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Lessons of the COVID-19 pandemic for Food Security in CARICOM*: Imperatives for the Way Forward

Lecciones de la pandemia de covid-19 para la seguridad alimentaria en el CARICOM: imperativos para el camino a seguir

Leçons de la pandémie de covid-19 pour la sécurité alimentaire dans la CARICOM: impératifs pour aller de l'avant

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* CARICOM refers to the fifteen member countries of the Caribbean Community. They are Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. The countries are often considered in four categories: the 'Continental States' (Belize, Guyana, and Suriname); the 'Larger Islands' (Barbados, Jamaica, Trinidad and Tobago); Haiti; and the 'Small Islands' (the remaining members). This paper is focused mainly on the food security challenges and needs of the small islands, to wit: Antigua and Barbuda, The Bahamas, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines.

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Abstract
When the Covid-19 pandemic was declared, the global lockdown started, and export restrictions on medical supplies and food were introduced, small islands of the Caribbean were among the first to raise an alarm concerning stability of food supplies and food security. This was not surprising as they are among the most dependent countries in the world on imports for their food availability, and on tourism for their employment and earnings that enable access to food. They are also countries with underlying health conditions that increased their vulnerability to the virus. This paper presents a synopsis of the lessons from the impacts of Covid-19 for CARICOM food security and describes four imperative areas for policy and investment interventions as critical elements of a strategy for building inclusive, competitive, and sustainable food and agricultural systems in the CARICOM region.

Key words: food security, Covid-19, trade, tourism, health, nutrition, obesity, vulnerability, investment, water, production diversification, economic structure balance, self-reliance, public policy, climate change, natural disasters, financing for development.

Résumé
Lorsque la pandémie de covid-19 a été déclarée et que des mesures restrictives ont commencé au niveau mondial, introduisant des barrières à l'exportation de fournitures médicales et de nourriture, les petites îles des Caraïbes ont été parmi les premières à tirer la sonnette d'alarme sur la stabilité des approvisionnements alimentaires et alimentaires. Sécurité. Ce n'était pas surprenant, car ils sont parmi les pays les plus dépendants au monde des importations pour leur disponibilité alimentaire, ainsi que du tourisme pour les emplois et les revenus qui permettent l'accès à la nourriture. En outre, ce sont des pays avec des problèmes de santé sous-jacents qui augmentent leur vulnérabilité au virus. Ce document présente un

résumé des leçons tirées des impacts de covid-19 sur la sécurité alimentaire de la CARICOM et décrit quatre domaines impératifs pour les politiques et interventions d'investissement en tant qu'éléments essentiels d'une stratégie visant à construire des systèmes agricoles et alimentaires inclusifs, compétitifs et inclusifs.

Mots clés: sécurité alimentaire, covid-19, commerce, tourisme, santé, nutrition, obésité, vulnérabilité, investissement, eau, diversification productive, équilibre de la structure économique, autosuffisance, politiques publiques, changement climatique, catastrophes naturelles, financement du développement.

Resumen

Cuando se declaró la pandemia de covid-19 y comenzaron las medidas restrictivas a nivel global, introduciéndose barreras a la exportación de suministros médicos y alimentos, las pequeñas islas del Caribe estuvieron entre las primeras en dar la alarma sobre la estabilidad de los suministros de alimento y la seguridad alimentaria. Esto no fue sorprendente, ya que ellas se encuentran entre los países más dependientes del mundo de las importaciones para su disponibilidad de alimentos, así como del turismo para puestos de trabajo e ingresos que permiten el acceso a los alimentos. También, son países con condiciones de salud subyacentes que aumentan su vulnerabilidad al virus. Este documento presenta una sinopsis de las lecciones de los impactos de la covid-19 para la seguridad alimentaria del CARICOM y describe cuatro áreas imperativas para las políticas y las intervenciones de inversión como elementos críticos de una estrategia para construir sistemas agrícolas y alimentarios inclusivos, competitivos y sostenibles en el CARICOM.

Palabras clave: seguridad alimentaria, covid-19, comercio, turismo, salud, nutrición, obesidad, vulnerabilidad, inversión, agua, diversificación productiva, equilibrio de la estructura económica, autosuficiencia, políticas públicas,

cambio climático, desastres naturales, financiamiento para el desarrollo.

Introduction

On 11 March 2020, the World Health Organization (WHO) declared the novel coronavirus (Covid-19) outbreak a global pandemic. The health consequences received immediate attention as the death count rose and supply chains for health-related products were disrupted. Later in the same month, the United Nations Food and Agriculture Organization (FAO) sounded the alarm that a food crisis could be triggered as food exporters moved to secure their domestic supplies by imposing export restrictions. On 21 April, G-20 Ministers of Agriculture met and urged that trade flows not be interrupted and thereby risk increasing food insecurity.

CARICOM countries were among the first to raise an alarm concerning stability of food supplies and hence food security. The reason for this is clear. Some Caribbean countries had already seen supplies of personal protective and medical equipment, which they had ordered, intercepted by larger countries to ensure that their own demands were met. Being a high food importing region, the vulnerability to disrupted food supply chains was obvious.

The major global response to the pandemic was to institute lockdowns and social distancing measures, which disrupted production systems, the movement of goods and of people, and the provision of a wide range of services. These measures hit at the heart of food security systems in most CARICOM economies, especially those whose livelihood systems provided incomes based mainly on tourism and related services.

CARICOM Heads of Government approved the «CARICOM Covid-19 Agri-Food Action Plan»[1] and the Organization of Eas-

1 CARICOM Secretariat. *CARICOM Covid-19 Agri-Food Action Plan*. April 2020.

tern Caribbean States (OECS) «OECS, Covid-19 and Beyond: Impact, Assessments and Responses»[2] initial response documents. These initiatives emphasized the vulnerability to food insecurity of the CARICOM countries and the need for immediate action to address the short-, medium- and longer-term impacts of the pandemic on the region's food security. National policies were introduced, assessment of the impacts and implications of the pandemic on food security continued, and regional and international collaboration and assistance was mobilized to assist in ensuring the region's food security.

One year after the declaration of the pandemic, the lessons of the impacts of Covid-19 on food security are still being learnt. This paper has two purposes. Firstly, to present a synopsis of the lessons from the impacts of Covid-19 for CARICOM food security. Secondly, in light of the lessons of Covid-19, to present critical elements in a strategy for building inclusive, competitive and sustainable food and agricultural systems in CARICOM.

Impacts and Lessons of Covid-19 for CARICOM Food Security

As Covid-19 has unfolded, the primary effects of the public health crisis together with the secondary and tertiary effects of the risk management measures, implemented in countries across the globe to contain the pandemic, have given rise to a complex and dynamic situation. CARICOM members, especially the small island developing States (SIDS), have been disproportionately affected. Three reasons for this will be highlighted. Firstly, the dependence on trade, specifically food imports for their food supply. Secondly, the dependence on tourism for their livelihood systems and economic welfare and, thirdly, the health condition of the populations. All these impacts have a direct impact on the food security and well-being of the Caribbean population and are presented below.

2 OECS Secretariat. *OECS Covid-19 and Beyond, Impact, Assessments and Responses*. May 2020.

1. Trade

CARICOM countries are classified as *open economies*, indicating the importance of trade to their economic well-being. This is reflected historically by the high contribution of commodity exports, such as bananas and sugar, to their employment, foreign exchange earnings and gross domestic product (GDP). More recently, the export of service —namely tourism— has been, by far, the leading economic pillar, creating concerns over the high dependence on this sector.

The global trade downturn in both goods and services as a result of Covid-19 is estimated to be 20%[3]. This figure does not fully reflect the reduction in port calls and container traffic to smaller and more remote ports like those of CARICOM. Despite this downturn, there is no clear evidence of a shortage of food to be imported due to agricultural export restrictions or import supply chains being disrupted. The presence of stocks on hand for the tourist arrivals that never materialized and the fact that logistics of food supply chains were not disrupted in a significant manner meant that once again CARICOM was saved from a major food availability crisis. However, there remains wide concern in CARICOM that the threat and vulnerability to food insecurity given the high dependence on food imports could easily have been a major crisis for the nations of the region. They may not be as lucky the next time. There is always the risk that without reducing the dependence they could suffer serious food insecurity from future pandemics or crises that could disrupt the supply of food imports.

Major exporters of wheat (such as Ukraine) and rice (Vietnam) placed restrictions on exports at the start of the pandemic, and while global supplies were sufficient not to cause panic, there well could have been shortages that affected countries like CARICOM as supplies were retained at home or diverted

3 UNCTAD, 2020: *The Impact of the Covid-19 Pandemic on Trade and Development: Transitioning to a New Normal.*

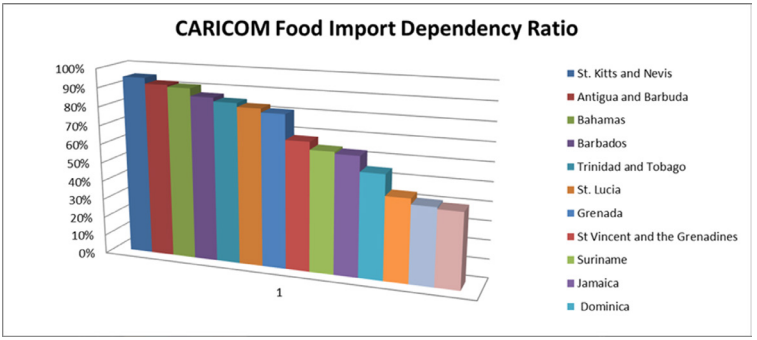
to more lucrative markets. Table 1 shows the food import dependency ratio of CARICOM countries.

With eleven countries in the CARICOM region importing more than 50% of the food they consume, the threat of food insecurity resulting from an interruption of the supply of food imports is real. Eight countries rely on food imports for upwards of two-thirds of their national supply. For the small island countries, more than 15% of these imports are accounted for by cereals (wheat), preparations of cereals, and grains and cereals (soybeans, corn) of the milling industry. There is also the impact on national food production exerted by the importation of essential inputs to produce these crops. This is particularly so in the case of the poultry sector, which is heavily reliant on imported feed. The production practices in the crop sector are also import dependent given their reliance on fertilizers and pesticides.

Table 1. CARICOM Food Import Dependency Ratio – Total Food Imports/Total Food Consumption

St. Kitts and Nevis	95%
Antigua and Barbuda	92%
Bahamas	91%
Barbados	87%
Trinidad and Tobago	85%
St. Lucia	83%
Grenada	81%
St. Vincent and the Grenadines	68%
Suriname	64%
Jamaica	63%
Dominica	55%
Haiti	44%
Guyana	41%
Belize	40%

Source: FAOSTAT, 2015.



More than 90% of food imports come from outside of the region, despite considerable possibilities for intra-regional trade in food products. The major constraints preventing this intra-regional trade are inadequate information, lack of harmonized sanitary and phytosanitary measures, poor logistics, scarce shipping services and weak transportation systems within the region. The development of the domestic food supply sector has been undermined by these failures as too often increases in production to fill market demand have not been able to be delivered, and there has been wastage and spoilage of food. In times of crisis the importance of the agriculture sector is always emphasized and there was no exception in 2020 during the pandemic, when the agriculture sector was the single sector that showed growth in some countries of the region. This production expansion enabled government social safety net programs to buy food from farmers and distribute to those in greatest need.

In terms of exports, there is evidence that for many CARICOM countries, exports of agricultural produce have declined from pre-pandemic levels. In St. Lucia, for example, it has been reported that the decline in airline traffic has negatively affected the shipment of agricultural exports.

Given some reports on the possible origins of the virus and resulting pandemic, the importance of adequate biosecurity and the linkages among human health, animal health, and the environment have been raised. This reinforces the need for

Caribbean countries to pay more attention to biosecurity in the context of food systems. As was mentioned earlier, there is also a concern about lack of harmonization of sanitary and phytosanitary measures among Caribbean countries, and that inadequate communication on these issues hamper the ease of movement of goods throughout the region. These issues need to be addressed, especially if intra-regional trade is to be enhanced. Furthermore, as the international community seeks to improve biosecurity and reduce the risk of future viral outbreaks, it is possible that sanitary and phytosanitary measures may be applied more strictly. For Caribbean countries seeking to maintain or expand food exports, it will be important for them to have the capacities to meet internationally agreed requirements and overcome the potential technical barriers to trade.

2. Tourism

The tourism sector is essential to CARICOM food security given its dominance of the economy in so many member countries for direct income earnings and livelihood systems.

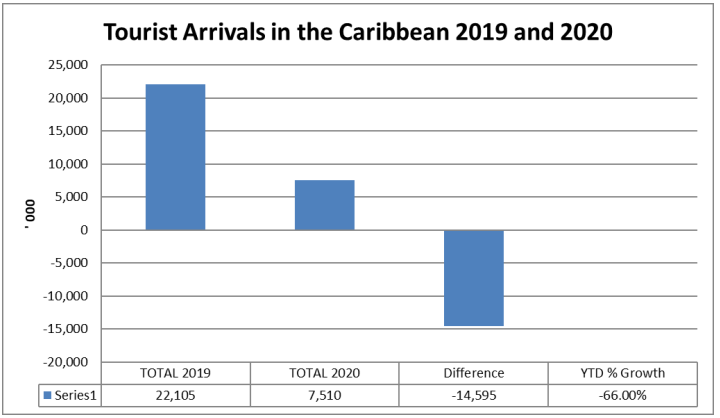
The International Monetary Fund (IMF) has indicated that tourism-dependent economies are among those harmed the most by the pandemic, estimating that «in the first half of 2020 tourist arrivals fell globally by more than 65 percent, with a near halt since April 2020» [4]. The severity of this can be better understood when compared with an 8% decline during the global financial crisis of 2008-09 and a 17% decrease amid the SARS epidemic of 2003[5]. Further, tourism receipts worldwide are not expected to recover to 2019 levels until 2023.

In CARICOM the numbers speak for themselves. Table 2 shows that the average decline in tourist arrivals in the Caribbean was 66%. In several markets such as the Bahamas, Dominica, Grenada, and St. Lucia the decline was much higher.

4 IMF. Finance and Development, Winter, 2020: *Wish You Were Here*.

5 Íbid.

Table 2: Tourist Arrivals in the Caribbean in 2019 and 2020



In most CARICOM countries there was a total shut down in April, May, and June of 2020. In the Eastern Caribbean States that are relatively more dependent on tourism it is estimated that on average their GDP declined by 15.6%.

The link between tourism and food security has at least three dimensions: (a) direct and indirect employment, (b) foreign exchange earnings, and (c) purchases of agricultural produce from the rural sector.

According to the Economic Commission for Latin America and the Caribbean (ECLAC), the tourism economy accounts for 17% of direct employment in the Caribbean, more than doubling to 35% when indirect employment is factored into the calculation. In some countries, such as Antigua & Barbuda and Saint Lucia, the employment created by the tourism sector is as high as 46 and 52% respectively. With the catastrophic decline in tourist arrivals, the loss of earnings increased the levels of food insecurity in almost every CARICOM country. The high proportion of women that find employment in the tourism sector results in a further gender bias in terms of impact on their food insecurity. This is especially so given the high number of single parent households (between 20 and

25%) in CARICOM, with more than 40% being female-headed households in the Eastern Caribbean countries[6].

There is also a relationship between the emphasis on tourism and the neglect of the domestic agriculture sector that of course contributes to the high dependence on food imports. The World Bank created a list of the ten destinations most affected by Covid-19. Five CARICOM countries were on the list. Table 3 shows the importance of tourism to the GDP of these countries and the percentage of jobs reliant on tourism.

Table 3. Five of the ten destinations most damaged by Covid-19

Country	% of GDP	Jobs reliant on Tourism
Antigua and Barbuda	52.5	46.2
Bahamas	48.3	56
Barbados	41.2	41
Belize	41.8	37.1
St. Lucia	43.3	52.4

Source: World Bank 2020. TC data 360 database.

Tourism is a key generator of foreign exchange across the region. Tourism's share in the exports of goods and services for the Caribbean as a whole exceeds 40% and is higher than this for eight CARICOM countries, rising to more than 70% for Barbados, Grenada, and the Bahamas[7]. This high sectoral dependence suggests an economic imbalance in the contribution of one sector to the country's GDP that increases the country's vulnerability generally and, given the need for

6 UNICEF, April 2020. *The Socioeconomic Impact of Covid-19 on Children and Young People in the Eastern Caribbean Area.*

7 ECLAC International Trade Series, #157, 2020. *The impact of the Covid-19 pandemic on the tourism sector in Latin America and the Caribbean, and options for a sustainable and resilient recovery.*

export earnings to pay for the high levels of food imports, increases the country's vulnerability to food insecurity. The tourism sector's contribution, direct and indirect, to GDP exceeds 25% for eight CARICOM countries and more than 40% for Antigua and Barbuda, the Bahamas, Grenada, and St. Vincent and the Grenadines. The indirect contribution arises from all the small businesses that are linked to the tourism industry (taxis, entertainment, local bars and restaurants).

There is also the impact of lost tourism sector purchases of local agricultural produce. Traditional agricultural exports (sugar and bananas) have historically been the major source of rural livelihoods across the CARICOM region. As the markets for these commodities were lost to more competitive exporting countries, rural residents turned to supplying more agricultural produce to domestic consumers and the tourism sector. With the downturn in tourism due to Covid-19, the demand for local agricultural produce also declined, and in some countries there was a significant negative impact on rural livelihoods.

3. Health

In the CARICOM region, Covid-19 magnified another important dimension of food insecurity, the food/health interface vulnerability. The pandemic brought to the fore, very forcefully, the importance of underlying health conditions (obesity, diabetes, cancer, immunosuppression, asthma, kidney disease, hypertension and other cardiovascular disorders, tuberculosis, among others) [8], as an exacerbating factor in poor outcomes for people who had contracted the virus. Most of the reported deaths were among those who had such underlying health conditions. In CARICOM, this catapulted the concern regarding high levels of non-communicable diseases even further up the national agenda as it increased vulnerability of both individuals and the national health system in the context of the rising number of persons needing admission to

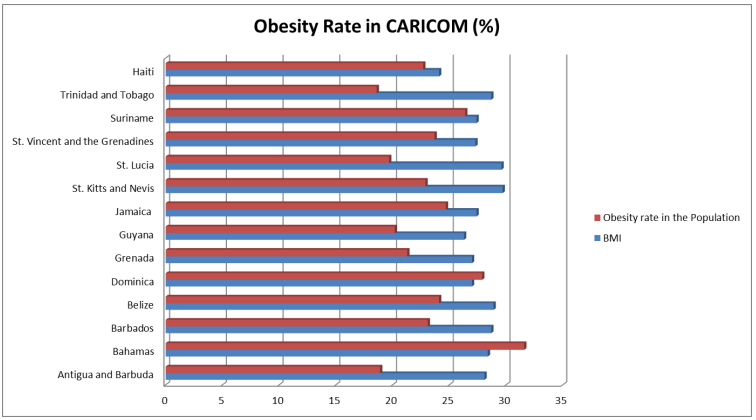
8 WHO, 2020. See https://apps.who.int/iris/rest/bitstreams/1299982/retrieve

hospital due to Covid-19. Obesity is directly associated with underlying conditions and, as Table 4 shows, this is a major problem in the region.

Table 4. Obesity in CARICOM

Country	Body Mass Index (BMI)	Obesity rate in the population
Antigua and Barbuda	28.1	18.9
Bahamas	28.4	31.6
Barbados	28.7	23.1
Belize	28.9	24.1
Dominica	27	27.9
Grenada	27	21.3
Guyana	26.3	20.2
Jamaica	27.4	24.7
St. Kitts and Nevis	29.7	22.9
St. Lucia	29.6	19.7

Source: WHO, 2020. Global Health Observatory.



Two countries in the region, St. Lucia and St. Kitts and Nevis, make the list of top ten most obese countries in the world. In five of the countries of CARICOM (Barbados, Dominica, Jamaica, St. Lucia, and Trinidad and Tobago) greater than 40% of the women are classified as obese. Thus, in strengthening food systems and increasing food security, national consumption patterns and nutrition would undoubtedly need to be given even more attention. The connection between non-communicable diseases and a diet too heavily dependent on processed food imports and fast foods also increases the concern regarding the dependence on food imports for the food security of the region.

The fact that the health and economic consequences of Covid-19 have had the greatest negative impacts on the poor and vulnerable is not surprising. The poor have suffered the most from loss of employment in the economic downturn and are the segment of the population with least access to healthy food and health services. Their loss of earnings has also highlighted the high cost of healthy eating in the CARICOM region. FAO's 2020 study on the «Cost and Affordability of Healthy Diets Across and Within Countries» indicates that healthy diets cost close to five times more than energy-sufficient diets, and even nutrient adequate diets cannot be afforded by those who fall below the poverty lines[9]. During the pandemic, the consumption of cheaper foods and less nutritional diets increased in CARICOM, further exposing the poor to both food insecurity and increased vulnerability of the impacts of the virus.

Section summary

The lessons of the impacts of Covid-19 on CARICOM food security have galvanized the commitment of national and regional policymakers to address the weaknesses in the food

9 FAO, 2020. *Cost and affordability of healthy diets across and within countries*. Background paper for the SOFI 2020 report.

security systems of the region. These weaknesses include the vulnerability that the pandemic highlighted in relation to trade, tourism, and health.

From a Covid-19 impact reference point, the three main lessons for CARICOM food security have been:

1. Vulnerability to trade dependence beyond the region and especially the need to shorten trade value chains for food security. CARICOM leaders have already spoken to this need to produce more food, increasing the proportion of food available from regional food systems. They have committed to reducing food imports by 25 % by 2025.

2. Risks of economic structural imbalance by too great a dependence on one sector —tourism— for national revenues, earnings, and viability of livelihood systems. This resulted in negatively affecting the economic accessibility to food by the population.

3. Understanding more clearly the linkages between food and agricultural trade and health. Therefore, calling increased attention to how food trade policy, consumption patterns, and poor food choices determine nutrition and give rise to damaging underlying conditions such as non-communicable diseases. This nutrition-related dimension of food insecurity is being highlighted during the Covid-19 crisis as never before.

Strategy Going Forward: Ensuring Food Security in CARICOM in the post Covid-19 era. Four Imperatives

The next section of this paper addresses these lessons through identifying critical elements for consideration in a strategy for building inclusive, competitive and sustainable food and agricultural systems to increase food security across the CARICOM region.

At the national, regional, and international levels there have been numerous consultations with regard to how best CARICOM might respond to address food security during —and beyond— the Covid-19 pandemic.

The imperatives presented below are mainly longer-term interventions intended to address establishing a food security system that is (a) not overly dependent on one sector and thereby builds the agriculture sector as an increasingly important sector for better economic wide structural balance; (b) not overly dependent on imports of food as now characterizes CARICOM countries and therefore susceptible to external supply chain disruptions; and (c) conscious of the linkages between food consumption patterns and good health and the products that result in healthier populations than is currently the case.

The remainder of this paper is devoted to the long-term strategy for building CARICOM food security beyond the Covid-19 period, reflecting the outcomes of several recent studies and consultations conducted at the national, regional, and international levels to detail strategies in both the regional as well as the national context of CARICOM countries.

The regional context is particularly important as over at least the past two decades there is a recognition that given the small economies, the high levels of vulnerability, and the remoteness of —especially— the island states, the future of their national level food security is closely tied to success with food security strategies in a regional context. As a result, there has been the Jagdeo Initiative on Binding Constraints to Agricultural Development (2005), the Liliendaal Declarations on Agriculture and Food Security, Climate Change and Development (2009), the CARICOM Common Agriculture Policy (2010), and the CARICOM Regional Food and Nutrition Security Policy and its Action Plan (2011), among others. All these documents proposed planning and policy approaches at the regional level to complement national actions towards increased food security.

Covid-19 has galvanized the commitment by CARICOM governments and institutions to make the changes that are necessary to transform the food and agriculture sector and reduce the serious state of food insecurity that characterizes the region.

Four Imperatives

As indicated in the previous section on the impacts and lessons of Covid-19, there are three imperatives that need to be addressed to ensure the food security of CARICOM in the future. Firstly, income earnings that enable *accessibility* to food by CARICOM citizens should not be overly concentrated and dependent on any one sector as is currently the case with the tourism sector. Secondly, the high levels of food import dependence of the region expose CARICOM's population to potential catastrophe if supplies are not *available* because of restrictions by exporting countries or transportation and supply chain logistics outside the region are disrupted. Thirdly, the CARICOM region's food security from a *nutrition* standpoint is precarious, as their consumption practices increase their underlying health conditions. The pandemic has fully exposed how this makes them more susceptible and vulnerable to diseases and death.

To the above three imperatives must be added one more major additional factor that undermines CARICOM's food security. It is the region's vulnerability to climate impacts. The data on damage from *natural disasters* in CARICOM reveals that the highest economic losses from the worst natural disasters are from floods, storms, and droughts[10]. Hurricanes Irma and Maria in 2017, each were in the top five climate disasters for absolute losses between 1998 and 2017, with a loss of 80.8 and 69.7 billion dollars respectively. The losses from Irma for

10 United Nations Office for Disaster Risk Reduction (UNISDR) and Centre for Research on the Epidemiology of Disasters (CRED), 2018. *Economic Losses, Poverty and Disasters, 1998-2017*.

Dominica are estimated at 259% of GDP. The average losses from natural disasters for CARICOM countries between 1990 and 2014 were 2% of GDP, above the IMF threshold of 0.5% for a major economic disaster. Clearly, reducing disaster losses is essential to decreasing poverty and increasing food security.

Imperative one: *reducing dependence on the tourism sector for earnings must be addressed by rapidly growing and diversifying the food and agricultural sector*. This transformation has to be characterized by the adoption of technologies that promote competitiveness and at the same time are environment friendly and increase sustainability. A critical dimension for achieving this is ensuring that the production and marketing infrastructure needed for scaling up production, increasing productivity, and enabling reliable and timely supplies to markets is in place. In this regard, two areas across the region need urgent expanded investment.

In terms of production, water availability and water management are the highest priority. This should start with an updated assessment of the current institutional, technology and infrastructure capacity for water management, paying particular attention to opportunities related to watershed management for gravity fed water supply, use of water tanks, and drip irrigation. In some of the island countries innovative pilot testing of small-scale desalination plants and solar powered micro-irrigation schemes are already underway. Water governance capacity building will be essential to improved hydro-climatic monitoring to balance water resources demand analysis and ground water assessments. A participatory approach including water institutions, water users, and rural area stakeholders will be vital for success.

In terms of marketing, the long-standing weaknesses related to linking the region's production and marketing systems starts with improving information and shipping infrastructure for trading agricultural products. Increasing and upgrading port facilities, product consolidation hubs, including warehousing (dry and cold storage) and marketing information

is crucial. Strengthening and harmonizing trade policy management, health, safety, and customs protocols is important at all stakeholder points for expansion of agricultural production and trade across and beyond the region.

Imperative two: *reducing the high levels of food import dependence of the region is fundamentally tied to expanding the availability and consumption of food and feed products that can be grown competitively in the region.* Simultaneously, the consumption of these products by households, institutions, hospitality establishments, and processing plants need to expand proportionately. Specific products should be targeted with accompanying public policy promoting their production and consumption. The goal of reducing food import dependence by 25% by 2025 suggests that products that can be produced and utilized in place of some levels of imports are the place to start. The food import bill indicates the areas for emphasis. A significant amount of meat (poultry and feed), cereals (wheat), fruits, and vegetables imports can be replaced by regional products, thus reducing the external dependence.

Meat imports should be addressed by increased production of small ruminants and fish. Grass-fed small ruminants, sheep, and goats should be promoted as a direct substitute for imports of mutton (lamb) and goat meat as well as for other imported meats (poultry and beef). The high level of fish imports by several countries of the region can be replaced by harvested (snapper and tuna) and farmed fish (tilapia). This applies to domestic consumption that includes the tourism demand as well. This expansion of fish production and consumption has the potential of contributing to exports as well in the context of imperative one.

Cereal imports of wheat and corn used by the bakery and feed industries should be addressed by increasing the levels of mixed flours and other products based mainly from increasing root crop production and processing. The two root crops that have demonstrated candidacy in this regard are cassava and sweet potatoes. Cassava flour has been used successfully

by bakeries in the region, replacing up to 40% wheat in a loaf of bread. The acceptability to regional consumers has been proven over the past five years. Sweet potato and other root crop flours have also been used. It has also been demonstrated that root crops can replace imported cereals in the feed and other industries, such as beer production. The key factor here is to pursue root crop production as a manufacturing process and as an industry, as is done in other countries of Latin America, as well as in Asia and Africa.

Fruits and vegetables are even more evident as opportunities for import replacement given the unharnessed potential of the diverse exotic fruit prospects and the demonstrated production of vegetables. The industrial production, processing and organization of fruits, mangoes, soursop, papayas, and guavas, among many others, is the recognized route to success in reducing imports of apples, grapes, and other fresh and processed fruits. Public policy, agro-industrial investment and producer organizations are the vehicles to reach this objective. The same applies for direct substitutes of vegetable such as cabbages, carrots, and onions, among many others.

Imperative three: *addressing food consumption habits for improved nutrition and health requires proactive integrated health, agriculture, trade, and public policy*. It is urgent to reverse the nutrition transition that has favored foods that are low in nutrients, high in fats, oils, sweeteners, and sodium, turning to domestic root crops, fruits, and vegetables. The pandemic has increased the risk of a decline in dietary quality stemming from income losses (the high cost of healthy diets) and reduced food transfer schemes, such as school feeding.

Health policy promoting better nutrition will continue to fail if affordable food of high nutritional quality is not readily available. This requires nutrition demand driven national food production expansion programs where nutrition institutions work with both consumers and producers to create well-functioning food markets characterized by the demand and supply of nutritious foods.

Public policy, both proactive and promotional, is needed to support efficient food markets that are proactive in terms of providing incentives that stimulate the production, processing, and consumption of nutritious foods. This includes influencing purchasing decisions by all segments of the public sector, including not only the normally cited school feeding programs, hospitals, and prisons, but all projects and programs that receive public funding. Promotional campaigns that are not passive as in past «buy local» advertising, but active in terms of targeting groups of consumers with nutrition education and purchasing strategies. This can focus on families with young children, sports events, community supported nutrition, and agriculture drives directed at inducing food suppliers to improve the quality of products offered for sale.

Food trade policy, regionally and globally, needs to be revisited as the problem of underlying conditions that have led to poor health outcomes are often associated with cheap imported food. These foods have contributed to narrow diets of a few commodities and have reduced both the production and demand of a wider, more diversified food supply. National nutrition and agricultural sector diversification considerations need to be factored into trade policy negotiations in a more effective manner. This requires more attention and engagement to subjects in the World Trade Organization (WTO) agriculture negotiations that have floundered over the last decades, such as «special products», public stockholding for food security, and the «special safeguard» mechanism. Health, agriculture, and trade policy makers need to be working closely, nationally and regionally, on these issues with the intention of facilitating negotiated outcomes that advance their nutrition and agriculture goals.

Short-term nutrition impacts have long-term consequences, therefore it is essential that social protection programs and safety nets are an integral dimension of food security policy, not only during a crisis but addressing the needs of the poor and food insecure at all times.

Imperative four, *addressing the vulnerability to climate change and other shocks which negatively impact all other determinants of food insecurity, such as loss of income, loss of crops and food supply, and consumption of less nutritious foods*. The estimates indicate that the impact on food and agriculture systems account for some 25% of the damage and losses from natural resource hazards and disasters. When droughts alone are considered, 80% of damage and loss affects the agriculture sector. Thus, there is the need to increase the resilience of agricultural sector livelihoods to prevent the impacts of disasters.

Embracing the four priorities of the Sendai Framework for Disaster Risk Reduction 2015-2030[11] is a good place to start. More specifically in the context of food security, it requires building resilience in food and agriculture systems, and diversifying the bases and sources of income. For agriculture production this translates into moving away from monoculture and adopting practices that pay more attention to managing soil cover and enhancing soil organic matter. Using modern information and communication technologies that facilitate more timely and accurate climate data would help producers to address climate variability more effectively. This includes investing in early warning systems that enable mobilization of governments, organizations, and producers to reduce the impacts of disasters.

A climate smart approach to food systems and agriculture has been developed and promoted by FAO. Its three main objectives and the synergies between them should be urgently pursued: (a) sustainably increasing agricultural productivity and incomes; (b) adapting and building resilience to climate change; and (c) reducing greenhouse gas emissions. FAO's

11 UNISDR. The Sendai Framework was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR). The four priorities are: (1) Understanding disaster risk; (2) Strengthening disaster risk governance to manage disaster risk; (3) Investing in disaster risk reduction for resilience; and (4) Enhancing disaster preparedness for effective response and to «Build Back Better» in recovery, rehabilitation, and reconstruction.

Climate Smart Agriculture Sourcebook[12] makes the case very clearly that there is no one technology or approach, but several. There needs to be collaboration across the agricultural (crops, livestock, forestry, and fisheries) as and other sectors, such as energy and water. The importance and need for addressing climate impacts on development and food security can be supported by the fact that in 2020, 52% of World Bank financing in agriculture also targeted climate adaption and mitigation. These investments are closely aligned to the interventions indicated in imperative one for managing water use by rehabilitating community watercourses and introducing modern irrigation and other activities to boost resilience to floods and droughts.

In the context of all of the four imperatives above it is important to promote the utilization of the new emerging digital technologies. This needs to be done to increase the efficiency and competitiveness of food production and distribution systems as well as providing readily accessible information on food choices and facilitating early warning systems on disasters and resilience adoption measures.

Conclusion

The four imperatives emphasized in this paper for building sustainable food security systems are dependent on resources being available. The Covid-19 crises caused the sudden collapse of the tourism sector that is so critical to the earning capacity of CARICOM economies and people. As a result, the countries have limited resources and need financial and technical support to embark on the recovery and transformation of their agricultural economies in order to increase their level of food security.

Resources are needed that will allow investment in food and agriculture planning, policy development and research for

12 FAO, 2013. *Climate Smart Agriculture Sourcebook,* Rome.

strengthening and promoting innovation systems. Innovation that is needed for development of new products and new production and marketing systems, and also for new and improved organizational approaches such as public-private, farmer's cooperatives, and community partnerships.

Resources are needed that enable the food insecure to finance their way out of poverty and food insecurity. This consists of inclusive financing approaches that ease liquidity constraints faced by farmers and small enterprises, enabling investment in rural infrastructure (especially water) that provide incentives for small entrepreneurs to invest more in their own development. The human dimension is critical to success; throughout the process, resources are needed to promote improvements in management skills, financial literacy, and utilization of relevant technologies, including the use of digital tools. Adequate attention to human capacity building will greatly enhance the chances of developing sustainable food systems and enabling an exit from poverty and food insecurity.

Resources are needed to influence global policies and decision making in a consistent and continuous manner towards achieving increased food security. This requires facilitation of the preparation of negotiating positions and advocating successfully for their adoption. For improved food security this means effective participation in global forums such as the 2021 United Nations Food Systems Summit, the World Trade Organization, the World Health Organization, the United Nations Climate Change Conference (Conference of Parties), and the multilateral negotiations that take place in the governing bodies of the United Nations Food and Agriculture Organization, and at the FAO-hosted Committee on World Food Security.