FOOD SYSTEMS PROFILE - EASTERN CARIBBEAN REGION
Catalysing the sustainable and inclusive transformation of food systems
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Catalysing the sustainable and inclusive transformation of food systems
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Key messages

This regional report covers seven small island developing states (SIDS) located in the geographical region known as the Eastern Caribbean: Barbados, Antigua and Barbuda, Dominica, Grenada, Saint Lucia, Saint Kitts and Nevis, and Saint Vincent and the Grenadines. These volcanic islands mostly have highland landscapes, except for Barbados, and tiny landmasses ranging from 270 km² (Saint Kitts and Nevis) to 750 km² (Dominica). Population sizes vary greatly, but density is low on most of these islands. Large parts of these islands are mountainous, with rugged terrain, steep slopes and shallow soils, which limit availability of suitable agricultural land.

The Eastern Caribbean countries have made significant progress in terms of per capita income, poverty reduction, access to services and gender inclusion, despite the constraints of their small sizes (World Bank, 2018). The region has made considerable strides in improving the health status of children relating to infant mortality rates, stunting and wasting. They have been successful in reducing infectious diseases as well as in lowering the incidence of anaemia among women and children.

Despite these advances, however, there are significant challenges to sustainable food systems in the region:

○ The loss of preferential markets, due to trade rules established during World Trade Organization (WTO) negotiations, led to a collapse of the agriculture sector in the 1990s. Because of the lack of a well developed transition strategy, the enabling conditions and environment for rebuilding the agricultural sector could not be created. The sector as a whole was neglected and viable agricultural commodity alternatives were not adequately promoted or supported. Production and export earnings fell, with many producers giving up farming. Following the collapse of the agriculture sector, there was a structural shift in the economic base of these islands towards services, mainly tourism.1

○ The agriculture sector never fully recovered from the economic and trade policy shocks and contributes a much smaller share of the gross domestic product (GDP) today. Several factors have contributed to the lack of a vibrant agricultural sector in these island countries. These include a lack of institutional reform, a weak policy environment, inadequate investments in farming infrastructure and technology, poor maritime and air transport infrastructure, scarce and unreliable water supply, lack of access to credit and insurance markets, limited capacity of research and extension services, an ageing farmer population, repeated losses and damage from extreme weather events and other natural disasters, environmental degradation, weak marketing systems and limited intra-regional coordination.

1 The contribution of the tourism sector to GDP ranges from 28 percent in Saint Kitts and Nevis to 43 percent in Antigua and Barbuda (ILO, 2020).
The neglect of agriculture and the shift towards tourism compounded food security issues as the Eastern Caribbean economies have become heavily reliant on food imports to meet consumption demand. The volume and value of imports have been rising rapidly. Changing consumption patterns have emphasized cereals, and cereal import dependency in most of these countries is close to 100 percent today. Consequently, these economies have become highly vulnerable to external economic and climate shocks.

Moreover, imported foods increasingly consist of energy-dense processed food, which are high in sugars, fats and sodium. The rapid expansion of supermarkets and fast-food restaurants facilitates the ready availability of these unhealthy convenience foods at affordable prices relative to healthy local food products, such as fruits and vegetables, which tend to cost more. Limited nutritional knowledge about healthy diets and unhealthy lifestyle choices among the general population have led to a transition away from traditional diets towards processed and ultra-processed foods.

Consequently, there has been a sharp increase in the prevalence of overweight and obesity in the region, principally among adults, but also among adolescents and children. Prevalence of overweight and obesity in the 5–19 years category ranges from 23.4 percent in Saint Lucia to 32.6 percent in Dominica, significantly higher than the global prevalence rate of 18 percent. Associated with obesity is the concomitant increase in non-communicable diseases (NCDs) which account for almost 80 percent of all deaths in the region, presenting a significant burden on health-care systems.

Repeated losses and damage from extreme weather events and other natural disasters have been adversely affecting food production and livelihoods of producers along the value chain. These issues are likely to worsen with climate change and the accompanying increase in temperature, lower precipitation, sea level rise and saltwater intrusion, increased intensity and frequency of cyclones, as well as shifting agricultural seasonality.

While such concerns are global, they are likely to erode the resilience of food systems in the Caribbean more dramatically than in many other geographical regions because of their exposure and vulnerability profile: (1) the region is part of the Atlantic hurricane alley, which makes it more likely to be affected by frequent and intense cyclones; (2) the region is characterized by low-lying coastal areas and long coastlines, implying high exposure to certain climate change impacts, such as sea level rise and rising water temperatures; (3) with a large share of their economies based on the coastal ecosystem, or located near the coastline, these islands are highly vulnerable to climate change impacts.

The high dependence on food imports and exports of a few commodities makes the region extremely vulnerable to global price fluctuations and external shocks (such as the 2008 global financial crisis, the COVID-19 pandemic and the Russian–Ukrainian conflict). The pandemic, for instance, has exposed the vulnerabilities in these economies. The global food supply and market disruption brought about by the closure of meat processing plants in the United States of America, freight-rate rises, shortages of shipping containers, shipping route interruptions and closure of physical markets considerably affected food systems in the region.

The above challenges pose significant threats to sustainable food systems and highlight the need for a more integrated, holistic and regional approach. The assessment provides various entry points
for sustainable transformation of food systems in the region – including innovative campaigns promoting healthy diets and lifestyles, policy support to reduce availability and affordability of unhealthy imported foods, front-of-package labelling requirements, building capacity for climate-smart and ecosystem-based approaches to agriculture, improving availability and accessibility of finance, creating an enabling environment to support alternative agricultural products, establishing public-private investment synergies, as well as improving the regional policy and regulatory environment to stimulate investments in agriculture and agribusiness, and establish linkages with tourism and the modern retail sector. Successful transformation of the region’s food systems require mainstreaming the food systems concept and improving cross-sectoral dialogue and coordination at the regional, national as well as local levels.
Methodology and process

This brief is the result of a collaboration between the Ministry of Agriculture, Fisheries, Physical Planning, Natural Resources and Co-operatives (Saint Lucia); the Ministry of Agriculture, Fisheries and Marine Resources (Saint Kitts and Nevis); the Ministry of Agriculture, Land and Forestry (Grenada); the Ministry of Agriculture, Forestry, Fisheries, Rural Transformation, Industry and Labour (Saint Vincent and the Grenadines); the Ministry of Blue and Green Economy, Agriculture and National Food Security (Dominica); the Ministry of Agriculture, Fisheries and Barbuda Affairs (Antigua and Barbuda); the Ministry of Agriculture and Food Security (Barbados); the Food and Agriculture Organization of the United Nations (FAO); and the European Union, in close collaboration with national and international experts. It was implemented in these seven Eastern Caribbean countries from June to August 2021. The methodology used for preparing this brief is the result of a global initiative of the European Union, FAO and the French Agricultural Research Centre for International Development (CIRAD) to support the sustainable and inclusive transformation of food systems. This assessment methodology is described in detail in the joint publication entitled Conceptual framework and method for national and territorial assessment: catalysing the sustainable and inclusive transformation of food systems (David-Benz et al., 2022).

The assessment integrates qualitative and quantitative data analysis with participatory processes by mobilizing public, private and civil society stakeholders. The approach includes interviews with key stakeholders and a consultation workshop to refine systemic understanding of food systems and discuss potential levers to improve its sustainability. The assessment process thus initiates participatory analysis and stakeholder discussion on the strategic opportunities and constraints to sustainable transformation of food systems. The approach assesses the actors and their activities at the core of the system, together with their interactions along the food chain as well as the environments directly influencing their behaviour. Conditioned by long-term drivers, these actors generate impacts in different dimensions that in turn influence drivers via a number of feedback loops (see Figure 1).
The approach involves a detailed understanding of the key challenges along the four dimensions of sustainable and inclusive food systems: (i) food security, nutrition and health; (ii) inclusive economic growth, jobs and livelihoods; (iii) sustainable natural resource use and environment; and (iv) territorial balance and equity. Aimed at identifying critical issues affecting the sustainability and inclusivity of food systems, the assessment is both qualitative and quantitative in nature. Critical challenges and key food systems dynamics are specified in the form of Key Sustainability Questions (KSQs), whose answers (see schematic representations for all KSQs) help identify systemic levers and areas of action that are essential to bring about desired transformations in food systems.

This approach is designed as a preliminary rapid assessment for food systems and can be implemented over a period of 8–12 weeks. The methodology has been applied in more than 50 countries as a first step to support the transition towards sustainable food systems.

Regional context: key figures

Prior to the 1990s, the agriculture and tourism sectors were both important drivers of the Eastern Caribbean economies. With the loss of preferential access to European Union markets as well as liberalization of markets brought about by WTO policies, the agricultural sector declined significantly (see KSQ 2 for a detailed discussion). The Eastern Caribbean countries became service-based economies with tourism, financial and government services accounting for the majority of employment and income. In the policy arena, the agriculture sector was neglected despite its importance to rural livelihoods. The increased dependence on tourism made the economies much more vulnerable to external shocks, contributing to the low and volatile GDP growth since 2000.

The changed structure of the economies and weak fiscal management over the years have led to unsustainable levels of debt, high (youth) unemployment, high incidence of obesity and NCDs, and increased vulnerability to the effects of climate change, natural hazards and economic shocks. Furthermore, the net emigration rates in these countries have been quite high relative to the total population, primarily comprising highly skilled persons in the 20–25 age group. Table 1 presents country-level data for the region over the past two decades.
Table 1. Country-level data – Eastern Caribbean region

<table>
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<th>Antigua and Barbuda</th>
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Key figures and trends in food production, consumption and trade

Historically, agricultural production in the region has been dominated by a few crops – banana (Saint Lucia, Saint Vincent and the Grenadines, Grenada, Dominica) and sugar cane (Saint Kitts and Nevis, Barbados) – that were cultivated primarily for export to the European Union under the preferential trade regime. However, with the loss of preferences and the “colonial premium” the countries had received, as well as the need to conform to WTO regulations, the food systems in these island nations received a series of significant shocks. Dominica, Grenada, Saint Lucia, and Saint Vincent and the Grenadines reduced their banana output, while Barbados and Saint Kitts and Nevis reduced their sugar cane production (with the latter discontinuing production from 2006). Annex 1 presents the production structure for each of these seven countries in 1990 and 2019; while Annex 2 presents time-series trends in the production of their key crops and livestock products over the last three decades.

Since the production and distribution ecosystem was focused on these key export crops, an agricultural support system for other crops had never quite developed in the region. As a result, the decline in banana and sugar production was reflected in the overall decline in the value of agricultural production in the region (see Figure 2), with agriculture, forestry and fishing accounting for a much smaller share of the GDP of these nations today (see Figure 3). Food import dependency, which was quite high to begin with, increased further (see Figure 4) due to declining production and increasing consumption demand (both domestic and tourist). While there have been efforts to shift rural resources to the production of food crops for the domestic market, they have not been successful in reducing the region’s high dependence on imported food. Agricultural production and productivity in the region has remained constrained by a broad set of factors, including inadequate access to improved crop varieties and other technologies, low access to credit, high labour costs, insufficient monitoring and response to pests and diseases, as well as inadequate skills and entrepreneurship among farmers.

Figure 2. Gross value of agricultural production (constant 2014-2016, 1000 International Dollar)


2 The value of agricultural production in 2019 was lower than that of 1990 for almost all seven countries.
Figure 3. Value added in agriculture, forestry and fishing (share of GDP)

Figure 4. Food import dependency ratio (total food imports/total food consumption)


Over the years, efforts to diversify into food crops and new export products have not been successful, largely because of the lack of a comprehensive integrated strategy and institutional changes supporting the transformation of production and distribution systems (see KSQ 2 for details). Major production houses and abattoirs (geared primarily towards banana and sugar cane) was dismantled, while new infrastructure (such as cold chains, packing houses, abattoirs) to support a shift to other commodities remains to be constructed. The liberalization of domestic markets exposed domestic farmers and industries to competition for which they were ill prepared. Barbados, however, has retained food policy controls and successfully undertaken some structural readjustments in its food sector. It has increased production of broilers and eggs, supported by modern infrastructure, feed mill and processing plants. It meets its chicken meat requirements and some of its beef and mutton demand from domestic production. While feed mills were constructed in other countries, such as Saint Lucia, and Saint Vincent and the Grenadines, investments in processing plants and other broiler infrastructure as well as technology transfer have been slow. Competition from cheap chicken pieces imported from the United States also limited the growth in broiler meat production in these countries. Processing has expanded in beverages, cereals and animal feed, primarily based on imported intermediate goods/ feedstock.

Figure 5 presents the structure of production in the region in 1990 and 2019. As is evident, the importance of banana and sugar cane in total agriculture production has declined in the last few decades with an increase in poultry meat (driven largely by Barbados). Farmers generally produce a wide range, but limited amounts of fresh produce that are absorbed by the domestic and regional markets, such as sweet potato, dasheen (taro), pork, some tropical fruits and a variety of greens (lettuce, cabbages, shallots) and vegetables. A few farmers continue to produce small volumes of bananas for export to the region and the United Kingdom of Great Britain and Northern Ireland markets. There is much to be gained in the region by enabling and stimulating farmers to shift production to more remunerative products, using state-of-the-art technologies and sustainable practices, through transfer of technology programmes and other enabling policies.
With the changed market preferences of the European Union, there was a dramatic decline in the export demand for sugar and bananas from the region, which led to a steep decline in exports of both these commodities. See Annex 3 for time-series trends in the exports of key commodities in the region (mainly fruits and vegetables). In recent years, there has been some growth in the exports of processed foods (such as beer, alcoholic beverages, wheat flour, livestock feed, and seafood), largely from countries, such as Barbados, Saint Lucia, and Saint Vincent and the Grenadines. Even so, the level of food exports remains very low, at less than 1 percent of domestic production in most of these countries. The region’s exports are generally far too specialized in a few products compared to the world average or even to those of other small island developing states (ECLAC, 2020). Structural gaps, particularly in quality standards and shipping-related infrastructure and services, have limited their integration into international value chains and trade. There is need for regional coordination for aggregation of similarly produced commodities to take advantage of economies of scale in production and distribution.

Structural shifts away from agriculture and towards services have led to a much greater reliance on imports to meet local and tourist food consumption demand. Imports of cereals, fruits and vegetables, beverages and dairy products have risen significantly over the years. In fact, the cereal import dependency is close to 100 percent for the region. The value of food imports in the region’s total merchandise exports range from 69 percent in Barbados to 210 percent in Saint Vincent and the Grenadines (see Table 9). The high and increasing import bill increases exposure to global food price shocks and puts pressure on scarce foreign exchange.

Some of the top food products imported by the region are sugary beverages, baked goods (including breads, pastries, cakes and biscuits), cheese, sausages, milk, and margarine. Imports of such energy-dense foods that are high in sugars, fats and salt are directly linked to the growing obesity epidemic and rise of NCDs. See Annex 4 for time-series trends in the imports of key commodities in the region.

At the aggregate level, food balance data indicate that food availability in the Caribbean is above recommended levels and has been increasing consistently. Nonetheless, food security is compromised because of poverty, income inequality and unhealthy food choices. Annex 5 presents the food availability for the different commodity groups (in terms of food energy) for each of the seven countries. The pattern of food supply is comparable across all countries with very slight variations. Cereals, sugar, and fats and oils are the three most frequently consumed food groups in the regional diet. The proportion of energy from sugar exceeds the standard 10 percent recommended by the World Health Organization (WHO) in almost all countries. This can be attributed to the high and increasing consumption of sugary beverages (see Figures 6a and 6b). According to estimates using the Global Dietary Database (2015), daily consumption of fruit and vegetables remains well below the recommended amount (400 grams) in the region, although there is ample variation among countries (see Figure 7). Moreover, sugar consumption is estimated to be significantly higher than the maximum recommended amount (50 grams).

Comprehensive data on consumption patterns and trends are not available for most of these countries. However, the existing literature points to a gradual shift, beginning in the 1990s, away from diets based on locally grown indigenous staples (grains, starchy roots), locally grown fruits,
vegetables, legumes, and limited foods from animal origin to diets that are more varied and energy-dense, consisting of foods that are more processed (including processed beverages), more of animal origin, more added sugars and fats, and often more alcohol (Ballayram, Lawrence and Henry, 2015). These shifts were linked to the policy of liberalization and privatization in the 1980s and 1990s, which led to a rapid growth of supermarkets and fast-food chains in the region and importation of unhealthy foods (see discussion in KSQ 1). A recent study by Harris et al. (2021) collected dietary data based on 24-hour dietary recalls from persons aged 25–64 years in Barbados. The study found that almost 41 percent of dietary energy came from ultra-processed foods (UPFs) with the largest contribution from sugary beverages, industrial packaged breads and pastries, buns and cakes. The study also found that younger respondents (25–44 years) consumed a significantly higher proportion of food energy from UPFs. One-quarter of the respondents consumed more than 50 percent of their daily food energy from UPFs.

Figure 5. Structure of production (share of value using constant 2014–2016, International Dollar)

Figure 6a. Sugar and sweeteners – share of available food energy in 2019 and recommended consumption levels


Figure 6b. Daily consumption of sugary beverages among adults (2000–2015) (in grams)


Figure 7. Daily consumption of fruits and vegetables among adults (2000–2015) (in grams)

Characterization of the dominant actors in the food systems of the Eastern Caribbean region

- As discussed earlier, the economies of these seven countries have undergone substantial structural transformation, with agriculture becoming a significantly less important part of their GDP and employment. Historically, farmers in large plantations produced agricultural commodities (primarily sugar and bananas) for exports. Data from the small island States suggest that the number of registered banana farmers, for instance, dropped from 23,100 in 1994 to 5,300 in 2003 (Ford et al., 2007). Similar trends were observed for sugar cane farmers as well.

- Smallholder producers constitute the largest share of the farming population in these countries. Using data from the most recent available censuses of agriculture, Lowder et al. (2016) identified that more than 80 percent of farms are smaller than five hectares and most are less than two hectares (see Figure 8).

- As mentioned earlier, these smallholder farmers produce a wide range, but limited amounts, of fresh produce that are absorbed by the domestic and regional markets, such as sweet potato, dasheen, pork, some tropical fruits and a variety of vegetables. A few farmers continue to produce small volumes of banana for export to regional markets and markets of the United Kingdom. More detailed and up-to-date data is not readily available for these countries. However, data from the most recent censuses suggest that most farms are individually owned (see Table 2). There are very few cooperatives, which are often not well organized.

- Poultry production has seen rapid growth in recent decades, mainly driven by the poultry subsector in Barbados. Production systems include semi-commercial small producers and commercial medium- and large-sized

Figure 8. Distribution of farm sizes (in ha)


* The analysis includes four small island states: Dominica, Grenada, Saint Lucia and Saint Vincent and the Grenadines.
The high production value makes it an attractive commodity for income generation. However, small-scale farmers are unable to compete against cheap imports of livestock products due to high costs of production, lack of access to capital and low adoption of efficient technologies.

- The small-scale fisheries sector is also vital for rural livelihoods. In the small island States, artisanal fisheries drive 95 percent of total fishing effort (Dunn et al., 2010), while industrial and super-industrial fisheries represent 5 percent. The sector, however, is characterized by a high degree of informality, seasonality, and hazardous working conditions (FAO, 2016).

- In most countries, more than 50 percent of farmers are 35–65 years old. A generally ageing farming population is the consistent trend across all these nations (IICA, 2017) as young people don’t want to be involved in agriculture (discussed in KSQ 2).

- Agriculture is an important source of employment and income for Caribbean women, who account for 20–30 percent of registered farmers in the region (22 percent in Grenada, 15 percent in Dominica). The low participation of women in agriculture is linked to gender-based inequalities in accessing land, labour, financial capital, technology and market information.

- Women are also involved in marketing agricultural crops. In some countries, women engage as “huggers” (intermediaries), purchasing directly from farmers and reselling to various markets, including overseas. Agroprocessing activities by rural women are becoming increasingly popular. While there is lack of data on youth participation and women’s roles in fishing value chains, there is strong evidence that women are active and recognized players in the post-harvest food value chain.

- In terms of local food processing, small-scale processors of pepper sauces, jams, jellies, fruit nectars, rum and other alcoholic beverages are prevalent throughout the region. However, the small scale of operations and high cost of inputs constrain their production capacities.

Table 2. Ownership structure of farms

<table>
<thead>
<tr>
<th>Country (census year)</th>
<th>Individually owned</th>
<th>Corporation-owned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbados (1989)</td>
<td>16,945</td>
<td>103</td>
</tr>
<tr>
<td>Dominica (1995)</td>
<td>8,365</td>
<td>7</td>
</tr>
<tr>
<td>Saint Kitts and Nevis (2000)</td>
<td>2,934</td>
<td>110</td>
</tr>
</tbody>
</table>


---

6 The analysis includes four small island states: Dominica; Grenada; Saint Lucia; and Saint Vincent and the Grenadines.
### Table 3. Share of total farms by farmer age group (%)

<table>
<thead>
<tr>
<th>Country (census year)</th>
<th>Aged 35 and under</th>
<th>Aged 35–65</th>
<th>Aged 65 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage share</td>
<td>Percentage share</td>
<td>Percentage share</td>
</tr>
<tr>
<td></td>
<td>of farms</td>
<td>of farms</td>
<td>of farms</td>
</tr>
<tr>
<td>Barbados (1989)</td>
<td>13</td>
<td>56</td>
<td>31</td>
</tr>
<tr>
<td>Dominica (1995)</td>
<td>62</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Saint Kitts and Nevis (2000)</td>
<td>19</td>
<td>59</td>
<td>22</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines (2000)</td>
<td>18</td>
<td>66</td>
<td>15</td>
</tr>
</tbody>
</table>


- Most food and beverages consumed in the Eastern Caribbean islands are imported. Of the total food products imported, roughly 60–70 percent is absorbed by the retail sector and the rest is channelled to the hotel, restaurant, and institutional (HRI) sector (USDA, 2015).

- Wholesalers and distributors in the Caribbean tend to focus on importing non-perishable food items (dry goods) with little emphasis on fresh produce (USDA, 2015).

- Modern grocery retailers (large and small supermarkets, convenience stores) represent about a quarter of all grocery retail establishments in the region. These stores generally carry a wide assortment of imported products and cater to tourists as well as to the domestic middle- and upper-income groups. Traditional grocery retailers, mainly independent small grocers, make up three quarters of all grocery retailers and carry smaller assortments of imported products, and cater mostly to the local population (USDA, 2015).

- Along with the rapid expansion of modern retail, there has been increasing proliferation of hotels, restaurants, informal street food vendors and fast-food chains in the region.

- Among national institutional actors are governments, including the ministries of agriculture, national food import and marketing boards, hotels, hospitals and non-governmental organizations (NGOs). Food import and marketing boards in these island nations have assisted with procurement from small farmers, production, management of supermarket import trade, as well as with policy guidance to national governments.

* Based on stakeholder interviews and discussions during the national and regional consultation workshops.
Regional institutional actors include the Organisation of Eastern Caribbean States (OECS), the Caribbean Agricultural Research and Development Institute (CARDI), the Caribbean Community (CARICOM), CARICOM Private Sector Organization (CPSO), Caribbean Export Development Agency (CEDA), Caribbean Development Bank (CDB), Caribbean Regional Fisheries Mechanism (CRFM), Caribbean Agricultural Health and Food Safety Agency (CAHFSA), Inter-American Institute for Cooperation on Agriculture (IICA) and the University of the West Indies (UWI).

The Caribbean Agricultural Research and Development Institute places emphasis on the generation of appropriate technology products and services in the areas of post-harvest management, the introduction of improved germplasm, capacity building, agricultural information management and distribution. The CARICOM secretariat’s agriculture desk coordinates food security initiatives across the CARICOM region. CEDA supports Caribbean Forum (CARIFORUM) firms to develop their businesses specifically for exports, in which services include capacity building, technical assistance, access to finance through grant schemes, and the provision of information and resources to support businesses to become export ready. CDB helps Caribbean nations finance social and economic programmes in member countries by mobilizing financial resources from within and outside the region. It also assists borrowing member countries in optimizing the use of their resources, developing their economies and expanding production and trade. CRFM promotes and facilitates responsible utilization of the region’s fisheries and aquatic resources for the economic and social benefits of the regional community, while CAHFSA helps to enhance agricultural health and food safety in the Caribbean community. The primary objectives of CAHFSA include regional and national support in establishing, managing and operating national agricultural health and food safety systems in accordance with the World Trade Organization Sanitary and Phytosanitary (SPS) Agreement. Meanwhile, UWI offers advanced education to support the development of the Caribbean region and beyond.

Global agencies such as FAO, Inter-American Institute for Cooperation on Agriculture (IICA) and the European Union assist governments in the formulation and implementation of programmes and policies related to food, nutrition and human development. They undertake actions and interventions for sustainable agriculture and promote the sector as a pillar of economic growth and stability.

*The Organisation of Eastern Caribbean States is an intergovernmental organization dedicated to regional integration in the Eastern Caribbean. It includes Anguilla, Antigua and Barbuda, British Virgin Island, Dominica, Grenada, Grenadines, Guadeloupe, Martinique, Montserrat, and Saint Kitts and Nevis.*
Key challenges to the achievement of core sustainable food systems goals

Key Sustainability Question 1: Why are people shifting away from healthier food options towards energy-dense foods with little nutritional value, contributing to the rising incidence of overweight, obesity and diet-related NCDs?

The changing food environment presents a significant threat to the sustainability of the food systems in the Eastern Caribbean region and has been identified as a national as well as regional policy priority by these island nations. This challenge highlights the compounded influence of historic consumption patterns from colonial commodity plantations (root crops and sugar), the promotional efforts of multinational food corporations to consume products traded by them (such as wheat, corn and poultry) and the tourism sector’s demand for Western diets and fast foods (soda, fried meats and potatoes). These influences have led to systemic issues related to access, affordability, availability, and utilization of nutritious foods in the region.

The prevalence of obesity among adults aged 18 years and above ranges from 19 percent in Antigua and Barbuda to 28 percent in Dominica. These numbers, however, mask glaring disparities by gender, with the prevalence of female obesity being almost twice that of male obesity (see Table 4). Moreover, these numbers have been rising rapidly over the years (see Figure 9).

Table 4. Levels of obesity by gender in adults aged 18+ (2016)

<table>
<thead>
<tr>
<th>Country</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>12</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>Barbados</td>
<td>16</td>
<td>34</td>
<td>25</td>
</tr>
<tr>
<td>Dominica</td>
<td>20</td>
<td>36</td>
<td>28</td>
</tr>
<tr>
<td>Grenada</td>
<td>13</td>
<td>28</td>
<td>20</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>15</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>12</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>17</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Global average</td>
<td>11</td>
<td>15</td>
<td>13</td>
</tr>
</tbody>
</table>

Particularly concerning is the growing trend of childhood and adolescent overweight and obesity, which presents a significant public health challenge. Current estimates show that the prevalence of overweight and obesity among children and adolescents aged 5–19 years ranges between 23.4 percent in Saint Lucia and 32.6 percent in Dominica (see Table 5). These figures are significantly higher than the global prevalence rate of approximately 18 percent.

### Table 5. Childhood and adolescent overweight or obesity (%)

<table>
<thead>
<tr>
<th>Country</th>
<th>5–9 years (%)</th>
<th>10–19 years (%)</th>
<th>5–19 years (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>29.6</td>
<td>25.3</td>
<td>26.7</td>
</tr>
<tr>
<td>Barbados</td>
<td>30.6</td>
<td>26.1</td>
<td>27.6</td>
</tr>
<tr>
<td>Dominica</td>
<td>35.7</td>
<td>31.1</td>
<td>32.6</td>
</tr>
<tr>
<td>Grenada</td>
<td>29.2</td>
<td>24.9</td>
<td>26.4</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>30.8</td>
<td>26.5</td>
<td>27.9</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>26.1</td>
<td>22.3</td>
<td>23.4</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>31.9</td>
<td>27.5</td>
<td>28.9</td>
</tr>
</tbody>
</table>

According to stakeholder consultations, some of the key factors underlying this challenge in the region are low agriculture production, increased reliance on food imports, changing consumption patterns, rapid expansion of supermarkets and fast-food restaurants, limited nutritional knowledge of the general population, combined with poverty, and other socioeconomic factors, such as poverty and unemployment.

The dismantling of protective trade regimes for Caribbean export crops and trade liberalization in the 1990s led to the collapse of the agriculture sector in the region. Agricultural production and productivity in these countries remains low due to myriad factors, such as limited cultivable land, policy neglect, weak institutions, lack of investments in infrastructure and technology, limited research and extension services, environmental degradation, and repeated loss and damage due to extreme weather events (see KSQ 2). This has impacted the availability of nutritious foods for domestic consumption in these island nations. Consequently, food imports are essential to meet the consumption needs of the local population as well as of tourists. This is reflected in the high and rapidly increasing volume of food imports discussed earlier. In fact, the Caribbean countries are highly dependent on food imports, which has also contributed to the low resilience of food systems in the region (see KSQ 3).

Moreover, much of this imported food is heavily processed, energy-dense, high in fats and oils, sugars and sodium, which is linked directly to the overweight and obesity epidemic and increasing prevalence of NCDs in the region. These products tend to be aggressively marketed, readily available and often cheaper than healthier alternatives. As detailed earlier, this has contributed to a nutritional transition that is characterized by a shift away from diets based on locally grown indigenous staples (grains, starchy roots), locally grown fruits, vegetables, legumes, and limited foods from animal origins to diets that are more varied and energy-dense, consisting of foods that are more processed (including processed beverages), are more of an animal origin, have more added sugars and fats, and often have more alcohol (Ballayram, Lawrence and Henry, 2015).

The Caribean has also seen an increase in sedentary lifestyles, with less than one-third of school children aged 13–15 years attaining the recommended level of physical activity (Healthy Caribbean Coalition, 2019). The consequence has been an increase in diet-related chronic diseases, such as obesity, hypertension, diabetes, cardiovascular diseases and some forms of cancers.

The rapid expansion of fast-food chains, supermarkets and convenience stores over the past two decades has contributed significantly to the changing consumption patterns. They have not only facilitated the supply of processed and ultra-processed products at lower prices (and longer shelf lives) but have also played a dominant role in how such food products are distributed, advertised, and labelled. Policy liberalization, privatization and globalization in Latin America and the Caribbean during the 1980s and 1990s spurred these changes. The liberalization of foreign direct investment regulations, elimination of food price controls and subsidies, dismantling of government systems of food and farm input distribution led to the rapid and unregulated development of modern food systems (Popkin and Reardon, 2018). Rapid investment by large foreign firms has contributed to the proliferation of supermarkets and fast-food chains, and the increased importation of unhealthy foods.

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10 Based on discussions with supermarket operators in Barbados, and Saint Vincent and the Grenadines, Iton (2009) highlighted that supermarkets were becoming increasingly important in the Caribbean. The number of stores of a supermarket chain in Trinidad and Tobago, for instance, was reported to have increased by 36 percent between 1990 and 2006. While data are not readily available for the seven Eastern Caribbean countries, the national and regional stakeholder consultations backed up observations of the rapid growth of supermarkets, convenience stores and fast-food chains, such as McDonalds, KFC and Pizza Hut.
In addition to ready availability, consumption of unhealthy diets is also related to issues of access and affordability. Socioeconomic factors, such as urbanization, poverty, inequality and unemployment, are closely linked to malnutrition issues.

With increasing urbanization, consumption of fast foods and eating out at informal street stalls have become attractive alternatives to home-cooked meals. Changing employment patterns, with more women joining the labour force, have also increased the opportunity cost of time and demand for convenience foods. It is estimated that the consumption of ultra-processed foods and beverages has increased by more than 25 percent between 2000 and 2013 in the Caribbean. Macronutrients in these products are mainly in the form of sugars (43 percent), carbohydrates (25 percent), fats (27 percent), and to a lesser extent, proteins (5 percent) (FAO et al., 2019, PAHO, WFP and UNICEF, 2019).

Estimates suggest that healthy eating is five times more expensive than a diet that provides the minimum food energy (FAO et al., 2020. IFAD, UNICEF, WFP and WHO, 2020). Poorer households, thus, have a higher probability of making poor nutrition choices and are more likely to become obese (FAO, 2019). In fact, outcomes in rural areas, which have a higher incidence of poverty, tend to be worse (Gaudin and Pareyón Noguez, 2020).

Moreover, gender inequality remains a major concern in the region. Women have fewer economic opportunities, earn lower incomes, are more likely to be unemployed, are less likely to own productive assets, and have lower political representation than men (FAO, 2019). Consequently, women are more affected by poverty than men. This is also linked to a large proportion of households in the region being headed by single mothers.

Table 6 depicts the high levels of poverty and unemployment (especially among women and youth) across these Eastern Caribbean island nations. This explains the higher prevalence of overweight and obesity among women over men (see Table 4).

Table 6. Socioeconomic Indicators – poverty and unemployment

<table>
<thead>
<tr>
<th>Country</th>
<th>Population below poverty line</th>
<th>Unemployment rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share (%)</td>
<td>Year</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>18.3</td>
<td>2006</td>
</tr>
<tr>
<td>Barbados</td>
<td>19.3</td>
<td>2010</td>
</tr>
<tr>
<td>Dominica</td>
<td>37.7</td>
<td>2008</td>
</tr>
<tr>
<td>Grenada</td>
<td>28.8</td>
<td>2009</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>23.7 (K) 15.9 (N)</td>
<td>2008</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>28.8</td>
<td>2006</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>30.2</td>
<td>2008</td>
</tr>
</tbody>
</table>


Caribbean consumers have noted the higher cost of healthy foods over less healthy foods as one of the major factors influencing their food choices (Henry et al., 2016).
The above economic factors are compounded by the limited knowledge of good nutritional practices among consumers and other food systems actors. As discussed during the consultation workshop and stakeholder interviews, this often results from inadequate resource allocation for nutritional education and training of consumers, health-care staff and other stakeholders.\(^\text{12}\)

On the policy front, the strong lobbying power of importers and distributors in these island countries makes it difficult for legislation to restrict imports of unhealthy food or encourage front of package labelling, which would make it easier for consumers to make informed decisions on their food consumption.\(^\text{13}\) The food, beverage and restaurant industries spend billions of dollars every year to reach children with targeted marketing and lobbying against laws that might prevent them from doing so (Popkin and Reardon, 2018). The WHO and other major health organizations worldwide point to pervasive, unhealthy food advertising to children as a significant risk factor for childhood obesity. Some countries, such as Antigua and Barbuda, Barbados and Dominica, have implemented taxes on fast foods and sugary beverages, while Saint Lucia has introduced subsidies on local fruits and vegetables (ECLAC, 2021). Bans on sugary beverages in schools are in effect in Grenada. Barbados and Saint Kitts and Nevis have initiated health promotion campaigns to encourage and sensitize their populations to live healthier lifestyles and reduce the incidence of NCDs. Governments have also promoted school programmes, such as “Water Wednesdays” to encourage the increased consumption of water as a healthier alternative to sugary beverages and implemented “Fruit Fridays” to encourage the inclusion of more fruits and vegetables for a balanced diet instead of sugar-laden and sodium-rich snacks (ECLAC, 2021). While specific studies have not been conducted to measure the impacts of these policies (some of which are relatively new), data reveal that the levels of overweight and obesity in the region continue to rise unabated. This underscores the need to revisit both domestic and trade policies in the region and review ways and means to better regulate the content of imports and reduce the availability of unhealthy foods in the region.

The obesity epidemic is contributing to an increasing incidence of NCDs. In fact, the Caribbean has one of the highest prevalence of NCDs in the world, constituting a significant burden on health-care systems. Chronic NCDs account for a large proportion of deaths in the Caribbean annually and are a leading cause of premature deaths (see Table 7). The trend in the NCD disease burden is likely to worsen in the coming decades, as childhood obesity – one of the main predictors of NCD prevalence in adulthood – is unacceptably high in the Caribbean. This has further implications for future health systems, labour productivity and sustainable development. Data from 32 countries suggest that childhood obesity is associated with poor academic performance and low educational attainment later in life (OECD, 2019).\(^\text{14}\) The lack of information on the economic impact of diseases is a major missing link in the fight against NCDs in the Caribbean (Abdulkadri, 2021). Abdulkadri et al. (2009) estimated the economic burden for Barbados was 5.34 percent of GDP in 2001.

12 Public expenditure on health remains below the recommended level of 6 percent of GDP in the Caribbean, ranging from 0.8 percent of GDP in Haiti to 4.4 percent in Barbados (ECLAC, 2020).
13 Based on stakeholder interviews and discussions during the national and regional consultation workshops.
14 Healthy-weight children were 13 percent more likely to report good performance at school than children with obesity.
15 The estimated burden for Barbados was 5.34 percent of GDP in 2001.
that in the Bahamas, Barbados, Guyana, Jamaica, and Trinidad and Tobago, the direct treatment costs (medications, consultations, hospitalization) and the indirect costs (foregone earnings from years of productive life lost to premature mortality and disability) for diabetes alone were approximately USD 1 billion per annum, or about 3 percent of GDP. Furthermore, a macroeconomic analysis calculated that each 10 percent rise in NCDs was associated with a 0.5 percent lower rate of annual economic growth (Stuckler, 2008). Another World Bank (2012) study estimated that the economic burden of the four major NCDs in Saint Lucia was estimated at USD 27 million, 2.8 percent of the island’s GDP in 2006. The total average private economic burden per patient was estimated at USD 1320, which comprised direct out-of-pocket costs (USD 324 for outpatient services, USD 315 for inpatient services, and USD 440 for medicines) as well as indirect costs (USD 241 losses through absenteeism and sick leave). More recently, a study by Barcelo et al. (2017) estimates the cost of diabetes mellitus for some of these island countries (see Table 8).

Table 7. Deaths due to non-communicable disease in 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Probability of dying between 30–70 years due to NCDs (%)</th>
<th>Proportion of deaths due to NCDs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>22.6</td>
<td>81.8</td>
</tr>
<tr>
<td>Barbados</td>
<td>16.2</td>
<td>82.8</td>
</tr>
<tr>
<td>Dominica</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grenada</td>
<td>21.4</td>
<td>81.3</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>18.8</td>
<td>82.0</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>23.2</td>
<td>81.0</td>
</tr>
</tbody>
</table>


Table 8. Estimated direct and indirect costs of diabetes mellitus

<table>
<thead>
<tr>
<th>Country</th>
<th>Lower bound</th>
<th>Upper bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect costs (USD million)</td>
<td>Direct costs (USD million)</td>
</tr>
<tr>
<td>Grenada</td>
<td>35</td>
<td>4</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Barbados</td>
<td>40</td>
<td>33</td>
</tr>
</tbody>
</table>

With increasing levels of obesity and NCDs in the Caribbean, health-care costs are expected to rise in the future. Such dynamics will lead to increased pressure on the health-care system. More funds will need to be allocated to the health sector at the expense of other sectors (education, agriculture). To ensure the sustainability of the food systems in the region, addressing the challenges of overweight and obesity and increasing NCDs needs to be a priority.

Proposed systemic levers:

Lever 1: Policy interventions at the regional, national and local levels to reduce the availability and affordability of unhealthy foods on the one hand, while increasing the availability and affordability of healthy foods on the other.

Increased tariffs or taxation on unhealthy food options (processed and ultra-processed products high in salt, sugar and fats) can help reduce the availability and affordability of these products. Likewise, subsidies for healthy foods, such as legumes, fruits and vegetables, can help to encourage consumption by making them more affordable. State policies and initiatives to encourage domestic production of nutritious foods along with investments in storage and transportation infrastructure can help improve their availability and accessibility. These policies will need to be complemented with strategic interventions to discourage unhealthy consumption choices. For instance, policies that encourage front-of-package labelling that display the nutritional content of food, along with regulating food advertising, can help consumers make informed choices. In some countries, such as Jamaica, health promotion strategies include engaging with fast-food restaurants to make the healthier choice the “more convenient choice” by providing more healthy and affordable options to consumers, such as vegetable juices instead of sugary beverages. This lever is in line with the recent policy changes in some of the Eastern Caribbean countries. Furthermore, support should be provided to promote integrated value chain development and strengthen institutions for food safety.

However, there are several barriers to the implementation and success of this lever. The strong lobby of importers, supermarkets and fast-food chains often make it difficult to implement such policies. For instance, additional labelling requirements will not only increase costs but also affect sales for a vast majority of producers, reducing buy-in from the business community. In addition, due to inadequate nutritional knowledge, people often lack awareness on how to read and interpret the labels, even if they are available. This necessitates complementary demand-side policies (see Lever 2). There is growing consensus among governments and civil societies that mobilization of the key food systems actors is critical to develop the political will necessary to contest the strong import lobby. However, given high levels of poverty and unemployment, recommendations for taxation of less-healthy food options must take into account the availability and accessibility of affordable, healthy alternatives for the population, especially those from lower-income brackets. This is particularly important because domestic agricultural policies in most countries lack incentives and capacity to encourage local production of fruits and vegetables.

To ensure the sustainable transformation of food systems and overcome the challenges of overweight and obesity in the region, coordinated support from national governments, regional organizations, private sector and civil societies is crucial.

Lever 2: Supporting innovative awareness campaigns that increase nutritional knowledge of the general population and encourage healthy food habits and lifestyle choices.

Introduction of innovative educational strategies and nutrition campaigns that promote healthy eating and physical activity are needed to
effectively address the growing prevalence of overweight and obesity in the region. Public health policies focusing on nutrition is crucial in this regard. School feeding programmes and community-based health education programmes, in conjunction with mass media and social media campaigns, can be used to educate consumers, health-care staff and other stakeholders about healthy diets and lifestyle choices, while increasing awareness among the general population about the hazards of consuming foods high in fats, salt and sugar.

There are several barriers to the implementation of this lever. Fast food and sugary beverages tend to be heavily advertised, especially on children's programmes, with many school canteens and vendors promoting such energy-dense foods. Moreover, their ready availability at more affordable prices than healthier alternatives limits the effectiveness of this lever. Lack of time-series data on consumption patterns and physical activity in most countries makes it difficult to design appropriate strategies and actions. Periodic consumption surveys and in-depth analysis of the data should be undertaken to better understand dietary patterns of different groups. Supporting policies across multiple sectors is needed to ensure the success of this lever.
The need to have a vibrant and diversified agriculture sector is now widely recognized by policymakers as a key to improving rural livelihoods, reducing dependence on imports, and improving food and nutrition security in the region. While there is a lot of untapped potential for agricultural development in the Eastern Caribbean, the region faces major obstacles to rebuild its agricultural sector (including fisheries and aquaculture) and improve its competitiveness and sustainability.

An important factor was the historically difficult structural adjustment of the region’s agricultural sector after the end of the preferential market access into the European Union for sugar and bananas from the Caribbean (FAO and CDB, 2019). As discussed earlier, the contribution of the agriculture sector to GDP registered a steady decline (see Figure 3) and the value of agriculture production fell in most countries (see Figure 2). Governments placed their focus on tourism to keep their economies afloat instead of planning for and investing in the agriculture sector. Many farmers exited the sector, abandoning fertile lands; and over the years, there has been a decline in the area under permanent crops, representing idle capacity and underutilized lands in the region. Figure 10a shows the declining share of agriculture in total employment in the Eastern Caribbean countries and Figure 10b shows the area under permanent crops. Those who remained, produce small volumes in response to the limited size of the domestic market and as a risk-averse measure.

Key Sustainability Question 2: Why were the Eastern Caribbean economies unable to adequately manage the shift from export-oriented single commodity agriculture (bananas, sugar cane) and rebuild a vibrant, diversified agriculture sector necessary for inclusive and sustainable transformation of food systems in the region?

Figure 10a. Share of employment in agriculture, forestry and fishing in total employment

In the years following independence, the Caribbean economies continued to be driven by trade arrangements from the pre-independence era, remaining dependent on the export of primary commodities (FAO and CDB, 2019). Agricultural development strategies and production received preferential access to markets in the European Union until the mid-1990s. However, efforts to diversify into food crops and new export products after the end of EU preferential access agreements were not successful due to the lack of a comprehensive integrated strategy and institutional changes supporting the transformation of production and distribution systems. Major production infrastructures (geared primarily towards banana and sugar cane) were dismantled and new infrastructure (such as cold chain, packing houses and abattoirs) to support a shift to other commodities remains to be constructed. Most economies in the region never fully recovered from this shock.

In the past three decades, productivity in the Caribbean has shown little improvement (even declining for some countries) and is actually lower than in other parts of the world (see Figure 11 for the evolution of vegetable yields). Similar trends are observed for cereals and fruits. This has resulted in persistent low incomes in agriculture-related activities and continued poverty in rural areas. There is little incentive for the young people to participate in agriculture. More attention needs to be paid to technology and innovation, access to land and credit, and the demonstration of agricultural enterprise economic viability to attract young people towards increased participation in the food and agriculture system.

16 The inability to attract the young people has led to rising unemployment and crime in the region (see Table 6).
Several factors have contributed to the lack of reorientation of the agricultural sector. Due to the lack of a well-developed transition strategy, the enabling conditions and environment for rebuilding the agricultural sector could not be created. The sector was neglected in favour of tourism and services and the necessary institutions and policies never quite evolved. Therefore, despite many years for transition out of these commodities, viable agricultural commodity alternatives were not adequately promoted and supported. Furthermore, the liberalization of the domestic markets coincided with the withdrawal of preferential treatment and brought severe competition from large exporters before local farmers could diversify into other commodities and/or capture market shares. Among other factors, the lack of investments in infrastructure and technology, high costs of agricultural inputs, limited access to land, inadequate financial resources and restricted access to credit, limited research and extension services, repeated loss and damage due to extreme weather events and other natural disasters, environmental degradation (land and water), weak marketing systems, and limited intraregional coordination continue to constrain growth of the agricultural sector in the region.

The preferential treatment afforded to these countries did not provide an impetus for further development of the banana and sugar industry. A narrow agricultural focus on these two export crops restricted the growth of other agricultural commodities. Systems were well-developed and logistics, marketing, research, and the entire ecosystem was built to support banana and sugar exports. There was little interest by the countries themselves in other agricultural products during that era as bananas and sugar provided a secure market and steady revenue streams to the farmers. However, the decline in preferential access for banana and sugar cane led to a steep decline in the production of both

![Figure 11. Vegetable yields (1991–2017)](image-url)
commodities and had a significant impact on export earnings and farmer incomes. Farmers were reluctant to move into other products because their skills and knowledge were directly related to banana and sugar cane production. The infrastructure, institutions and services did not change sufficiently to provide adequate incentives and support to farmers to shift to other products.

A focus on tourism by national governments has created tensions in agricultural land and water use. Arable agricultural land is already limited in these regions and the transition towards the tourism, construction and services sector has led to competing demands for land and water. There has been a change in land use away from agriculture to other uses, such as housing development and tourism. This leaves less land available for agricultural production and constrains production capacity. Farmers in many countries are cultivating on marginal lands and steep slopes. Moreover, the farming sector is quite fragmented and farm sizes remain small in most countries, which affects the ability of farmers to benefit from economies of scale. Agriculture in the region is largely rainfed. On average, only 12 percent of cultivated lands in the region are equipped for irrigation, with variations in the level of infrastructure across countries. This is further compounded by poor soil health because of historically high levels of pesticides and chemicals used in banana and sugar cane production.

The prevalence of pests and diseases and a lack of research around these – and possible solutions – have created an environment of uncertainty for farmers around diversified products. There is also low use of technology (including improved varieties) in the agricultural sector and the supporting infrastructure is limited or non-existent. Consultations with stakeholders suggest that moving towards alternative crops could require high labour cost to convert the land to other cash crops or other areas of productive activity and can be very capital intensive. There is also a lack of research to guide the production of new crops, and the lack of knowledge of new production areas and best practices fuel the unwillingness to invest in new areas. Moreover, the region is highly vulnerable to extreme weather events and climate change, leading to the loss of both production and infrastructure. For instance, meteorological events in 2011 and 2014 damaged irrigation infrastructure in Saint Vincent and the Grenadines, rendering it unusable (FAO, 2015). There is a lack of focus and knowledge on marketing and logistics of the diversified products, and farmers may not be aware of the existing and potential markets for those products. They may not have the required information of what the market demands, as well as standards and other requirements to access the markets. Furthermore, low workforce skill levels and lack of entrepreneurship present an obstacle to innovation and business competitiveness and the private sector continues to express concerns about the skills gap in the workforce (ECLAC, 2020).

Most countries lack a vibrant agroprocessing subsector to link with the agricultural output. There is limited research into viable value-added products that the region could competitively produce and lending agencies are reluctant to provide finance capital given the uncertainty around new products. Some countries, such as Barbados, have been successful in establishing agroprocessing businesses for broilers and eggs. But the high cost of manufacturing inputs, lack of adequate processing facilities, competition from international exporters, inadequate market information and intelligence systems, and weak governance structures are some of the factors limiting success in other countries. Productivity of the livestock sector is constrained by additional factors such as low availability (and high prices) of quality feed, low-quality feed concentrate, limited availability of grazing lands, low-quality breeding stock, poor access to credit and lack of technology adoption and innovation. More generally, high input and packaging costs (for items, such as bottles), small markets, tariff policies, lack of mechanisms for health/food safety and production
standard certification, insufficient processing capacity, rising labour costs, weak technical and management capacity, and high freight costs reduce the ability of the domestic sector to compete against imports. Imported products thus crowd out domestic agricultural products and agroprocessing industries and contribute to rising rural unemployment (FAO, 2013).

The fisheries and aquaculture sector has also continued to operate at artisanal levels. A minimum capital injection is required to buy boats and fishing equipment, which many rural people do not have access to. While there are some high-valued species from inshore fisheries that are being exported, several species still remain underexploited. Adequate investments have not taken place to exploit the offshore fishery due to undercapitalization, limited technical fishing capabilities and lack of experience. Seafood importers in markets, such as Canada and the United States, have been unable to get adequate supplies from this region and expansion in per capita consumption of seafood in these countries is largely met from imports. For the sector to be globally competitive and to improve market access, investments in processing facilities, sanitary, phytosanitary and traceability controls, among other international trade requirements, is needed. Developing the aquaculture subsector and other upstream and downstream activities along the fisheries value chain can create employment and economic benefits (FAO, 2019).

Key strategic linkages have yet to be formed between the growing tourism industry and the agricultural sector. For instance, hotels and restaurants import large quantities of fruits and vegetables, such as tomatoes, pineapples, watermelons, cantaloupes, lettuces, cabbages and sweet peppers, even though these crops can be efficiently grown in the region. Similarly, there is significant demand for certain prime cuts of meat that could be produced in the region but are largely imported from countries, such as the United States. This is because the tourism sector demands a consistent supply of high-quality, certified products that the agriculture sector is unable to meet. There is information asymmetry regarding the standards required by hotel and restaurant chains, cruise ships and the yachting sector. Compounding this issue is the slow adoption of these standards, which may in part be due to an ageing farming population and low basic education attainment. Finally, due to the lack of critical infrastructural investments
(such as cold storage facilities, refrigerated trucks, certified processing facilities and food safety systems) and specific value chain investments (such as extension and certification services and capacity building of farmers’ associations), capacity to comply with modern safety and quality standards is limited. As a result, the agriculture sector has been unable to respond to rapidly growing demand for high-value food products from the tourism, processing, and retailing sectors – inside and outside the region (FAO, 2019). Instead, the growing demand by these sectors in the region is mainly met by imports.

Although the region is close to the markets of Canada and the United States, integration is constrained by low liner shipping connectivity and inefficiencies in port operations. Establishment of marketing infrastructure in general to support exports has not materialized, as government revenues remain low. These factors have also constrained CARICOM efforts at production integration. Modernizing key economic infrastructure for maritime and air transport and investment in ports, freight logistics, information and communications technology (ICT) are necessary to foster greater engagement in regional and global value chains.19

There is a lack of integration in policy formulation where policies are developed in silos. This uncoordinated approach does not allow for synergistic planning, which would enable the region to identify and take advantage of emerging opportunities in other sectors. A higher-level strategic vision for the food systems supported by the development of appropriate policies, institutions, and infrastructure investment is key to transforming the agriculture sector in the region. Given the small size of these Eastern Caribbean economies, coordination across the countries to achieve economies of scale and drive down the cost of procurement, production and marketing can go a long way. The region needs to look carefully into alternative viable commodities and identify where the competitive advantage lies, what could be produced competitively in the region and what steps need to be taken to ensure success. One such step is a financial system oriented to provide credit to smallholder farmers.

The development of the agriculture sector should be a key priority for inclusive and sustainable food systems in the region. According to an FAO report (FAO, 2019), sustainable agricultural development can contribute to overcoming major socioeconomic and environmental challenges in the region, including food and nutrition insecurity, obesity, youth unemployment, poverty and gender inequality, unsustainable use of natural resources, and low resilience to climate change and economic shocks.

Proposed systemic levers:

**Lever 1: Improving the regional policy and regulatory environment to encourage investments in agriculture and agribusiness, and establish linkages with tourism and modern retail sectors**

It is critical to improve the general policy and regulatory environment in the region to offer greater support to food systems actors and encourage them to invest in infrastructure and technologies that will support sustainable value chain development. These include market information and intelligence systems, innovative seed financing schemes, flexible credit term options, and strategic capacity building in selected technical/business areas to facilitate capturing opportunities in new markets and products. In addition, establishing linkages with tourism and modern retail sectors will provide opportunities to local farmers and agribusinesses to supply selected markets,20 (both domestically

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19 Intraregional trade accounts for just 13 percent of the total trade of the Caribbean (UN Comtrade Database, 2018) and presents opportunities for growth.

20 For example, avocados in the United Kingdom market or EU market; meats and seafood in the domestic markets.
and internationally) and help reduce the food import bill in the region. Meeting the demands of the tourism industry and export markets, however, requires significant infrastructural investments in cold storage and chilling facilities (at the farm level), processing and packaging facilities, strengthening procurement systems, developing certification and quality assurance systems, strengthening transport and logistics systems and as well as support for marketing and advertising.

**Lever 2: Establish public–private investment synergies for increased production and trade in alternative crops and livestock products**

Given the large number of small producers with limited resources, identifying a few markets to be targeted with selected commodities that can be competitively grown in the Eastern Caribbean ecosystem should be prioritized. Coordination at the local, national and regional levels is needed to put in place the appropriate production and trading infrastructure and improve access to affordable credit for private producers, processors and traders. Attention should also be given to long-term buyer guarantees, short business gestation periods, buyer collection points, a cash flow that provides weekly returns, post-harvest and processing infrastructure to reduce vulnerabilities, tax reforms, land titling strategies, supply chain infrastructure and logistics, government backing and support, and strong producer governance organizations. Producing commodities to meet international regulatory requirements, logistics and reliability require education and training, not just for primary producers, but also for government, private sector, and other relevant actors along the respective value chains. As these countries have a comparative advantage in the same agricultural commodities, creation of a cooperative network of local enterprises and favourable institutional conditions may help to produce benefits from economies of scale.

Both levers should take into consideration the cross-cutting issues of gender and youth empowerment. Current policies tend to overlook these important players in the food systems, yet they are key players in ensuring resilient food systems.
Small island developing states share many characteristics that make them economically, environmentally and socially vulnerable to shocks over which they have little or no control. Their small land sizes (and, therefore, small domestic markets), geographic dispersion across wide oceans, low economic diversification, high dependence on a limited number of traditional primary exports, excessive reliance on food imports, high population densities in coastal zones, poorly developed coastal infrastructure (such as waste management and transport and communication networks), limited human and technological capacity and extremely fragile natural ecosystems (including steep hillsides, coral reefs, coastal and marine areas) leave them open to frequent external shocks associated with both natural hazards and global economic fluctuations (Lewsey, Cid and Cruse, 2004; UNDP, 2009; Otker-Robe, 2019). Moreover, the relative poverty of large segments of the population adds further dimensions to their vulnerability. While these countries cannot change their external environment, they can reduce their vulnerability and exposure to shocks and improve resilience by pursuing policies that respond more effectively to shocks when they occur.

As discussed earlier, domestic food production in the Eastern Caribbean countries is low for a variety of reasons. Consequently, these countries are highly food import-dependent (see Table 9). This overreliance on imports and a few primary export commodities leaves these seven countries highly vulnerable to fluctuations in international markets, natural disasters, and other economic and biophysical shocks.

Table 9. Caribbean food import statistics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>98.8</td>
<td>122</td>
</tr>
<tr>
<td>Barbados</td>
<td>100</td>
<td>69</td>
</tr>
<tr>
<td>Dominica</td>
<td>100</td>
<td>197</td>
</tr>
<tr>
<td>Grenada</td>
<td>100</td>
<td>193</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>-</td>
<td>91</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>100</td>
<td>140</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>100</td>
<td>210</td>
</tr>
</tbody>
</table>

Moreover, the Eastern Caribbean countries are among the most vulnerable in the world to natural and climate-related disasters. The region is the most active part of the world for hurricanes and tropical cyclones. Biophysical shocks, such as droughts, floods, earthquakes, and volcanic eruptions are also frequent. These events cause significant loss and damage in the agriculture sector (including crops, livestock and fisheries) with devastating impacts for food security and rural livelihoods. Natural disasters are estimated to have cost the OECS countries an average of 3.6 percent of GDP between 1997 and 2016 (World Bank, 2018). In Dominica and Grenada, two of the most vulnerable countries in the region, damages and losses related to extreme weather events between 1997 and 2016 have been estimated at almost 8 percent of GDP. In some countries, damage and losses from individual events have exceeded their annual GDP. For instance, Hurricane Georges cost Saint Kitts and Nevis more than 220 percent of its GDP in 1998, and Hurricane Maria cost Dominica a similar amount of economic output in 2017 (Dominica, 2017). Hurricane Ivan cost Grenada 150 percent of its GDP in 2010. Hurricane Irma had catastrophic impact on the island of Barbuda, damaging or destroying 90 percent of its infrastructure (Horsford, 2017) with damage estimated at 9 percent of GDP (Government of Antigua and Barbuda, 2018). Table 10 presents estimated damage from selected severe disaster events in the past two decades.

Table 10. Damage from selected severe natural disasters, (2000–2021)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Disaster</th>
<th>Damage (% of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grenada</td>
<td>2004</td>
<td>Hurricane</td>
<td>200</td>
</tr>
<tr>
<td>Dominica</td>
<td>2017</td>
<td>Hurricane</td>
<td>200</td>
</tr>
<tr>
<td>Grenada</td>
<td>2010</td>
<td>Hurricane</td>
<td>150</td>
</tr>
<tr>
<td>Dominica</td>
<td>2015</td>
<td>Floods</td>
<td>96</td>
</tr>
<tr>
<td>Dominica</td>
<td>2009</td>
<td>Hurricane</td>
<td>35</td>
</tr>
<tr>
<td>Saint Lucia</td>
<td>2011</td>
<td>Hurricane</td>
<td>34</td>
</tr>
<tr>
<td>Dominica</td>
<td>2008</td>
<td>Hurricane</td>
<td>20</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>2021</td>
<td>Volcano</td>
<td>18</td>
</tr>
<tr>
<td>Saint Vincent; the Grenadines</td>
<td>2014</td>
<td>Floods</td>
<td>15</td>
</tr>
</tbody>
</table>

Climate change is projected to further increase the frequency and intensity of hydrometeorological events, such as hurricanes and tropical storms in the Caribbean. IMF has estimated that based on current trends, climate change could increase storm costs in the Caribbean by as much as 77 percent by 2100. Increased temperatures have already resulted in longer and more devastating droughts. Severe droughts over the period 2009–2010 were associated with losses of up to 30 percent of vegetable crops in Antigua and Barbuda, a reduction of 43 percent in banana production in Dominica, and a decline of 20 percent in overall agricultural production in Saint Vincent and the Grenadines (Cashman, 2013). Agriculture in the Eastern Caribbean is mainly rainfed and heat stress while worsening drought conditions will reduce the availability of fresh water, intensify competition for scarce water resources, and substantially affect food production in the region. Climate change is also expected to exacerbate floods, lead to increased coastline erosion and saline contamination of coastal aquifers. Sea level rise and saline intrusion has resulted in large swathes of arable land in certain countries becoming infertile.

In addition to the overreliance on imports and the increasing number and intensity of weather events, several other drivers lead to the food systems in the region being increasingly vulnerable to climate change and other shocks. Among them are the increasing pressure of competition for land, poor agricultural water policies and lack of adequate infrastructure, inappropriate farming technology systems, limited financing and resource capacity, and the lack of disaster preparedness to protect crops, livestock and fishery resources.

Weak land use systems, poorly regulated land-use change (most of these island nations lack national land-use plans and policies) and unsustainable cultivation practices (such as slash and burn agriculture, particularly on steep slopes) lead to land degradation, with food production taking place on increasingly marginal lands. These marginal lands are even more prone to loss and damage as a result of extreme weather. There is also limited utilization of protected agriculture methods such as greenhouses, windbreaks and natural dams, which would help mitigate losses in the agricultural sector.

Moreover, poor agricultural water policy and the inadequacy of irrigation infrastructure contribute to the inadequate supply of water for the agriculture sector. The lack of economical large reservoir sites has been identified as a major constraint on the development of agricultural water supply in most of the OECS countries. The terrain (steep, narrow valleys) and small catchment areas make it difficult to harness rain and surface water for storage (Ekwue et al., 1999). This helps to explain why Barbados, which is relatively flat and draws its supply from natural groundwater storage rather than surface water, has the most developed agricultural irrigation system of the seven islands under consideration. Key food systems actors in the region, including FAO and Inter-American Institute for Cooperation on Agriculture (IICA), are seeking to advance the use of on-farm water storage and irrigation systems as an essential component of climate-smart agriculture. However, it has been noted that in cases where farmers lack tenure to the land they cultivate, they may be reluctant to invest in water infrastructure and irrigation equipment (Ekwue et al., 1999).

Research shows that changing climate and extreme weather events can increase the spread and impact of agricultural pests and diseases (CARIBSAVE, 2012a; WTO, 2019). Increasing use of chemical pesticides and associated environmental contamination, particularly of water supplies, is an emerging concern, but few countries routinely monitor chemical contamination of surface or groundwater. There have been reports that some

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23 Given the topography of these countries, characterized by limited flat agricultural lands, agricultural production often takes place along hill slopes and steep terrain.
agriculture commodities have been refused by trading partners outside the region for exceeding maximum pesticide residual levels. Information about pesticide residue levels in commodities for local markets is not readily available, raising food safety concerns. Institutes such as CARDI are carrying out research and development (R&D) to produce commercial crops that are resistant to common diseases and pests, thus reducing the need for pesticides to treat pathogens. CARDI is also active in R&D on improved climate-resilient crop varieties, and in the distribution of planting materials for rapid response and recovery in the aftermath of disaster events.

The sustainability of the fisheries sector is also under threat as a result of overfishing and natural resource degradation. While fishing in the Caribbean Sea almost doubled since the 1990s, the annual catch has declined by more than 25 percent (see Figure 11) with about 50 percent of the catch being overexploited species (FAO, 2019). Many countries in the region do not have formally adopted fisheries management plans in place. Often, the laws and regulations that are in place are outdated and do not allow for effective enforcement. There is much scope for improving intraregional governance in the marine ecosystem.

Furthermore, only 8 percent of wastewater in the Eastern Caribbean is treated (mostly with primary treatment) and less than 2 percent of urban sewage is treated before disposal (Peters, 2015). These countries also tend to have very high litter concentration (items/km) relative to other countries in the world (see Table 11). The most common marine litter includes plastic bottles, in addition to other single-use plastic items, and foam containers. Marine pollution – due to agricultural run-off, inadequate sewage treatment, poor waste management systems, and littering – is one of the key threats to economic and ecological sustainability in the region with serious implications for food safety and health.

**Figure 12. Fishing effort and annual catch in the Caribbean Sea**

![Fisheries Graph](chart)

*Source: TWAP (Transboundary Waters Assessment Programme. 2015. Caribbean Large Marine Ecosystem: Transboundary Waters Assessment. Kingston, UNEP.*
Table 11. Litter found in coastal clean-ups in selected Caribbean countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Km of coast surveyed</th>
<th>Litter concentration (items/km)</th>
<th>Common litter items (items per km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plastic beverage bottles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plastic grocery bags</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plastic bottle caps</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plastic lids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Straws-stirrers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Foam food containers</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>6</td>
<td>1050</td>
<td>394</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Barbados</td>
<td>44</td>
<td>1260</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td>15</td>
</tr>
<tr>
<td>Saint Vincent and the Grenadines</td>
<td>4</td>
<td>2435</td>
<td>623</td>
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Overfishing, along with marine pollution and coastal development, has contributed to coral reef degradation in the Caribbean (CRFM, 2014). The economic value of coral reefs in the Caribbean is estimated at USD 3.1 billion–4.6 billion annually. Despite their importance, more than 75 percent of Caribbean reefs are reported to be threatened, with more than 30 percent in the high or very high threat category (Burke et al., 2012). Damage to coral reefs, beaches, mangroves, and other related ecosystem services greatly affect economically relevant sectors such as tourism and fisheries (Patil et al., 2016), increasing the vulnerability of food systems in the region.

Limited resources and capacity in national hydrometeorological offices contribute to poor availability and interpretation of hydrometeorological data for agricultural planning and early warning systems, leading to inadequate preparedness of the food systems actors. The Caribbean Institute for Meteorology and Hydrology, CARDI, and the Caribbean Society for Agriculture Meteorology have responded to this issue by preparing a regular Agro-Climatic Bulletin for the Caribbean, but the level of awareness among farmers and other stakeholders about this information product and how to use it is unclear. Recommendations on irrigation water cycles for crops commonly cultivated in the region have also seen limited uptake by farmers (Ekwue et al., 1999). National and regional institutions require further assistance and support: first, to increase their knowledge and capacity to assess climate change risk; and second, to design and implement appropriate climate-resilient policies and programmes.

Finally, the lack of available financing to mitigate the adverse impacts of environmental shocks to the food systems is a critical driver affecting vulnerability. Even where funding is available, it may be difficult to access. Discussions with stakeholders indicate that food systems actors are often required to provide extensive business plans, loan guarantees and audited financial statements, which small businesses and enterprises are unable to provide due to lack of adequate resources. Governments of Small Island Developing States face constraints on domestic and external resources, and difficulties in accessing financial instruments at affordable rates. Consequently, they tend to rely on ex-post borrowing instead of ex-ante risk reduction. The underinvestment in adaptation and risk reduction leads to slow, fragmented and unreliable responses to external shocks (Clarke, 2016). Moreover, on climate change, financing has been oriented toward mitigating greenhouse gas emissions rather than helping small States adapt to global warming (IMF, 2016). While small States have begun to access global climate funds, their adjustment needs are underfunded by as much as USD 1 billion annually. Complex and administratively cumbersome procedures for establishing eligibility for climate change financing are hampering access by small States with weak institutional capacity.

Because of deficiencies in agriculture insurance and financing, losses are not fully compensated for or recovered. Broader and deeper insurance markets are critical to enable vulnerable households and small businesses, in particular, to withstand shocks. In addition to the direct impacts recorded from the destruction and damage of capital stock (agricultural crops, farm feeder roads, fishing boats), food systems experience indirect impacts as a result of reduced production levels in the aftermath of a disaster event, or as the result of the exit of producers from the agriculture sector. For example, the number of active farmers in Saint Lucia declined by approximately 30 percent in the year after Hurricane Tomas in 2010.

Repeated disaster events and associated

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24 In some areas, coral cover is down by 80 percent (Jackson et al. 2014)
25 These seven countries do not necessarily maintain data on the incidences of floods, droughts, non-landfall storms and non-storm meteorological events, and IMF indicates that there is a high level of disaster underreporting in the Caribbean.
recurring undercompensated losses not only lead to economic impacts on producers in terms of affected livelihoods, they also discourage investment in infrastructure and technological innovation, which is also limited due to the lack of financing.

Despite active responses by key food systems actors, particularly regional organizations and institutions providing support and capacity building at the national level, the region remains increasingly vulnerable to external biophysical and economic shocks. This leads to acute losses in agricultural production, insecure livelihoods for large segments of the rural population dependent on natural resources and ecosystems, lower availability and higher prices of local food commodities along the value chain, greater reliance on imports, a higher import food bill, and ultimately reduced food and nutrition security in the region.

There is a need to strengthen policy formulation and support at the national and regional level to adequately address the resilience in a systematic and pragmatic manner.

Proposed systemic levers:

Lever 1: Build capacity among farmers, fishers, and other food systems actors for climate-smart and ecosystem-based approaches to agriculture

Climate-smart approaches to agriculture need not be complicated. For example, in Antigua and Barbuda, it was found that substantial increases in yield could be achieved by shifting planting seasons by one month to accommodate changing weather patterns (CARIBSAVE, 2012b). Adoption of water-efficient irrigation systems and integrated water resource management practices (rainwater harvesting), agricultural diversification (including a shift towards drought-resistant crops), improved land and soil management practices, prudent use of chemicals and hydrometeorological data can help build resilience to external shocks and improve livelihoods and the economy. Financial support and incentives can be given to small farmers to encourage adoption of these sustainable best practices. However, there is a need to undertake more field-based research,
to identify good practices that are effective in Caribbean conditions and contexts, and to share these interventions more widely with the relevant actors in the food systems, using capacity-building methods that respond directly to their needs and encourage uptake of good practices and innovation. Experience has shown that training that is not based on practical, participatory, and beneficiary-led learning is unlikely to produce change.

This should be supplemented with the creation of an information system module directly targeted to early warning information for agriculture that includes disaster response assistance to the most vulnerable farmers, depending on the anticipated disaster. This would require substantial capacity and technological development in terms of digital network infrastructure, research to compile and generate relevant data, trained personnel to operationalize, manage and maintain the national and regional information systems, and sensitization of stakeholders on access to and use of available data.

**Lever 2: Improve availability of financing and incentive support for small producers, and improve accessibility of existing financing mechanisms to build disaster prevention and resilience capacity**

With respect to financing and incentives, constrained national fiscal circumstances in member States affect the availability of subsidies, incentives, and other forms of financial support, particularly for small producers. Such producers, especially those without secure land tenure, may lack collateral, security, and counterpart funding required for accessing the limited financing that is available. Poor record-keeping and, therefore, the inability to submit documentation and information required by funding entities has also been identified as a blocking factor for access to credit and finance. There is a need for local, national and regional institutions, including farmer groups, government ministries, and financial agencies to work together in a collaborative manner and ensure adoption of best practices that will improve access to finance and help build resilience in the food systems.
Transition to sustainable food systems

The food systems assessment in the Eastern Caribbean region brings to light the fact that the challenges facing sustainable food systems and the levers as action points for transformation encompass many dimensions – agriculture, health, education, environment – and require strong engagement from public, private and civil society as well as from consumers at large. Moving on the path of transformation requires strong collaboration across stakeholders – various ministries and line departments, national and international development bodies, regional institutions, private sector players, academia and civil society. Furthermore, it is important to ensure coherence in policies across the different dimensions for an impactful outcome.

The assessment highlights the challenges faced by these small island States across the four sustainability dimensions. The declining importance of agriculture in the region presents a significant threat to food security and rural livelihoods. It has contributed to high levels of poverty and unemployment, especially among women and young people in rural areas. The low productivity and diversification of agriculture and the high and increasing reliance on imports has made the food systems increasingly vulnerable to external economic and climate shocks. Unbalanced diets and sedentary lifestyles have contributed to the growing overweight and obesity epidemic, with significant health and economic costs to the region. The concomitant increase in NCDs presents a significant health-care burden, which is likely to worsen. Lack of investments in infrastructure and technology, limited access to finance, limited research and extension services, environmental degradation, climate change and weak intraregional governance threaten the resilience, inclusivity and sustainability of food systems in the Eastern Caribbean.

The Eastern Caribbean countries have significant opportunities to address these challenges and make their food systems contribute in a meaningful and sustainable way to improved food security, nutrition and health for the population, and improved livelihood opportunities that ensure equitable and resilient socioeconomic development, while meeting environmental commitments.

The assessment provides various entry points for sustainable transformation of food systems in the region – including innovative campaigns promoting healthy diets and lifestyles, policy support to reduce availability and affordability of unhealthy imported foods, front-of-package labelling requirements, building capacity for climate-smart and ecosystem-based approaches to agriculture, improving availability and accessibility of finance, creating an enabling environment to support alternative agricultural products, establishing public-private investment synergies, and improving the regional policy and regulatory environment to stimulate investments in agriculture and agribusiness, and establish linkages with tourism and the modern retail sector. Considerations to "returns per drop of water" is important in an era being increasingly affected by climate change and drought conditions.

The findings of the rapid assessment serve as a first step for planning programmes and projects for sustainable food systems transformation. Further research will help to dig deeper to understand in detail the challenges and the impact on food system sustainability. The specific levers and action areas can be sharpened, along with best practices from the region and across the globe to bring about the desired impact. Institutional innovations must be experimented for effective multi-stakeholder platforms to ensure that the voices of the stakeholders, especially the most vulnerable sections of the society, are reflected in the activities and plans.
References


**CARIBSAVE, 2012a.** *Climate Change Risk Profile for Barbados*. Christ Church, Barbados, The CARIBSAVE Partnership.

**CARIBSAVE, 2012b.** *Climate Change Risk Profile for Antigua and Barbuda*. Christ Church, Barbados, The CARIBSAVE Partnership.


Acknowledgements

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Administration and process support: Béatrice Ngirabacu-Mukahira

Editors and graphic designer: Rex Merrifield, Alan Cooper, Chiara Virdis.
Annex 1: Structure of Production (1990 and 2019)


1. Antigua and Barbuda

1990

2019

2. Barbados

1990

2019

Other crops and livestock products  Fruit, tropical fresh  Milk, cow  Meat, cattle  Mangoes, mangosteens, guavas  Meat, chicken  Melons, other (inc.cantaloupe)  Eggs  Meat, goat  Meat, sheep  Lemons and limes  Meat, pig  Seed cotton  Tomatoes

Other crops and livestock products  Fruit, tropical fresh  Milk, cow  Mangoes, mangosteens, guavas  Melons, other (inc.cantaloupe)  Eggs  Lemons and limes  Meat indigenous, cattle  Tomatoes  Pinapples  Onions, dry  Eggplants (aubergines)  Meat indigenous, pig  Bananas
3. Dominica

1990

Panel A

Other crops and livestock products  Bananas  Taro (cocoyam)  Grapefruit (inc. pomelos)  Yautia (cocoyam)  Milk, whole fresh cow  Mangoes, mangosteens, guavas  Meat indigenous, cattle  Coconuts  Yams  Lemons and limes  Plantain and others  Oranges

Panel B

Other crops and livestock products  Bananas  Grapefruit (inc. pomelos)  Taro (cocoyam)  Yams  Yautia (cocoyam)  Milk, whole fresh cow  Meat indigenous, cattle  Oranges  Plantain and others  Cocoa beans  Mangoes, mangosteens, guavas  Coconuts

2019

4. Grenada

1990

Panel A

Other crops and livestock products  Nutmeg, mace and cardamoms  Bananas  Cocoa beans  Avocados  Eggs  Coconuts  Mangoes, mangosteens, guavas  Fruit, fresh  Fruit, tropical fresh  Meat, chicken  Grapefruit (inc. pomelos)  Roots and tubers  Meat, cattle  Vegetables, fresh

Panel B

Other crops and livestock products  Nutmeg, mace and cardamoms  Bananas  Watermelons  Tomatoes  Plantain and others  Melons, other (inc.cantaloupes)  Cucumbers and gherkins  Eggs  Sweet potatoes  Cocoa beans  Avocados  Lettuce and chicory  Fruit, fresh  Cabbage and other brassicas

2019
5. Saint Kitts and Nevis

1990

Panel A

- Other crops and livestock products
- Sugar cane
- Fruit, tropical fresh
- Meat indigenous, cattle
- Eggs, hen, in shell
- Meat indigenous, sheep
- Meat indigenous, goat
- Meat indigenous, pig
- Coconuts
- Meat indigenous, chicken
- Pulses nes
- Roots and tubers nes

2019

Panel B

- Other crops and livestock products
- Fruit, tropical fresh
- Coconuts
- Meat indigenous, cattle
- Pulses nes
- Eggs, hen, in shell
- Roots and tubers nes
- Vegetables, fresh
- Meat indigenous, pig
- Sweet potatoes
- Tomatoes
- Watermelons

6. Saint Lucia

1990

Panel A

- Other crops and livestock products
- Bananas
- Mangoes, mangosteens, guavas
- Coconuts
- Meat indigenous, cattle
- Fruit, tropical fresh
- Yams
- Meat indigenous, pig
- Pepper (piper spp.)
- Meat indigenous, chicken
- Roots and tubers nes
- Plantains and others

2019

Panel B

- Other crops and livestock products
- Bananas
- Meat indigenous, chicken
- Fruit, tropical fresh
- Meat indigenous, cattle
- Fruit, fresh nes
- Meat indigenous, pig
- Coconuts
- Eggs, hen, in shell
- Plantains and others
- Pepper (piper spp.)
- Mangoes, mangosteens, guavas
- Meat indigenous, sheep
- Milk, whole fresh cow
- Vegetables, fresh nes
- Roots and tubers nes
7. Saint Vincent and the Grenadines

1990

Panel A
- Vegetables, fresh nes
- Eggs, hen, in shell
- Spices nes
- Sweet potatoes
- Coconuts
- Meat indigenous, cattle
- Yams
- Other crops and livestock products
- Bananas
- Sugar cane
- Meat indigenous, pig
- Mangoes, mangosteens, guavas
- Plants
- Meat indigenous, chicken
- Other crops and livestock products
- Bananas
- Roots and tubers nes
- Plantains and others
- Fruit, fresh nes
- Mangoes, mangosteens, guavas
- Vegetables, fresh nes
- Meat indigenous, cattle
- Nutmeg, mace and cardamoms
- Meat indigenous, chicken
- Sugar cane

2019

Panel B
- Vegetables, fresh nes
- Nutmeg, mace and cardamoms
- Plantains and others
- Fruit, fresh nes
- Mangoes, mangosteens, guavas
- Vegetables, fresh nes
- Meat indigenous, cattle
- Nutmeg, mace and cardamoms
- Meat indigenous, chicken
- Sugar cane
Annex 2: Trends in production of key crop and livestock products


1. Antigua and Barbuda

Panel A: Crop products

Panel B: Livestock products
2. Barbados

Panel A: Crop products

Panel B: Livestock products
3. Dominica

Panel A: Crop products

Panel B: Livestock products
4. Grenada

Panel A: Crop products

Panel B: Livestock products
5. Saint Kitts and Nevis

Panel A: Crop products

Panel B: Livestock products
6. Saint Lucia

Panel A: Crop products

Panel B: Livestock products
7. Saint Vincent and the Grenadines

Panel A: Crop products

Panel B: Livestock products
Annex 3: Export trends


Antigua and Barbuda

Barbados
Saint Vincent and the Grenadines
Annex 4: Import trends


Antigua and Barbuda

Barbados
Saint Vincent and the Grenadines

FOOD SYSTEM PROFILE

© FAO/Max Valencia
Annex 5: Consumption patterns
food availability by commodity groups, share of calories


1. Antigua and Barbuda

2. Barbados

3. Dominica

4. Grenada
5. Saint Kitts and Nevis

6. Saint Lucia

7. Saint Vincent and the Grenadines


Figure A.6.1: Estimated per capita food intake for adults age 25+ years (in grams per day)
Annex 7: Key Sustainability Questions (national)

Antigua and Barbuda

KSQ 1: What are the reasons behind the rising incidents of overweight, obesity and NCDs in the population, especially among women and children?

KSQ 2: Why is the fisheries subsector not adequately developed in spite of the economic potential in providing employment for persons generally and in particular for women and young people?

KSQ 3: Why is the agricultural marketing information system and agricultural marketing underdeveloped despite the need for food market transparency and livelihood security?

KSQ 4: What are the key constraints/bottlenecks in providing sustainable livelihood opportunities for women and young people in agriculture in Antigua and Barbuda, especially in the rural areas?

Barbados

KSQ 1: What are the reasons behind the rising incidence of overweight, obesity and NCDs in the Barbadian population?

KSQ 2: Why is there limited modernization and low production diversity in agriculture, hindering the sustainable and inclusive transformation of the sector?

KSQ 3: What is driving the conversion of agricultural land contributing to the unbalanced territorial development across Barbados?

KSQ 4: What are the reasons for the lack of integration along agricultural value chains in Barbados?

Dominica

KSQ 1: Looking at our food system, why is there a high level of health-related issues, such as obesity, diabetes and hypertension, in the population?

KSQ 2: Why is there high levels of rural unemployment and poverty rural migration, and reduced purchasing power alongside underdeveloped agricultural value chains in Dominica?

KSQ 3: After many years of impacts from weather-related disasters, why does Dominica continue to experience high losses almost annually?

KSQ 4: Why are wage rates unattractive in agriculture compared to other sectors? Why are women and young people outside the catchment of the formal financial system?

Grenada

KSQ 1: How can Grenada address the growing issues of obesity and overweight, especially among children and the rising incidences of diet-related NCDs in the population?
KSQ 2: Why is there a high level of rural unemployment, poverty and rural migration, alongside underdeveloped agricultural value chains in Grenada?

KSQ 3: What are the reasons for the lack of resilience of the food systems of Grenada to climate and natural disasters?

KSQ 4: What are the key constraints to becoming more efficient in using the blue economy of Grenada (including Carriacou and Petite Martinique regions)?

Saint Kitts and Nevis
KSQ 1: Looking at the food system, why is there a high level of health-related issues, such as obesity, diabetes and hypertension, in the population?

KSQ 2: Parallel to the high level of food imports and vacant lands, why is there employment and income challenges among farm-family households, which is affecting their access to healthier foods?

KSQ 3: Why is there limited participation of young people and women in the food system while there is high levels of poverty and inequality in rural areas?

KSQ 4: Despite having rich soils and favourable weather throughout the year, why is the food system underproductive and less resilient to shocks?

Saint Lucia
KSQ 1: What are the reasons behind growing obesity and diet-related CNCDs, especially among women and children?

KSQ 2: Why is the local agriculture sector not able to benefit from the thriving tourism industry?

KSQ 3: What are the constraints for moving from a banana-based economy to a more diversified agriculture/fishery sector?

KSQ 4: What are the reasons behind the lack of resilience of the food system to environmental shocks?

Saint Vincent and the Grenadines
KSQ 1: Why is there an increasing trend towards health-related issues, such as obesity, diabetes, and hypertension in the population?

KSQ 2: What are the reasons for the limited diversity in agriculture production and the transition away from agriculture (as the production of banana crop decreases from the banana crop)?

KSQ 3: What are the reasons for low development of the rural food system, with limited opportunities to engage women?

KSQ 4: Why is the degree of the impact from natural disasters increasing in frequency and total loss, with severe implications for rural population?