the farmers and the government as an effective risk management instrument but currently there are no agricultural insurance products on the market. The insurance regulator will be aware of any insurance products for the agricultural sector, as all insurance products must be registered by the insurers with GARFIN before offering it in the market. The insurance regulator's main objective is to ensure a sound performance for insurance companies (international solvency standards). GARFIN registers all insurance products designed by the insurance companies. Any insurance product modifications must be registered as well with the regulator.

Private Sector

According to the regulator, agricultural insurance is important for Grenada, but the insurance companies will need to consider offering agricultural insurance based on their resources and technical capacity. The insurance companies in Grenada compete by prices (premium rates) and the competition is especially fierce in the segment of motor insurance. However, there is no formal training for underwriters in Grenada and therefore underwriting competency may need to be further established within the insurance companies. There are certain concerns in respect of the loss adjustment capacity. The regular losses are assessed by the specialists at the insurance companies but in case of complex risks or disaster events, the insurers must outsource loss adjustment services from abroad.

The assignment team met with several insurance companies in Grenada, who confirmed that there is no agricultural insurance in the country. Some insurers perceive agricultural insurance as a high-risk insurance business line with a high probability of extensive losses. The insurers commented that the market will need to be educated in order for agricultural insurance to start working in Grenada.

Motor and property insurance are the main business lines for insurers generating the largest share of premium. The insurers lack underwriters and loss adjusters. In line with GARFIN comments, the insurers reported that the loss adjustment services are usually outsourced from other countries for complex and severe risk events.

The insurers are open to new insurance products and initiatives. The insurers are advanced in using social media, radio and TV for promoting various insurance products. The insurers do not see issues in reaching the farmers if agricultural insurance is introduced in the country. The major concern is if the farmers have a demand for insurance and if they would be able to pay premiums without the government's support.

Currently, insurance companies do not use new technologies (satellite imagery, drones, GIS, and mapping software) for insurance purposes. One insurer mentioned that drones can be effective for assessing damage in commercial properties after disaster events, but they do not use new technologies on an everyday basis. Nevertheless, the insurers expressed interest in knowing more about the application of new technologies and will be interested in attending any informational or training events on this topic.

In the agriculture sector, the cocoa and nutmeg associations indicated that they are both working with FAO and the World Bank (WB) on the introduction of insurance products for cocoa and nutmeg producers. The representatives of the associations informed that the WB consultants are working on the insurance product design, and it is expected that the product documents will be finalized later in 2023. Discussions of the potential new products will be held with the insurance companies, brokers, and reinsurers. According to the associations, the new products will have a hybrid structure with a parametric component covering the wind perils and traditional indemnity component covering over perils.

The assignment team met with representatives from the Grenada network of rural women producers. The farmers confirmed that there is no agricultural insurance currently available to them but commented that there has been a recent advertisement on the national TV channel about insurance for farmers.³⁶ The farmers interviewed suggested they would be interested in insurance but expressed concern about the potential high price of premiums. The farmers had experience with the storm disaster losses assessed by the representatives of the Ministry of Agriculture, however there was a lack of understanding on how the losses were estimated and farmers commented that the actual losses were much higher than the assessed ones (e.g. assessed EC \$500 vs. actual EC \$5000). The farmers interviewed reported that they have production and financial records for their farming operations. Such records may be used for assessing the insurance options, and farmers may be able to pay for a premium if the premium rate is below 5% of their total revenue.

Conclusions and Country Specific Recommendations for Grenada

The government agencies in Grenada understand the importance of agricultural insurance and the government is ready to support the development of this type of insurance. At the same time, more planning must be done to understand how to launch an agricultural insurance program in the country.

Grenada has limited options to develop a sizeable agricultural insurance program due to the small size of the country (only 11 thousand hectares of agricultural land) and low commercialization of agricultural production. Most farms are small (average of 1 hectare) and only several high-value crops may present an opportunity for a crop insurance program. This includes nutmeg, cocoa and spice crops like turmeric, cloves, allspice, cinnamon, and ginger. Livestock insurance will likely not be viable, considering that livestock farms are small in size and the total number of agricultural animals in the country is low.

The insurance product being designed by FAO project is still in the design stage and it is impossible to assess the potential effectiveness of this insurance product before it is fully developed. In general, the approach to the development of this product is sound and in line with best international insurance practices. The indemnity component of this product should be in line with the needs of the farmers to manage various localized perils and the parametric component can provide protection against disaster type weather events (e.g. strong wind, excess rainfall). Both nutmeg and cocoa farmers' organizations are cooperating with the FAO project on the development of insurance products, however, local insurance companies did not indicate that they have been involved in this process.

³⁶ This is a new community livelihood protection index insurance program introduced by CORP-EFF insurance company which is a Dominica-based insurance company. See the Recent Activities section of this report

In order to ensure buy-in from insurance companies, it is necessary to involve them in product development. If the product is successful, nutmeg and cocoa insurance can become the pilot for a more comprehensive agricultural insurance program with insurance solutions designed later for other crop types.

According to the information collected during fieldwork, the value of nutmeg and cocoa commodities is assessed at about EC \$15 to \$20 million (up to \$7.5 million USD). Insurance of these two crops can deliver a premium of \$375,000 USD using the 5% premium rate as a technical indicator. The potential agricultural insurance market may be forecasted at \$500,000 thousand USD per annum if the crop insurance program is expanded in the future to other commercial crop types. Such a premium level will be interesting to the insurance companies, and it may be possible to get access to quality reinsurance programs on the condition that the insurance companies have developed sound technical skills and loss adjustment infrastructure in the future.

The insurance companies in Grenada are well-positioned to offer standard general insurance products for insuring buildings, cars, motor, business, and civil liability. The current level of the local insurance market development is promising and is conducive to the introduction of new types of insurance solutions for the general population, business and, specifically, for agriculture. Agricultural insurance is seen as the potential vehicle for expanding the general insurance client base and getting access to expanding insurance services to the rural population. This includes home insurance, health, life, property, motor, and personal accident insurance in addition to crop insurance.

At present, the local insurance companies in Grenada lack technical skills and knowledge of agricultural insurance. Moreover, there is a shortage of underwriters and product design specialists, in addition to loss adjusters even for general insurance business lines. Although the absence of loss adjusters may not be a problem for parametric insurance products, the commercial farmers growing high-value crops will require indemnity crop insurance products and the existence of some loss adjustment capacity is necessary if the crop insurance program is introduced in Grenada.

Grenada is a member of several regional organizations (CCRIF, CARICOM, etc.) and it is recommended to consider a regional agricultural insurance program with a technical support unit providing support to the insurance companies and governments of the Caribbean region countries. Such a unit can design targeted agricultural insurance programs for specific countries and crop or livestock types.

Conditions of Success Analysis for Grenada

| Condition | Condition Met/Not Met | Explanation |
|--|-----------------------|--|
| Legal environment and government support | | There are no laws or legal documents on agricultural insurance. |
| Insurance supervision | | Agricultural insurance is not recognized as a separate type of insurance. |
| Agricultural sector priority | ✓ | Agriculture is important to the government – export revenues, rural population income and employment, food supply to tourism industry. |
| Government support programs to the agricultural sector | ✓ | Government provides various types of support to the agricultural sector to increase productivity. |

| | | |
|--|---|---|
| Government support to agricultural insurance | | There is no support for agricultural insurance. |
| Availability and storage of agricultural production and weather data | | No complete data sets readily available for agricultural insurance. |
| Commercial agricultural production | ✓ | Nutmeg and cocoa are main export crops, spices have potential to grow. However, farms are small which may represent a challenge to agricultural insurance from the agricultural insurance administration perspective. |
| Established insurance sector | ✓ | Mature insurance sector. |
| Insurers' technical capacity | | No agricultural insurance skills or knowledge. |
| Financial institutions working with agricultural sector | ✓ | Present relationships and provision of financial services to farmers. |

Recommendations for Grenada:

1. The government must discuss the options and decide if an agricultural insurance program can be introduced in the country.
2. If the decision is made to introduce an agricultural insurance program, it is recommended to develop a strategic plan for the introduction of an agricultural insurance program in the country. Establish a coordination or steering committee and a technical working group which must include insurance companies. GARFIN can provide support to the technical working group to assure the suggested solutions are in line with the regulatory framework for insurance activities.
3. Develop a workplan on the introduction of crop insurance in Grenada.
4. Collect data necessary for agricultural insurance and create a digital data depository where all new data can be added and archived.
5. Consider the option of a regional Caribbean agricultural insurance program and discuss the concept with CARICOM. Cooperative efforts on a regional level may save resources and speed up the introduction of agricultural insurance programs in CARICOM member states and in Grenada specifically.
6. Agree on the model to introduce an agricultural insurance program – agricultural insurance pool, appointed insurance provider(s) (a selected insurance company/ies), a regional agricultural insurance facility. An appointed insurance provider (a selected insurance company) may be the best solution for Grenada due to the assessed small size of the program. The other insurance companies can participate in risk sharing based on co-insurance principles which are already practiced in Grenada under other property insurance business lines. This can reduce the cost of reinsurance for the agricultural insurance program in Grenada.
7. Specify the timeline for nutmeg insurance product and get local insurance companies involved.
8. Consider development of technical skills on agricultural risk management and insurance to enhance the technical capacity of the local insurance companies and Ministry of Agriculture.

9. Seek technical assistance from the international development agencies to train agricultural insurance specialists in Grenada. There are lots of technical resources available at USAID, World Bank, FAO, IFAD, etc., but consider critically the required assistance – not general information but training of specific skills and competencies – underwriting, loss adjustment, portfolio management, premium rate setting, insurance product design.
10. Consider an integrated approach for agricultural sector development. The actions to commercialize and modernize agricultural production may include provision of targeted financial instruments bundled with crop insurance (indemnity and parametric).
11. Discuss with CCRIF if targeted parametric insurance products could be designed for protecting agricultural sector in Grenada. The parametric solutions for such crops as nutmeg, cocoa, bananas, coconuts, etc. may require specific triggers and payout structures.

Guyana Case Study and Profile

Guyana is a nation located on the mainland of the South American continent, neighboring Venezuela, Brazil, Suriname, and the Atlantic Ocean.³⁷ It is approximately 214,969 km² in area.³⁸ Of that area, approximately 6.32% is used for agricultural purposes.³⁹ Guyana's geography consists of 3 main zones: coastal plains, a white sand belt, and interior highlands.⁴⁰ Most significantly, rainforests take up a large portion of the country's area, covering over 87% of the entire area.⁴¹

The climate in Guyana is hot and humid year-round, with temperatures averaging at 23.7°C at their lowest, contrasting 30.9°C at their highest. The climate also consists of two wet and two dry seasons. Rainfall is typically higher from November to January and from late April to mid-August. February to March and September to October tend to be drier months on average. Precipitation falls at over 2000mm of rain per year on average. Rainforest covered areas have a relatively consistent amount of rainfall throughout the year.⁴²

Guyana's economy is predominantly driven by mining, oil, and agriculture.⁴³ Top exports of local crops include rice and sugar, followed by various tropical and citrus fruits such as grapefruits, oranges, limes, etc.^{44,45} Fishing and

³⁷ <https://www.britannica.com/place/Guyana>

³⁸ <https://www.nationsonline.org/oneworld/guyana.htm>

³⁹

https://www.theglobaleconomy.com/Guyana/Percent_agricultural_land/#:~:text=For%20that%20indicator%2C%20we%20provide,from%202020%20is%206.31%20percent

⁴⁰ <https://www.infoplease.com/countries/guyana>

⁴¹ <https://rainforestfoundation.org/our-work/where-we-work/guyana/#:~:text=of%20indigenous%20land,Rainforests,across%20the%20entire%20Amazon%20basin>

⁴² <https://www.climatestotravel.com/climate/guyana>

⁴³ <https://www.britannica.com/place/Guyana/Resources-and-power>

⁴⁴ <https://agricarib.org/guyana-2/>

⁴⁵ <https://www.trade.gov/country-commercial-guides/guyana-agriculture-sector#:~:text=Guyana%20offers%20a%20favorable%20climate,%2C%20pineapples%2C%20and%20passion%20fruit>

livestock productions are also a large focus of the agricultural industry in Guyana. The agriculture sector also employs roughly 16% of the labor force, as of 2019.⁴⁶

Due to Guyana's physical geography of low-lying coastlines, the nation is prone to serious flooding and drought incidents, which has been further accelerated by recent La Niña events.⁴⁷ Recent incidents include major flooding in the capital Georgetown during January 2005, affecting 39% of the population and costing US \$500 million in property damages total, specifically costing the agriculture industry US \$52.6 million.⁴⁸ Serious flooding was also seen in May 2021, with a greater impact due to the presence of COVID-19. This event seriously affected over 74,000 acres of farmland and over 20,000 farmers.⁴⁹

Agricultural Sector in Guyana

According to FAOStat, the agricultural land area in the country is 1,678,000 hectares which includes cultivated land, permanent meadows, and pastures. The actual cultivated land (arable and under permanent crops) is 448,000 hectares. Of this total, 420 000 ha were under annual crops and the remaining 28,000 ha were under permanent crops in 2012.⁵⁰

Crop production (except sugarcane) and livestock production are characterized by the predominance of small farms. According to the farm household survey in the 1990s, farms of less than 6 ha accounted for about 75 percent of the country's 24,000 farms. It is estimated that about 70-80 percent of these small farms are geared towards rice production. Many of these small farms combine their crop production with some milk production. There are, however, several larger agricultural operations that include private rice growers, some medium- and large-size forest and fishing operations, and large public-sector enterprises.

Guyana's two main crops, rice and sugar, are the lead export-oriented earners. They occupy most cultivated land and, also most irrigated land. They are mostly produced in the declared drainage and irrigation areas (DDI). However, a small amount is produced in the undeclared drainage and irrigation areas (UDI). Other crops - vegetables, staple crops, fruits, and spices - are now being produced in larger quantities to satisfy local needs and to meet the export markets that are being developed in the CARICOM Region and beyond. The non-traditional crops and vegetable sector is growing and contributing to the food production efforts by taking advantage of the support of the government and of the New Guyana Marketing Corporation (NGMC), which assists farmers to market their produce both locally and internationally.

Rice is the largest locally grown crop, with harvest retrieved from 185,702 ha of land in 2021, producing 687,539 tons. The total rice production volume has recently exceeded 1 million tons in the years 2016, 2019 and 2020. Due to favorable climate, growers started to grow rice twice a year about 10 years ago. Several rice regions exist in

⁴⁶ <https://www.statista.com/statistics/1080863/guyana-share-employment-agriculture/#:~:text=The%20employment%20in%20the%20agricultural,decreasing%20over%20the%20last%20years.>

⁴⁷ <https://climateknowledgeportal.worldbank.org/country/guyana/vulnerability#:~:text=Guyana%20is%20most%20at%20risk,to%20be%20an%20imminent%20threat>

⁴⁸ <https://reliefweb.int/report/guyana/floods-guyana-january-2005-situation-report-25-jan-2005>

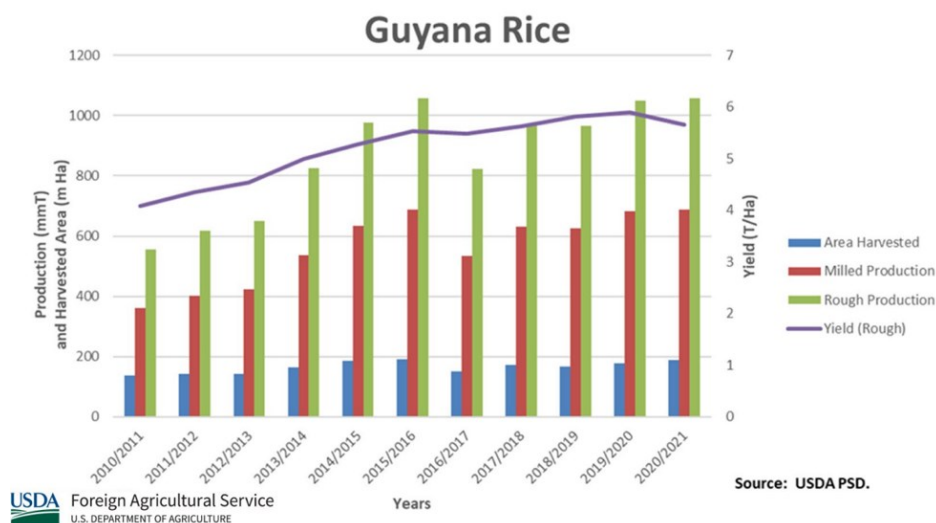
⁴⁹ <https://www.kaieteurnewsonline.com/2022/06/04/agriculture-sector-to-be-strengthened-to-reduce-devastating-impacts-of-flooding-drought/>

⁵⁰ FAO Guyana country report, 2015

Guyana with the largest production along the coastal belt. With two crops annually, the first crop is planted late in the calendar year into January and harvested in March through April. The second crop is sown from April to June and cut in September through October. In 2019, the second crop did exceptionally well, slightly better than the first crop, but in 2020, the second crop was less than the production and yield from the 2020 first rice crop.

Rice production is an important crop in Guyana and is produced by over 6,000 farmers. With 43 licensed rice millers and 22 registered exporters, the crop accounts for over 3 percent of the country's Gross Domestic Product (GDP) and over 20 percent of the agricultural GDP. Improvements in the rice industry have been helped with the strong program implemented by the Guyana Rice Development Board (GRDB) to develop, test, and release new varieties.⁵¹

Figure 5. The area harvested, milled production, rough production, and yield over the last decade for Guyana rice.⁵²



The other larger crops according to the area planted in 2021 include sugar cane (20,510 ha), coconuts (14,601 ha), plantains and cooking bananas (3,044 ha), ginger (2,996 ha) and corn (2,926 ha). Guyana's farmers cultivate over 30 types of field crops, fruits, and vegetables on a commercial basis.

Corn and soybeans have recently become the most important crops for the poultry sector. Several farms cultivate these crops to satisfy the growing demand for feed crops. In 2020, the farmers produced roughly 4000 tons of corn.⁵³ The government is committed to the cultivation of these crops in the intermediate savannahs to become self-sufficient by 2025. The intention is to continuously increase production to cover at least 10,000 hectares by 2025.⁵⁴

⁵¹ <https://ipad.fas.usda.gov/highlights/2021/03/Guyana/index.pdf>

⁵² Source: <https://ipad.fas.usda.gov/highlights/2021/03/Guyana/index.pdf>

⁵³ FAOStat data, downloaded on July 5, 2023 from <https://www.fao.org/faostat/en/#data/QCL>.

⁵⁴ <https://agriculture.gov.gy/2023/01/22/guyana-aims-for-self-sufficiency-in-corn-soya-bean-production-by-2025/>

As rice represents the largest crop in Guyana, this crop may be the most suitable to start testing agricultural insurance in the country due to the largest planting area and big number of rice farmers. The Rice Development Board has very good connections with the growers and this organization can be a partner for insurance companies to introduce crop insurance.

The Government of Guyana is actively courting investments into the production of meat (beef and lamb), poultry products, milk, and milk products for both domestic consumption and export to the Caribbean. Guyana's savannahs provide a favorable environment for free range cattle grazing, though cattle rustling is a challenge, transportation is difficult, and processing facilities are limited.⁵⁵

Insurance Sector in Guyana

The insurance sector in Guyana is regulated by the Bank of Guyana. The Bank has supervisory responsibility for deposit taking (including commercial banks) and non-deposit taking financial institutions under the Financial Institutions Act 1995, money transfer services and dealers in foreign currency under Money Transfer Agencies (Licensing) Act 2009 and the Dealers in Foreign Currency (Licensing) Act 1989 respectively. The supervision of insurance business and pension funds plans, which were, prior to 2009, supervised by the Commissioner of Insurance also form a part of the Bank's supervisory portfolio.⁵⁶

In 2023, there are 17 licensed insurance companies in Guyana with 5 companies in the long-term insurance segment (life insurance and other related business lines) and 12 general insurance companies.⁵⁷ Insurance brokers and agents must be registered with the Bank of Guyana as well. There are no registration requirements for underwriters, actuaries, and loss adjusters.

There are only 4 general insurance classes in Guyana's insurance regulatory framework which include accident and liability, auto (motor), marine and aviation and fire class. The Consultant understood that the insurance companies can write agricultural insurance under "fire" class of business.

There is little statistical data available on the operation of the insurance sector in Guyana. The Bank of Guyana publishes quarterly and annual reports, but these reports are very formal and do not provide the overview of the general insurance sector structure and premium distribution according to the class of business.^{58,59} Additional discussions with the Bank of Guyana may be required to understand the strategy of the insurance regulator and the strategic view for the sector development.

According to Global Data report, the Guyana insurance market size was \$73.7 million (the Consultant assumes this is US dollars) in 2021.⁶⁰ The key segments in the Guyana insurance market are life insurance and general insurance.

⁵⁵ <https://www.trade.gov/country-commercial-guides/guyana-agriculture-sector>

⁵⁶ <https://bankofguyana.org.gy/bog/regulatory-framework/overview>

⁵⁷ https://bankofguyana.org.gy/bog/images/insurance_supervision/list_registered_insurance_companies.pdf

⁵⁸ <https://bankofguyana.org.gy/bog/images/research/Reports/Dec2022.pdf>

⁵⁹ <https://bankofguyana.org.gy/bog/images/research/Reports/ANNREP2022.pdf>

⁶⁰ See <https://www.globaldata.com/store/report/guyana-insurance-market-analysis/> - this the most comprehensive information gathered during open source research the Consultant managed to find in open sources, however the reliability of the information available has not been determined.

The Guyana insurance industry was dominated by the general insurance segment in 2021. Property insurance was the leading line of the general insurance segment followed by motor insurance. The life insurance segment has invested largely in advertising campaigns and digitalization, such as online payments and electronic claims settlement to increase the product's awareness, as well as to tap into the general population in the market.

According to the Bank of Guyana (BOG), the key challenge in the insurance sector is low penetration which was less than 2% in 2023. The capital capacity of the insurers is adequate, but the BOG undertakes measures to strengthen capital base.⁶¹

The insurance companies must register any new insurance product with the insurance regulator, including modifications to the existing insurance products. It takes anywhere from 3 to 6 months to register an insurance product, depending on the quality of information provided by the applying insurer.

Current Status of Agricultural Insurance in Guyana

The analysis of various sources of information indicated that there is no agricultural insurance program in Guyana. The insurance companies do not currently have insurance products they can offer to farmers. This situation was confirmed by the Ministry of Agriculture during a meeting on June 19, 2023. There is no specific legislation or regulatory provisions for agricultural insurance.

BOG conducted a poll on agricultural insurance through the questionnaire filled in by the insurance companies to prepare for a meeting with the mission team. Out of 12 insurers, 10 insurers submitted their feedback and informed they are not offering agricultural insurance. The main reasons for the insurers to stay away from working with the agricultural sectors are lack of specific legislation, high-risk weather profile (perceived), lack of technical knowledge and difficulty in obtaining a reinsurance capacity. According to the insurers, the reinsurers have many specific rules for agricultural insurance and the potential of large losses positions agricultural insurance as loss making and unprofitable for insurers.

Recent Agricultural Insurance Activities in Guyana

The Consultant did not find any activities relating to agricultural insurance in Guyana. The Ministry of Agriculture shared that they held previous discussions on agricultural insurance with IDB, IICA and the World Bank for many years, but there were no specific projects or initiatives implemented in the country. The Ministry of Agriculture is engaging partners in discussions on agricultural insurance; however, insurance companies remain cautious and there is little experience with agricultural insurance in the region which can be assessed and used as a case study to progress with a program or development of insurance products.

⁶¹ Meeting with the BOG on June 20, 2023

There will be a Regional Agriculture Investor Forum for Guyana in October 2023 with the special ministerial task force organizing this event. The Ministry of Agriculture is willing to discuss the options for agricultural insurance in the country to support investments in the agricultural sector.

Two banks are currently working with rice farmers to provide seasonal loans: The Guyana Bank for Trade and Industry and Demerara Bank. These financial institutions expressed their interest in applying agricultural insurance as a mechanism for farmers to protect their investments in the agricultural production.

Demerara Fire and General Insurance company expressed interest in agricultural insurance. They have recently conducted a market survey and found out that agricultural insurance can be implemented in Guyana but found the best option to be a public-private partnership, with the government taking an active position in supporting agricultural insurance and conducting the public awareness activities to educate farmers on how agricultural insurance works.

Analysis of Findings from Guyana

Overview

During the fieldwork conducted in Guyana in June 2023, the Consultant met with various stakeholders including government agencies, financial institutions, farmers' organizations, and insurance companies. The agricultural sector is an important part of the national economy and produces a range of commodities which represent an opportunity for a large-scale agricultural insurance program.

Public sector

The government agencies understand the importance of agricultural insurance, but there is no common vision for introducing an agricultural insurance program in the country. Agriculture contributes approximately 15% of the total GDP, being a significant sector of the national economy after oil and gas. The Ministry of Agriculture has several agencies within its structure which can assist with data for agricultural insurance programs. These include: National Agriculture Research Education Institute, National Livestock Development Authority, Guyana Marketing Corporation, and the Hydrometeorological Service of Guyana. The Ministry of Agriculture collaborates with the Ministry of Finance and other government agencies on special programs, and agricultural insurance is being discussed. To date, no action has been taken to introduce an agricultural insurance program in the country.

The Hydrometeorological Service of Guyana has over 20 years of weather data, both from ground-based weather stations and gridded data (5 km simulated data). The gridded data is updated every 10 days to provide weather and climate data for the country locations where the traditional weather stations are absent. This agency previously tried automatic weather stations (AWS) (40 AWS currently in operation) but found that AWS are not suited for Guyana conditions. There are specific challenges with corrosion, site management, batteries and data transfer which must be resolved if the AWS are to be used in the country on a wider scale.

The Bureau of Statistics (BOS) collects various types of data, but the agency's mandate is to specifically gather economic and socio-economic data. BOS does not have specific agricultural data and there is no special department working with agricultural data. The agency receives agricultural data, required for BOS publications, from the Ministry of Agriculture, and therefore the Ministry of Agriculture has greater access to agricultural data rather than BOS.

The Bank of Guyana (BOG) is a single regulatory authority responsible for supervision of banking and non-banking financial institutions, including insurance companies. BOG is ready to review the options for an agricultural insurance program once the government specifies the needs in this risk management instrument. If the government were not supporting agricultural insurance and if the status quo remains the same, the insurance companies would not be interested in agricultural insurance. The insurance companies currently develop fire property and motor insurance (mandatory motor insurance is the main business line in motor but voluntary car insurance continues to develop as businesses and individuals buy more new cars) and their main priority now is increasing insurance penetration to grow premiums for these insurance business lines.

Private sector

According to BOG, the insurance companies have capacity to write business, but the insurers may need more underwriters. There are no loss adjustment standards even for the developed lines of business. Although the Insurance Act of 2016 has introduced legislative requirements for loss adjusters, there is still no registration of loss adjusters. Most insurance companies outsource loss adjustment services from other Caribbean countries. There are no registered actuaries in Guyana and there are certain challenges with rate setting for insurance products. The insurance companies compete by premium rates (price competition), however there are standard price setting guidelines to verify the actuarial soundness of premium rates.

The banks currently work with the agricultural sector and provide financing to farmers. The Guyana Bank of Trade and Industry (GBTI) is the leading agricultural lender in the country. The bank provides loans to over 1,000 agricultural customers but most of them are rice farmers and rice millers. GBTI is involved in new initiatives on corn and soybeans production as well as seed production. The non-performing loans (NPL) ratio is less than 5% which is better than that of the total portfolio (approximately 9%). The bank has experienced some issues with loan repayment by agricultural customers, mainly due to floods and saltwater inundation. GBTI considers agricultural insurance to be critical for the further development of the agricultural sector. Agricultural insurance could be beneficial for GBTI, but further education for the farmers is required.

Demerara Bank is currently working with about 300 rice farmers. They offer unsecured loans up to \$10,000 USD in addition to secured loans. The NPL for agricultural customers is less than 1%. This bank is interested in agricultural insurance and is willing to offer bundled solutions where insurance is attached to the agricultural loan and the premium sum added to the loan sum. This may make agricultural insurance more affordable to the farmers and provide better security to agricultural portfolio against possible disaster events when the farmers' loan repayment ability is affected by weather-related losses (excess rain and floods).

The insurance companies are interested in agricultural insurance but remain cautious due to the perceived high-loss profile of agricultural insurance. The insurers commented that the agricultural reinsurance agreements will require a minimum premium to be paid to the reinsurers and they must be sure they will be able to generate sufficient premium to get quality reinsurance coverage at the international reinsurance markets.

The insurers noted that discussions on agricultural insurance with the Ministry of Agriculture started in 2015. They suggested that the agricultural insurance program could be implemented in Guyana through a consortium of insurance companies as an agricultural insurance pool. It may be possible to have a regional Caribbean agricultural

reinsurance pool which could provide capacity to the member countries and reduce the cost of reinsurance for individual insurance companies.

The insurers lack technical expertise in agricultural insurance; there are no specialists in the country including agricultural underwriters, product designers and loss adjusters. They would benefit from additional training on agriculture insurance and suggested that the insurance institutes of Jamaica or Trinidad and Tobago could arrange agricultural insurance training programs for insurance specialists from Caribbean countries.

Insurance companies are willing to adopt new technologies for insurance, and recently participated in an online seminar on digital, satellite and precision agriculture, organized by the Georgetown Chamber of Commerce. In order to implement the new technologies for agriculture insurance, additional information and training is needed. Agriculture insurance has the potential to become a large market in Guyana, but the insurance companies expect the government to take the lead in supporting agricultural insurance and assisting with farmers' education and awareness.

Conclusions and Country Specific Recommendations for Guyana

Guyana has the potential to develop a substantially sized agricultural insurance program due to its large agricultural sector, with rice as a starting point as it is grown in several regions by a large number of farmers. Rice is the only crop that can provide over 1 million USD of premium which represents a good commercial opportunity for insurance and reinsurance companies.⁶² Together with other major crop types, if an agricultural insurance program is implemented in Guyana, the agricultural insurance market has the potential to reach over \$5 million USD of premium within 5 years of introduction. The implementation of an agricultural insurance program will require joint efforts from all potential stakeholders, but the government must play a leading role.

The initial review of the available information provides that excess rain and flood are the main perils for agricultural production in Guyana. Flood itself is a difficult peril to insure due to its nature. The risk profile for most agricultural regions in Guyana is complex due to low lying agricultural land, often below the sea level. Enhancement of the physical infrastructure may be required to reduce the risk of flooding which may have a positive impact on premium rates (lower premium rates).

It is difficult to get good agricultural and weather data. Additional review of the data sources will be required, and the data must be collected and accumulated at a single source. This data will be necessary for risk profile assessment, design of insurance products for different crop and livestock types, as well as premium rate setting.

Guyana will need to enhance the technical competency on agricultural risk management and specifically on agricultural insurance. The international agricultural insurance practice will need to be analyzed to develop insurance solutions for Guyana. The technical competency can be enhanced through a region-based training programs which can be introduced with the assistance of the international development agencies. The key focus must be not the

⁶² This assumption is based on 1 million tons of rice produced in a good year, 200 USD per ton of rice, assumed 3% premium rate for multi-peril insurance coverage and 20% participation rate.

review of the international practices, but the critical review of the existing programs and training of specific technical skills (underwriting, loss adjustment, portfolio management, claims handling, etc.).

Conditions of Success Analysis for Guyana

| Condition | Condition Met/Not Met | Explanation |
|--|-----------------------|--|
| Legal environment and government support | | There are no special legislative documents relating to agricultural insurance |
| Insurance supervision | | Regulator does not identify agricultural insurance as a separate insurance type. Insurance supervision needs enhancement |
| Agricultural sector priority | ✓ | Large crop and livestock sectors with good potential for further development |
| Government support programs to the agricultural sector | ✓ | Significant support to the agricultural sector |
| Government support to agricultural insurance | | No support and no specific plans yet |
| Availability and storage of agricultural production and weather data | | No data sets for agricultural insurance. Agricultural sector data is challenging to obtain |
| Commercial agricultural production | ✓ | Commercial commodity production is significant with potential to grow |
| Established insurance sector | ✓ | Established and competitive insurance market with risk appetite for new insurance products |
| Insurers' technical capacity | | Need further training on agricultural insurance |
| Financial institutions working with agricultural sector | ✓ | Banks provide loans to farmers and partner with government on various funding initiatives for the agricultural sector |

Recommendations for Guyana:

1. Develop an action plan for the introduction of an agricultural insurance program in the country. Establish a coordination or steering committee and a technical working group which must include insurance companies. Clearly define the roles and responsibilities of all stakeholders involved. BOG can provide support to the

technical working group to assure the suggested solutions are in line with the regulatory framework for insurance activities.

2. Introduce special legislation and specific insurance regulatory norms for agricultural insurance.
3. Introduce a special risk class (or risk sub-class under fire class) for agricultural insurance by the insurance regulator. Collect insurance data separately for crop and livestock insurance. Such data will provide monitoring opportunities to see how the agricultural insurance program develops for the program administrator to implement the necessary actions.
4. Introduce a technical management unit (e.g. at the Ministry of Agriculture) which will be responsible for agricultural insurance program administration and technical aspects of the program.
5. Consider the option of a regional Caribbean agricultural insurance program with CARICOM. Cooperative efforts on a regional level may save resources and speed up the introduction of agricultural insurance programs in CARICOM member states.
6. Collect data necessary for agricultural insurance (production data, weather data, historical disaster events data) and create a data depository where all new data is to be added and archived.
7. Agree on the model to introduce an agricultural insurance program. The possible solutions for Guyana may include an agricultural insurance pool, an appointed insurance provider with the co-insurance agreement for risk sharing with the other insurance companies, and a PPP model where several insurance companies will operate as approved insurance providers under the supervision of the program administrator.
8. Use rice as a pilot crop for agricultural insurance. Design an insurance product for rice based on the additional risk profiling activities to better understand the specifics of growing rice in different regions of the country. Begin with a pilot for the new insurance product in 2-3 regions and later to offer to other rice-growing regions. It will be necessary to carefully select a type of insurance product for rice. The indemnity insurance may be challenging due to the small size of rice farmers. The marketing of the product and administration may be expensive if named peril or multi-peril products selected. Area yield index product can be a good solution, but the basis risk challenge must be addressed and specific measures to reduce basis risk must be implemented. Another challenge will be the procedure for calculation of the average crop yield per administrative area for claim payment purposes. Enhanced collection procedure of crop production data will be required. Alternatively, it is possible to test satellite imagery to assess rice yield using satellite data.
9. Consider development of technical skills on agricultural risk management and insurance to enhance the technical capacity of the local insurance companies and Ministry of Agriculture.
10. Seek technical assistance from international development agencies to train agricultural insurance specialists in Guyana. This can be a part of a regional training program on agricultural insurance for CARICOM countries.
11. Consider bundling commercial banking programs offering loans to agricultural producers with insurance. Such programs can speed up the introduction of agricultural insurance in Guyana and provide an enhanced agricultural risk management framework in general in the country.
12. Discuss with CCRIF if targeted parametric insurance products could be designed for protecting agricultural sector in Guyana. The parametric solutions for such crops as rice, sugar cane, corn, soybeans, etc. may require specific triggers and payout structures.
13. Consider the use of new technologies for agricultural insurance purposes and wider for disaster risk management. It is recommended to test drones and satellite remote sensing in Guyana, specific functional requirements and procedures may need to be developed to assure usefulness of new technologies. Also, it is recommended to conduct training for government agencies staff, banks, and insurance companies on the use of GIS and mapping software. Such software can be very effective for portfolio management and program administration. GIS solutions combined with drones and satellite remote sensing products can be very effective for management of post-disaster recovery, which can be useful for timely flood response.

Data available for Agricultural Insurance Purposes in Grenada and Guyana

A review of publicly available data indicated that agricultural insurance may be challenging in both Grenada and Guyana, and possibly for other countries in the Caribbean region.

Although weather data of a reasonable timeline is present in both countries, this data is not open to the public and must be purchased by the insurance companies. Crop production data is another challenge, as the Consultant was not able to obtain any crop production data sets in Grenada or Guyana. Such data is an important starting point for assessing the crop risk profile which is necessary for choosing an insurance product for specific crop types. The same applies to livestock insurance solutions.

It is recommended to consider developing crop production and weather data sets for agricultural insurance and to provide them for free to the specialists who can analyze this data. This data will be required for insurance product design and premium rate setting. According to international practices, these data sets can be provided to the insurance companies or program administrators under specific conditions requiring that the data could be used exclusively for agricultural insurance purposes.

ASEAN – A Relevant Regional Agricultural Insurance Initiative Example

The Association of Southeast Asian Nations, or ASEAN, was established on 8 August 1967. The ASEAN Charter serves as a firm foundation in achieving the ASEAN Community by providing legal status and institutional framework for ASEAN. It also codifies ASEAN norms, rules, and values; sets clear targets for ASEAN; and presents accountability and compliance. ASEAN Cooperation in Food, Agriculture and Forestry is coordinated by the ASEAN Economic Community Council.⁶³ The agricultural insurance activities are implemented by this council.

Agricultural insurance in the ASEAN region is relatively new, with the exception of the Philippines. The Philippines Crop Insurance Corporation (PCIC) has been offering subsidized crop insurance to smallholder rice and maize farmers for more than 40 years. Within the last decade, Thailand and Indonesia have also developed national subsidized agricultural insurance programmes which offer crop insurance protection to small-scale farmers. At the other end of the scale, there is no agricultural insurance program in Brunei or Singapore where the agricultural

⁶³ <https://asean.org/aec-council/>

sector is very small. Currently, there is no agricultural insurance in Lao PDR and Malaysia and only small-scale pilots have been initiated recently in Cambodia, Myanmar, and Vietnam.

The agricultural insurance programs in the ASEAN countries, where they exist, have similar challenges to the Caribbean region. In the Philippines, the program is being revised to reduce the costs to the government (the government provides 100% insurance subsidy to small farmers) and to get the private insurance sector involved in agricultural insurance. This process started recently, in 2022, and it is too early to assess the results revision process.

In Indonesia, the government implements the crop and livestock insurance programs. The crop program, specifically rice insurance, is under revision due to loss-making performance. Although certain actions have been introduced in Indonesia to enhance the program performance, the rice area insured has dramatically reduced from 1 million in 2019 to 353 thousand hectares (rice insurance is the main crop insured) in 2022.⁶⁴ The program cost, implemented through the parastatal insurance company Jasindo, is high and the government is looking for options to reduce the budget funding required for program running. High expectations for the area yield index insurance program for rice, launched recently, were not realized and the actions are required to enhance performance of both indemnity and index crop insurance programs.

Similar issues with the performance of the crop insurance programs are being observed in Thailand. Vietnam undertook several initiatives to implement the agricultural insurance program but all of them did not expand after piloting and have been abandoned.

Table 6. Agricultural insurance programs in ASEAN⁶⁵

| Country | Agricultural Insurance (Yes/No) | Year Introduced | Market Status | Crop Insurance | Livestock Insurance | Fisheries/ Aquaculture Insurance | Main Market: Public, Private, PPP | Government Support for Premium Subsidies |
|------------------|---------------------------------|-----------------|---------------|--------------------------------|------------------------|----------------------------------|-----------------------------------|--|
| Brunei | No | | | | | | | |
| Cambodia | Yes | 2015 | Pilot | Pilop (WII) | X | X | Private | No |
| Indonesia | Yes | 2016 | Scaling-up | Commercial (NPCI); Pilot (WII) | Commercial (Indemnity) | Commercial (Indemnity) | Public | Yes |
| Lao PDR | No | | | | | | | |
| Malaysia | No | | | | | | | |
| Myanmar | Yes | 2018 | Pilot | Pilot (MPCI) | X | X | Private | No |

⁶⁴ Presentation by Jasindo insurance company at the International Conference “Agricultural insurance in Indonesia, June 2023

⁶⁵ Source – GIZ, ASEAN guidelines on agricultural insurance implementation, 2022

| | | | | | | | | |
|--------------------|-----|-------------|------------|--|------------------------|------------------------|--------|-----|
| Philippines | Yes | 1961 | Scaling-up | Commercial (MPCI; NPCI); Pilot (AYII; WII) | Commercial (Indemnity) | Commercial (Indemnity) | Public | Yes |
| Singapore | No | | | | | | | |
| Thailand | Yes | 1978 (2011) | Scaling-up | Commercial (NPCI). Pilot (WII) | Pilot (Indemnity) | Pilot (Indemnity) | PPP | Yes |
| Vietnam | Yes | 1982 (2011) | Pilot | Pilot (AYII) | Pilot (Indemnity) | Pilot (Indemnity) | PPP | Yes |

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), a German development agency, has worked actively with the ASEAN Secretariat to promote knowledge sharing, understanding, experience, and best practices for agricultural insurance among Member States. ASEAN also received technical assistance for agricultural insurance program development from the World Bank and JICA. Although ASEAN and the international development agencies have invested significant resources, the success of the agricultural insurance programs in the region is limited with many of existing programs being loss making and actuarially unsound.

ASEAN countries still have challenges with the technical performance of their national programs. ASEAN member states must enhance the technical competency of the agricultural insurance providers, which is also required in the Caribbean for agricultural insurance to be successful.

Most of the training activities were conducted with heavy support from the international development agencies, especially by GIZ. These training events centered on sharing experience in the region without recognizing the challenges and the actions required to enhance performance of the national insurance programs. For example, the premium rates for crop insurance program in the Philippines were stable for many years and no actions were implemented to address loss performance. Currently, the rate review is being implemented following the government's orders to improve program performance and reduce state budget spending for premium subsidies. In Indonesia, the premium rates are set at the country level, and they do not capture the risk features of main crop performance in the individual regions. These technical issues have not been discussed and, to date, no technical assessment has been completed.

The ASEAN countries require in-depth technical assistance for insurers and government agencies to understand the current problems in specific countries, and to understand the sound technical basis for agricultural insurance. For example, the unified premium rate for rice for the whole country was maintained in Indonesia. The revision of the program revealed that there was no documented methodology for premium rate calculation and there were no guidelines on which data had been used for premium rate setting and which assumptions were used by the people calculating premium rates for rice insurance program in Indonesia. Similar technical challenges must be discussed for weather index insurance programs which were piloted in the Philippines but none of them became sustainable. SEADRIF insurance facility was introduced several years ago in Singapore to help ASEAN countries with new insurance products. This facility was founded with the technical support of the World Bank. The main objective of this risk facility (which is similar to CCRIF) was to provide the ASEAN member states with innovative disaster risk management instruments. SEADRIF has designed several index-based insurance products, but the uptake is very limited. SEADRIF operates as a general insurance company, but it does not support the agricultural insurance programs in the member states with technical advice or agricultural reinsurance capacity.

While the structure of ASEAN provides certain similarities to the structure of CARICOM, there are challenges in adopting the ASEAN approach to the development of the agricultural insurance program in the Caribbean region. Firstly, CCRIF proved to be more effective in supporting the Caribbean states with disaster risk management solutions. Secondly, the ASEAN countries have reasonably developed national insurance markets which have their own priorities. The countries have large domestic agricultural sectors delivering significant potential volume of agricultural premium proving good business opportunities to the local insurance companies. The insurance programs can be implemented in most ASEAN countries, with the exception of Singapore and Brunei on a stand-alone basis. However, access to the regional reinsurance capacity could help reduce the reinsurance costs to each member state.

The key challenges in the agricultural insurance market in the ASEAN region are highlighted below:

- No agricultural insurance training program to help member states with enhancing the technical capacity in agricultural insurance industry;
- The member states do not work together in developing the national and regional agricultural insurance programs, the national programs are country based and no regional approach is discussed;
- The experience and knowledge exchange are formal and is mostly based on presentations and formal meetings;
- The member states do not cooperate on pooling agricultural risks for more efficient reinsurance options.

General Recommendations to CARICOM and the Caribbean Region

CARICOM has 15 member countries which have different country sizes, agricultural sectors, and production systems. Most of the member countries are small and all countries are exposed to various risks. Disaster events such as hurricanes, floods, storms, excess rainfall, and droughts occur regularly in the region. Therefore, CARICOM can play an important role in the establishment of an integrated risk management framework and mitigation program in the region.

The review of the options for agricultural insurance in Grenada and Guyana revealed that each of the countries in the Caribbean region have very different needs in agricultural insurance. This is due to differences in agricultural production practices, variations in crop mix and different risk exposure. One agricultural insurance program or a set of standard insurance products may not suit the needs of the individual countries in the region. The insurance programs for individual countries in the Caribbean region may be different, but regional cooperation supported by CARICOM will help in building the agricultural insurance technical capacity, exchange in lessons learnt and advisory support to the national governments and insurance sectors.

The initial steps on the introduction of the agricultural insurance programs may include the following critical steps:

- a) the development of agricultural risk profiles for individual countries;
- b) development of a strategic action plan to introduce agricultural insurance programs in the countries based on the agricultural sector specifics and risk management needs;
- c) assessment of the local insurance market capacity and agreeing on the most suitable model for an agricultural insurance program in each country,
- d) adoption of a regional plan for the development of a regional agricultural insurance program to pool risks from different countries for effective reinsurance solutions under the CARICOM leadership;

- e) establishment of a regional training program on technical aspects of agricultural insurance for capacity building in the region.

Some elements of such a framework have already been introduced – CCRIF is one of the most successful risk facilities in the world, providing different risk and disaster management solutions for the countries in the Caribbean region. CCRIF offers different insurance products based on parametric or index concepts. Most insurance products developed by CCRIF have been designed to provide risk management solutions to the national governments of the Caribbean and Latin America countries at meso and macro levels.

There were several attempts to introduce agricultural insurance programs in different countries in the region but most of them failed. The discussion on agricultural insurance has been active for the last 20 years, with the most prominent initiative being WINCROP which was a commercial insurance program offered to manage agricultural risks in several countries in the region. Unfortunately, the WINCROP program failed and stopped operation around 2009. International experience in agricultural insurance based on the last 20 years of practice and the recent development of new technologies may provide new and better opportunities for the introduction of more efficient insurance products from the technical insurance perspective. For example, the use of drones and satellite data can support loss assessment making it quicker and more accurate. Satellite data can enhance the underwriting process and improve agricultural insurance portfolio management.

FAO has recently suggested to re-introduce a similar program in Grenada (nutmeg insurance) but in the enhanced hybrid variant with the insurance product including an indemnity and parametric components. Based on information gathered, this approach would be sound - commercial farmers are interested in the individual indemnity coverage, but the catastrophic losses to the major assets (nutmeg trees) can be effectively protected by the parametric insurance solution.

The insurance sector in the Caribbean countries does not have the sufficient technical knowledge and skills to introduce new agricultural insurance products. Additionally, the potential agricultural premium volume for certain individual countries would be very low and this will not be supporting the costs required for introduction of the agricultural insurance programs. Many countries lack agricultural specialists to support agricultural insurance nationally, including underwritings, loss adjusters, product designers and portfolio managers. Without a clear view of the commercial perspectives for an agricultural insurance program, many insurance companies in the Caribbean countries will be reluctant to invest resources in agricultural insurance.

CARICOM can become a knowledge center and a coordination unit in the region to support the introduction of the agricultural insurance program in the region. A regional agricultural insurance program can be implemented through the Caribbean Catastrophe Risk Insurance Facility (CCRIF) which is a multi-country risk pool, established in 2007, offering parametric insurance instruments to Caribbean and Central American governments to manage disasters like tropical cyclones, earthquakes, excess rainfall, etc. CCRIF has technical capacity and specific insurance knowledge and skills which can be used for initiating a regional agricultural insurance program to assist governments in managing risks in the agricultural sector. According to CCRIF, this institution can establish a special agricultural insurance technical team to administer a regional agricultural insurance program if Caribbean countries would agree to introduce such a program. CCRIF can also introduce a loss assessment and claims management team to handle agricultural insurance claims in the Caribbean countries. CCRIF is using satellite data for the existing insurance

products offered and this institution can implement technological innovations (satellite remote sensing, drones, GIS, etc.) to support a regional agricultural insurance program⁶⁶.

The following recommendations are suggested to the Caribbean countries and CARICOM:

1. Introduce a coordination unit to provide technical support to the member states on agricultural insurance. This unit can become a center of competency which will provide advice on the technical aspects of agricultural insurance to the member countries. This unit can assist the member states with agricultural risk profiling, insurance products design, development of major insurance procedures (underwriting, portfolio management, loss adjustment for different insurance products and crop types), development of premium rate setting guidelines and/or conduct premium rate calculation for the insurance products implemented in the member countries;
2. Consider the foundation of a regional agricultural insurance company or a facility to accumulate risks from the member countries and reinsure the whole regional agricultural insurance program at the international reinsurance market. Assess the options of introducing the program via CCRIF, an established insurance provider in the region. This will help to achieve a risk volume (premium volume) interesting to the international reinsurance companies. This regional agricultural insurance facility can combine agricultural insurance portfolios from different countries and reinsure these portfolios as a regional program;
3. CCRIF has a special mandate on provision of disaster risk solutions to the member countries at meso and macro level. Allocation of the regional agricultural insurance program authority to CCRIF may be excessive which may interfere with the current operation of CCRIF;
4. Conduct a regular conference in the region to update member states on the development of agricultural insurance programs in the region and share international experience on agricultural insurance. Such a regional conference may be conducted once every 2-3 years. It is recommended to study the experience of AIAG (International Agricultural Insurance Association) which organizes its congress once in 2 years.⁶⁷ This organization also organizes loss adjustment training seminars every year which become one of the main events internationally where insurance companies can learn about new approaches on adjusting losses for different crop types and different insurance products. ALASA – an association of Latin American agricultural insurers - conducts regular conference events in Latin America but the information they provide may have less relevance to the Caribbean region due to the specifics of agricultural insurance in the region;
5. Implement a permanent training program on technical aspects of agricultural insurance. This program can target insurance companies, financial institutions, and government agencies. Such a training program will help to develop an agricultural technical competency in the region. Such a training program can be implemented at the College of insurance and professional studies of Jamaica or at the Trinidad and Tobago Insurance Institute which offer various insurance training programs but do not have agricultural insurance courses.^{68,69} One of these institutions can also implement a certification program for agricultural loss adjusters - these specialists will be critical for the success of the agricultural insurance programs if or when introduced.

⁶⁶ Web-meeting with CCRIF on September 7, 2023

⁶⁷ <https://www.aiag-iahi.org/en/about-us/>

⁶⁸ <https://cipsonline.edu.jm/>

⁶⁹ <https://ttii.org.tt/>

Annex 1: List of Stakeholders Consulted

Grenada

Ministry of Finance
 Ministry of Agriculture
 GARFIN – Grenada Authority for the Regulation of Financial Institutions
 Meteorological Service of Grenada
 GTMI – Guyana and Trinidad Mutual Insurance (Grenada country office)
 CG United Insurance
 Grenada Cocoa Association
 Grenada Nutmeg Cooperative Association
 GRENROP – Grenada Network of Rural Women Producers

Guyana

Ministry of Agriculture
 Hydrometeorological Service of Guyana (Hydromet)
 Bureau of Statistics (BOS)
 Bank of Guyana (BOG)
 Guyana Bank for Trade and Industry (GBTI)
 Demerara Bank
 Guyana and Trinidad Mutual Fire Insurance Company Limited (GTM)
 Hand in Hand Mutual Insurance Company
 Demerara Fire and General Insurance Company
 Guyana Rice Development Board

Other

Caribbean Catastrophe Risk Insurance Facility (CCRIF)

Annex 2: Key Factors for Successful Agricultural Insurance Programs

Agricultural insurance programs are well developed in many countries, however, government support (especially premium subsidies) proved to be instrumental in the establishment of the programs and their effective running. The international practice provides that agricultural insurance is developing slowly without government support. In the countries where purely commercial agricultural insurance is offered (e.g. Australia, New Zealand) the private insurance companies predominantly offer hail and fire coverage while over perils may be insured optionally and are subject to various limitations (e.g. limits of liability lower than the actual asset value, high deductibles, reduced coverage periods, etc.).

Subsidies and state support to the nation-wide agricultural insurance programs play an important role in farmers' resilience to external shocks. Governments may subsidize a certain portion of insurance premiums – usually 50% of premiums is subsidized but recently many countries reviewed their subsidy approach and started to apply higher subsidy rates to reduce the cost of insurance to the farmers. For example, in Canada the government subsidizes 60% of the premium. In 2022, Kazakhstan increased crop premium subsidies from 50% to 80% and similar actions have been implemented in other countries. The main purpose of premium subsidies is to stimulate farmers buying crop and livestock insurance to manage their risks more effectively.

The countries in the Caribbean region are recommended to consider subsidizing agricultural insurance to make crop and livestock insurance more affordable to farmers.

Internationally MPCI (Multi-Peril Crop Insurance) products are the main ones that require government assistance for premium subsidies. Such insurance products provide a comprehensive coverage for crops and livestock with, usually, most of weather perils covered. This is especially important for perils that may seem to be less important, but which may result in losses only once in 10 or even 20 years.

That practice is widely represented in such countries with the developed crop insurance programs as USA, Canada, Spain, Turkey, Austria, Switzerland, etc. MPCI programs may be required for commercial crop producers in certain countries in the Caribbean region.

Some countries develop CAT (Catastrophe) Crop Insurance Programs for Smallholder Farmers, when the government subsidizes up to 100% of the premium rate. Such CAT programs are specifically important in the countries with a large majority of smallholder farmers in the country's agricultural production landscape. Those farmers usually cannot afford access to finance and purchase crop insurance policy. CAT Crop Insurance Programs serve as a risk management instrument on the macro level. CAT insurance products provide coverage against risk events that happen rarely, but which may result in massive losses of the agricultural assets at the regional or country levels. Usually, CAT products provide payouts for total loss events when the farmers lose their produce due to intensive risk events (e.g. hurricanes, massive floods, very intense rainfall, drought, etc.).

The analysis of the historical risk events in Grenada and Guyana provides that CAT insurance can be effective for large loss events as were recorded in Grenada - hurricanes Ivan (2004) and Emily (2005), drought in 2009-2010 and in Guyana – flood in 2005.

Historically, named-perils insurance products have been selectively subsidized in the countries with the developed agricultural insurance systems. Often, premium subsidies are offered for insuring the most important crop and livestock types which have food security importance or are critical for farmers' income stability.

Subsidized crop insurance programs usually include certain eligibility criteria for farmers, which help to better structure and target the governmental assistance. Such criteria may vary depending on the:

- agricultural production landscape in the country;
- type of farm (subsistent farmers, smallholder farmer, commercialized and mid-size farming enterprises, large farming enterprises, agricultural production holdings, etc.);
- production practice (traditional / intensive, dry / irrigated land, etc.)
- farming area per one farm;
- type of crop;
- types of risks;
- specific types of insurance products.

The most reasonable approach is to link eligibility criteria for subsidized crop insurance with the other state-supported programs (ad hoc assistance, subsidized loans, subsidized fertilizers/inputs, etc.). As an example, financial institutions in Canada accept AgrilInsurance policies as a collateral because the value of the insurance coverage is known, and payment is guaranteed in the event of a production loss.⁷⁰ Similar approach is observed in other countries (USA, Spain, Turkey, etc.).

Eligibility criteria may require the farmer (or farmer groups) to qualify for participation in a subsidy program. Such a farmer will be making decisions for the cropping practices on the farm, being directly responsible for the applied crop production technology. The qualified producer should receive the majority share of the proceeds from further sale of crop insured. Another possibility can be a collective (farmers' groups) policy which are found in Spain and some other countries. Collective insurance policies can be working for nutmeg farmers in Grenada and for small rice growers in Guyana when the issuance of individual insurance policies can be too expensive from the administrative point of view for insurance companies.

Eligibility criteria may also relate to provision of farmer's legal, operational, and financial information to the insurer and to the respective government authority which is in charge for subsidy disbursement. Producers must follow good farm management practices, meet deadlines set by the program, timely report damage, and insure all areas under the selected crop (avoiding anti-selection). In some countries, it is also required by the state that farmers must report yield and other production data regularly. The eligibility criteria in Guyana may include the commercial rice growing by farmers who have delivery contracts with rice millers. In Grenada, nutmeg and spice farmers can be eligible for an insurance coverage because there is a requirement to sell such produce to the statutory farmers marketing organizations.

Standard Products and Procedures

The program's sustainability depends much on adhering to standard insurance products focusing on specific types of farmers. It is important for subsidy administrators to understand the specific risks covered by the subsidized crop

⁷⁰ <https://www.agricorp.com/en-ca/programs/Pages/Default.aspx>

insurance product. In most cases the insurance cover is in line with the government's strategy for agricultural production and regional production landscape.

Most state-supported programs worldwide consider MPCl products. The best examples of diversified crop and livestock insurance subsidy programs can be found in different countries:

- the US Risk Management Agency (RMA, USA);
- Agricultural Insurance Pool - Agroseguro (Spain);
- Alberta Finance Services Corporation (Canada);
- Manitoba Agricultural Services Corporation (Canada);
- Agricorp (Ontario, Canada).

Traditionally, the subsidized crop insurance program establishes standard procedures and protocols followed by the insurers and farmers. Standard actuarial principles, underwriting guidelines and crop inspection / loss adjustment procedures ensure transparency of the process and quality of services. Standard loss adjustment rules help to assure applying same principles in assessment of crop conditions at each stage of crop vegetation. The integrity of the procedures and protocols allow objective and transparent evaluation of the insurers' operations. Government often certifies/licenses crop inspectors and loss adjusters to assure services comply with the established procedures and protocols.

Standard insurance products are easier to introduce because such products can be designed by the insurers with the assistance of the government agencies (ministry of agriculture, insurance regulator). The standard insurance products provide common insurance terms which are easier to explain to the participating farmers. It is recommended to use standard insurance products in the Caribbean region.

Subsidy Level

Developed countries tend to set their premium subsidies according to the coverage or deductible level attributed to the product. A relatively low coverage level is considered to be a catastrophic cover, and this may be fully subsidized, e.g. CAT coverage program in the USA where the insured pays an administrative fee, and no risk premium is charged. Many advanced subsidy programs allocate subsidies disproportionately – the lower the risk the farmer is ready to accept, the lower the subsidy he/she receives.

Farmers usually either pay the full amount of premium and receive a subsidy back to their accounts (Ukraine during 2005-2008, Serbia), or pay their own share of the premium to insurer (Canada, USA, Turkey, Spain, etc.) with the balance paid to insurer by the program administrator (responsible governmental agency, Ministry of Agriculture, etc.).

Historically, many countries have initiated programs with comparatively low subsidy rates though later they had to revise these rates and to increase budget spending. Standalone administrative and operational subsidies also show no significant effect on farmers' participation rate.

The real cost of agricultural insurance to the government cannot be estimated through subsidies alone. Governments incur additional costs through conducting information campaigns for farmers, developing and enacting relevant legislation, regulation provisions for the insurance market. All these costs should be considered for inclusion into the real cost of the program.

The most common subsidy rate is 50% but recently many countries started applying higher subsidy rates up to 80% (Kazakhstan, India) and even 100% for smallholders (the Philippines). Higher subsidy rates help with the insurance penetration and stimulate farmers to purchase crops and livestock insurance.

The governments of Caribbean countries may introduce subsidized agricultural insurance programs with higher subsidy rates (e.g. 80%) at the start of the program. Such an approach can be implemented for the initial 3 or 5 years of the program to stimulate farmers to purchase agricultural insurance contracts. After the establishment of the program, the subsidy rate can be reduced to lower subsidy levels after the farmers understand how insurance works.

Figure 1. Changes of agricultural insurance subsidy approach in Canada

| Agricultural Insurance Premium & Subsidies 2007 | | | | | Agricultural Insurance Premium & Subsidies 2019/20 | | | | |
|---|---|---------------------|--|-----------------|--|---|-----------------------|--|-------------------|
| Country | Total Agricultural Insurance Premium (US\$ Million) | Global Market Share | Total Premium Subsidies (US\$ Million) | Premium Subsidy | Country | Total Agricultural Insurance Premium (US\$ Million) | Global Market Share % | Total Premium Subsidies (US\$ Million) | % Premium Subsidy |
| United States | 8,511 | 56% | 3,823 | 45% | United States | 11,063 | 32% | 7,191 | 65% |
| Japan | 1,111 | 7% | 549 | 49% | China | 10,200 | 29% | 8,160 | 80% |
| Canada | 1,090 | 7% | 546 | 50% | India | 4,000 | 11% | 3,400 | 80-90% |
| Spain | 809 | 5% | 581 | 72% | France | 1,509 | 4% | 906 | 60% |
| China | 682 | 5% | 283 | 41% | Canada | 1,400 | 4% | 840 | 60% |
| Italy | 383 | 3% | 280 | 73% | Japan | 1,200 | 3% | 600 | 50% |
| Russia | 315 | 2% | 156 | 50% | Spain | 910 | 3% | 287 | 32% |
| France | 241 | 2% | 146 | 61% | Italy | 661 | 2% | 399 | 60% |
| Mexico | 142 | 1% | 62 | 44% | Brazil | 571 | 2% | 166 | 29% |
| South Korea | 93 | 1% | 34 | 37% | South Korea | 468 | 1% | 383 | 82% |
| Top 10 Countries | 13,375 | 89% | 6,460 | 48% | Top 10 Countries | 31,986 | 91% | 22,331 | 70% |
| Other 55 Countries | 1,727 | 11% | 135 | 8% | Other 115 Countries | 3,014 | 9% | n.a. | |
| Total World | 15,102 | 100% | 6,595 | 44% | Total World | 35,000 | 100% | 0 | n.a. |

Figure 2. Development of agricultural insurance program subsidy rates internationally.⁷¹

| Time Period | Federal (%) | Provincial (%) | Producer (%) |
|-------------|-------------|----------------|--------------|
| 1960-1967 | 25 | 0 | 75 |
| 1968-1972 | 25 | 5-6 | 69-70 |
| 1973-1989 | 48-49 | 2-3 | 49-50 |
| 1990-1995 | 25 | 25 | 50 |
| 1996-2002 | 27-35 | 26-32 | 36-41 |
| 2003-2011* | 33-35 | 26-27 | 39-40 |

Source PINSS, AAFC.

Subsidy Limits

Some countries limit their maximum premium subsidy per client on the grounds that larger farms have a better capacity to leverage the effect of negative weather events. Indonesia has its limits set for the farmers cultivating up to 2 ha of paddy rice land.

Many countries tried to apply limits due to the realm of limited budget spending. However, they had to reconsider the type of production of different farmers and significantly raise those limits. Understanding the farmer's production helps to better address their needs. Otherwise, the insurance penetration may stay low in the country. There are different approaches to setting the amount of any premium subsidy. In some jurisdictions (Canada) the subsidy rate (60%) is the same for all crop insurance products. The practice of other countries is to apply different premium subsidy rates for different product types (USA, Spain, Turkey) considering their strategic importance for the country's agricultural economy. The subsidy rate can also depend on the type of policy (individual or collective), risks covered and additional coverage.

It is recommended to apply the Canadian approach to agricultural insurance subsidies if considered. This will make subsidy programs simpler and easier to administer by the government. Also, the budget funding of the subsidy program will be easier to plan during the budgetary planning process for the future periods.

⁷¹ World Bank, Disaster Risk Financing for Agriculture webinar, October 2021

Figure 3. Subsidy rates in the USA depending on the coverage level and type of insurance policy.

| Unit Type | Coverage Level | | | | | | | | |
|--------------------------------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | CAT | 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% |
| Subsidy Rate (%) | | | | | | | | | |
| Basic or Optional | 100 | 67 | 64 | 64 | 59 | 59 | 55 | 48 | 38 |
| Enterprise or Multicounty enterprise | n/a | 80 | 80 | 80 | 80 | 80 | 77 | 68 | 53 |
| Area Plan (Yield) | n/a | n/a | n/a | n/a | n/a | 59 | 59 | 55 | 55 |
| Area Plan (revenue) | n/a | n/a | n/a | n/a | n/a | 59 | 55 | 55 | 49 |
| Whole Farm | n/a | 80 | 80 | 80 | 80 | 80 | 80 | 71 | 56 |

Source: CRS Using 7 U.S.C. 1508(e).

International Experience with Crop Insurance Subsidy Programs

The governments are often very careful in entering into a long-term agricultural insurance subsidy program. Budget spending must be planned for a long period of time. Significant funds must be allocated for such a program with proper future planning. At the same time, it is often not possible to be confident that the dedicated funds will be sufficient. The key factors having impact on the subsidy budget:

- the portion of the premium paid by the farmer;
- crop yields volatility for specified crops;
- commodity prices volatility.

It is even more difficult to estimate the required subsidy budget at the initial phase of crop insurance program, or at a complete reconsideration of the existing agricultural insurance subsidy program.

It is notable that each national-scale program has many of its own specifics and characteristics, that could hardly be extrapolated without adjustments to programs in other countries. This relates to legislation and regulatory environment in each country, approaches to agricultural technology, agricultural production landscape, typical risks observed in each country, etc.

CARICOM can assist the national governments of the member countries with subsidy program planning and structuring. CARICOM can develop the guidelines for a subsidized agricultural insurance program which will assist countries with making decisions about if to subsidize agricultural insurance and how to structure the program.

Other Types of State Support Programs in Agriculture

Government support is not limited by premium subsidies however these have been most effective to drive farmers purchasing crop insurance coverage. Other types of subsidies may include the following:

- Crop and weather data which are provided to insurers for free subject to specific use limitations (Spain, Turkey, USA, etc.);
- Data processing and actuarial analysis (USA, Spain, Turkey);
- Tax rebates (In Canada premiums for insuring farm property including crop are tax exempt. In USA premiums on subsidized MPCI are tax exempt – coordinated between Federal and State tax authorities);
- Reinsurance capacity for CAT and regular risks (USA, Turkey, Spain, etc.);
- Legislative regulations to assist insurance product establishment and development;
- Informational and educational activities (USA spends over 16 million per annum only for crop insurance training and educational events for farmers);
- Product design and performance analysis (USA, Spain, Turkey).
- Provision of public goods such as physical infrastructure (e.g. weather stations, irrigation systems, greenhouses, etc.)
- Lower solvency capital requirements for micro insurers (Brazil - the paid-in capital requirement of firms exclusively dedicated to microinsurance is set at 20% of the normally required base capital for insurance companies).
- Price support mechanisms or government guaranteed minimum prices are used to smooth price fluctuations to ensure stable income and provide support to smallholder farmers.

It may be challenging for the countries to introduce agricultural insurance programs due to lack of experience in the Caribbean region. CARICOM can become a knowledge hub for the member countries and assist with (a) the development of data specification for insurance products, (b) introduce data processing and actuarial analysis guidelines, (c) provide guidelines on agricultural insurance products design and program administration. CARICOM also can help countries with the program analysis after they are introduced. This may help with problem identification and adoption of correction actions as required. It is recommended to conduct a program audit once in 3 or 5 years with the independent third party doing such an audit.

Annex 3: Major Models of Agricultural Insurance Programs (public, private, PPP) – International Experience

The losses caused by catastrophes worldwide could be significantly lower, provided that there is an effective national agricultural insurance scheme with state support in place. Such schemes require tight cooperation between the public and private sectors providing sufficient financial stability to farmers and countries' economies in the event of natural disasters. International practice proves the importance of establishing efficient PPP models in agricultural insurance.

Usually, direct insurance model involves two parties - the policyholder (farmer) and the insurer. PPP in agricultural insurance involves additional financial support from the state (premium subsidy) and stimulates interaction between three key parties - the insured, the insurer, and the state.

The leading role in PPP models belongs to the state, which plays the role of initiator, organizer, and guarantor between the participants. Governments perform controlling and supervisory functions for the insurer, observing the key activities are conducted within the regulatory framework in place.

Special legislation for systemic state support in agricultural insurance is required. It regulates relations between participants of the PPP scheme. In most models, the governments approve insurance terms, subsidize insurance premiums, sometimes cover a part of the insurer's administrative expenses related to insurance services and loss adjustment, provide protection in case of catastrophic events. The state aims at stabilizing the country's agricultural production by offering subsidized catastrophe insurance programs (CAT) that are usually reinsured domestically and internationally. CARICOM can assist the member countries with the development of specific legislation and regulatory norms to support the introduction and development of agricultural insurance programs. CARICOM can also help the national governments with the insurance products design and development of standard insurance procedures including underwriting, loss adjustment and portfolio management.

The insurer's role in PPP is to administer the program, organize loss adjustment and insurance sales. The insurer sells policies, collects premiums, assesses losses, and determines adjustments to premium rates for various products. When risk events occur, the insurer determines the extent of the loss and pays out the compensation to farmers affected. The insurer shares risk-associated losses with the government for the coverage agreed on the PPP program(s) in the country. Reinsurance coverage is a pre-requisite factor for such programs. Most insurers reinsure their risk portfolios on the international markets applying favorable terms and conditions, by pooling risks in a single reinsurance portfolio of a particular PPP model.

State-subsidized agricultural insurance in the USA is considered one of the best internationally. The PPP models of agricultural insurance pools in Spain and Turkey also have significant advantages. The functionality of the Canadian PPP in agricultural insurance has its peculiarities, which has proven its effectiveness for decades. All the above-mentioned models are based on the PPP principles.

There are five major types of PPP models applied in agricultural insurance, based on the following examples of selected countries for this document: USA; Canada, Israel; Spain, Turkey; Austria, Switzerland; and Germany.

USA - A Model of the Most Efficient Collaboration Between the Public and Private Sector

The agricultural insurance system in the USA is characterized by the government's high attention to risk management mechanisms applied by farmers in fields. US subsidized agricultural insurance programs are administered by the Federal Crop Insurance Corporation, which sets insurance premium rates and subsidies, approves insurance products, etc. The activities of the Federal Corporation are controlled by the Risk Management Agency (RMA), operating under the authority of the US Department of Agriculture. Federal insurance is done through private insurance providers, responsible for insurance activities and payouts to policyholders.

The USA PPP model is recommended for the Caribbean countries with potentially large agricultural insurance program. For example, Guyana has a large agricultural sector with over 30 crop types grown by the farmers and significant livestock sector. The insurance companies willing to participate in the program can operate as the approved insurance providers unless a pool model is considered.

The Federal Corporation supervises activities of all insurance companies that deliver services for the subsidized agricultural insurance programs by analyzing data on policies, losses, and indemnities. US agricultural insurers are subject to compulsory licensing prior to starting their market operations. Basically, the main supervision over insurers' activities is done by the Federal Corporation, which is controlled by the Risk Management Agency (RMA).

Insurers use premium rates (tariffs) designed and adjusted by the Federal Corporation regularly, at least once every three years. The average level of premium subsidy in the country is 50% with the agricultural insurance penetration in the country at about 70%. The subsidy rates for different crops range between 30% to 60% (depending on the coverage level and crop type). Farmers pay only their share of the premium, while the rest is covered by the government directly to the insurers. US agricultural insurance covers 85 different crops. Farmers are offered more than 150 different insurance products, mostly for multi-peril and index insurance coverage.⁷²

The key insurance programs offered to farmers by the US government are: "Catastrophic Risk Protection" (CRP), "Multi-Peril Crop Insurance" (MPCI), "Group Risk Plan" (GRP) and "Income Protection" (IP). The most insured risks in the US are drought (53%), floods and excessive rainfall (23%) and frost (6%). Crop farmers insure mainly corn, soybeans and wheat. US agricultural insurance market has generated in 2018 USD 9.9 billion of premiums, while the subsidy sum reached USD 6.3 billion.⁷³

Advantages of the model:

- active participation of the state;
- state subsidies for insurance premium help to reduce the cost of insurance to farmers and, therefore, increase insurance penetration;
- active participation of private insurance companies in providing insurance services to farmers;

⁷² Roman Shynkarenko: The international practices in agricultural insurance (Rus).

⁷³ Risk Management Agency, USDA - www.usda.gov

- high level of protection for agricultural producers, regardless the type of their risks;
- transparent relations between farmers and insurers;
- development of agricultural insurance through continuous improvement of insurance products.

Challenges of the model:

- high administrative expenses for the government;
- limited profitability of insurance companies (note: according to the insurers).

Canada / Israel - Models with Strong Influence of the Government

Agricultural insurance with state support is a voluntary type of insurance in Canada. More than 60 years ago five Canadian provinces founded the so-called “Crown Corporations”. These corporations are state-owned companies that operate according to general market principles and rules. Such Corporations receive financial support from federal and provincial governments in case of emergency situations, but such support is provided on a repayable basis. The subsidized agricultural insurance programs in some provinces were launched relatively recently (about 15 years ago). Services are provided by special units of the provincial Ministries of Agriculture. Crown Corporations carry out the procedures of subsidized agricultural insurance on their own, that includes marketing, contracting, loss adjustment and claims settlement.⁷⁴ Each corporation develops its own insurance programs based on the guidelines from the Federal Ministry of Agriculture. Due to specifics of agricultural production and financial capacity of different provinces insurance programs differ, but these differences are insignificant.

Canadian government covers most of the costs associated with the agricultural insurance, with an average level of premium subsidies of 60%. Farmers pay 40% of their premium share, and the state transfers the subsidy directly to Crown Corporations. Agricultural insurance subsidies are shared equally by the federal and provincial governments (50% / 50%).

Canadian private insurance companies also offer agricultural insurance products. However, those sell insurance coverage for named risks only (example: hail, fire). Such insurance products are not subsidized by the state. This setup gives private agricultural insurers an opportunity to compete with Crown Corporations. Subsidized multi-peril insurance coverage is available in state-owned companies only.

Crown Corporations reinsure their risks on the international markets and by the state. The state offers reinsurance coverage based on the “stop-loss” principle. This means that in the case the level of program’s indemnity payouts exceeds (example: 3-4 times) the amount of insurance premiums, the stop-loss mechanism gets activated. Thus, the state covers the overhead losses of insurance companies. Crown Corporations are well experienced in agricultural insurance and reinsure most of the risks on international markets. Provincial insurance departments, that have recently launched their programs, reinsure most of their risks through a state reinsurance program. There are about 28 state-wide programs for risk management and income support is available to Canadian farmers.⁷⁵ The most popular program among the farmers is the “Crop insurance program for full or partial crop loss”.

⁷⁴ Roman Shynkarenko, The international practice in providing subsidies in agricultural insurance.

⁷⁵ Agriculture and Agri-Food Canada (AAFC) - www.agr.gc.ca

Up to 80% of the country's farmers are insured under this program. Major crops insured through the state-subsidized programs: wheat, barley, canola, and corn. Key risks insured are drought, frost, and floods.

Israel has been actively developing agricultural insurance for over 50 years. The State Insurance Fund for Natural Risks in Agriculture (KANAT) provides agricultural insurance in the country, subsidizes premium rates (35% subsidy for all types of crops and livestock) and reinsures the risk portfolio internationally. The state also covers 80% of the premium for the separate Natural Disaster Program. This program is administered by KANAT on behalf of the state. In addition to crop insurance KANAT also provides livestock and aquaculture insurance products. Agricultural insurance in Israel is compulsory, thus the penetration rate of agricultural insurance in the country is about 90%. The total sum of premiums collected in 2018 amounted to USD 104.3 million, and the sum insured reached USD 6.4 billion.⁷⁶

The Canadian or Israel model can be recommended for the Caribbean countries where the insurance companies have no appetite for offering agricultural insurance. Introduction of the program through a specialized agricultural insurance entity, can be quicker and require less resources. The program management and decision making can be more efficient as the center of competence will be residing at such an entity.

Advantages of the model:

- subsidies for insurance premiums reduce the cost of insurance for farmers.
- program stimulates a high level of agricultural insurance penetration in the country;
- protects farmers in case of catastrophic events;
- continuous development of effective agricultural insurance products in the country.

Challenges of the model:

- high administrative expenses for the government;
- limited profitability for insurance companies.

Spain / Turkey – Agricultural Insurance Through Insurance Pool

Spanish model is successfully developing for more than 40 years. It is a good example of an effective model of PPP realized through the insurance pool. The government of Spain has launched a national agricultural insurance program in 1978 - Seguros Agrarios Combinados. Nowadays the program is administered by a specially created state-owned company - Agroseguro. It operates as an insurance pool. There are 27 private insurance companies which are members of the pool.⁷⁷ Agroseguro administers contracting, loss assessment and indemnity payouts for its agricultural insurance products.

Agroseguro offers more than 100 insurance products for crops, livestock, and aquaculture. Farmers are actively involved in the development of new insurance products. Agroseguro independently performs actuarial calculations for premium rates, and the government sets the volume of subsidies for various insurance products.⁷⁸ The total

⁷⁶ Personal correspondence with Shmuel Tourgeman, CEO, KANAT

⁷⁷ AGROSEGURO official web-site – www.agroseguro.es

⁷⁸ World Bank Survey: Government Support to Agricultural Insurance: Challenges and Options for Developing Countries, Annex E

premiums collected by the program in 2018 amounted to USD 871.5 million, with a total sum insured reaching USD 16.5 billion.⁷⁹

Penetration rate of agricultural insurance in Spain varies from 12% to 100%, which depends on the type of crop / livestock insured. More than 70% of Spanish farmers insure their crops and livestock. Spanish government subsidizes both crop and livestock insurance. The average level of subsidy is 53% of the total insurance premium, where 40%–45% share is subsidized by the central government, and 10%–15% by regional governments. Catastrophic losses of farmers insuring their crops / livestock are compensated on a first-priority basis. Crop insurance in Spain is an integral part of the country's nationwide agricultural policy. All risks are reinsured through a state-owned reinsurance company which cedes certain exposure to the international reinsurance markets.

Turkish model of PPP has been created by analogy with the Spanish model. It currently represents one of the most successful business cases in agricultural insurance for PPP models. Before 2005, crop and livestock insurance were offered in Turkey by 15 private insurance companies, constantly competing for insurance premiums on the market. The “Law on Agricultural Insurance” was adopted in 2005. Based on that law the state and private insurance companies had to reach mutual agreement on creating the Agricultural Insurance Pool, with Tarsim being its management company. The board of this company includes representatives of Ministry of Agriculture, the Treasury, and representatives of insurance companies and farmers' organizations that become the members of the Pool, which is also regulated by the country's “Law on Agricultural Insurance.”

The main purpose of creating the Pool was to determine a role of the state in developing country's agricultural insurance system. It also aimed at increasing the level of state support through the subsidized insurance products, gradually increasing the level of agricultural insurance penetration in Turkey.⁸⁰ Insurance premiums are paid by the policyholders directly to Tarsim (farmer's share only). Government subsidies (50%-66%) are also transferred to Tarsim. Insurance payouts are made by insurance companies that are part of Tarsim pool. Tarsim reinsures its risk portfolio on the local and international markets.

The total sum of premiums collected by TARSIM in 2006 was USD 34 million, while in 2018 the sum exceeded USD 490 million with the total sum insured of USD 10.2 billion.⁸¹ Over the 14 years of Tarsim's active work on the market, the penetration rate of agricultural insurance has significantly increased from 1% in 2006 to 20% (average) in 2018. Actual penetration of agricultural insurance in the country differs by region. This is due to specifics of crop production landscape in various regions of Turkey, agricultural insurance penetration varies between 5%-45%. Major crops insured in Turkey: wheat, tomatoes, grapes, nuts (hazelnut) and olives. There are 36 crops in total that are possible to insure with state support. Tarsim manages insurance for crops, cattle / small cattle, poultry, aquaculture, and greenhouses. Major risks insured in Turkey with state support are drought, flood, and hurricane, among livestock - death and morbid labor.⁸²

⁷⁹ Personal correspondence with Elsa Sánchez Elizo, Senior Expert, Agroseguro

⁸⁰ World Bank Survey: Government Support to Agricultural Insurance: Challenges and Options for Developing Countries, Annex E

⁸¹ Personal correspondence with Murat Şener, Specialist, Foreign Relations and Reinsurance Directorate, TARSIM

⁸² TARSIM official web-site – www.tarsim.gov.tr

The pool model is recommended to the countries with large agricultural sectors but where the insurers lack technical knowledge and perceive agricultural insurance as very risky. The pool model is also working well in the countries where there is a lack of trust in the loss adjustment process. In this model, loss adjustment is done by the experts appointed by the pool administrator and the insurance companies have no direct administration of the loss adjustment inspections.

Advantages of the model:

- effective interaction of insurers, farmers, and the state;
- protection of farmers in case of catastrophe events;
- active participation of farmers in decision-making on types of agricultural insurance products and coverage structure.

Challenges of the model:

- high administrative expenses for the government;
- the role of the private sector is significantly reduced due to Pool's leadership in administration and implementation of major agricultural insurance processes.

Austria / Switzerland – A Single Agricultural Insurer on The Market

Austria can be singled out as an example of a multi-peril subsidized insurance program with state participation. In 1947, Austrian insurers (17 companies) incorporated an insurance company - Die Österreichische Hagelversicherung, which initially had the status of a non-profit organization. This company currently administers the country's subsidized agricultural insurance program.

The law on hail insurance was adopted in Austria in 1955. In 1995, the law was amended with the provision on subsidies for hail insurance. In 1997, the provision was supplemented by the obligation of the government to subsidize crop insurance against the negative effects of low temperatures. Currently, multi-peril crop insurance (frost, drought, flood, snowstorms, grain germination and pests) and livestock insurance are subsidized in the country. The law indicates that the federal government compensates 25% of insurance premium, while regional governments are also obliged to subsidize another 25% share of premium from their own budgets. In the absence of payouts, premium subsidies are returned to the federal and provincial governments. Premium rates are based on a multi-year insurance historical data being actuarially balanced. The level of agricultural insurance penetration in Austria, as of the end of 2014, was 85%, which represents a very high penetration level considering that agricultural insurance in the country is voluntary.

A distinctive feature of such a model is the lack of competition among private insurers on the market, in which companies-shareholders agreed that, due to the technical complexity of agricultural insurance, it should be carried out through Hagelversicherung only.

Swiss agricultural insurance has begun taking shape since 1880. Nowadays, livestock insurance is offered by 27 insurance companies, while crop insurance is carried out only by one insurance company – Swiss Hail Insurance. Historically, it was initiated with participation of farmers in the country as a farmers' mutual insurance company. Private insurers provide insurance coverage for livestock against accidents and deaths, while insurance against epidemics and diseases is available through the state insurer only.

Crops in Switzerland are insured on a voluntary basis, while livestock insurance against infectious diseases is compulsory, controlled by the regional authorities. Premium subsidies are not provided in Switzerland at the national level. Some cantons (local municipalities) of the country provide financial assistance to the farmers. This support varies in each region, where its size depends on the policy of each canton. Regional governments also reimburse all claims incurred. State assistance is provided only upon the occurrence of an epidemic in a particular region, being available only to the farmers having insurance policies.

The model with a single specialized agricultural insurance at the market helps to deal with the issue of the severe price competition which can be detrimental for the development of the agricultural insurance program. This model is similar to a Canadian one with the difference that the private insurance companies found a specialized agricultural insurer and agree that only this insurer will offer agricultural insurance products at the market.

This model is recommended for the countries with a developed insurance market but when the potential volumes of business cannot guarantee significant premium volumes for multiple insurers. Many countries in the Caribbean region have small agricultural sectors and this model can be an option for the introduction of an agricultural insurance program.

Advantages of the model:

- the only model among all analyzed, which showed the ability of market participants (insurers) to self-organize and introduce agricultural insurance by creating one insurance company (organization), which lead to limited competition for agricultural insurance portfolio;
- the state / regional subsidies significantly reduce the cost of insurance for the farmers;
- the farmers who provide statistics on crop yields, receive discounts for insurance policy purchase (Austria).

Challenges of the model:

- insufficient protection of agricultural producers in case of catastrophe events;
- the terms of subsidized insurance include strict rules for agricultural producers (Austria);
- drought insurance in these countries is being introduced with difficulties due to the systemic nature of this risk and climate specifics in the region.

Germany - Minimal State Participation in Agricultural Insurance Model

There is no systemic state aid system for crop losses in Germany. Only in exceptional cases are specific decisions made on the allocation of ad-hoc assistance, only with the agreement of the European Union authorities. There is no developed program of subsidized agricultural insurance in Germany, while only three risk management tools are available to the farmers: 1) one-time emergency payouts after significant effects of adverse weather events (fully funded by the state); 2) livestock disease insurance fund, which is partially funded by the state; 3) private hail insurance, purchased by farmers on a voluntary basis.

German government pays compensation to livestock producers only in cases of epidemics. The government compensates 50% per unit of livestock, provided that the livestock is insured.

However, hail insurance products (60% penetration for crops) become widely used in Germany. Those are offered for most crops on a voluntary basis. Such insurance programs include crop's quantity (volume of produce) and quality insurance.

Farmers pay 100% of the premium sum, which allows insurance companies to market only those insurance products that have sufficient farmers' demand. These are the named-risks insurance products (hail - mainly in the southern regions of Germany). Multi-peril crop insurance products are not popular, being considered too expensive for the farmers in the country.

German government believes that agricultural producers should take all responsibility for their own business. Nonetheless, existing insurance products provide farmers with an effective protection against major weather risks in the country, being the key reason for the government not to consider designing a special state-subsidized agricultural insurance program.

The international experience provides that the programs implemented by the private insurers without government support develop longer and the insurers will probably offer a limited number of insurance products to farmers, usually only named-peril insurance. This is currently a case of Australia and New Zealand where livestock insurance is practically non-existent and crop insurance is limited by fire and hail insurance. In such countries such perils as hurricanes, excess rainfall, frost, and drought are usually not insured against and the farmers can't insure their crops against severe risk events.

Advantages of the model:

- low administrative expenses for the government;
- development of private insurance market.

Challenges of the model:

- insecurity of farmers in case of catastrophe events;
- lack of state support in case of significant crop losses;
- high cost of insurance to farmers due to absence of subsidized insurance program;
- limited opportunities for development of more agricultural insurance products.

Conclusions

Annex 3 provides greater context on the importance of development of a systemic approach to agricultural risk management in agriculture of any given country. National-scale agricultural insurance schemes based on PPP principles are efficient in the context of each specific country. In most cases this is due to differences in systemic support provided by the state. Based on economic analysis and years of experience, governments of various countries (excluding Germany) came up to the point that well-organized state-subsidized insurance programs represent the best-way solution to support various groups of farmers, ensuring economic stability of each group. Direct emergency payouts after catastrophe events have proved to be not efficient enough in the long-term prospective. One-time ad-hoc payments have no systemic nature, as they are influenced by many factors - economic and political. Moreover, the political aspect of ad-hoc payments is internationally considered as a factor negatively affecting the systemic development of agricultural insurance programs in most of the countries.

Each model of PPP has its advantages and drawbacks. Understanding those allows transparent assessment of the potential for development of agricultural insurance model in the countries considering introduction of the agricultural insurance program.

Specialized agricultural insurance companies and pools are the models recommended to the countries in the Caribbean regions. These models will help introduce agricultural insurance programs quicker and with less resources required compared to other models described in this annex.

Annex 4: Validation Workshop Summary

On September 13, 2023, IESC hosted a virtual Validation Workshop in collaboration with USAID to gather input from the CARICOM Secretariat, representatives from Member States, and other related institutions involved the agricultural sector on the findings from the feasibility study, and to determine the way forward for agricultural insurance in the Caribbean. The workshop was attended by 27 individuals representing 11 countries and the CARICOM Secretariat. Roman Shynkarenko presented the findings from his literature review and stakeholder interviews. Following the presentation of findings and recommendations, the participants we invited to ask questions and provide feedback. Below is a discussion of the topics that were discussed in depth.

1. How agricultural insurance programs can support climate adaptation and how farmers could be incentivized to participate in agricultural insurance programs. It was mentioned that there is a general aversion towards insurance by small farmers, however government support would encourage farmers to participate. It is more critical to adopt a systemic approach for an agriculture insurance program introduction and administration. It is also recommended to bundle other types of government support with insurance. This will ensure that the money provided to farmers as government support will not be lost if a large disaster happens. It is possible, and there are examples internationally, for the government to offer catastrophic insurance when farmers register to the program, but the premium is paid by the government. This is an approach to effective disaster risk management and adaptation.
2. Concerns about the lack of available data with respect to record keeping by farmers - if individual farmer data collected on crop production at individual farms would be an appropriate alternative to gathering country level data. The consultant suggested that it is important to start with the available data but, generally, better records mean better insurance. Insurance can be a good vehicle to educate farmers on how record-keeping can help them increase their incomes and achieve higher productivity.
3. Templates or guidelines to consider when developing agricultural insurance for emerging markets and developing economies. There are several small countries in the world that have agricultural insurance working and the government supports such programs. The main recommendation is to make risk analysis, assess options for an agricultural insurance program, and to develop a strategic plan for program implementation. An action plan can be developed based on a strategic plan, but it is very important to have an agency which will be responsible for the program and have authority for making decisions.
4. Additionally, the type of insurance was considered; indemnity insurance is more comprehensive for the farmers, but for small countries in the region it may be difficult to implement in the long run on an individual basis. A regional program could be a solution when several countries pool risks insured and reinsure portfolios at the international reinsurance market. This can reduce reinsurance rates for individual countries. CCRIF offers disaster insurance through parametric insurance, and it works however this may not work for agricultural insurance. The consultant mentioned that commercial farmers prefer indemnity insurance because it is more accurate to individual farmers. Often it is easier to start with index insurance and then later to move to indemnity insurance – this should be decided by individual countries.
5. Approach to insurance regulation and supervision. The main recommendation is to separate agricultural insurance (crop, livestock, aquaculture as sub-types or ag insurance) from fire or property insurance but use the same approach to regulating insurance and supervising the program. The insurance regulators will need

technical support and training on assessing insurance products to understand if the insurance products designed by insurers are fit for purpose. General framework for insurance should not be a problem if the technical guidance is provided.

6. The most practical approach to starting an agricultural insurance program: regional vs. country-specific programs? It was mentioned that there is an ongoing process to have a regional product for agricultural insurance that would take into consideration the particularities of each member state. There was general agreement and support for moving forward jointly, however, how can it be ensured that the expertise level is there to achieve the goals in each member state? The consultant mentioned that we need to first understand which countries are interested, and which crop types to be insured. Differences in production systems and crop calendars can mean that one product might not work for every country. The regional insurance product may require certain adjustments per individual country and while the product will be the same for participating countries, there may be some differences in coverage, but this is okay from the insurance technical perspective. We need to look at the technical capacity within the country and at the regional level. Communication and cooperation are very important – the countries must exchange information to enhance the insurance products for agriculture offered in the country or regionally. This will help to establish agricultural insurance program(s) quicker and with fewer mistakes. Regarding the technical expertise, the consultant suggested that a product designer or underwriters for each individual country are not necessary, and that we could have a group of technical specialists at a regional technical unit (agricultural insurance technical unit, e.g. at CARICOM) to support the product design for each country. This can be a much quicker and efficient approach to ensure expertise is available to Member States.

Regarding possible next steps to move forward with the launch of an agricultural insurance program, the following was discussed:

- Start with making initial risk profiles for each country, then gather key representatives together to discuss a way forward and create an action plan with a qualified facilitator to guide and lead the discussion in the right direction. Each representative can then bring the discussion back to their respective countries to internally discuss the options for launching agricultural insurance program and the possibility of a regional program. A regional program can be initiated by a minimum 3-4 countries with others joining in later, as interested.
- It may be beneficial if CARICOM takes the lead by developing a taskforce regarding a regional agricultural policy to exchange experience. If there is a regional agricultural policy, which is agreed to by all Member States, there will be greater buy-in to this initiative.
- At the country level, Agriculture Insurance can be included in the National Strategic Development Agenda, so that it becomes a part of the agricultural development agenda. Also, a comprehensive communication plan to inform agriculture stakeholders of the benefits of this insurance should be done, starting with the Ministry of Agriculture and extension services. Countries need to define who oversees public events/communications, and who monitors. Consider in each country who can be the key agency for public awareness. Consistent, permanent, focused training is key to making insurance effective. Include information about payouts public to help farmers understand why insurance is important.
- Raise awareness about agricultural insurance through the organization of a high-level conference or debate for policy makers including ministers and other public and private managers at the country level.

- Technical training events and materials should be implemented for the first five or so years of an agricultural insurance program. Integrated training programs can encourage countries' participation. The regional training program could be beneficial.

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