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# FOOD SYSTEMS PROFILE - JAMAICA

Catalysing the sustainable and inclusive  
transformation of food systems



Jamaica



# **FOOD SYSTEMS PROFILE - JAMAICA**

Catalysing the sustainable and inclusive transformation of food systems

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# FOOD SYSTEMS PROFILE

## JAMAICA

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**Jamaica** is the largest island in the English-speaking Caribbean with a total area of 10 990 km<sup>2</sup>. Its geology and geography expose the island to a number of natural hazards. Hurricanes causing floods and landslides, as well as droughts, have increased over the last 30 years due to the climate crisis. While Jamaica has been classified as an upper-middle-income country, its GDP growth has experienced a dramatic decline due to COVID-19. Inequality, youth unemployment and high levels of violence as well as certain governance challenges hinder progress and the equal distribution of development gains. The magnitude of these challenges seriously exposes the vulnerability of Jamaica's food systems to external shocks.

### **Jamaica has significant potential for the sustainable transformation of its food systems:**

- Jamaica has greater potential for food security than most other Caribbean Small Island Developing States (SIDS) as **there are local substitutes for many imported staples that can be widely produced in addition to nutritious local varieties** (FAO, 2015).
- Jamaica's rich biodiversity allows for the development of numerous **high value-added agricultural export products, such as superfoods, including a growing market for plant-based active pharmaceutical ingredients (APIs)**. These products often follow the **unique example of the high-value Jamaican Blue Mountains Coffee**.
- Despite a general decline in the volume of exports, the export value of lightly processed agricultural products, such as Jamaica's sauces, fruits, spices, and beverages, has experienced a recent rise.

### **Yet, despite numerous opportunities, sustainable food systems continue to face significant challenges:**

- Declining agricultural production, coupled with **increasing reliance on imports, is leading to increased vulnerability to food price volatility and food price inflation**.
- Jamaica is particularly **vulnerable to climate change**, including rising sea levels resulting in dramatic coastal erosion and salinization, as well as increasing frequency of hurricanes and tropical storms.
- The **triple burden of malnutrition, coupled with the lack of progress on key food security indicators**, has persisted over the last 10–15 years. Undernourishment, stunting among children under five (CUF), and anaemia among women of reproductive age (WRA) all experienced a slight rise before the COVID-19 pandemic (FAO, 2021).
- Persistently **high rates of obesity** are linked to **high instances of non-communicable diseases (NCDs)** are a leading cause of mortality, with 25 percent of Jamaicans suffering at least one chronic disease.



Obesity rates among adults have increased slightly and doubled among children between 2010 and 2017.

- The high level of **youth unemployment is often linked to extremely high levels of gang violence**. According to the International Labour Organization (ILO), 35 percent of rural youth were not engaged in employment, education, or training in 2019.
- Jamaica suffers from a **very high percentage of food loss** (30–40 percent) and a lack of data on food waste and greenhouse gas (GHG) emissions from food loss and waste.
- There is **declining soil fertility and pollution of watersheds linked to high usage of agrochemicals**, limited data on their impacts across the food ecosystem, and no data at all on their GHG emissions.
- **Smallholder food producers have limited access to financing** due to many barriers, including land registration, **while simultaneously losing agricultural land to encroachment and development projects**. Only 10 percent of Jamaican farmers have access to credit (Rural Agricultural Development Authority, RADA).
- Although over 100 000 farmers enjoy memberships in about 39 agricultural cooperatives, these **cooperatives face many challenges** in terms of their sustainable operations.

This assessment has identified several potential entry points for increasing the sustainability of Jamaica's food systems. These entry points underscore the need for increased collaboration between various actors in Jamaica's food systems as well as different government sectors to provide leadership and an enabling policy environment.

Key among these identified entry points are: improving consumer knowledge of nutrition and food labelling through policies focused on increasing access to healthy food products; increasing the participation of marginalized groups (especially small producers, youth, and women) in food systems by improving their access to land, finance, and training; and providing incentives to increase access to climate-smart technologies for smallholder farmers and producers.



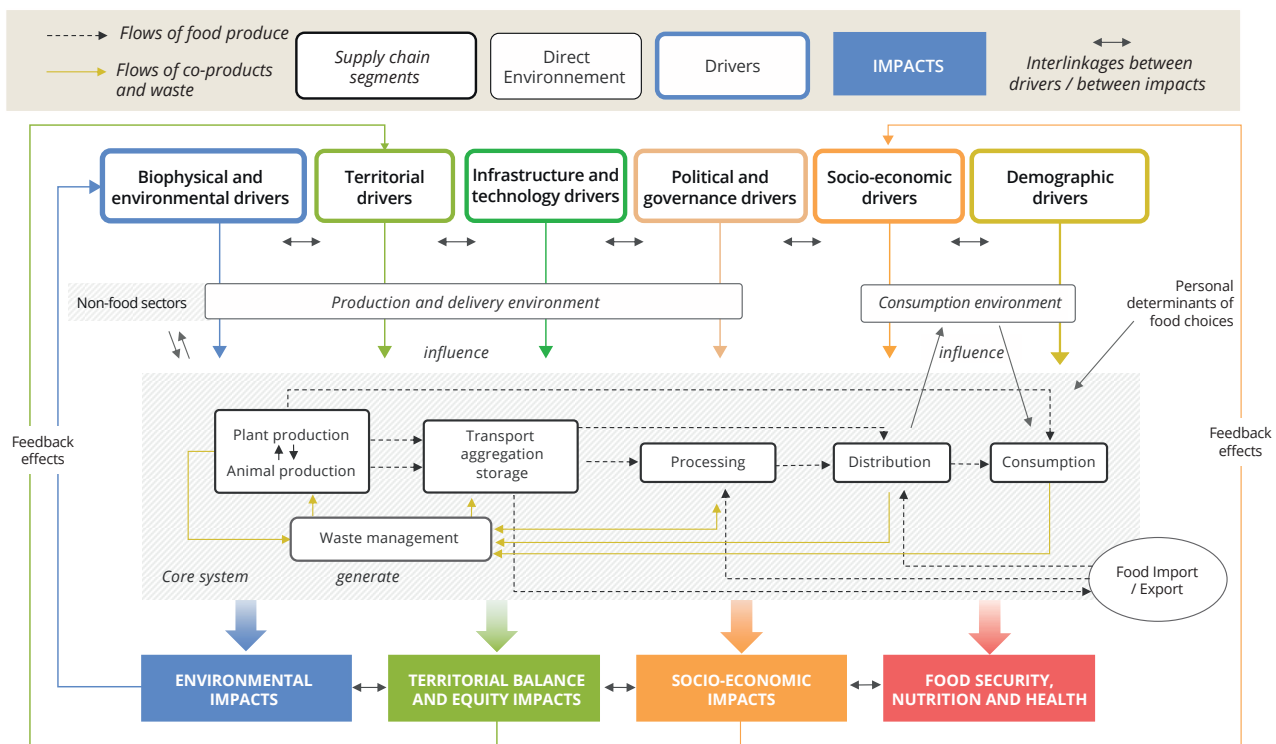
## Food systems assessment methodology and process

This brief is the result of a collaboration between the Ministry of Agriculture and Fisheries (MoAF) and the Planning Institute of Jamaica, with the Food and Agriculture Organization of the United Nations (FAO) and the European Union, in close consultation with national and international experts. It was implemented in Jamaica between July and September 2021. The methodology used for preparing this brief is the result of a global initiative of the European Union, FAO and 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 assessments. Catalysing the sustainable and inclusive transformation of food systems* (David-Benz et al., 2022).

**Figure 1: Analytical representation of the food system**



**Source:** David-Benz, H., Sirdey, N., Deshons, A., Orbell C. & Herlant, P. 2022. *Conceptual framework and method for national and territorial assessments. Catalysing the sustainable and inclusive transformation of food systems*. Rome, FAO, Brussels, European Union and Montpellier, France, CIRAD.



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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 the 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 the 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 the drivers through several 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.





## National context: key figures

Jamaica has a population of 2 961 161 (World Bank, 2021) and a slowing but stable population growth of around 0.4 percent. Economic growth in Jamaica has averaged around 1 percent over the last ten years with a recent sharp negative decline due to the COVID-19 pandemic. The gross domestic product (GDP) per capita declined from USD 5 369 in 2019 to USD 4 664 in 2020. Jamaica is characterized by high-income inequalities,

youth unemployment and underinvestment in agriculture. While there are large pockets of urban poverty, the highest prevalence of poverty is found in rural areas and small towns (Planning Institute of Jamaica, 2017). The Gini index in Jamaica has fluctuated over time, to reach a maximum value of 48.30 in 2002 as against a minimum value of 35.70 in 1993, with the most recent value of 45.5 in 2004 (World Bank, 2021).

**Table 1. Country-level data – Jamaica**

| Indicators                                                              | 2000      | 2010      | 2020         | Comment                                                                                                                            |
|-------------------------------------------------------------------------|-----------|-----------|--------------|------------------------------------------------------------------------------------------------------------------------------------|
| Population growth rate                                                  | 0.8%      | 0.5%      | 0.4%         | Slightly slowing and stable                                                                                                        |
| Percent urban population                                                | 51.8%     | 53.7%     | 56.3%        | The growing urban population reflects rising rural out migration                                                                   |
| Urban population growth rate                                            | 1.3%      | 0.8%      | 1.01%        | Urban population growth is rising; now reaching double the general population growth                                               |
| GDP/capita                                                              | USD 3 392 | USD 4 704 | USD 4 664    | Rising trend up to 2019, followed by a decline in 2020 due to the pandemic                                                         |
| Inflation of consumer prices                                            | 8.1%      | 12.6%     | 5.2%         | Despite declining inflation before the pandemic, food prices are increasing due to import reliance and local currency devaluation  |
| Access to electricity                                                   | 84.3%     | 92.2%     | 99.1%        | Significant increase; but electricity prices remain very high, access is often disrupted and there is limited uptake of renewables |
| School enrolment (primary)                                              | 95.9%     | N.A.      | 85%          | School enrolment has been going down over the past two decades                                                                     |
| Unemployment                                                            | 15.5%     | 12.3%     | 8.4%         | Current unemployment rates may have gone up due to COVID-19                                                                        |
| Forest area (% of land area)                                            | 48.1%     | 51.5%     | 55.4% (2018) | Forest area coverage has been increasing over the past two decades                                                                 |
| People using at least basic sanitation services (% of urban population) | 83.5%     | 83.4%     | 83.2%        | Almost 17% of the urban population still lacks access to basic sanitation                                                          |

**Source: The World Bank.** 2022. Data. In: *Jamaica* [online]. Washington, DC. Cited 30 March 2022. <https://data.worldbank.org/country/jamaica>



The agricultural sector is an important contributor to GDP, employment, foreign exchange earnings, environmental sustainability, food security, and rural development in Jamaica. In the period 2016–2019, the agriculture sector (including fisheries and forestry) recorded an annual average growth of 3.5 percent. Periods of growth were supported by favourable weather conditions. The sector added over USD 1 billion to the Jamaican economy in 2019, representing 7.1 percent of the national GDP – almost double the Caribbean average. Nonetheless, the sector is considered unproductive with reducing the output per hectare (ha) and a small decline in employment from 16.2 percent of the population in 2018 to 15.2 percent in 2019.





## Key figures and trends in food production, consumption and trade

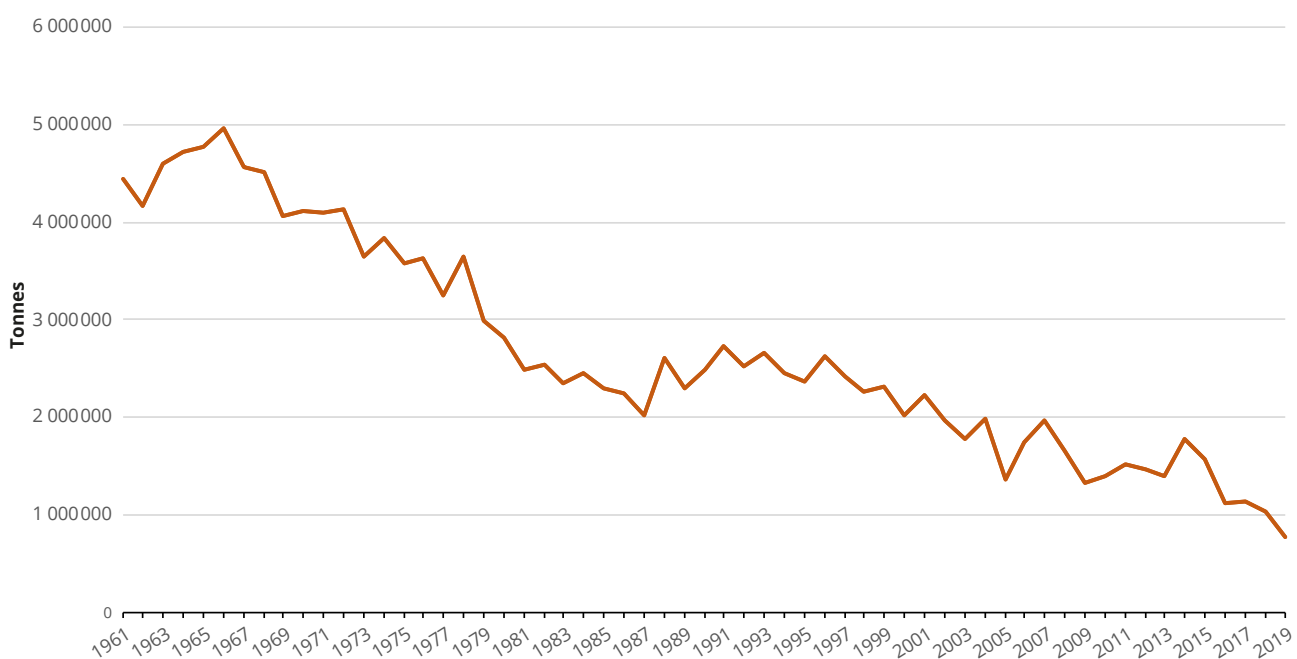
**Sugar cane cultivation has long dominated the agricultural sector in Jamaica. Despite its declining importance, it continues to account for one-third of the value of agricultural production. Root crops, yams, and sweet potatoes, fruits and vegetables are other important crops. The poultry industry has also increased in size over the years.**

Jamaica's colonial history led to the development of a plantation-style agricultural production system that is primarily focused on the export of sugar, bananas, coffee, cocoa and citrus fruits. Sugar cane cultivation historically dominated the agricultural sector for centuries as the raw material for manufacturing and exporting sugar, primarily to the United Kingdom of Great Britain and Northern Ireland. Production for the domestic market, meanwhile, has been organized around "non-traditional" crops, such as root crops, yams, and sweet potatoes, exotic fruits and vegetables, herbs, and spices.

Over the years, however, the role played by sugar crops in Jamaican production and

exports has diminished because of declining productivity and competition from larger volume exporters in the region (see figure 2). The value of production of sugar cane is still significant at 33 percent of total agricultural production (see figure 3); although this represents a significant drop from 53 percent in 2000. In recent years, meanwhile, the livestock sector has expanded; particularly the poultry industry, which benefits from consumer preferences for white meat. In 2019, eggs and meat from poultry and milk from goats accounted for 21 percent of the value of agricultural production, followed by root crops, fruits and vegetables.

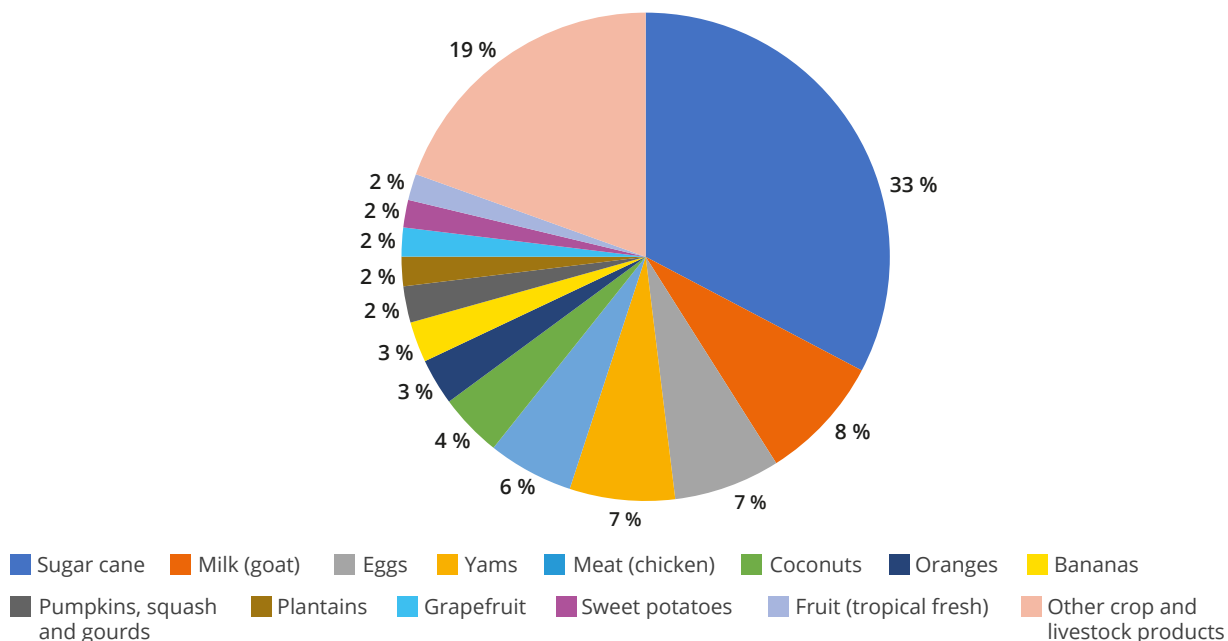
**Figure 2. A steady decline in sugar crop production**



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)



**Figure 3. Structure of production (% of value ) in 2019**

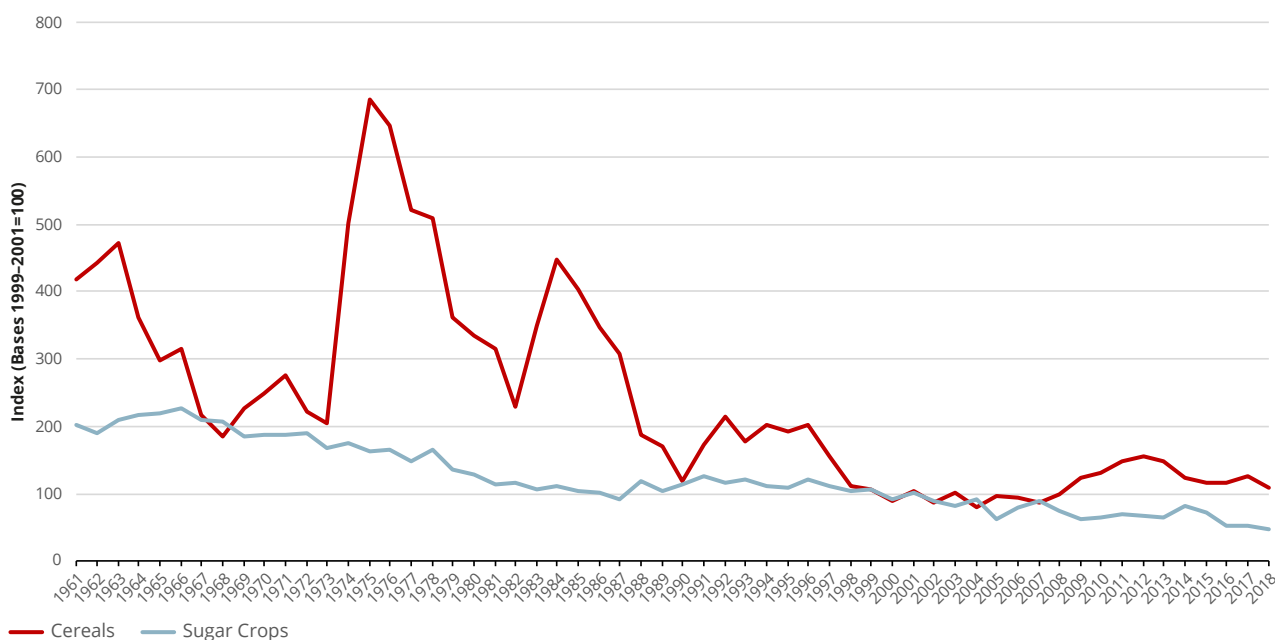


Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

In Jamaica, agricultural production has not kept pace with population growth, especially in terms of cereals and pulses. Figures 4 (a)–(c) show the

trends in production index for key agricultural crops and livestock products from 1960 to 2019.

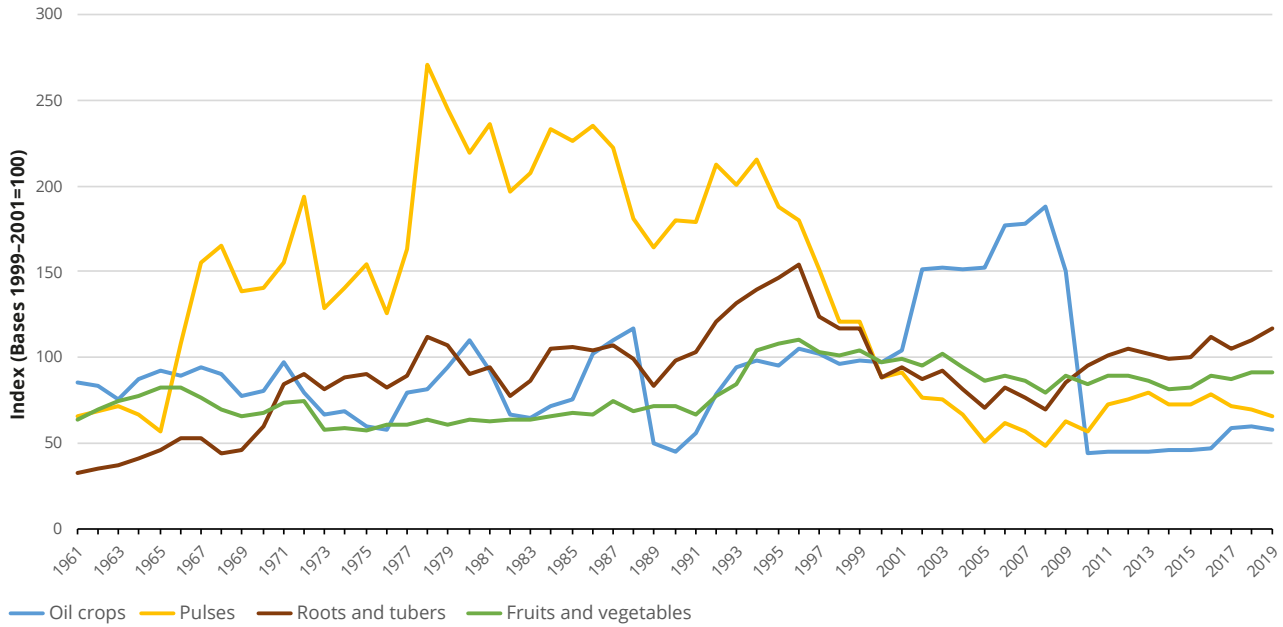
**Figure 4 (a). Cereals and sugar crops production index**



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

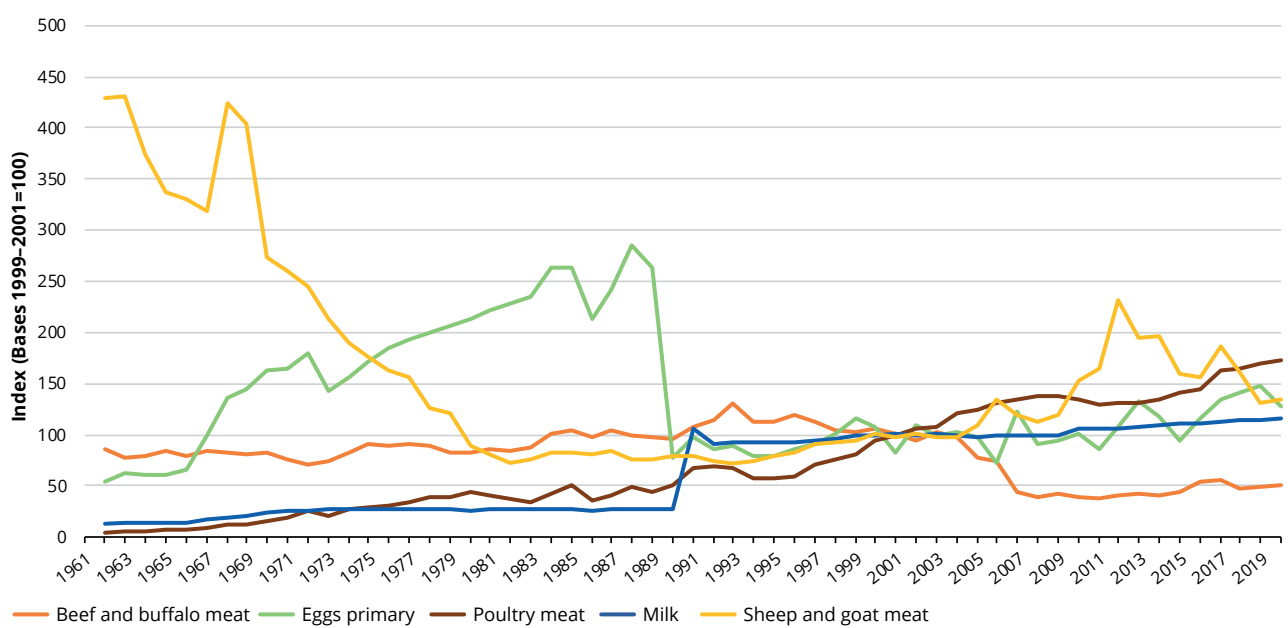


Figure 4 (b). Other crops production index



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

Figure 4 (c). Livestock commodities production index



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

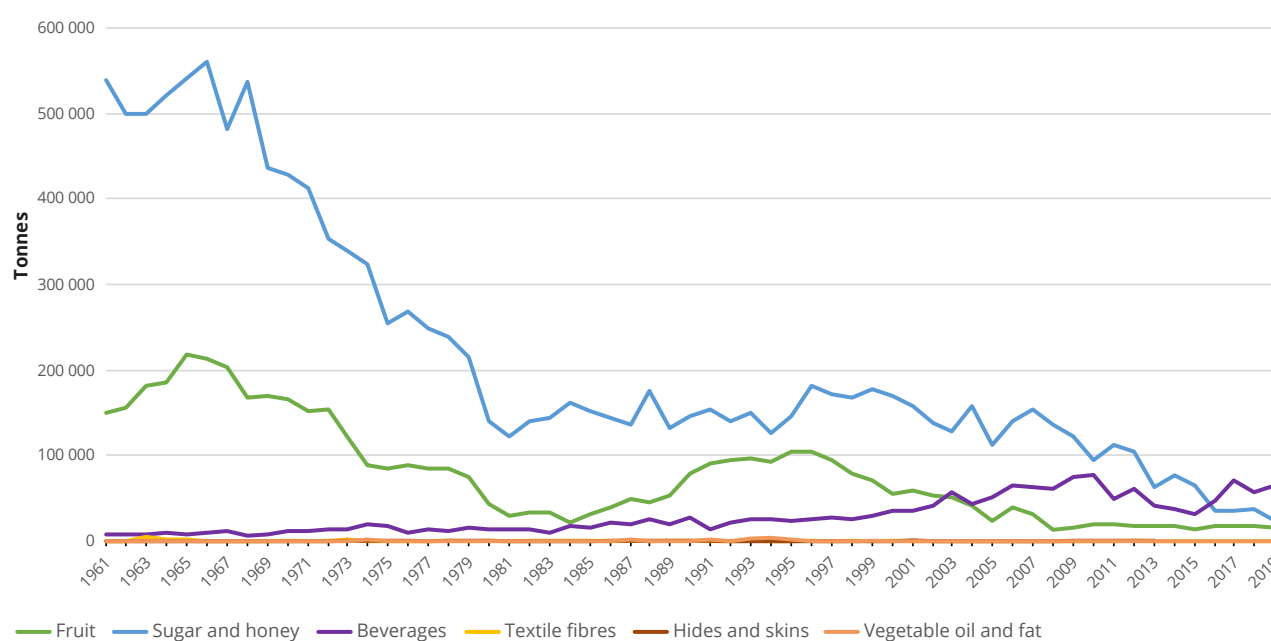


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Such production trends have a direct bearing on Jamaican trade patterns. The main traditional export crops include sugar, bananas, coffee, citrus fruits, cocoa, and pimento. Figure 5 shows the massive decline in exports of sugar and honey products over the last few decades, along with declining exports of fruit crops. In recent years,

however, exports of beverages have marked a gradual increase. Despite the decline in overall agricultural export volumes, the value of Jamaica's non-traditional exports, such as beverages and other foods, has increased over the years. Such exports include raw sugar, barley beer, and alcoholic as well as non-alcoholic beverages

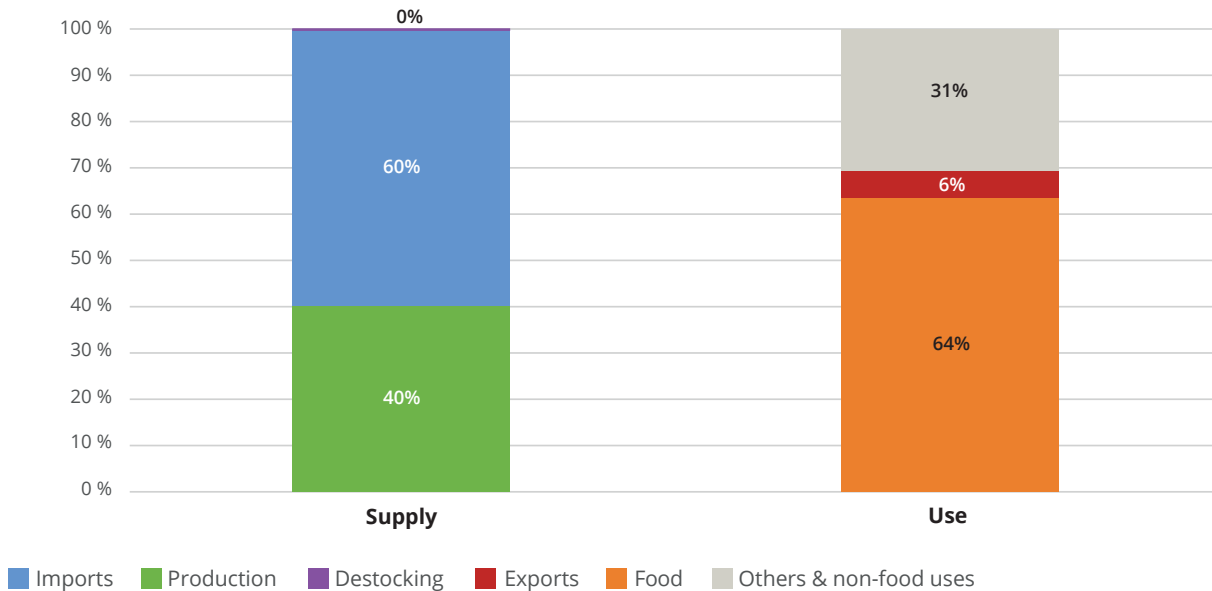
**Figure 5. Trends in exports of key commodities (volume, in tonnes)**



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)



**Figure 6. Food balance (in calories)**



**Source:** FAO. 2021. FAOSTAT Food Balance Database. Rome. Cited 15 December 2021. [www.fao.org/faostat/en/#data](http://www.fao.org/faostat/en/#data)

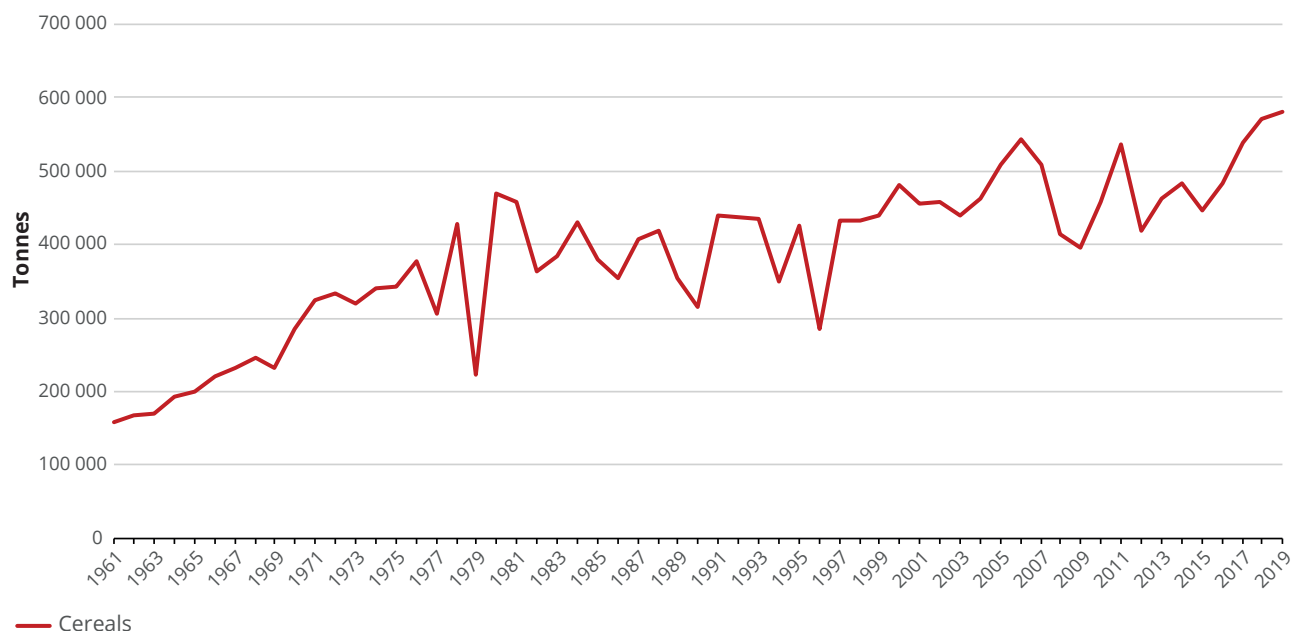
Jamaica has always been reliant on imports of various agricultural and food products (see figure 6). But this reliance – in terms of both volume and especially value – has grown over the last 10 to 15 years. This can be mainly attributed to the large presence of the hotel industry catering to the growing tourism sector. Jamaica’s leading food and beverage import categories include grains and soybean, fruits and vegetables, meats (beef and veal), cheese and dairy products, processed snacks, and alcohol. Cereals, mainly processed rice, accounted for the largest increase of imported foods in the country at 580 919 tonnes in 2019, up from 168 435 tonnes in 1962 (see figure 7). The island nation’s exposure to the cultural influence of the United States of America has also created a growing demand for breakfast cereals. The country is listed among the highest per capita consumers of flour and flour-based products. Imports of all major commodities have increased to meet this growing local and tourist demand (see figure 8). Likewise, imports of particular fruits (apples, pears, strawberries, plums, kiwis, etc.) and vegetables (broccoli, asparagus, spinach) have been growing as



demand from the hospitality and retail sectors remains high. Demand for prime beef cuts and alcohol comes primarily from the hospitality sector, which has also resulted in further imports. Although mutton and goat imports are growing, the market for these products is price-sensitive. In the last few decades, imports of refined sugar and honey have increased. There has also been rapid growth in imports of fodder and feed to support the growing poultry production. Reliance on imports makes Jamaica especially vulnerable to high food price volatility and inflation.

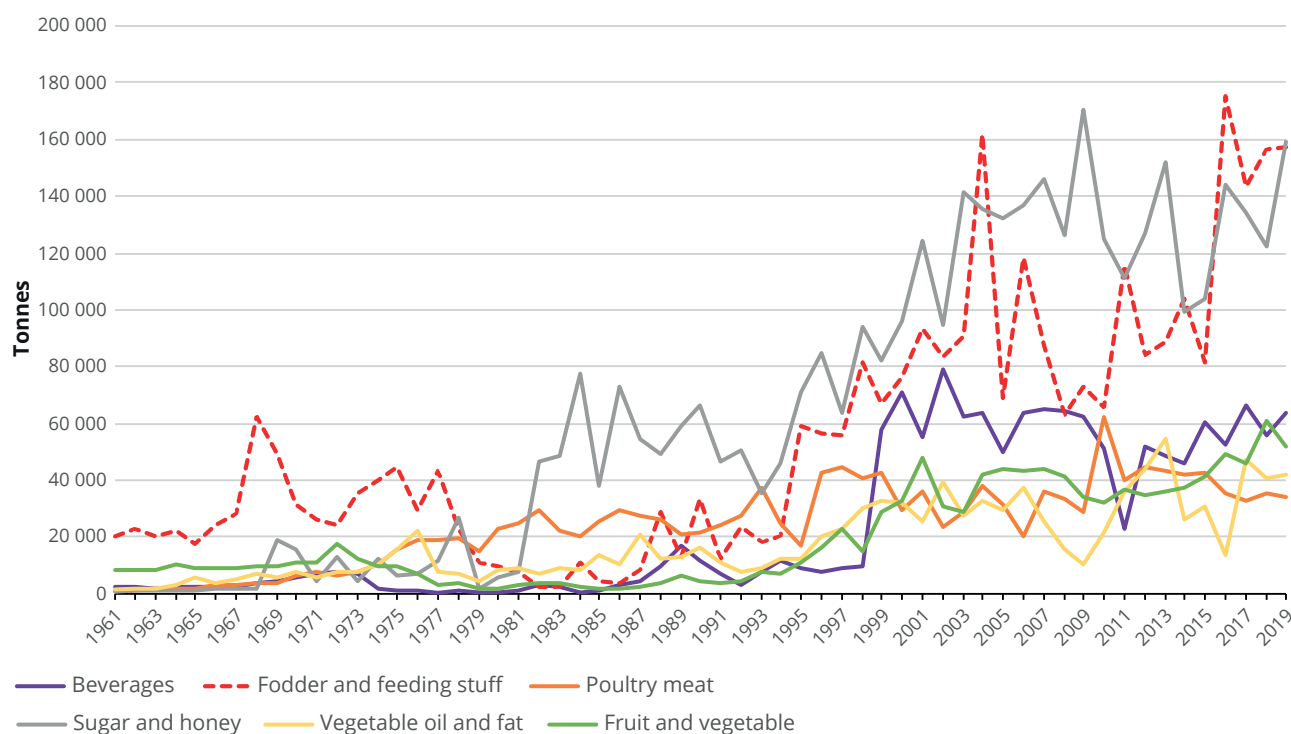


Figure 7. Trends in imports of cereals (volume, in tonnes)



Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

Figure 8. Trends in imports of key commodities (volume, in tonnes)



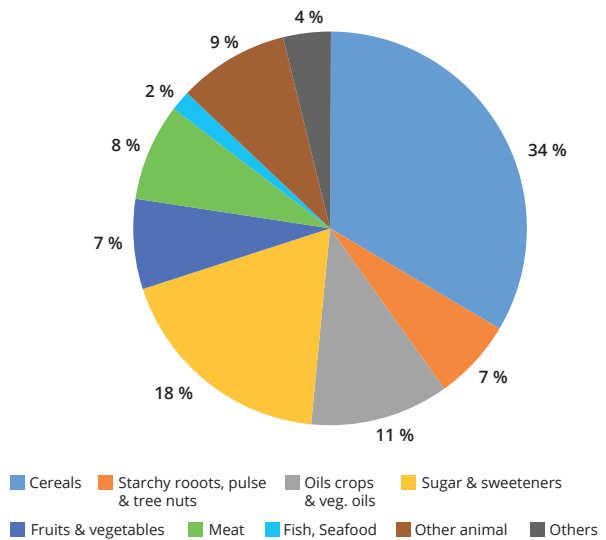
Source: FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)





Figure 9 shows the daily food supply in calorie terms in Jamaica. In the absence of recent, nationally representative consumption surveys, this serves as a proxy for food consumption patterns in the country. As the figure shows, over 50 percent of calories consumed by Jamaicans come from cereals and sugar. Despite the wide availability of locally grown fruits and vegetables, they are still relatively under-consumed by the local population.

**Figure 9: Daily food supply (kcal/capita)**



**Source:** FAO. 2022. FAOSTAT Selected Indicators: *Jamaica*. Cited 10 January 2022. [www.fao.org/faostat/en/#country/109](http://www.fao.org/faostat/en/#country/109)

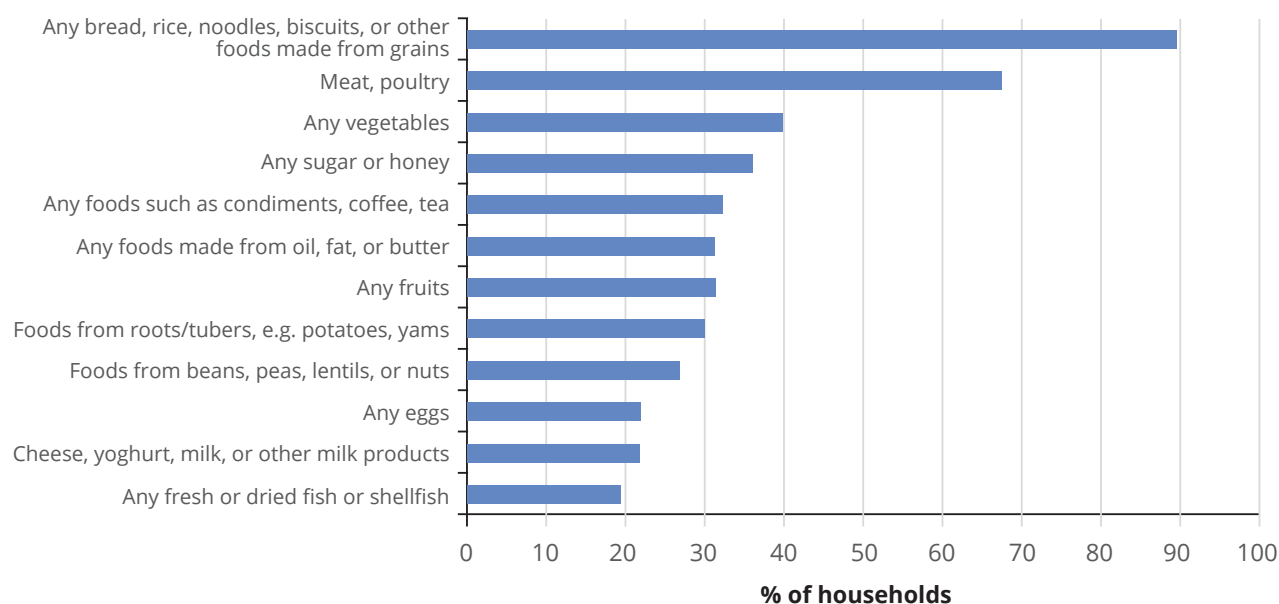




Fish and seafood consumption is also very low, even though Jamaica is an island. This could be explained by two possible causes. First, fish habitats have degraded, as indicated by the Coral Reef Health Index, which continues to post poor figures for a sixth consecutive year. Such degraded habitats can result in decreased size and quantity of catch by fishers. Second, traditional fishing is not as developed in Jamaica as on other islands, since most of the population with historical links to slavery settled in the mountains rather than on the coast. The average biomass of herbivorous and commercial fish continues to decline in Jamaican waters (Planning Institute of Jamaica, 2021).

There has been a marked rise in the urban consumption of fast foods as well as highly processed foods and sugary beverages. A recent survey of 700 households in the Kingston Metropolitan Area (KMA) of Jamaica reveals high consumption of bread, rice, noodles, biscuits, and other foods rich in carbohydrates (see figure 10). Meat, such as chicken and beef, was the most commonly consumed food group after carbohydrates, with fewer households deriving protein from seafood and peas, beans or lentils. Consumption of fruits and vegetables was far lower, contributing to low levels of dietary diversity, especially in poor households.

**Figure 10: Food groups consumed in the previous 24 hours**



**Source:** Kinlocke, R., Thomas-Hope, E., Jardine-Comrie, A., Timmers, B., Ferguson, T., and Mccordic, C. 2019. *The State of Household Food Security in Kingston, Jamaica*. Hungry Cities Report No. 15. <https://hungrycities.net/wp-content/uploads/2019/06/HCP15.pdf>



## Characterization of the dominant actors of the food system

- Characterization of the dominant actors in Jamaica's food systems
- The domestic agriculture sector consists of farmers producing vegetables, legumes, fruits, roots, and tubers, cereals and condiments. Most of these commodities are for local consumption, and destined for the hospitality sector, while a small share is exported. Exports of non-traditional commodities, such as papaya, ackees, fish, conch, pumpkin, sweet potatoes, dasheen, mangoes, and yam account for a significant portion of Jamaica's export revenue.
- The agriculture export sector is more organized than the domestic sector, consisting of large plantations producing a few crops that compete for sale in the markets of developed countries. However, several governmental commodity boards regulate exports in Jamaica. High levels of intervention from such boards and other regulators in export chains contribute to the high costs of exports and create disincentives for exporters (Shik et al., 2017).
- The total number of farms is about 230 000, with an average farm size of about one hectare. Four percent of landholders control 65 percent of agricultural land, while the remaining 96 percent are mostly smallholder farmers. Commercial producers, who hold only 20 percent of the production units, represent 80 percent of the marketed output (Qamar, 2013). The average age of farmers is 48 years, and 89 percent of the land is registered with male farmers (FAO, 2019a).
- More than 100 000 farmers enjoy memberships in about 39 agricultural cooperatives, most of which are in rural areas. Similarly, there are a significant number of producers' associations. Agricultural cooperatives and farming organizations face many challenges



for their sustainable operations, such as poor management, inadequate financing and limited integration (Ishemo and Bushell, 2017).

- Informal employment is very common in Jamaica. In 2006, most workers (70 percent) were without formal contracts. Nearly 60 percent of those in the informal sector worked in wholesale/retail trade or agriculture, and a further 9 percent in the manufacturing sector (Hungry Cities Partnership, 2017).
- Domestically produced foods flow into Kingston and other cities largely through Jamaica's higgler (pedlar) system. These informal vendors perform many functions as market intermediaries, including trading, harvesting, post-harvest processing, re-distribution and sales. In Kingston, higglers benefit from large volumes of produce sold at competitive prices and enjoy up to 44 percent price markups from farmgate to retail. More than 90 percent of higglers are women (Hungry Cities Partnership, 2017).



- Jamaica is the third-largest packaged food market in the Caribbean, excluding Puerto Rico. The Jamaican retail food market is expected to expand to USD 857 million by 2021, an increase of nearly 35 percent, or USD 222 million (Food Export USA, 2022).
- Jamaica's food processing sector is relatively underdeveloped and domestic food processors import most of their raw materials directly from suppliers in the United States of America.
- Small retailers, such as neighbourhood "mom and pop" stores and convenience stores, buy most, if not all, of their products from local wholesale distributors. Such retailers have a slow turnaround on product sales and are limited in terms of storage space (Food Export USA, 2022).
- The consumer food service sector in Jamaica generated sales of about USD 700 million in 2017, 5 percent higher than in 2016.



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Independent food service establishments accounted for around 60 percent of those sales, while chain establishments drove the remaining 40 percent (GAIN report, 2018). American (US) fast food franchises make up approximately 50 percent of Jamaica's fast food subsector and continue to expand (GAIN report, 2018).



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## Key challenges to the achievement of core sustainable food systems goals

Jamaica is experiencing several challenges, such as decreasing agricultural production, high post-harvest losses, urbanization, changing consumption patterns, and environmental sustainability. Reliance on imports exposes Jamaicans to high food price volatility and food price inflation. High obesity rates, coupled with malnutrition, are contributing to a very high incidence of non-communicable diseases (NCDs). Jamaica is also characterized by the inefficient use of resources, lack of secure land access, credit, and financing, as well as well-developed food systems, leading to continued underinvestment in agriculture and underemployment of rural youth and women. Jamaica's food systems are vulnerable to climate change variabilities

and shocks, which increasingly contribute to environmental challenges such as biodiversity loss and depletion of natural resources.

The food and agriculture policy and planning trajectory for Jamaica is well reflected in the commitments of the current Government of Jamaica (GoJ) to tackle these major challenges. The Agriculture Sector Plan and Vision 2030 Jamaica – National Development Plan have been formulated as an engine for a long-term vision of the dynamic transformation of Jamaica's agriculture sector. The GoJ has pledged to address food security, agriculture transformation and rural development through various programmes and regulations.

### Key sustainability question 1: What are the reasons behind the increasing triple burden of malnutrition and diet-related NCDs, especially for women and children, in Jamaica?

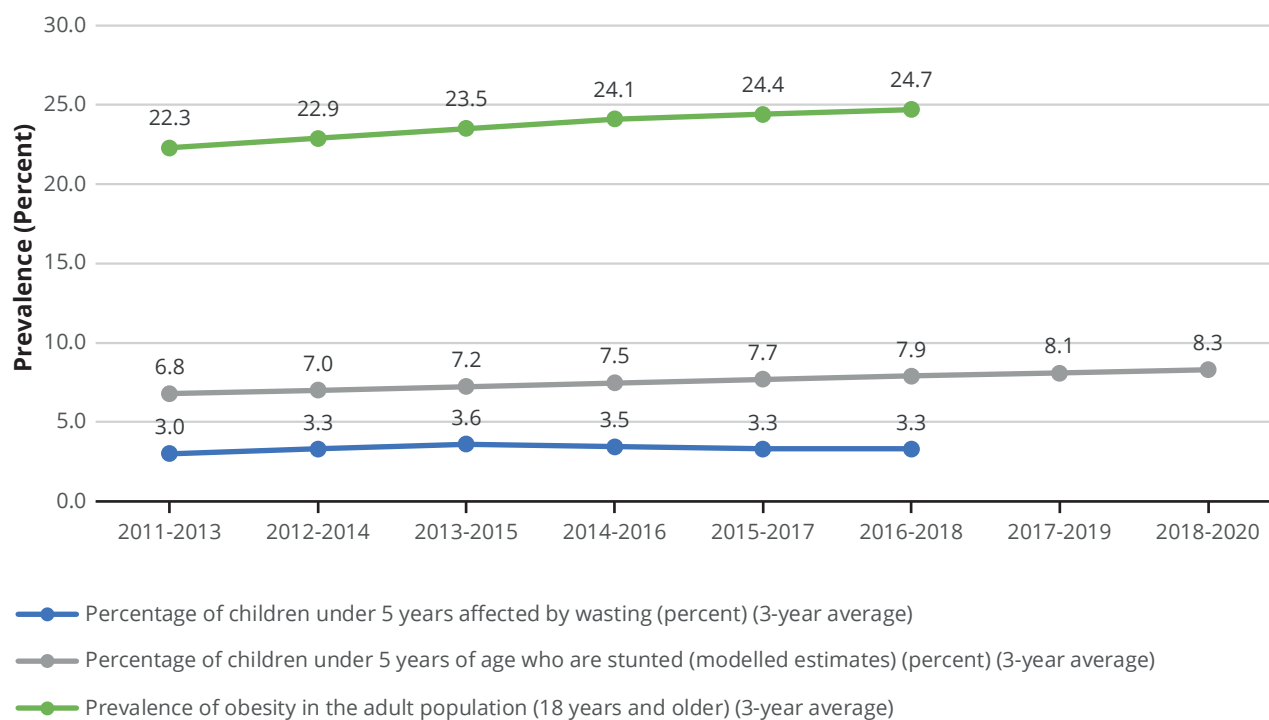
This challenge highlights the systemic issues related to access, affordability, availability, and utilization of nutritious foods in Jamaica. These issues present a significant threat to the sustainability of Jamaica's food systems (see figure 12). According to FAO, roughly 14.6 percent of Jamaicans have been classified as being food-insecure during the period 2015–2017 (FAO, 2022). Food and nutrition security in Jamaica has, therefore, been identified as a national policy priority.

Other food security indicators, as seen in figure 11, have not shown any improvements in the last decade, and have indeed worsened in some cases. For instance, obesity increased from 22.3 percent to 24.7 percent during the period 2012–2020 (FAO, 2021). Meanwhile, the rate of obesity doubled among children between 2010 and 2017, with that in boys going up from 5.3 percent to 10.3 percent and that in girls from 6.7 percent to 9.9 percent (Hibbert, 2018). It is a





**Figure 11. Food security indicators in Jamaica (2011–2020)**



**Source:** FAO, IFAD, UNICEF, WFP & WHO. 2021. *The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. Rome. <https://doi.org/10.4060/cb4474en>

matter of concern that there was a slight increase in undernourishment in the total population from 7.4 percent in 2006 to 7.7 percent in 2020, and an increase in stunting in CUFs from 6.8 percent in 2012 to 8.5 percent in 2020 (FAO et al., 2021). This is compounded by the fact wasting among CUFs also marked a slight increase from 3 percent in 2013 to 3.3 percent in 2020 (FAO, 2021). In parallel, anaemia among WRA increased from 19.5 percent in 2012 to 19.9 percent in 2020 (FAO et al., 2021).

NCDs continue to be the main cause of mortality in Jamaica with 25 percent of the population being afflicted with at least one chronic disease. It is noteworthy that these diseases appear to disproportionately affect adult women, as highlighted by the fact that of the 2 375 Jamaican citizens who died from Diabetes Mellitus in 2017, 1 384 were women. Similarly, of

the 1 518 Jamaicans who died from hypertensive diseases in the same year, 818 were women (Planning Institute of Jamaica, 2019).

Jamaica's low agriculture productivity levels, increased import reliance, changing consumption patterns, globalization of food and beverage (F&B) brands, limited nutritional knowledge among the general population, and poverty and socioeconomic factors (see figure 12) all help explain this malnutrition burden.

Despite the increase in local food demand, Jamaica's agricultural production has been stagnant over the past few years. Smallholder farmers are confounded by several challenges that limit their productivity and production, including the high cost of agricultural inputs, limited access to capital, credit and climate-smart technologies, the prevalence

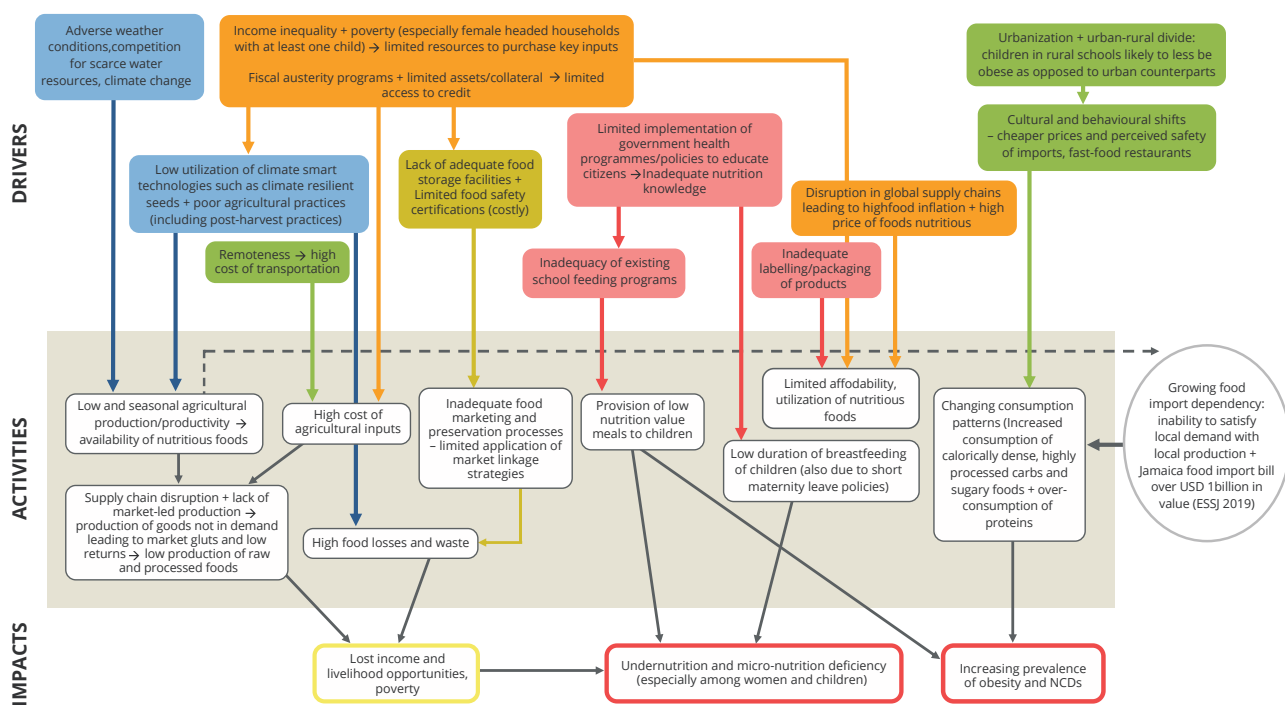


of subsistence farming and the low rate of recruitment and replacement (an ageing population) (see KSQ 3 for details). Taken together, these constraints prevent smallholders from producing enough nutritious food to satisfy domestic demand, thus limiting the availability of such food in the Jamaican market (see KSQ 2 for details).

At the same time, the food consumed in Jamaica is increasingly made up of imported goods. Indeed, food imports for household consumption surged from USD 757.8 million to USD 848.8 million (54 percent of consumer goods imports) in the period 2018 to 2019 (Planning Institute of Jamaica, 2019). The country's high food import bill leaves it particularly vulnerable to external economic shocks, food inflation and climate change.

Food security in Jamaica is also impacted by changing consumption patterns and shifts in consumer preferences towards nutritionally poor diets, leading to increasing obesity and diet-related chronic NCDs, such as diabetes, hypertension, stroke, heart disease, and some forms of cancer. Having become key national public health problems, these diseases are costly to individuals as well as to the country's economy. This is compounded by the increased availability (mostly through imports) of high calorie and low nutrient foods; the abandonment of the traditional Jamaican diet as well as the adoption of urban diets high in refined carbohydrates, sugars, and sodium (Ferguson et al., 2012; Nelson et al., 2020; Popkin, Adair and Ng, 2012). Children attending rural public schools face less risk of being overweight than those in urban-public schools (Blake-Scarlett et al., 2013).

**Figure 12. Reasons behind the increasing triple burden of malnutrition and diet-related NCDs in Jamaica**



Source: Authors, 2022.



Moreover, the globalization of F&B brands has contributed significantly to the country's changing consumption patterns (Nelson et al., 2020). This trend is evident from the widespread promotion of fast-food restaurants and other high calorie/low nutrition food options. The prevalence of obesity and NCDs has grown to match the increased consumption and importation of sugar, oil and beverages. The period 1961–2019 also witnessed a sharp increase in the imports of cereals, such as processed rice (see figure 7).

The change in consumption patterns can be connected to socioeconomic factors such as income inequality, poverty, urbanization, high food inflation and the high price of nutritious foods. These have been observed to be the main driving factors behind the poor food choices that ultimately result in the increasing triple burden of malnutrition and diet-related NCDs, especially among women and children. The poverty rate in 2017 was 19.3 percent, with the World Bank projecting that this rate would increase by four percentage points in 2020 due to the COVID-19 pandemic (Cucagna and Johnson, 2020). Common associated and interlinked features of poverty in Jamaica include high crime, drug trafficking and youth unemployment (Medvedev et al., 2013). The high volatility of prices affects food system participants, while rising food prices limit lower-income households' access to nutritious foods, especially for single-woman-headed households. This is evidenced by the rising consumer price index (CPI) that tracks the increase in the cost of a basic basket of goods, which surged by 33.1 percent in January 2021 compared with 2015.

Another facet of this multidimensional challenge is limited nutrition knowledge in general, and specifically among mothers. Resources for nutrition education via the training of health personnel and other key stakeholders are inadequate. The resultant lack of nutritional knowledge is evidenced by breastfeeding periods in Jamaica, which are shortening considerably, with a current average duration



of three months as opposed to the six months recommended by health professionals. This could be linked to short maternity leaves and the need for mothers to return to work (Cain and Henry, 2017). The literature shows that the short duration of breastfeeding in Jamaica is caused by a combination of inflexible work arrangements and a lack of nutritional knowledge. The limited application of nutritional knowledge can also be observed in some government school feeding programmes that tend to reinforce poor diet preferences. Several Jamaican school feeding programmes – in which students from lower-income families are more likely to participate – have promoted the consumption of sugary beverages and confectioneries (Walker *et al.*, 2005).

Additionally, the inadequate labelling of products leads to limited utilization of nutritious foods, with consumers unable to make informed decisions. Labelling standards for pre-packaged goods in Jamaica currently require clear displays in English of company/brand contact information, the country of origin, details of shelf life, a food description, a declaration of contents, and an ingredient listing. However, the adherence of local factories to current policies





and inadequacies in the current local packaging policies are clearly limited, as the legislation does not require local food manufacturers to provide adequate and accurate nutritional information on their products.

#### Proposed systemic levers:

1. **Support for innovative educational awareness campaigns for healthy food habits, local biodiverse foods and child nutrition at the community level; increasing nutritional knowledge of the general population through public health services.**
2. **Drafting and implementation of policy and regulation on food labelling for all food products sold in Jamaica. The establishment and implementation of policies and regulations would require manufacturers and retailers to provide adequate, accurate, and legible nutritional labelling that clearly displays the ingredients and nutritional information of the product.**

Introducing innovative educational awareness strategies, including school programmes that promote healthy diets for children and adults (similar to “Love Yuh Body...Treat Yuh Body Right” and “Jamaica Moves”), mass media and social media campaigns that inform mothers of the benefits of sustained breastfeeding as well as better dietary choices for young children. Educating expectant mothers about the hazards of fatty, salty, and sweet foods and the introduction of healthier diet options will significantly reduce the prevalence of undernourishment, obesity, and micronutrient deficiencies. The leveraging of mass and social media would be key to promulgating the knowledge and best practices related to nutrition.

Potential barriers to the implementation of this lever include the reluctance of the population to opt for the food habits being promoted, as well as the affordability and availability of the foods recommended. Likewise, the efficacy of the promotion of breastfeeding could be limited by the duration of maternity leave in Jamaica, which





would inevitably shorten breastfeeding time, despite increased awareness of its benefits.

The success of reformed school feeding programmes can be ensured through the engagement of local farmers and agribusinesses to provide consistent, reliable, and nutrient-dense food for the programme. With adequate community engagement and policy coordination across government agencies, this approach could form part of a multifaceted response to the food and nutrition challenges facing Jamaica. The successful execution of this initiative could be achieved in partnership with the private sector, the Ministry of Health and Wellness, the MoAF, the Pan American Health Organization (PAHO) and the media. As these partners are already working under the National Food Industry Task Force (NFITF), such a partnership could not be considered far-fetched.

The second lever in addressing the increasing triple burden of malnutrition and diet-related NCDs would be to establish initiatives to increase the level of nutritional awareness and knowledge among consumers concerning manufactured food products, to support them in making informed nutritional decisions. Such initiatives would encompass capacity development for manufacturers to provide adequate labelling as well as the provision of incentives for food manufacturers and retail businesses (including medium, small and micro enterprises, or MSMEs) to provide accurate nutritional labelling on packages for consumers (both back and front labelling). Conversely, these initiatives would also actively seek to educate consumers on how to properly analyse food labelling and thus make more informed

choices around foods with the most nutritional value. This policy change, however, is only one example of the raft of policies needed to address the triple burden of malnutrition, diet-related NCDs and public health nutrition. Efforts have been made by the Scientific Research Council and the Jamaican Bureau of Standards to introduce standard nutrition fact labels in 2021 and as part of the Improving Household Nutrition Security and Public Health initiative within the Caribbean Community (CARICOM) project, which also involves the UTech Jamaica and the University of West Indies (UWI). Results from the tests will provide baseline data on the concentrations of sugar, sodium, potassium and fat content in reformulated products, towards informing healthier food choices. A total of 106 nutrition fact panels have been developed for local products seeking to access domestic and export markets.

A potential barrier to the implementation of this lever is the limited adoption of proper labelling from Jamaican food manufacturers and retailers. Evidence suggests that Jamaican manufacturers are hesitant to accept a labelling policy that does not align with the labelling policies and practices of their major trading partners, such as the United States of America. Additionally, local manufacturers are concerned that the inclusion of nutritional information on packaging could lead to a decline in sales. As such, the policy will have to propose labelling strategies that align with the practices of the Jamaican manufacturers' trading partners and the task force. It must also establish an incentive programme to reduce the reluctance of agroprocessing businesses to use octagonal warning labels on product packaging.



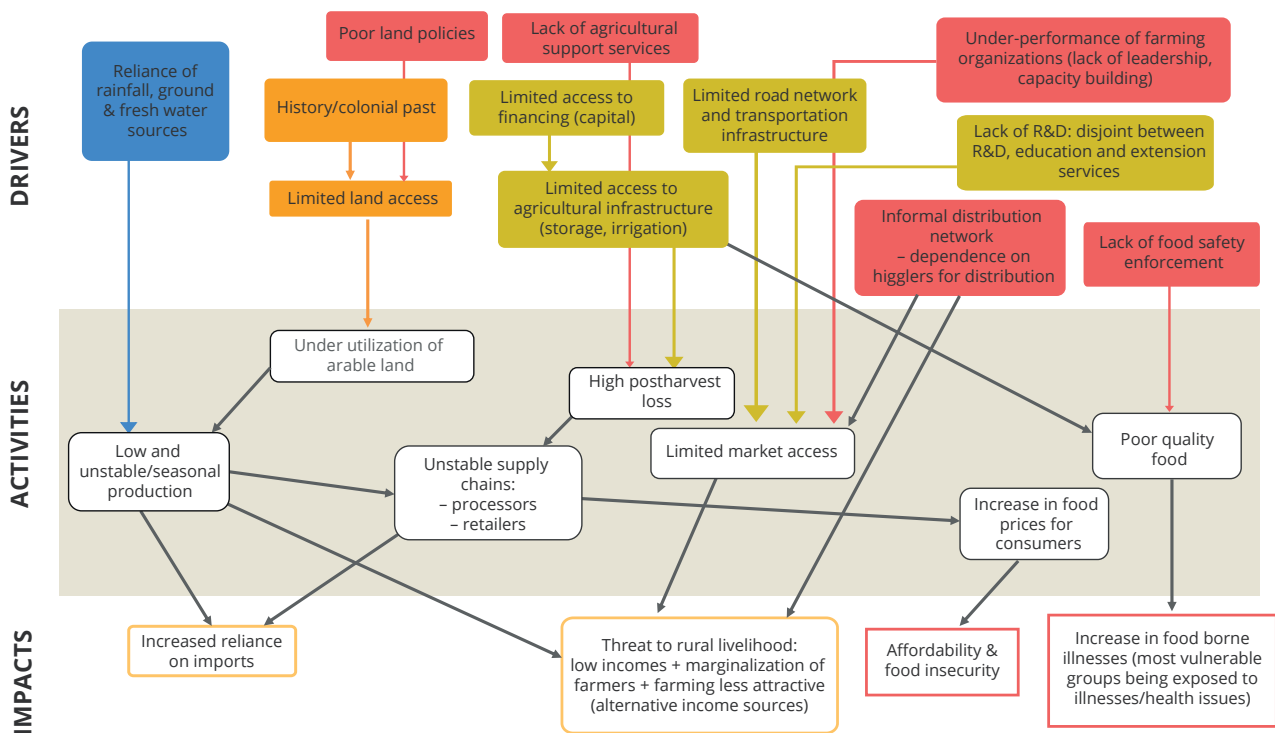
## Key Sustainability Question 2: What inefficiencies along the agrifood value chain compromise the sustainability, safety, resilience, and inclusivity of Jamaica’s food systems?

Low productivity, high post-harvest losses, inequity and food safety issues lie at the heart of the inefficiencies plaguing Jamaica’s local food systems. These interlinked factors inevitably impact producers, processors, and distributors, as well as consumers. Low productivity issues are manifested through a lack of infrastructures, such as roads and transportation facilities, and the underperformance of farming organizations. Meanwhile, high post-harvest losses are presented through a highly centralized municipal and wholesale market structure shaped by a heavy reliance on informal distribution networks and the lack of proper storage facilities. Inequity

in Jamaica’s food systems takes the form of unequal access to land and inadequate access to capital. Such inefficiencies have resulted in inconsistent production levels, price volatility, the threat to rural livelihoods and high food insecurity through increasing reliance on imports.

Figure 13 shows a schematic representation of the drivers – such as poor land policies, reliance on rainfall, and limited access to land, infrastructure and capital – of inefficiencies in the food value chain, and their impact on the sustainability, safety and inclusivity of the country’s food systems.

**Figure 13: Inefficiencies in the agrifood value chain compromising the sustainability, safety, resilience, and inclusivity of Jamaica’s food systems**



Source: Authors, 2022.



Jamaica's agricultural landscape is dominated by plantations/monocrops (sugar cane, citrus fruits, banana, coffee, etc.) at the eastern end of the island, which has historically targeted export markets, while domestic crop production dominates central and western Jamaica. St. Elizabeth is the largest driver of domestic agriculture (Hungry Cities Partnership, 2017). Approximately 60–70 percent of domestic food produced in rural Jamaica moves through Coronation Market in the KMA to distributors, such as retailers (56 percent market share), wholesalers (13 percent) and operators of whole and retail markets (31 percent) within the KMA. This highly centralized marketing system dictates the movement of produce, while simultaneously causing high post-harvest losses and food safety issues. St. Catherine, the neighbouring parish to Kingston and St. Andrew, is the fastest-growing peripheral area on the island, due to the affordable housing in Portmore and its environs, feeding the urban areas of Kingston and St. Andrew. According to the Statistical Institute of Jamaica (STATIN, 2019), in 2019, Kingston, St. Andrew and St. Catherine accounted for 43 percent of Jamaica's population, which explains the movement of produce to the most populated area (the KMA).

Improper packaging, insufficient or lack of storage, rough handling and the overloading of vehicles during transportation from production to consumption areas, account for approximately 20 percent of losses within the post-production chain (FAO, 2008). Several stakeholders who were interviewed stated that packaging solutions such as crates and ventilated bags are usually expensive for the average farmer; hence, they reuse "fertilizer bags" or "feed bags" that have been previously used in their production to package fresh produce for storage and transportation. This is a less than ideal solution for storing or transporting agricultural produce and further highlights the challenges that underlie Jamaican food systems. In addition, the movement of produce, usually from western to eastern parishes, coupled with improper transportation (overpacked

market trucks and pickups where produce are exposed to the elements) and packaging (feed bags) results in losses of approximately 20–30 percent of national domestic food production per annum (FAO, 2017b). This poor post-harvest management is often attributed to the heavily centralized marketing system, leading to a loss of USD 56 million per annum (ibid.). Further analysis depicts a worrying reality whereby food loss accounts for 50 percent of post-harvest loss in leafy vegetables, 50 percent in legumes, 40 percent in fruits and 20 percent in roots and tubers (ibid). As a result, farmers lose out on their initial investment in production and forgo as much as 50 percent of their potential income.

Coronation Market is embedded in local food systems through its cultural and historical significance within Jamaica's agricultural marketing system. However, significant inefficiencies hamper the municipal market infrastructure across the island, which does not



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complement the current centralized marketing system. This system is heavily reliant on pedlars (higglers) for the movement of produce, which usually compromises food safety, quality and the shelf-life of fresh produce. The more structured transporters and aggregators target hotels, large restaurant chains, and retailers as they have the capacity to properly transport produce in refrigerated trucks, packages (crates and ventilated bags) and store it to enhance its storage life. The poor infrastructure of the municipal markets and Coronation Market also results in high post-harvest losses, poor food safety, and the offence of littering public places. When organic waste slowly breaks down, it increases the production of methane, a greenhouse gas more potent than carbon dioxide. This increased waste and poor market infrastructure in turn create a huge food safety problem – the breeding of rodents and other insects at the markets. Added to this is the way produce is stored and displayed at the market – on tarpaulins laid out on the ground. This is less than optimal for the storage and display of produce, bringing the issue of food safety enforcement to the fore. Produce that is usually consumed fresh is, hence, at a heightened risk of being contaminated, resulting in increased danger for consumers.

The issues mentioned above negatively impact farmers' access to markets due to the lack of proper farm roads and storage facilities, especially in rural and remote areas. As a result, pedlars (or higglers) are more likely to dominate such remote locations (see page 19 for details). According to FAO (1996), higglers have had a reputation for overcharging and taking advantage of farmers through unfair practices, such as deliberately delaying the purchase of produce, thereby forcing deep concerns about spoilage. They are also often accused of price-fixing (ibid.). Even their huge markups, however, do not guarantee that farmers are paid what they are owed on the pretexts of spoilage and lack of sales.

Land inequalities are rooted in the colonial history of Jamaica; and the concentration of land in the hands of a few – amongst other problems – is unfavourable for the economic development of smallholder farmers and the market overall. Inequality in access to land remains a defining feature of Jamaica's food systems, where 4 percent of landholders control 65 percent of agricultural land on fertile alluvial plains. The remaining 96 percent, mostly smallholder farmers, control only 35 percent of agricultural



land in small, hillside farms that average 0.83 ha (Weis, 2004). According to Jamaica's RADA, 11 percent of cultivated land is attributed to 30 percent of registered female farmers, whereas 89 percent is registered under the purview of male farmers (FAO, 2019a).

Furthermore, Jamaica's colonial history is often to blame for the creation of a plantation system based on exports of selected crops at the expense of investing in smallholders producing food for domestic consumption or exploring other high value-added agricultural exports. This lopsided scenario has resulted in many farmers working on hillsides for subsistence and on plantations to subsidize their income. This exposes domestic production to labour-intensive practices that compromise output and supply levels while encouraging higher prices of produce sold to aggregators, wholesalers, processors, retailers, distributors and, inevitably, consumers. To further add to the complexity of land access for farmers, production of traditional export crops (sugar cane, citrus, banana) has declined, due to a reduction in Jamaica's global competitiveness. However, farmers still find it difficult to access these rising fallow lands that no longer cultivate traditional cash crops, rendering them in turn more inefficient and unproductive, since they are left with no other option but to farm on infertile hilly terrain.

In Jamaica, 85 percent of small farmers practise rainfed agriculture on hillsides, using more "person-days" or labour time on land preparation, pest management and reaping, which eventually leads to an increase in their cost of production, a reduction in return on investment, an increase in prices for those along the value chain, and negative environmental impacts (soil degradation and deforestation). Farmers in general are vulnerable to climate shocks and natural disasters such as flooding, and to extreme weather events like hurricanes. The agriculture sector is among those hardest hit by such events and suffers a significant loss, sometimes threatening to wipe out the production of entire crops. Reliance on rainfall also leads to increasing vulnerability



to climate shocks, such as droughts (see KSQ 4). Resilience among small farmers is also low as insurance solutions tailored to their needs are limited and accessible only to very few. This vulnerability to climate change and high production cost results in inconsistencies in production, leading to supply level fluctuations throughout the value chain, ultimately creating supply shortfalls and higher prices for various agrifood actors.

The GoJ has initiated interventions to address the country's historic land issues through the Agro Investment Corporation, whereby farmers can lease small plots of arable lands, usually within Agro Parks, with access to infrastructure such as irrigation. Despite these interventions, however, most farmers remain landless – cultivating on hillsides, and unable to access available arable lands to improve their productivity and capacity, as discussed earlier. There is also little or no incentive for large plantation owners to make use of their fallow lands.

The limited land access of smallholder farmers also exacerbates the long-standing issue of limited access to financing, thus compromising the sustainability of Jamaica's food systems. In



2018, less than 2 percent of Jamaica's commercial lending portfolio was allocated to agriculture (Bank of Jamaica, 2018) with less than 10 percent of Jamaican farmers having access to credit (Eing-Chow, 2019). This has harmed the agricultural sector as it is seen as a high-risk sector owing to Jamaica's high susceptibility to natural disasters. To further compound this issue, the vast majority of farmers cultivating along hillsides usually have no collateral or structured financial records. This has resulted in the marginalization of rural families unable to increase their farming operations and capacity, causing high levels of unemployment among rural youth and forcing many of them to migrate to urban areas in search of income. The lack of financing in the agricultural sector, especially for smallholder farmers, has resulted in unstable production levels while increasing the country's dependence on imported produce – 45 percent of which can be produced locally (Charles, 2020).

Farming organizations were set up with a view to solve two of the major issues affecting the sustainability of Jamaica's food systems – (i) access to land, and (ii) access to financing. Cooperatives were initially formed to address these issues by allowing farmers to consolidate their land acreage for increasing their production capacity and market access while farming under a marketing entity that would access capital to exploit the benefits of reduced costs through bulk purchases of inputs. However, farmer cooperatives in Jamaica have seen a high failure rate, with many becoming inoperable. Although this can be attributed to several challenges that negatively impact their sustainability, the major obstacle has been the skewed pattern of land ownership, whereby small farmers occupy small plots averaging less than 1.5 ha (Ishemo and Bushell, 2017). Other problems affecting farming organizations include lack of management, poor cooperative integration, and an unwillingness to offer mutual support for the common good. This scenario has ultimately marginalized small producers, as they are generally unable to access the more lucrative markets, thereby limiting their earning potential.

Based on discussions with stakeholders, cooperatives work well when they procure resources from non-governmental organizations (NGOs) and the government. However, when resources are scarce and technical support through extension officers has come to an end – thus no longer enabling cooperatives to operate independently – they usually fail due to internal conflicts. The failures of cooperatives have forced youth and farmers to migrate to urban areas in search of other job opportunities. Women, who make up the management structure within such cooperatives are also marginalized when the groups fail, resulting in demotivation when they see their intensive individual and collective efforts come to nothing.

The above issues all affect actors in Jamaica's food systems, none so more than agroprocessors. The inconsistent supply of produce has forced local agroprocessors to build a production line using imported raw materials (puree and concentrate). Moreover, their business model is usually built on the easiest, most assured and cost-effective way to access raw materials to produce their products, rather than supporting the local agricultural sector by buying local produce and building a niche/premium product through research and development (R&D). The low level of entrepreneurship and management training of personnel engaged in agroprocessing also affects agroprocessors. Hence, the sector lacks R&D experts and the motivation to come up with innovative solutions.

#### **Proposed systemic levers:**

- 1. Strengthening access to land and capital for smallholder producers**
- 2. Facilitating agricultural infrastructure development**

The first lever seeks to facilitate the formalization of land ownership for smallholder farmers and the creation of an asset base that can translate to improved farming operations and the maximization of greater market opportunities.



This may result in increased profits/earnings and the ability to invest in the long-term sustainability of agricultural land. Smallholder farmers would be able to increase their production levels, incorporate the use of technology to improve their productivity or address cash flow problems that may arise throughout the production cycle. This would reduce the amount of arable land remaining underutilized while decreasing inefficient production practices through rainfed hillside agriculture. The GoJ could play a leading role in devising a strategy to address the issues of land tenure specifically for agricultural purposes. Such a programme would not just benefit smallholder farmers, but also the many rural families dependent on farming for their livelihood. This will also benefit the country through improved food security and increased consumption of locally produced foods, leading to more stable food price benefits passed on to the consumer.

Potential barriers to the implementation of this lever include the reluctance of legal landowners to provide access to their lands for alternative agricultural purposes, the willingness of the government to succumb to pressure from competing industries, particularly housing, and the lack of clear land policy on land use.

The second identified lever is to facilitate irrigation and infrastructural development (roads, storage, markets, transport, etc.) across the country with the help of NGOs, public-private partnerships (PPP), the private sector and the government, in order to improve market access for smallholder farmers in the KMA and beyond.

To ensure the success of agricultural infrastructure development across Jamaica, various stakeholders will need to play their part. NGOs, the government, PPP and the private sector will be required to invest in resources to facilitate greater market access (thus reducing the likelihood of post-harvest loss), access to improved transportation, such as refrigerated trucks, improved irrigation systems for smallholder farmers dependent on rainfed



agriculture, and access to cold storage facilities for fresh produce. This would likely ensure more stable supplies, offering greater access to proper nutrition, which will inevitably translate into more stable and affordable prices for consumers. NGOs, PPPs, the government and the private sector all stand to benefit by honouring their responsibilities to improve the standard of living and reduce the marginalization of specific groups by creating investment opportunities with potential to yield profits.

One way to approach this lever is to expand investment opportunities with agricultural cooperatives, which can ensure that product quantity and quality are maintained to supply increasing market demand.

Potential barriers to this lever include poor returns for the above facilitators, coupled with the extensive expense associated with providing such infrastructure to hillside farmers. The stakeholders involved may not see the value of investing their funds in a sector that only contributes seven percent to the national GDP. Additionally, it may not be seen as prudent for a SIDS such as Jamaica to invest heavily in infrastructure amid competing and arguably more important needs for the government and taxpayers to consider.



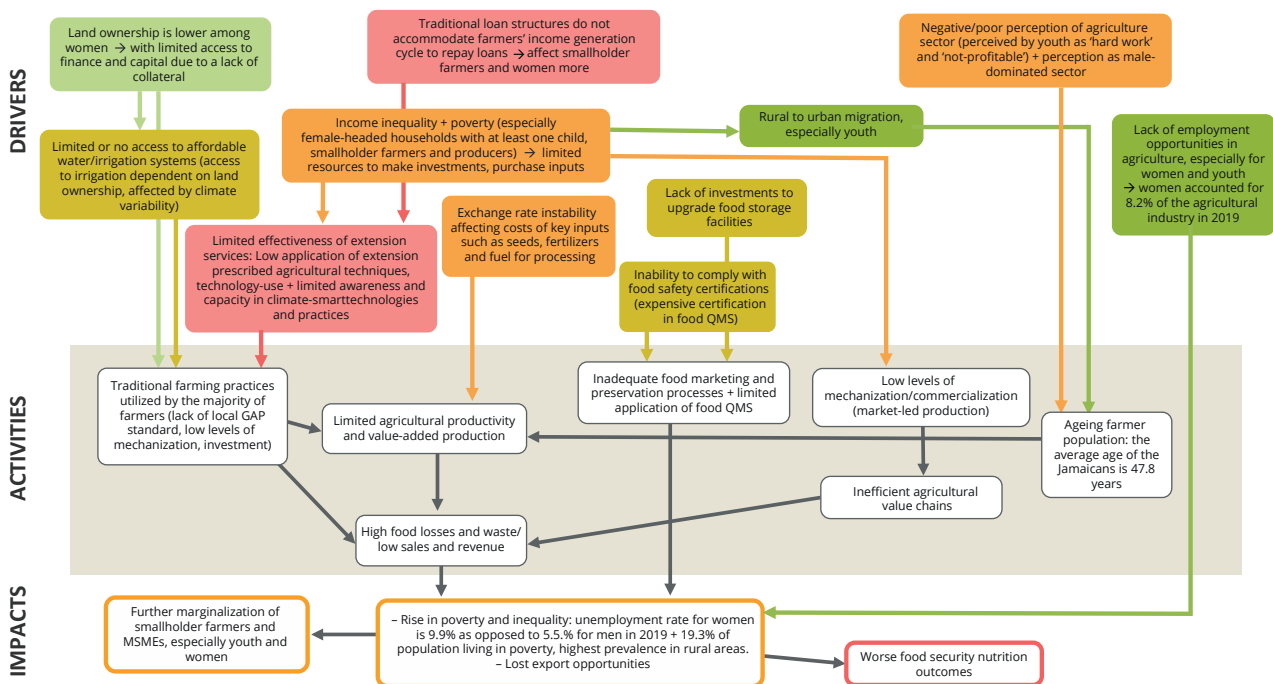


### Key Sustainability Question 3: Why are smallholder farmers and MSMEs, especially youth and women, increasingly marginalized? What role does the lack of access to productive and sustainable assets and services play in preventing a more inclusive and sustainable transformation of the food systems in Jamaica?

The marginalization of smallholder farmers and MSMEs is a significant challenge to the sustainable transformation of the food systems in Jamaica, as it reinforces sustained patterns of income inequality and poverty, especially for vulnerable groups, including youth and women. The lack of access to productive and sustainable land, credit, infrastructure, and climate-smart technologies limits the inclusive participation of smallholders and MSMEs in Jamaica’s food systems (see KSQ 2 for details). Despite efforts by the MoAF, through its policies and programmes, to support and facilitate the preferential entry and participation of women and youth in gainful and attractive agribusiness opportunities, these groups are still underrepresented in most activities downstream of the country’s food systems.

Against this backdrop, the average employment for the agriculture industry declined slightly from 16.2 percent of the population in 2018 to 15.2 percent in 2019. Moreover, the percentage of female employment in agriculture was reported to be a mere 8.2 percent (15 156 females) of 189 450 persons in 2019. Likewise, youth (15-24 years) only accounted for 12 percent of Jamaica’s employed workforce (Planning Institute of Jamaica, 2019). The lack of awareness of the economic benefits of agriculture and lack of access to financial resources and capital, coupled with negative stereotypes and poor perception of the sector, exclude youth as active participants (see figure 14). This is one of the reasons why youth migrate to urban centres in search of job opportunities.

**Figure 14: Causes of increasing marginalization of smallholder farmers and MSMEs, including youth and women, in Jamaica’s food systems**



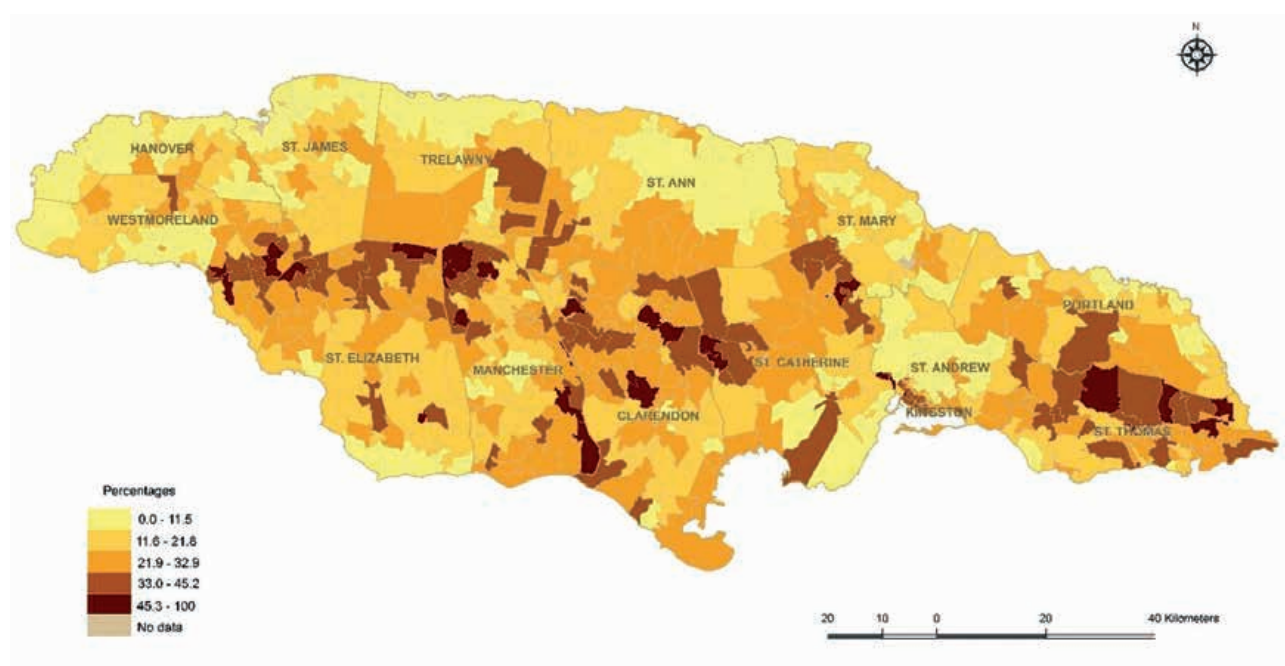
Source: Authors, 2022.



Analysis of the business gains of women and youth employment in agriculture has hitherto been limited, even though these two groups are the most affected by socioeconomic constraints. Poverty and income inequality are major drivers limiting the ability of smallholder farmers, including youth and women, to participate in the food systems, resulting in their marginalization. In 2017, 19.3 percent of the population was living in poverty, with the highest prevalence in

rural areas and remote towns (Planning Institute of Jamaica, 2017). Figure 15 shows the stark realities of poverty in Jamaica with the darker areas displaying a higher percentage of residents living below the poverty line, indicating that higher levels of poverty are mainly located in rural Jamaica. Poverty and inequality have a great influence on the food security and nutrition status of households in Jamaica, and more specifically on the marginalization of farmers and MSMEs.

**Figure 15: Incidence of poverty by community in Jamaica – 2012**



**Source:** Planning Institute of Jamaica. 2017. *Jamaica Survey of Living Conditions*. PIOJ, Jamaica.

Access to productive and sustainable assets is critical to the establishment of agricultural enterprises; however, this lack of access presents a significant entry barrier for some actors, such as youth and women. The lack of land ownership deprives farmers and MSMEs of the requisite collateral to secure a loan (Tucker-Clarke, 2021), or access extension services such as developing irrigation systems. Jamaican farmers are often unable to financially support their enterprises because of the lack of adequate

personal savings and earnings to invest in agricultural operations, along with the lack of access to capital and credit, due to stringent credit requirements that insist on the leveraging of collateral. Most financial institutions are hesitant to offer loans to rural youth and women farmers because of their lack of such collateral. Lack of access to financial resources also affects the ability of farmers to innovate, mechanize and utilize climate-smart technologies, resulting in the use of poor agronomic practices and leading



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to low and seasonal agricultural production (Tucker-Clarke, 2021).

Further, several agricultural inputs are imported, and their costs are denoted in US dollars. Therefore, the recent volatility of the exchange rate makes agricultural inputs increasingly more expensive for smallholder farmers, especially youth and women. The lack of adequate irrigation infrastructure also prevents smallholders from producing high yields and leads to low crop productivity (Shik et al., 2017). Meanwhile, Tucker-Clarke (2021) asserts that limited or no access to affordable water represents an additional challenge to smallholders. The associated costs to install adequate irrigation systems present a barrier to smallholder farmers, especially youth and women.

As discussed earlier, the lack of adequate food storage facilities also results in high post-harvest losses. Additionally, the inadequacy of storage facilities prevents smallholders from meeting the sanitary and phytosanitary standards required for food safety certifications. Most food storage facilities are dilapidated government buildings in need of investment for renovation and modernization in addition to new, energy-efficient storage facilities. Overall, poverty and the lack of income limit the ability of smallholder farmers,

especially women and youth, to grow their enterprises and increase production.

Another policy driver is the low application of prescribed agricultural techniques, technology-use and limited awareness and capacity for climate-smart technologies and practices, as discussed earlier. Fath, Koswatta and Wingenbach (2018) observe that extension education in Jamaica may require more resources or improved methods to help smallholder farmers prepare for and manage their vulnerability to climate change. Most farmers report having problems with access to seeds and planting material and experiencing frequent crop failures (Fath, Koswatta and Wingenbach, 2018).

#### **Proposed systemic levers:**

- 1. Establishing flexible credit for smallholder farmers and MSMEs, especially women and youth.**
- 2. Facilitating capacity development training, mentorship, incubation and networking opportunities, especially for women and youth.**

The current credit and debt-servicing requirements of commercial financial institutions



often exclude smallholder farmers because of the heavy reliance on collateral for loan security and the existence of debt-servicing cycles that are not tailored to their income-generation cycles. The reframing of public-private sector credit facilities, such as the Credit Enhancement Facility being spearheaded by the Development Bank of Jamaica in partnership with commercial banks, would greatly benefit smallholder farmers and producers. The establishment of more flexible loan arrangements that rely less on standard forms of collateral and use payment structures that align more closely with the production cycles and income generation of farmers would also assist smallholder farmers in securing credit.

The reframing of the Credit Enhancement Facility would greatly increase access to capital for smallholder producers. In addition, dedicated offerings and financing schemes, such as start-up loans at lower interest rates, public-private investment funds, women and youth venture capital funds, and de-risking mechanisms (guarantees and insurance), can be further developed to assist smallholder farmers.

Potential barriers to the implementation of this lever emanate from the possible unwillingness of commercial banks to reframe the current credit policy guidelines for smallholder farmers and MSMEs. The success of this initiative hinges on the strength of the partnership among commercial banks and lending institutions, the Ministry of Agriculture and Fisheries, and the Development Bank of Jamaica. Providing financial services should also deploy technologies such as mobile money or e-cards to reduce transaction times, and be readily accessible in remote areas.

Another lever to address the marginalization of smallholder farmers and MSMEs lies in personnel training and capacity development. Current initiatives such as the Agricultural Landowner Match Programme, Youth in Agriculture Programme, and Agriculture in Bloom Programme, will all require a widening of their scope to include more participants and financial support. They will also need access to monetary



and non-monetary provisions for agricultural inputs, marketing, training, information, and other supporting services such as agricultural R&D.

Research also shows that most women farmers have received a formal education, are literate, and form part of agricultural cooperatives. This is an incentive to stimulate the organizational capacity of these cooperatives as well as to adapt to new methods in farming and appropriate technologies to enhance agricultural productivity.

The combination of these initiatives will result in more smallholder farmers, especially youth and women, being gainfully employed in the agricultural sector. This will in turn stimulate increased productivity, enabling local farmers to satisfy local demand for food, limiting the need for food imports.

A potential barrier to implementing this lever is the lack of continued support from incubation and extension programmes. To make the Jamaican food systems more inclusive to smallholder producers, technical and financial support from the government and its partners must be maintained until smallholders are self-sufficient. Similarly, the low uptake of youth and women in existing Ministry of Agriculture and Fisheries programmes could be a barrier to their success. The achievement of this initiative is dependent upon a collaborative effort between the private sector and the MoAF.



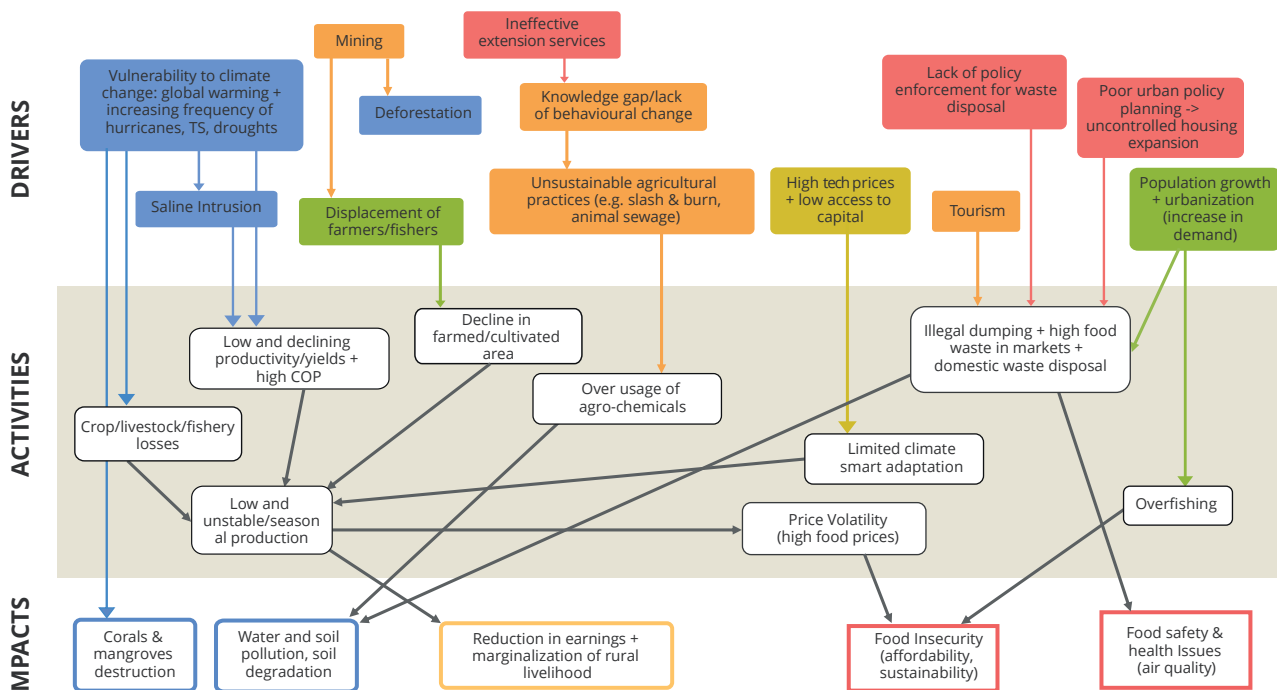
### Key Sustainability Question 4: Why are Jamaica’s food systems increasingly vulnerable to climate change and natural resource degradation?

Jamaica’s food systems are not only increasingly vulnerable to climate change and natural disasters but also affect the equilibrium of the climate and ecosystem through the use of various unsustainable practices, resulting in water pollution, soil degradation, coastal erosion, ocean salinization, and biodiversity loss. As a result of this increased vulnerability, aerial images taken over the last five years have shown that the Hellshire Beach (along the southern coast of St. Catherine) has narrowed by up to 10 metres and has also straightened and lost its convex shape (GFDRR, 2017), limiting landings and reducing the production of fishers. Similarly, the Kingston Hydrologic Basin (Liguanea Aquifer) has shown elevated levels of nitrate, primarily associated with inadequate sewage treatment, which has impacted ground water quality in the lower sections of the basin.

This has resulted in the abandonment of some wells and compromised the water quality of other domestic wells (WRA, 2019). Likewise, the Rio Cobre Aquifer has shown elevated levels of nitrate above WHO guidelines for drinking water quality (WRA, 2019). The protection and conservation of environmental and natural resources are thus becoming essential for achieving food systems sustainability in Jamaica.



Figure 16: Reasons why Jamaica’s food systems are increasingly vulnerable to climate change and natural resource degradation



Source: Authors, 2022.



Jamaica consumed 65.8 kg of fertilizer per hectare in 2018 and is currently ranked 99th globally in fertilizer consumption per hectare (The Global Economy, 2021). Jamaica's fertilizer consumption has more than doubled from 4 557 tonnes in 2015 to 9 340 tonnes in 2019 (FAOSTAT, 2021). There is clear evidence of a long-term increase in the quantities of imports and manufacturing of agrochemicals in Jamaica. Data show that 57 percent of the pesticides imported to Jamaica are for the agricultural sector. About 3 549 tonnes of pesticides were imported to Jamaica between April 2013 and March 2014, representing an increase of 14 percent and a value of USD 20.1 million (The Pesticides Control Authority [PCA], 2017).

The impact of agrochemicals and fertilizer use on the environment has not been studied in detail in Jamaica. However, previous studies on nitrate levels in runoff waters have identified areas on the island with unacceptably high levels of nitrates and phosphates (Simpson, 2003). According to the National Report on Integrating the Management of Watersheds and Coastal Areas in Jamaica, this increase in agrochemicals

further contaminates agricultural runoff, which often results in elevated levels of nitrates from fertilizers and other agricultural chemicals. These chemicals are carried via rainfall runoff into rivers and streams, reservoirs and coastal waters, polluting water bodies and modifying aquatic habitats. This results in eutrophic conditions and anoxic conditions. Moreover, an accumulation of heavy metals in sediments and animal tissue has been observed in Kingston Harbour, which is a popular spot for local fishers and the public. The consumption of contaminated fish may become a health hazard. Further evidence shows that 17 of the 26 watersheds in Jamaica are considered severely degraded, making farmlands within the area susceptible to extensive soil erosion and landslides, while compromising mangrove ecosystems (FAO, 2020).

According to the World Bank (2021), 55 percent or 5 568.9 km<sup>2</sup> of Jamaica's land mass has been classified as forests; however, the deforestation rate of 0.1 equates to 336 ha annually. The Land Use Assessment of 2013 shows an increase in forest cover, which equates to an afforestation rate of 0.41 percent (NRCA, 2001). Some of that





loss can be attributed to mining, slash-and-burn agriculture, and lumber harvesting for charcoal use. Mining has had numerous negative impacts on the environment – and by extension Jamaica’s food systems – well beyond that of deforestation: it also causes air and water pollution, degrades valuable agricultural soil, and displaces farmers, also impacting their productivity.

This scenario further compounds the previously discussed issue of land access for farmers (see KSQ 3). An often overlooked area of deforestation consists of damage to coral reefs, seagrass beds, and mangroves, which are critical to marine life and marine ecosystem sustainability. They produce sand, protect beaches from wave action and nurture wildlife. Deforestation provides a long-term threat to the marine ecosystem’s ability to provide food, livelihoods, and income to Jamaicans through fisheries, tourism, coastal protection, and transportation. Deforestation negatively impacts food systems by reducing precipitation, which directly impacts the hydrology of surface and groundwater sources that farmers and livestock are so dependent on. Deforestation also leads to soil erosion, which results in increased sedimentation and siltation of water sources. Over time, this may lead to rivers overflowing their banks, destroying farms and habitats, thus further displacing farmers.

GHG emissions also result in increased temperatures. Jamaica’s total GHG emissions were 10.3 million metric tonnes of carbon dioxide equivalent (CO<sub>2</sub>-eq) in 2013, which equates to 0.02 percent of global emissions (USAID, 2017). In 2013, Jamaica’s GHG emissions were dominated by the energy sector (72.8 percent), followed by industrial processes (8.9 percent), land-use change and forestry (LUCF) (7.8 percent), agriculture (6.1 percent), and waste (4.4 percent) (USAID, 2017). This affects the microclimate in rural areas and the production of crops that are temperature-sensitive. For example, the Irish potato is considered a temperature-sensitive crop and one of the major traditional production areas (Guys Hill) has seen a reduction in yields, which is attributed to increased temperatures.

Jamaica’s vulnerability to climate change has been experienced through an increase in temperatures by an average of 0.16 °C per decade between 1961 and 2010 (CSGM, 2017). A study produced for the Planning Institute of Jamaica (PIOJ), has recorded a decrease of 2 percent per decade in annual rainfall since the 1960s, and a sea-level rise of 0.9 mm per year from 1955 to 1971 (CSGM, 2017). This has resulted in the increased frequency and intensity of hurricanes and tropical storms, longer periods of droughts, a decrease in the number of cool days and nights, and sea-level rise. Such climate change incidents would likely increase coastline erosion and the saline contamination of coastal aquifers. Increased temperatures have already resulted in longer and more devastating droughts, which will lead to decreases in production and productivity, increased produce and livestock prices, and an increase in pests and diseases along with other harmful pathogens (for example, beet armyworm infestation in St. Elizabeth and Manchester).

The effects of drought conditions on agricultural production as assessed in eight parishes demonstrate that the range of reduction in crop yield extends from as low as 2 percent to as high as 70 percent (Bedasse, 2018). This suggests that even though farmers are still able to harvest, they may be reaping far less than the optimum standards, and highly likely that their cost of production has increased due to increased usage/purchase of water and other agrochemicals in some instances. As a result, the supply chain will inevitably be adversely affected and the consumer may end up paying higher prices for lower-quality produce. Droughts significantly affect Jamaica’s food security and contribute to Jamaica being a net importer in order to feed its citizens.

Hurricanes and tropical storms lead to storm surges that result in coastal erosion and saline contamination of coastal aquifers. This saline intrusion has resulted in large portions of arable land in coastal southern parishes becoming infertile. Storm surges have also degraded entire popular beach and village communities in Little



Bay and Hellshire. This has compromised the fishing industry in the area, and fishers now have to venture further afield or seek other sources of income. Data from separate studies of different periods also highlight the impacts of hurricanes and tropical storms. Between the years 1988 and 2008, hurricanes and tropical storms were responsible for agricultural losses amounting to USD 296.625 million, which resulted in a decline in agricultural contribution to GDP over the same period, ranging from as low as 2.7 percent to as high as 27 percent (ECLAC, 2011). Likewise, between 1994 and 2010, the island experienced agricultural losses amounting to USD 167.44 million (FAO, 2013a).

An increase in rural families seeking better opportunities has led to an increase in rural-urban migration trends, further compounded by the lack of proper urban planning. This has resulted in the growth of the informal housing sector, and ultimately in pollution due to improper solid and sewage waste management and disposal across

the island. Unplanned increase in population puts pressure on scarce resources such as water, roads, housing, waste disposal and food systems. Empirical data also suggest that urbanization has risen in Jamaica (see Table 1.). Poor urban planning and policy are also highlighted in a study carried out by the PAHO in 2001, which found that 51.5 percent of households lack any kind of sewerage connections and only 17 percent are connected to adequate collection and treatment systems. Poorly functioning sewerage systems and the lack of or improper disposal of sewage are also causing extensive pollution of surface and ground waters (Cashman, 2013). To further compound the issue of sewage disposal, 85 percent of wastewater entering the Caribbean Sea remains untreated (Cashman, 2013). This is of great concern for the sustainability of the agricultural sector, which has the greatest demand for water at 75 percent, followed by the domestic urban sector (15 percent), industrial (7 percent), domestic rural (2 percent) and tourism (1 percent).







The lack of enforcement of waste disposal further exacerbates the situation. Many communities have no proper waste collection system in place and residents are left to dispose of the waste as they see fit. Moreover, 30 percent of waste in Jamaica is not collected and is either burned or ends up in the drainage system, and ultimately in rivers and the sea. Evidence in the 2019 report, “Marine Pollution in the Caribbean: Not a Minute to Waste”, clearly shows that Jamaica leads the rest of the Caribbean in litter concentration (items/km) (see table 2). As a result, Jamaica’s marine biodiversity and ecosystems are severely

affected as mangroves are destroyed. Rural families reliant on coastal areas for their income are also affected and become marginalized. Fishers have to venture further out to sea to maintain their catches, while others have entered other coastal areas, causing further problems of overfishing. Overfishing has resulted in the MoAF asking fishers to refrain from catching the Parrotfish, a species found close to the shores, usually in coral reefs and seagrass beds, which benefit the marine ecosystem and biodiversity through their production of sand in the coastal areas.

**Table 2: Litter found in coastal cleanups in selected Caribbean countries**

| Country                       | Km of Coast surveyed | Litter Concentration (items/Km) | Common litter items (Items per Km) |                     |                      |              |                 |                      |
|-------------------------------|----------------------|---------------------------------|------------------------------------|---------------------|----------------------|--------------|-----------------|----------------------|
|                               |                      |                                 | Plastic beverage bottles           | Plastic bottle caps | Plastic grocery bags | Plastic lids | Straws-stirrers | Foam food containers |
| Belize                        | 48                   | 1 914                           | 157                                | 101                 | 85                   | 30           | 86              | 26                   |
| Jamaica                       | 151                  | 4 684                           | 1 497                              | 509                 | 115                  | 70           | 63              | 125                  |
| Cuba                          | 2                    | 601                             | 4                                  | 38                  | 30                   | 8            | 15              | 13                   |
| Dominican Republic            | 117                  | 3 966                           | 394                                | 30                  | 116                  | 74           | 173             | 3                    |
| St Kitts and Nevis            | 6                    | 1 050                           | 394                                | 135                 | 5                    | 47           | 20              | 30                   |
| Barbados                      | 44                   | 1 260                           | 97                                 | 126                 | 22                   | 14           | 45              | 15                   |
| St Vincent and the Grenadines | 4                    | 2 435                           | 623                                | 76                  | 102                  | 24           | 24              | 84                   |
| Grenada                       | 1                    | 543                             | 110                                | 9                   | 23                   | 0            | 10              | 0                    |
| Trinidad and Tobago           | 13                   | 1 636                           | 351                                | 151                 | 25                   | 25           | 31              | 44                   |
| Guyana                        | 4                    | 3 904                           | 1 086                              | 448                 | 50                   | 79           | 200             | 84                   |
| Suriname                      | 1                    | 160                             | 31                                 | 11                  | 25                   | 0            | 0               | 1                    |
| <b>Average (Caribbean)</b>    |                      | 2 014                           | 431                                | 148                 | 54                   | 34           | 61              | 39                   |
| <b>Average (Global)</b>       |                      | 573                             | 65                                 | 34                  | 22                   | 17           | 17              | 15                   |

**Source: The World Bank.** 2019. *Marine Pollution in the Caribbean: Not a Minute to Waste*. Washington, DC. Cited on 10 March, 2022. <https://documents1.worldbank.org/curated/en/482391554225185720/pdf/Marine-Pollution-in-the-Caribbean-Not-a-Minute-to-Waste.pdf>.



### **Proposed systemic levers:**

- 1. Policies to encourage smallholder producers to implement climate-smart adaptation technologies**
- 2. Capacity development of smallholder producers and agricultural support services**

This first lever will provide incentives, whether through tax/duty concessions on climate-smart adaptation technologies or through subsidized inputs that will reduce climate-smart technology prices and in so doing, will encourage small farmers/producers to implement them on their farms. This lever can further be supported through the mobilization of private-sector (financial institutions) in providing competitive loan products to specifically target small producers and other core actors. It is important for the government, therefore, to set the tone nationally by incentivizing small farmers with appropriate plans and programmes.

A potential barrier to the implementation of this lever is the current financial climate considering the adverse effects of the COVID-19 pandemic on government coffers, coupled with current International Monetary Fund (IMF) restrictions. This may result in an unwillingness by the government to provide tax incentives that may reduce government revenues. Moreover, financial institutions are already reluctant (evidence shared earlier in this report) to provide capital to actors in the agricultural sector; hence, it will be important for the Bank of Jamaica to influence private sector change through financial policies via the GoJ.

To complement the first lever and to ensure its success, it is important to provide intense capacity development to small farmers through enhanced extension services that will result in positive and long-term behavioural changes, while encouraging innovation in climate-smart practices. This lever confronts the issue of change

in behaviour as it has been observed that despite the provision of such training by extension agents, it is often the case that no real change in behaviour is experienced, due to existing financial constraints experienced by small farmers. As a result, this capacity development could be used to complement the first lever to effect long-term changes in behaviour after accessing financing and benefiting from the reduced cost of climate-smart technologies. This would in turn benefit smallholder farmers and their rural families, helping increase their resilience in the face of hurricanes, storms, droughts, increasing temperatures, and reduction in rainfall which may disrupt their production cycle and increase their loss of produce and potential income. Rural families would also be more inclined to stay in rural areas due to a more sustainable farming operation. Produce supply would also be sure to stabilize, which would allow normal market forces to operate efficiently, while consumers would benefit from lower and more stable prices. This would improve the country's food security while reducing the import value of imported products to the country.

Potential barriers to the implementation of this lever include the current extension staff to farmer ratio, the costs associated with capacity development and follow-up visits, and farmers' unwillingness to adapt to changes. The extension officer-to-farmer ratio impacts extension delivery in terms of the amount of time it takes for the extension officer to conduct farm visits and training with all farmers. Serving 1 103 farmers may take a prolonged period and this may prove to be inadequate in achieving the desired result of change in behaviour. Additionally, it may be challenging for extension officers to focus on intense capacity development in climate-smart practices that will ensure behavioural change, due to the constraints of limited resources affecting extension officers coupled with their other responsibilities.



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## Transition to sustainable food systems

This food system assessment in Jamaica identifies the diverse and intricate sustainability challenges facing national food systems, as well as the numerous actors playing different roles within this complex dynamic process. The assessment highlights the vulnerabilities in this small island across the four sustainability dimensions. Jamaica is particularly threatened by the persistent triple burden of malnutrition and the prevalence of NCDs, in the context of low agricultural productivity and high reliance on imports. This makes the food systems vulnerable to external shocks. The food system in Jamaica is also characterized by a large majority of smallholder producers facing marginalization (especially youth and women) due to various socio-economic and structural factors, including access to land, infrastructure, and market structure, which curbs opportunities for small-scale producers to stimulate domestic food production and local markets. Furthermore, Jamaica is facing increasing environmental vulnerabilities and natural resource degradation, leading to compromised sustainability and resilience of the food systems. These sustainable challenges are often linked

to the lack of policies and legislation that would address the root causes of these challenges.

The food system assessment identifies practical levers and entry points to address some of these sustainability challenges. To put the transformation of food systems back on a sustainable track in Jamaica, actors will have to collaborate closely and tap into each other's resources and knowledge to move forward in addressing these compounded challenges. The first set of levers addresses issues of nutrition knowledge and labelling to enable consumers to make better choices. The second set of levers is tailored around the needs of small-scale producers, especially youth and women, and how they can better access finance and capacity development to improve their participation in the food systems. The third set of levers focuses on greater access to and incentives for the adoption of climate-smart agriculture technologies for small-scale producers. All three sets of levers need to be accompanied by political will and policies to ensure their implementation and impact.



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