Contextual Backdrop of the Caribbean Subregion

The Caribbean subregion of the Islands and Remote Areas Regional Food Business Center (RFBC) comprises two archipelagos- Puerto Rico and the US Virgin Islands (USVI), which lie approximately 50 miles from one another in the Caribbean Sea. Hispaniola, which comprises Haiti and the Dominican Republic, is to the west of Puerto Rico and the British Virgin Islands (north and east of USVI). Both island groups consist of three main islands, and lie over 1,000 miles from the southeastern United States. Puerto Rico and USVI boast diverse landscapes from steep hills and lush vegetation to grasslands and sandy beaches, and each is shaped by a rich cultural heritage from various communities who have called these islands home over the centuries.

Arawak indigenous populations inhabited both groups of islands and subsequent colonization by European powers imported African slaves as well as forced or indentured laborers from Asia and India. The United States, Puerto Rico, and the USVI have maintained a colonial political relationship up to the present day. The social and cultural footprint of such history is layered and rich. Currently, USVI has a population of around 87,000 occupying 134 square miles while Puerto Rico's 3,515 square miles are home to nearly 3.3 million people.

Despite these differences, people have migrated between the islands throughout history (especially from the Puerto Rican islands of Vieques and Culebra to USVI during the Great Depression) and there have been at times vibrant examples of inter-island trading, training, resource coordination ranging from formal pacts to informal activities between the two places. Historical ties between the islands are deep and persistent, and while social structures around language use, ethnic and racial identities, and orientation towards the US government may differ among many residents in each place, there remains a strong, shared vision for self-reliance and food sovereignty in current day Puerto Rico and the USVI.

The bigger islands in this subregion have a favorable agricultural climate, rich natural resources, and resilient communities working to strengthen their local food systems. However, the region's centuries of colonization, export-oriented plantation agriculture, and rapid industrialization harmed the environment, disrupted practices of growing and raising food, and positioned the islands towards outside economic interests. As a result, both places now rely heavily on imports, with estimates suggesting more than 90% of food consumed in the USVI and 80%+ in Puerto Rico is imported. This region also struggles with outdated or altogether absent food systems infrastructure to support small and mid-sized producers. The devastating impact of two major hurricanes in 2017 (Irma and Maria) and the COVID-19 pandemic a few

years later further exposed the fragility of the islands' food systems. Their reliance on long, overseas supply chains, and the precarious state of their local food systems infrastructure and food production became apparent.

In summary, while there are important differences in culture, language, governance, and economic conditions between USVI and Puerto Rico, their parallel "food stories", shared pathways, and challenges and opportunities facing their local food systems make this subregion ripe for development through the USDA's RFBC program.

Food System Review

In the sections that follow, we synthesize many resources shared with us by our key partners in the Virgin Islands and Puerto Rico (including the Virgin Islands Good Food Coalition and Alliance for Agriculture in Puerto Rico) as well as findings from key informant interviews we conducted as part of the baseline assessment.[1] This Food Systems Review is intended to provide a fairly detailed consideration of the current conditions, challenges, and collaboration occurring in the core steps of the food cycle, from production to market access. For all subregions of the Islands and Remote Areas RFBC, these 'Program Areas' serve as guideposts for understanding where each subregion can focus its work, how to optimize the impact of their Business Builder awards, and where to best deploy the Technical Assistance funds provided by this RFBC, ultimately to improve the local and regional food economies in these places.[2]

Because of the large differences in the scale of each place's food economy (and, therefore, the importance of using right-sized approaches to address challenges in each), we have divided this report into two distinct sections: one focused on the Program Areas in the US Virgin Islands, the other focused on the Program Areas in the Puerto Rico. Our key partners encouraged us to acknowledge the uniqueness of each island territory's value chains while pointing to their shared vision for a regional food economy that integrates these neighboring islands as well as the larger Caribbean region.

For each of these places in the subregion, we review each Program Area in four parts. We briefly describe the current reality of each Program Area by providing a sense of the conditions

[1] Our efforts focused primarily on the VI Good Food Coalition as partners from Alliance for Agriculture collaborated with pre-existing partners to conduct initial background research that preceded this report.
[2] Program Areas include: Production, Processing, Aggregation & , Distribution, Access to Markets, and Access to Capital.

and capacity. We then highlight some relevant businesses, organizations, networks and other actors who are shaping the on-the-ground reality of that place's local food economy. We then summarize the core challenges facing that place and, lastly, we underscore opportunities in each Program Area. These findings reflect some of the barriers and pieces of momentum the RFBC can address and leverage through its priorities and strategies. This is not intended to be an exhaustive or even holistic database of all actors, projects, or work unfolding; rather, it is intended to serve as a snapshot-in-time and evidence base for Puerto Rico and the Virgin Islands's key partners to share with collaborators. We hope it also illuminates the resilience, brilliance, and daily realities faced by the communities in these islands for readers who may not be familiar with them.

U.S. Virgin Islands

The U.S. Virgin Islands, a Caribbean territory of the United States, consists of four main islands: St. Thomas, St. John, St. Croix, and Water Island. These islands boast a diverse landscape of steep, rough hills, lush vegetation, and sandy beaches, creating a range of ecosystems in a compact area. The USVI's rich cultural tapestry reflects its complex history, blending influences from Indigenous peoples, European colonizers, enslaved Africans, and more recent immigrants.

Originally inhabited by various Indigenous tribes, the islands were colonized by European powers beginning in the late 15th century. Centuries of colonial rule, plantation agriculture, and the brutal institution of slavery profoundly shaped the islands' social, economic, and agricultural landscape. The United States acquired the territory from Denmark in 1917, ushering in a new era of political and economic ties to the continental United States. As an unincorporated territory, the USVI operates in a political middle ground that impacts its food sovereignty and agricultural development. While residents are U.S. citizens, they lack full Congressional representation and voting rights in presidential elections, limiting their influence on federal agricultural policies and access to certain programs. This status also affects the islands' ability to implement sovereign economic and trade policies that could bolster food self-sufficiency.

Today, the USVI faces unique challenges in developing a resilient local food system. Despite a favorable climate for year-round cultivation, the territory imports over 95% of its food. This heavy reliance on imports is a legacy of historical disruptions to local food systems, including the shift away from diversified agriculture following the decline of the sugar industry and subsequent industrialization efforts. In recent years, severe hurricanes and the COVID-19 pandemic have highlighted the vulnerability of the Territory’s food supply chain. These crises have sparked renewed interest in revitalizing local agriculture and strengthening the islands' food economy. Virgin Islanders are resilient in the face of natural disasters and other profound and systemic injustices, and the islands’ farmers and food producers, organizers and activists, and other food systems actors are committed to growing a local food system that is healthy, just, and accessible to all, building on traditional knowledge and adapting to modern challenges.

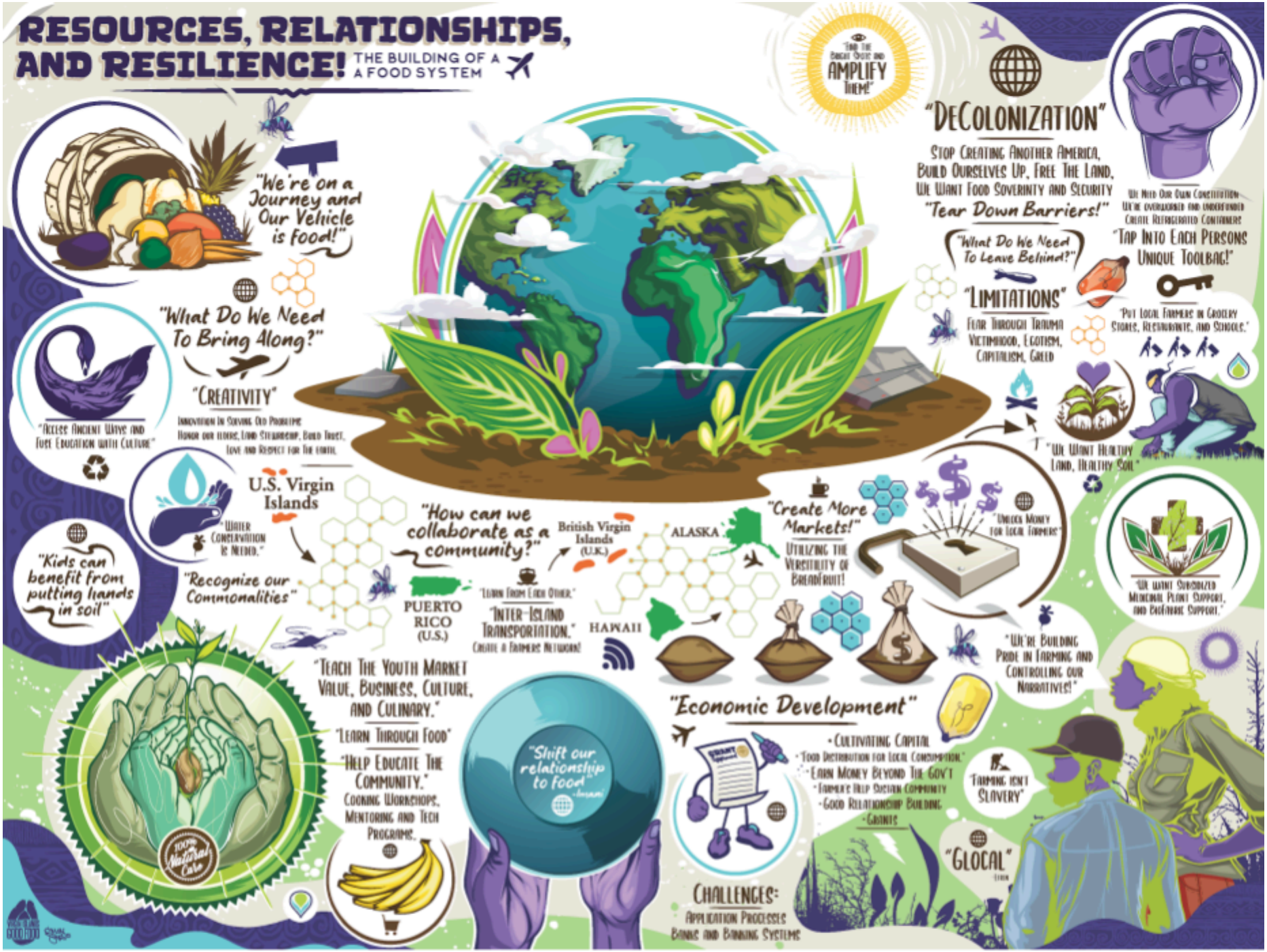

Figure 1. A graphic distillation of conversations held at the inaugural Virgin Islands Good Food Summit on St. Croix, February 2024. Illustration Credit: Flux Singleton.

Production

Current Reality

The tropical climate of the Virgin Islands enables year-round production of various fruits, vegetables, and other crops, and there is a strong presence of small-scale and backyard growers cultivating food despite the challenging soil and rough, hilly terrain (particularly on St. Thomas and St. John). The most recent USDA Agriculture Census (2018) reported a large increase in the number of farms on the islands compared to 2007 - 565 farms, up from 219. The vast majority of those farms are less than 10 acres, and nearly half are less than three acres.[3] The islands' agricultural history includes Indigenous and early settler communities' cultivation of yams, cassava, guava, and maize, as well as the sugarcane plantation period of the mid-19th century. Today, top commodity crops include bananas, coconuts, papayas, and avocados, while other popular crops include cucumbers, tomatoes, hot peppers, guava berries, and herbs. Additionally, the islands' ocean ecosystem still supports vibrant small-scale fishing.

While producers face challenges due to outdated infrastructure, expensive inputs, significant issues with fresh water access, and long-term impact of hurricanes (including trauma from experiencing such devastation, displacement and loss of life in their communities, not to mention the economic impact the storms have had on crops and infrastructure), there are major opportunities in food systems development across these islands. The agricultural community's extensive knowledge of tropical cultivation and the emergence of a new generation of producers harnessing modern technology present opportunities for enhancing local production and improving food security in the Territory. Today, it is regularly reported that more than 95% of food consumed in USVI is imported from off-island: however, that statistic - often given without context - does not tell a complete story. Underneath that 95% figure, there is a vibrant network of food producers, advocates and other community members who are committed to cultivating a strong, resilient, localized food system that works for farmers and producers, and which provides accessible, healthy food to all Virgin Islanders.

Relevant actors and networks

- A significant presence of small-scale and backyard farmers and gardeners on each island, with the most agricultural production on the large island of St. Croix
- Farms that produce on a more commercial scale and may have outreach and educational activities/events, like Sejah Farm, Ridge to Reef Farm, Josephine's Greens, Estate Bordeaux farmers

[3] U.S. Virgin Islands Agriculture, Results from the 2018 Census of Agriculture

- Collective or cooperative efforts like We Grow Food, Inc. and the Virgin Islands Farmers Alliance
- Significant and informal networks of subsistence producers, spiritual practitioners, bush farmers, and producers tending privately held lands with handshake agreements[4]
- Support actors like Virgin Islands Good Food Coalition, Virgin Islands Department of Agriculture, UVI Cooperative Extension,

Challenges

USVI producers face numerous challenges when it comes to scaling production and developing a more self-sufficient food economy. While farmers face challenges that are different from ranchers (which are different from fisher folk), they all share the burden of higher input costs, limited land for production, and an existential threat from the rapidly changing climate pattern, including hurricanes, severe droughts, and ocean acidification.

- **Limited access to inputs, equipment, and capital for farmers**

Limited access to land, equipment, and financial capital, and the high cost of necessary agricultural inputs like fertilizer, feed, and pest control making farming hard in USVI. Without these basics, it is difficult to build, sustain, and grow their operations to meet local demand. These limits can be traced to many sources including the islands' distance from the continental United States, geopolitics and trade regulations between the U.S. Federal Government and the Territory, and shipping costs tied to outdated, protectionist US maritime policies.[5] It faces other

[4] Several producers shared stories or reverence for these farmers who cultivate crops like banana, sweet potato, and much more on steep, jungle-covered hillsides they have stewarded for years without formal lease agreements or even farm infrastructure. Many of these farmers practice Rastafarianism and view this cultivation as both physical and spiritual sustenance.

[5] One such policy is the Jones Act, a 1920s protectionist trade policy of the U.S. government that restricts which ships may dock at U.S. ports based on factors like the vessel's ownership, place of construction, and nationality of its crew. The policy restricts competition, increases operating costs, decreases efficiency in routing, and ultimately reduces vessel capacity. All of this results in higher shipping costs which, in turn, create higher prices for imported goods (including agricultural inputs, equipment, etc.). While USVI is exempt from the Jones Act, its ports do not lead to enough economic demand for the broader, global marketplace to create cheaper alternatives for shipping from continental U.S. ports. And since neighboring Puerto Rico lacks this exemption, the USVI's nearest large ports are either (continued below) international (i.e. British Virgin Islands) or subject to the economic impact of the Jones Act (i.e. Puerto Rico).

food system-related challenges given its economic and political orientation to the distant United States rather than its international neighbors, which limits the USVI's ability to fully participate in a Caribbean community and shared identity. For example, USVI has historically not been part of the intergovernmental coalition Caribbean Community (CARICOM), a grouping of primarily Caribbean island nations that cooperates around shared interests and policy issues related to trade, agriculture and other economic and security issues.

Figure 2: Sugar Brown Farms on St. Thomas is not able to rely on public water supplies because of delayed repairs to public infrastructure like water delivery trucks. Their location on the top of a steep hill (seen above) forces them to rely on natural rainfall or public water sources.

Additionally, producers in USVI often do not own the land on which they farm, which can be a deterrent to making long-term improvements to farm equipment. Outdated or unmaintained equipment and even public infrastructure further hinders farmers' productivity and efficiency, while the scarcity of capital and financing options to fix that equipment makes it difficult for them to scale up their production. One illustrative example we encountered was with producers on St. Thomas who are not able to rely on the island's lone public water supply truck (which carries potable water up steep hillsides to residences and businesses) because it has not been repaired since tropical storms from years past. Consequently the farm (shown in Figure 2 above) devoted years of work to fundraising and installing cisterns for their own water capture.

This limited and/or expensive access to critical components of agricultural production keeps local production limited in USVI, and it keeps supply chains oriented to imports. While there is undeveloped potential for producers here to grow much more of the food consumed on-islands, without these core components of an agricultural economy farming remains difficult, expensive, and extraordinarily risky.

- **Extreme shifts and climatic and weather patterns**

The impacts of climate change on the USVI are profound and far-reaching. As storms grow more intense and frequent, and droughts become more severe, these environmental challenges compound existing issues that limit agricultural production on the islands. Without comprehensive disaster preparedness and resilient farming and ranching practices, producers face a more or less annual risk of high crop losses, critical damage to equipment and infrastructure, and disruption of distribution networks.

The aftermath of destructive storms often leaves farm and food businesses in a precarious position, with support for recovery frequently delayed and insufficient. This was painfully evident after the devastating hurricanes Irma and Maria in 2017. For example, some farmers reported receiving only a few dollars in reimbursement per lost fruit tree – a sum that grossly undervalued their actual production value.[6] This lack of meaningful support discourages investment in agricultural businesses and hinders the sector's growth, perpetuating the cycle of vulnerability.

As a result of these challenges, the local food system remains fragile and inconsistent, struggling to meet the needs of the population (and especially in the wake of disasters). When extreme weather events disrupt supply chains for imported food, the islands' inability to rely on local production becomes starkly apparent. This precarious situation underscores the urgent need for robust support and investment in the agricultural sector to build resilience against the growing threats posed by climate change.

- **Aging population of farmers and producers, and lack of new generations entering agriculture**

Only 12% of USVI farmers are younger than 45, compared to 48% of the entire working-age population (19-65 years old), and around 40% of the islands' farmers are older than 65 (compared to 21% of population overall).[7] This trend demonstrates a need for engaging and training the next generation of farmers, fishers, and other producers in the Territory. Elders in the agricultural community hold a wealth of knowledge and experience, and in order to strengthen and expand production to meet the vision of more accessible local food, the islands need a stronger pipeline of new farmers and producers to take over operations and

[6] Territory of the Virgin Islands Food Systems Resilience –Impact from COVID and severe climactic events. Courtney Long and Kaley Hohenshell, ISU Extension and Outreach Food Systems Team

[7] 2018 USDA Ag Census and 2020 US Census Bureau data

innovate with new approaches and technologies. More broadly, out-migration and population decline is an added challenge facing USVI: the overall population decreased by around 18% between 2010 and 2020.[8]

- **Lack of trusting relationships between producers, local government, and support systems**

The legacies of Hurricanes Maria and Irma (as well as many others preceding them) have reinforced a hard truth for residents and local business owners: they must be prepared to be self-sufficient. Previous attempts at cooperation have highlighted how many small and mid-sized producers in USVI have been reluctant to establish deep collaboration with each other. Similarly, many small producers in USVI do not expect collaboration from their local governments and perceive a lack of consistent support from the Department of Agriculture on their islands. Years-long delays in recovery support from local government agencies have established a norm whereby many farmers do not anticipate any support from their local government, writ large.

Opportunities and Momentum

There are several initiatives in the USVI focused on developing the agricultural workforce and engaging young people in the islands' local food systems, food justice, and sovereignty movements. Producer-facing efforts like **Southeastern African American Farmers' Organic Network (SAAFON)** provide onramps for African American young farmers to engage with producers from around its network in the Southeastern US. Local farming leaders like **Dale and Yvette Browne** of Sejah Farms (St. Croix) and **Roniel Allembert** of The V.I. Honeyman Farm (St. Croix) are also generous supporters of youth and young farmers throughout USVI.

Funding and other types of support for farmers are available through various USDA programs, including those under the **Natural Resources Conservation Service** (NRCS) and **Farm Service Agency** (FSA). NRCS has funding designated to provide support for fencing and other conservation practices, although there are challenges in adapting their standard practices (which tend to be designed around the needs of producers on the continental U.S.) to the unique environment of the USVI. The FSA offers several financial assistance programs which are covered in more detail in the Capital Access section.

[8] Population of the U.S Virgin Islands, 2010 and 2020

The **Virgin Islands Department of Agriculture (VIDA)** also plays a role in supporting local producers, although some farmers feel the department's support could be more consistent and tailored to their production needs. It is clear there is an opportunity to strengthen the relationship between VIDA and local producers to better leverage available resources and support.

Community- and urban agriculture are also creating opportunities for innovative, increased production on the islands. Community gardens and school gardens are potential areas for development in the USVI, and several hydroponic farms like **Smart Life Farms** (St. Thomas) create pathways for farmers that do not have access to land, to produce food and agricultural products in indoor or climate-controlled environments and engage with the cycle of agricultural production. Creating school gardens is a way to teach food security principles and connect students to local agriculture, and organizations like **EARTH** (Energy and Resources to Thrive) on St. John are working to provide agricultural education and support community growing efforts, offering workshops on topics like fruit tree grafting and seed saving. Urban producers could serve as a model for expanding local food production in more densely populated areas of the islands.

Underpinning these opportunities is a growing focus on sustainable and resilient agricultural practices. There is significant interest in composting programs, water catchment systems, and other infrastructure improvements that could support more sustainable farming practices. And some producers, entrepreneurs and others in the community are exploring traditional crops and value-added products which could help diversify local agriculture and preserve cultural food traditions. Additionally, agritourism opportunities abound where sustainable farming practices can be put on display for the islands' vibrant tourism industry (as well as allow producers to access new markets).

Together, these opportunities align with broader efforts throughout USVI to increase food security, reduce reliance on imports, and build a more resilient local food system in the face of climate challenges like hurricanes and drought, which are significant concerns for USVI producers.

Processing

Current Reality

USVI has a small but growing local food processing sector. Especially for fresh cut/frozen processing, it faces core challenges in sourcing raw produce, crops, and meat due to limited

infrastructure and high electricity costs. Few (if any) diversified fruit and vegetable producers in USVI are able to access commercial processors, and producers of other types of products also struggle to use processing as a means of preserving their harvest. However, some innovative businesses, including small-scale distilleries, are sourcing local ingredients that demonstrate the potential for producers to benefit from more processing ventures rooted in local tradition and production.

Specifically for animal proteins, the lack of adequate meat processing facilities (particularly on St. Thomas and St. John) poses a significant bottleneck for local livestock production, while the development of shared-use commercial kitchens and value-added processing capacity could enable local food entrepreneurs to thrive. As of May 2024, the Territory's only remaining certified abattoir (slaughterhouse) was temporarily closed on St. Croix due to hazardous working conditions leaving ranchers with no options for food safe meat processing or certified slaughter. The Virgin Islands Department of Agriculture has recently secured USDA funding to support the growth of the broader processing sector, and local leaders anticipate this development will spur economic activity for small-scale producers and help meet the demand for Virgin Island products from locals and large tourist-oriented markets channels.

While large-scale alcohol distilleries like Cruzan and Captain Morgan's are active on the island and process product into rum, they rarely if ever source ingredients from local producers.

<u>Relevant actors and networks</u>

- Some local liquor distilleries utilize produce like breadfruit, for example, **Mutiny Island Vodka on St. Croix**
- While there are currently no abattoir/slaughterhouse facilities operating on the islands, there is infrastructure on St. Croix and a history of a slaughterhouse on St. Thomas, and potential for mobile slaughter units to fill this processing gap. There is also limited/low-volume meat processing at **Cost U Less, Annaly Farms,** and other retail butchers.

Figure 3: Mutiny Island Vodka utilizes local botanicals in its breadfruit vodka, and even creates a source-identified bottling with exclusively Puerto Rican breadfruit.

- Value-added processing is one part of proposed developments through **VI Tech Village,** and other proposed projects in collaboration with the Virgin Islands Department of Agriculture.

Challenges

- **Lack of equipment, facilities, and/or businesses to support processing in multiple product categories (especially produce, proteins, and dairy)**

A fundamental barrier to development of this segment of the value chain is the absence of equipment and facilities for processing of whole/raw produce, meat and dairy products, as well as value-added processing and infrastructure like co-packers and shared-used kitchens. As noted above, in the past USVI had two USDA-certified slaughterhouses. The St. Thomas facility has been closed since sustaining significant damage from the 2017 hurricanes, requiring cattle from the islands to be transported to St. Croix for processing. The St. Croix facility has closed temporarily for repairs more than once in the last several years, and as of May 2024 is closed with no timeline for reopening. This leaves cattle, goat, and other livestock ranchers with the only option of field slaughtering to process their herds. Additionally, there are no longer any commercial dairy operations on the islands

Opportunities and Momentum

Opportunities for processing and value-added production are emerging as a key focus for strengthening the local food system. There is interest in developing **processing capacity for juice production** which could provide a new market outlet for local mango growers and help reduce waste from surplus or second-grade fruits (of which there are many, given the favorable climate for tropical fruits). These "seconds" could also be usable for non-food applications, including skin care products. Other opportunities for value-added production include using medicinal plants to create products like neem oil and aloe.

There is also an underdeveloped but growing demand for value-added food products based on traditional **Virgin Islander family recipes like pepper sauces, dried bush teas, and chutneys**. Developing these products could help preserve cultural heritage while providing new market opportunities for small-scale producers, and these specialty products could serve local markets, the vibrant tourist industry across the islands, and the Caribbean diaspora community in the United States. In USVI, **Caribbean Food Service**, a locally-run wholesaler, is an example of a business that could potentially increase their sourcing and distribution of these local ingredients and/or value-added products.

Leveraging the minimal but critical food processing infrastructure on the islands is key to develop these products. Two certified kitchens on St Croix could be used for a small scale food processing, and the **Virgin Islands Good Food Coalition (VIGFC)** is considering implementing a cohort-based program to support value-added producers (VAPs) in the region. Building off the assets the islands already have will help provide technical assistance and resources needed for recipe development, food safety, and marketing to support producers in creating and selling value-added products.

By developing these value-added opportunities and strengthening connections between producers and local food businesses, USVI can work towards reducing economic leakage and fostering more entrepreneurship in the local food economy. These efforts align with broader goals of increasing food security, reducing reliance on imports, and building a more resilient local food system in the face of climate challenges.

Aggregation and distribution

Current Reality

USVI faces challenges in aggregating and distributing locally-produced food, despite renewed interest in developing coordinated aggregation models for farmers and producers. Organizations like We Grow Food, Inc. provide support for producers through periodic opportunities to aggregate and sell at farmers markets and agricultural festivals, but no dedicated entities exist in the islands who focus on sourcing food from multiple producers across the Territory and providing centralized market access for consumers.

Food hubs have emerged as a key opportunity by local food system actors, and while extensive informal food aggregation and sharing of harvests happen at the household and community level, developing this system of decentralized access points into a more coordinated aggregation network will better support market access for USVI's farmers and producers. The islands' reliance on imported food and limited intra-island distribution pose serious challenges to a more localized food economy, highlighting the need to adapt existing assets to match the needs of small and mid-sized producers and food businesses.

Relevant actors and networks

- **We Grow Food, Inc,** an organization that focuses on farming as central to cultural preservation, hosts the twice monthly Bordeaux Farmers' Market on St. Thomas, and hosts festivals.
- **Caribbean Foodservice** is a large distributor serving both the US and British Virgin Islands. It is primarily a food importer but does source small volumes of local products.
- **StockedVI** is a grocery delivery service specializing in D2C delivery for tourists, stocking hotel rooms, villas or yachts; it does not source meaningful volumes of local food.
- Other broadline distributors include **Merchants Market on St. Thomas and St. Croix and Sam's Food Distributors**. These distributors, largely, are not collaborating with or sourcing food from local producers or food systems actors.

Challenges

- **Lack of local food aggregation capacity**

Currently, there are no organizations dedicated to sourcing local food and aggregating it for wholesale in the USVI. The only consistent aggregation occurring in small scale for D2C sales channels like farmers markets that provide centralized access to multiple farmers and food producers. While these farmers markets are a critical building block of a localized food economy, they are still a relatively small-scale type of aggregation and oriented to individual consumer sales. On the island of St. John, even access to this kind of less formal, de facto aggregation is limited.

The lack of a food hub or an aggregator consistently purchasing local produce at volume makes it difficult for producers to gain access to larger markets without taking on the risk of scaling their own business. This is a huge barrier to the development of wholesale markets for locally-produced food. Farmers previously attempted to collaborate to develop a formal cooperative, but it was ultimately unsuccessful. Its struggles to succeed eroded trust between farmers and with the Department of Agriculture, and this outcome has hindered the development of new aggregation efforts (especially those led by farmers). Like all sustainable value chain coordination efforts, future attempts will require rebuilding trusting, reciprocal relationships before the efforts can succeed.

- **Limited accessible storage and transportation options for local/small-scale producers**

Without intermediaries like aggregators to buy and resell food, there has been little investment in facilities that would store volumes of local produce larger than what an individual farmer may need, and the same is true for the infrastructure to distribute that food to customers. The

ability to cool, store, and transport local products on and between islands is severely limited, currently owned by and serving almost exclusively large importers and mainline distributors.

Limited inter-island transportation also holds back the development of aggregation and distribution. The most agricultural production occurs on St. Croix, while the largest markets (for locals and tourists) are on St. Thomas, meaning agricultural producers need this inter-island distribution to access the most market opportunities. While there are inter-island cargo shipping services, the costs for most individual producers to ship are prohibitively high. An aggregator would be able to consolidate larger volumes of product and gain efficiencies in shipping (logistic and financial), especially for small producers.

Opportunities

- **Development of a food hub(s) to facilitate aggregation of products from multiple farms and distribution to multiple customers**

This represents a promising opportunity for stakeholders to develop larger, more consistent markets in USVI. A food hub could be organized in ways that meet stakeholder needs, including in different legal structures (as a for-profit, 501(c)(3) non-profit, or a cooperative), and for a range of market channels. Any such model could be developed to leverage the breadth and volume of products available and it could be tailored to right-size market opportunities based on its producers' capacity.

- **Hard infrastructure improvements**

To sustain additional aggregation and distribution capacity for small- and mid-sized producers in USVI, there must be investment in infrastructure to store, cool, and transport products. Developing a fully fledged network of aggregators and local distributors could be expensive, but immediate opportunities could lie in smaller, more tactical investments like decentralized cold storage, shared refrigerated trucks, or more. Additionally, partnerships with the existing food systems actors like grocery retailers and more traditional distributors who might not yet be supplying locally sourced food could extend the availability of their infrastructure to smaller farm and food businesses. Even installing small, mobile, modular storage and cooling such as CoolBot trailers would better support aggregation of meaningful quantities of produce. Refrigeration and accessible inter-island transportation are crucial components of a more robust system that connects USVI-produced food to Virgin Islanders, across the Territory's islands.

Access to Markets

Current Reality

Developing a robust mix of markets at which to sell their products is critical for farm and food businesses on these islands. Generally speaking, because the challenges facing production, processing, and aggregation/distribution all influence how (or if) any locally-produced food can be sold, the reality of market access for small and mid-sized producers in the Caribbean is largely determined by the rest of the food system (which are discussed at length above).

While Virgin Islanders are expressing a general interest in consuming more locally-grown food, it remains extremely difficult for local producers to provide it to them in cost-effective ways and compete with the artificially low costs of imported food.[9] This leaves locally-produced food from small and mid-sizes producers prohibitively expensive for many local consumers, something that is reflected in how sparse, underdeveloped, and sporadic D2C markets like farmer's markets are on the islands.

While the strong tourism-driven foodservice industry in the islands represents a potential (year-round and large volume) market channel for local producers, inconsistent supply and the similar price pressures remain reasons these restaurants and other food retailers don't purchase more locally. Schools, healthcare institutions, and other large wholesale buyers present are not currently factors in the growth of small and mid-size farm and food businesses in USVI, and improved value chain coordination and processing infrastructure are needed for producers to better meet the demand of these potential buyers. Overall, despite its relatively small population, the USVI has the potential for a genuinely thriving D2C markets for local producers in the near-term, and even robust wholesale markets in the mid-term.

Relevant actors and networks

Beyond the many producers who sell products at roadside stands, there are a handful of active producers and food businesses that illustrate the islands' landscape for farm and food businesses seeking multiple market outlets. **Smart Life Farms** is one of several St.

[9] We consider the cost of this imported food to be "artificially low" because of the complicated systems of subsidies, corporate incentives, and economic policies that purposefully reduce the cost of growing and/or processing in order to maximize the scale or volume of production. Examples include reducing pay to farmworkers to below federal minimum wage levels, USDA commodity food programs, and corporate volume discount arrangements that ensure volumes of production and contracted purchasing in exchange for rebates.

Thomas-based hydroponic producers who are addressing the challenges of maintaining production (i.e. keeping electricity-dependent systems running despite power outages via solar power) and navigating a lack of distribution capacity (i.e. no refrigerated vehicle for deliveries). Their greens and mushroom sales are split about 80/20 between hotel foodservice and retail/D2C. **Sejah Farm** is a long-standing 15-acre diversified produce grower on St. Croix led by Dale and Yvette Browne who are local advocates for sustainable, intentional agriculture. Additionally, **Annaly Farms** on St. Croix is a small-scale retail outlet that specialized in cut-to-order proteins from their own cattle, and the business also purchases and resells produce from local producers like **Ridge to Reef Farm** and others.

Challenges

- **Limited infrastructure and capacity for storage and distribution results in underdeveloped local markets**

One of the most pervasive challenges limiting market access for small and mid-sized producers in both USVI is the underdeveloped state of local aggregation and distribution infrastructure. As discussed above, the islands lack formal food hubs or aggregation facilities that could enable small producers to combine their harvests to serve larger buyers and markets. Limited cold storage and processing infrastructure also constrain producers' ability to preserve and add value to their products before being aggregated for off-island sales or longer shelf life, especially given how exposed USVI is to natural disasters that regularly disrupt basic public infrastructure like electricity and water.

Transport of agricultural goods is also a challenge, with no dedicated freight services or coordinated logistics for moving products inter-islands available to most small farm and food businesses. There is also a need for improved coordination and networking among producers themselves to share resources, information, and best practices related to production, marketing, and distribution. Strengthening these production, processing, and aggregation and distribution capacities will be critical for small and mid-sized producers to efficiently move their products to a wider range of markets on and off the islands.

While D2C and local markets offer promising channels for small and mid-sized producers in USVI, farmers' markets in the islands are often inconsistent and poorly coordinated, with limited communication between organizers and vendors and an overemphasis on prepared foods (which might not utilize locally sourced ingredients) and handicrafts rather than fresh, local agricultural products. Consequently, many farms rely on agritourism and other on-farm revenues that yield D2C sales and leverage the islands' tourism economy to support local producers. While this might support individual producers to balance the need for revenue,

agritourism does not drive the scaling of the production of local food in USVI for the benefit of the broader food economy. Without coordinated, stable markets like farmers markets and mercados, many small producers remain unable to effectively promote their products and interact with new customers.

- **Intrinsic barriers in scale to accessing wholesale markets**

Even producers who may be prepared to sell wholesale volumes struggle to access institutional and other wholesale market channels due to difficulties meeting the requirements of institutional buyers like schools and securing ongoing contracts with them. Oftentimes this revolves around scale and pricing, since larger wholesale buyers tend to prefer higher volume and lower price goods while small and mid-sizer producers often cannot initiate relationships that ensure both volume and price (without incurring serious risks).

This poses a classic "chicken or the egg" dilemma: producers cannot scale their production without commitments from these wholesale purchasers, and these purchasers feel they cannot commit to sourcing from them until the producers can guarantee their production has scaled. While most small producers here lack farm-level food safety certifications like GAP and do not carry high levels of insurance required by some larger institutional buyers, there are undoubtedly opportunities for these businesses to transact now in discrete, meaningful ways.

- **Macroeconomic forces pressuring small farm and food businesses into competition with low-cost sources of food for many wholesale sales**

Competition with artificially low-cost imported food poses one of the most fundamental challenges for small and mid-sized farm and food businesses. Given the higher costs of inputs described in the section on Production, local farm and food businesses must generate significant demand for their locally grown products in order to compete against large importers. Due to these higher input costs, these products are often more expensive than imported foods and, consequently, are less desirable to consumer channels that have high sensitivity to price- often larger volume wholesale channels like institutions, grocery chains, and government agencies.

This is exacerbated by the comparably low purchasing power of locals (a scenario caused and sustained by consistent disinvestment in the island's broader economy and negative impacts of U.S. economic policies), something experienced disproportionately by Black Virgin Islanders. The significant influence of tourist markets and supermarket chains on which food is sold in the islands even further disadvantages local producers, as these buyers tend to favor imported

products for their consistency, volume, and low price because they can dependably supply to the steady stream of tourists most of the year.[10]

Opportunities

There is significant opportunity to build on small successes with K-12 schools, such as **Ridge to Reef Farm**'s sales to schools on St. Croix. More targeted technical assistance and capacity building around the key areas of food safety, post-harvest handling, and marketing could help producers provide a more consistent supply of quality produce, allowing them to be more competitive with larger/import-based distributors and secure long-term contracts with larger buyers.

Encouraging the **development of more value-added products from local ingredients** and materials could also open up new market opportunities and revenue streams for farmers. Relatedly, developing a strong "locally grown" brand, and launching public education or marketing campaigns, could increase demand for existing and new local products by highlighting their freshness, economic impact, and cultural significance. Increasing the options for local food products, and stronger branding and consumer awareness, are opportunities to strengthen local markets for USVI-produced foods.

Capital Access

Current Reality

Access to capital is a central challenge for food producers in the USVI. While USVI producers are generally eligible for the same USDA grant opportunities as those in Continental US, they do not benefit from significant support from local or federal partners in meeting the requirements of these grants such as matching funds, proficiency with grant writing language, and tailored support navigating the complexities of Grants.gov. Even when a producer or food business might have the capacity to submit an application for such federal funding, most of the USDA's grant funds are distributed on a reimbursement basis: without steady liquidity to spend the tens of thousands of dollars in order to be reimbursed by such a grant, the program remains wholly out of reach for the majority of the subregion's farm and food businesses.

[10] While USVI has a vibrant tourism industry and many visitors are willing to pay premiums for locally grown food, there is a firm commitment among food systems stakeholders to make local food available and affordable to locals. This principle informs the islands' focus on food sovereignty and the desire to avoid a two-tiered food economy.

Beyond this critical USDA grant support, there are few traditional finance tools like loans and debt that are well-suited for farm and food businesses in the region, making it a core challenge to identify and expand more flexible and appropriate funding opportunities to help producers and food businesses scale. Public loans through the USDA's FSA are theoretically well-suited to serve producers and food businesses on the islands, but due to structural challenges and a lack of administrative capacity, many food businesses remain unable to access the loans. Other agencies, like the VI Small Business Development Center and Accelerate VI, that are focused on business development broadly (and less on farm or food businesses) exist, but they often lack the specific expertise that is required to support businesses in the agricultural or food sectors. National ag-focused lenders like FarmCredit do offer some support for small and mid-sized farm and food businesses in the region, but only to those who are established enough to navigate traditional finance tools.

Relevant actors and networks

While the structural factors outlined above limit how small and mid-sized farm and food businesses in USVI access the capital they need to grow their operations, some organizations play active roles in connecting them to both expertise and funding opportunities.

For example, **Small Business Development Centers (SBDCs)** in the US Virgin Islands play a role in supporting small farm and food businesses with financial planning, record-keeping, and exploring financing options. They have recently launched an Agriculture Business Center to provide targeted support to farmers and fishers, with advisors on all three islands and plans for mobile offices to meet clients in their communities. While the SBDC in USVI offers seminars on some topics that are appropriate for small and mid-size producers and aggregators (like record-keeping requirements for USDA programs), it is clear that their programs do not adequately serve farm and food businesses who are in the early phases of growth or who might be further disadvantaged. Additionally, in USVI, the systems change and liberation organization **Southeastern African American Farmers' Organic Network** (SAAFON) provides culturally rooted business support specifically for African American farm and food businesses.

The **VI Local Food and Farm Council** in USVI has been working to develop a grant program to provide funding for local food and farm businesses with a particular focus on supporting young farmers. While the grant program specifics are not yet finalized, it is clear that access to capital is a key priority for the Council in its efforts to strengthen the local food system and support the next generation of agricultural entrepreneurs.

Challenges and Opportunities

Small farm and food businesses in the Caribbean face significant hurdles in accessing affordable financing for critical investments in infrastructure, equipment, and other expansion needs. Traditional lenders often perceive these businesses as high-risk due to their scale, limited collateral, and vulnerability to natural disasters and economic shocks. This perception results in unfavorable loan terms (e.g., high interest rates, short repayment periods) or outright rejection.

While government grant and loan programs like those offered by the USDA exist, many small business owners lack the knowledge and resources to navigate complex application processes. The fragmented landscape of federal, territorial, and private financing options, coupled with structural barriers like limited internet access, further complicates the situation.

Farming requires not just deep knowledge of the land and local conditions, but also financial literacy and business acumen. While the islands' farmers and food entrepreneurs are experts in their product and trade, many have limited access, time, and options for developing skills for the business and finance side of agriculture and food business. The lack of readily available services to enhance financial and business planning capabilities, combined with time constraints and varying levels of formal education or tech literacy among Virgin Island farmers hinders their ability to assess investment opportunities, develop strong business plans, and effectively communicate with potential lenders or investors. Basic business management skills become even more crucial given the unique challenges of running a profitable agricultural or food business on the islands. Moreover, eligibility requirements set by traditional lenders, like proof of land ownership or leasing, minimum credit scores, collateral, and financial records, often prove prohibitive for small businesses, particularly young or historically disadvantaged entrepreneurs. The seasonal and variable nature of small-scale agricultural production further complicates meeting standard documentation requirements such as financial projections and cash flow statements.

These challenges highlight the need for patient, flexible, and accessible capital tailored to the unique needs of Caribbean small farm and food businesses. There's a significant opportunity to develop alternative lending programs, provide targeted support services that are better aligned with the realities of the Territory's small farm and food businesses, and enhance the business capacity of these entrepreneurs. Such efforts could expand their access to capital and improve their chances of growth and success in both local and export markets.

Puerto Rico

Note: The information that was considered in this section of the report (including the entirety of the introduction below) relies heavily on research conducted by Dr. Ramon Borges Mendez who was contracted by Alliance for Agriculture. The section that follows presents an overview of Puerto Rico's local and regional food systems through the Program Areas of the RFBC: Production, Processing, Aggregation & Distribution, Access to Markets and Access to Capital. For each area we present a summary covering: current reality, relevant actors, challenges and opportunities. For an in-depth discussion of these topics please refer to Dr. Borges Méndez's full report here: Puerto Rico Food System - A Landscape Assessment & Review of the Literature.

Puerto Rico (PR) is an archipelago, whose largest island is the smallest of the Greater Antilles, which sits in the Caribbean Sea (Atlantic Ocean). It measures approximately 100 miles in length by 35 miles wide (3, 515 sq. mi.). The capital city is San Juan. The population of the island is 3,205,691 (2023 estimate) (US Bureau of the Census, 2023)[11], with a negative population growth rate (-1.2; 2024 estimate; CIA, 2024). The economy has experienced negative growth over the past 11 years, with public debt accounting for nearly 93% of GDP (Gould et al., 2015). In the last two years the island's rate of GDP growth has marginally improved, fluctuating between .9 percent in 2021 to 1.6 percent in 2023. Official unemployment stands at 5.8% (Jan 2024), although with the island having a vibrant informal economy, experiencing strong underemployment, and commanding a low civilian labor force participation rate (2015-2017).[12] The island has a net migration rate of -16.9 migrants / 1,000 (CIA, 2018). Out migration increased following the 2017 hurricane season (in 2014 the net migration rate was -8.93 migrants/1,000; Gould et al., 2015). Such economic deterioration and mismanagement have contributed to the island's debt burden, currently standing at $90 billion. To manage the payment of the debt burden, the US Congress passed the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA Act) in 2016 (Austin, 2016). PROMESA is a Federal Law that places Puerto Rico's finances, budget, and some administrative functions under the control of an Oversight Board appointed by the US President and Congress.

The United States acquired Puerto Rico from Spain in 1898 following the Spanish-American War (Ayala and Bernabe, 2007). In 1917, the Jones-Shafroth Act, also known as the Jones Act of Puerto Rico (1917), granted US citizenship to anyone born in PR after 1898. After five decades

[11] https://www.census.gov/quickfacts/fact/table/PR/PST045223 . Accessed 5/31/24.

[12] https://wioaplans.ed.gov/node/20521#:~:text=With%20a%20participation%20rate%20of,55%20to%2064%20years%20old. With a participation rate of 43.4%, Puerto Rico remains well below the participation of 63.2% observed in US (WIOA State Plan. Puerto Rico PYs 2020-23).

of military and appointed civilian governors, the Puerto Rican Constitution of 1952 created the Commonwealth of PR, granting Puerto Ricans the right to vote and elect popularly its governor. Puerto Ricans residing in the island cannot vote for the President of the US; those residing in the mainland can. Puerto Rico elects one Resident Commissioner, who serves as the voice (with no vote) of the island in the US Congress. Puerto Rico elects no senators or representatives to the US Congress. National sovereignty is thus limited.

The establishment of the Commonwealth sets the modern framework of the political and government relations with the US together with a set of economic strategies including tax exemptions to American corporations to invest in Puerto Rico (Ayala and Bernabe, 2007). Operation Bootstrap (*Operación Manos a la Obra: 1952-mid1960s*) transformed the island's economy from an agrarian one to an industrial one focused on manufacturing labor-intensive goods, which displaced Puerto Rican workers and families to the US mainland (Ayala and Bernabe, 2007). The island's economy now focuses on services such as banking, tourism, and retail. The industrial sector remains the largest contributor to Puerto Rico's Gross Domestic Product (GDP) (50.1%) followed by services (49.1%), followed by a far distant agricultural sector (0.8%) (Gould et al., 2015; Junta de Planes, 2022).

The natural, geo-spatial environment, and the territory of the island, and its two largest nearby islands of Vieques and Culebra, regularly experience the embattlement of hurricanes, dust storms, and earthquakes, and other hazards related to climate change such as flash floods, and heatwaves (Gould, et. al. 2015). The topography of the island strongly conditions its climatologic conditions, as Gould and his colleagues of the USDA Caribbean Climate Change Hub express:

> "The Puerto Rican central mountain chain exceeds 600 m above sea level and has 63 peaks ranging between 2625 ft. (800 m) and 4390 ft. (1338 m). This Cordillera Central forms a barrier to the predominant northeast trade winds and casts a rain shadow over most of the southern coast, which averages less than 49 in (1140 mm) of rain annually. Areas north of the Cordillera receive an estimated annual rainfall average of 79 in (2030 mm). With an estimated overall average annual rainfall of 70 in (1780 mm), Puerto Rico has a yearly water budget of around 11,600 million gallons per day" (p.7: Gould, et.al. 2015).

Undoubtedly, combined with the island's export-led process of industrialization, these environmental conditions have strongly conditioned Puerto Rico's agricultural fortunes. Gould, et. al. (2015) extends their diagnostic of the island's structural crux to the rest of the Caribbean region:

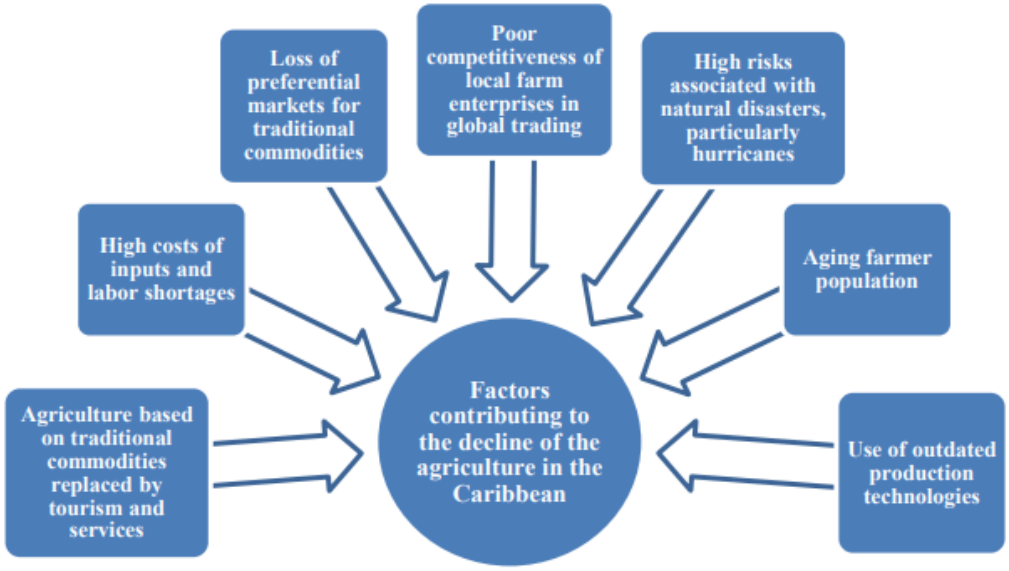

Figure 4: Socio-economic factors contributing to the decline of agriculture in the Caribbean region. *(Originally in Gould, et. al. (2015) adapted from Ganpat & Isaac, 2014)*

Production

Current Reality

Puerto Rico's agricultural environment is characterized by its tropical climate, rich soils, a wide range of tropical staple crops, and the potential for year-round production. Common agricultural production in Puerto Rican includes a variety of trpical fruits like bananas, mangoes, pineapples, and a variety of vegetables and root crops like yautia, yuca y ñamey which are produced on the island for domestic markets and in some cases for export. Historically the island was autonomous with respect to the basic food basket. That began to change with the introduction of high-scale sugarcane producers in the early 1900s. By the 1920s local food production had declined to 70% of its basic food consumption.

Puerto Rico has seen a drastic decline in food production starting in the mid-20th century. In 1980, around 45% of food consumed in Puerto Rico was locally produced, and by 2010 that figure was less than 20%. Estimates suggest that percentage has continued to decrease in the decade and a half since. Puerto Rico has also experienced a steady loss of both subsistence and mid-sized agricultural production, with a noticeable decline in the number of farms under 50 acres and an overall decrease in total number of farms from 2012-2018. In the same timeframe, there has been a steady increase in average farm size, highlighting the trend of consolidation of farmland and farm operations on the island. The only significant outlier to this

trend has been the dairy industry. Production of milk is an important segment of the agricultural sector with most milk consumed in Puerto Rico being produced locally and dairy production accounting for more than 20% of all agricultural income. Notwithstanding, the milk industry is heavily regulated and under pressure to evolve.
As in may other jurisdictions farmer populations in Puerto Rico are aging, it is well known the need to engage youth and young adults in the local food movement and in support of agriculture as a necessary, and economically viable way of life. And, like their counterparts in the Virgin Islands, Puerto Ricans experience the devastating effects of tropical storms and hurricanes, with communities still rebuilding and recovering from the widespread damage (including major agricultural losses) caused by Hurricanes Irma and Maria in 2017.

While the local food system in Puerto Rico has suffered from the erosion of the islands' agricultural sector due to a growing import dependence and climate related impacts, a vibrant community of smallholder farmers and food business shows a desire to reconstitute Puerto Rico's agricultural production and the local food system. These communities contain invaluable expertise rooted in cultural identity, self-sufficiency, and community responsibility. They are crucial to building a healthy, sustainable and resilient food system.

For the most current Puerto Rico's government report on agriculture see: Puerto Rico's Planning Board 2023 Report to the Governor and the State Legislature regarding the importance of the Agricultural Sector.

Relevant actors and networks

- Middle Agriculture: medium size operations, numerous small-scale farms backyard farmers, and community/urban gardens and farms
- Dairy & Meat operations, particularly in the northern region
- Fruit & Vegetables operations, particularly in the central mountain range and the southern region
- Local distributors & value-added operations
- Farmers Education Programs
- Farmers Support Organizations
- Retail: Convenient food stores (colmados), Supermarkets & Restaurants.
- Educational and Vocational Institutions

Challenges

Puerto Rico faces some key challenges in developing more resilient production systems across the islands. While specific production challenges vary from product category to product category, the high costs of inputs, limited suitable land for scaled production, and significant threat posed by rapidly changing climate are forces that affect all aspects of agricultural production in Puerto Rico.

- **Limited access to equipment, capital, inputs, and land for farmers**

Farmers have limited access to equipment, capital, and inputs like fertilizer, feed, and utilities and these limits pose a significant challenge for farmers and food producers in Puerto Rico. This constrains their ability to build, sustain, and grow their operations to meet the large-scale demand, and the limited access is caused by factors like the islands' distance from the continental United States, the economic and trade implications of territorial status, and shipping costs. For example, the Jones Act (a 1920s protectionist trade policy of the US Federal government) has particular impact on Puerto Rico through its restrictions on vessel ownership, construction, and crewing, all of which lead to limited competition, higher operating costs, inefficient routing, and reduced vessel capacity. These factors combine to increase shipping costs which translate into higher prices for imported goods - including imported food and the equipment and other elements necessary for local production.

Additionally, land tenure issues are a deterrent to smallholders investing in long-term improvements to farms, such as implementing sustainable agricultural practices or installing essential infrastructure like irrigation systems, and greenhouses. Outdated or unmaintained equipment further hinders farmers' productivity and efficiency, while the scarcity of capital and financing options makes it difficult for them to scale up their production.

This limited and/or expensive access to critical components of agricultural production hampers Puerto Rican producers' ability to scale their operations, leaving the territory's food economy heavily dependent on imported goods and vulnerable to supply chain disruptions that originate beyond their islands. While there is potential for these islands to grow and harvest much more of their own food and rely less heavily on imports, these challenges make farming and agricultural production difficult, high-risk and expensive endeavors. If Puerto Rico is to overcome these challenges it requires a clear vision and strategy and a firm and unbending commitment of a critical mass of peoples at all levels of society.

- **Climate change and impact of extreme weather**

Climate change- with its more frequent and intense storms and droughts- compound other challenges that constrain agricultural production in Puerto Rico. Without comprehensive disaster preparedness plans, resilient agricultural practices and infrastructure in place (e.g., drought-hardy crops, efficient irrigation, sturdy storage facilities), producers face the risk of substantial annual crop losses, damage to equipment and structures, and disruption of distribution networks when extreme weather events occur.

Farmers and business owners in these islands have learned from experience not to depend on timely federal, state, or local services for recovery after destructive storms. Many Puerto Rican farmers- and entire communities- waited over two full years for the most basic of needs (running water, electricity, etc.) to be restored after Hurricanes Irma and Maria leveled the islands in 2017. This vulnerability creates a precarious and uncertain environment for agricultural production, discouraging them from making investments in their businesses and hindering the growth of the sector. This all challenges producers' ability to consistently supply the islands' 3 million plus inhabitants with food and keeps the broader food system in a fragile state reliant on imports. Climate smart farming practices must be a cornerstone of all strategies to reconstitute a robust and dependable local food system in Puerto Rico

- **Aging population of farmers and producers, and lack of new generations entering agriculture**

Puerto Rico's agricultural workforce is aging: the 2018 agriculture census showed the average age of its farmers was nearly 61 years old. This likely contributes to an overall decline in productivity as well as difficulties accessing resources, information and support implementing new technology. Out-migration and population decline is an added challenge for developing the workforce (in agriculture and beyond), and Puerto Rico has experienced net population decline over the last 20 years (and especially in the wake of the 2017 hurricanes).

Opportunities and Momentum

There are several programs in Puerto Rico focused on developing the agricultural workforce, and engaging young people in the islands' local food systems, food justice and sovereignty movements. **Americorps**, **Future Farmers of America**, **4-H**, and other **mentorship** or **apprenticeship** programs, as well as school gardens provide opportunities for students and young adults to gain agricultural experience and deepen connection with the environment and local foods. Increased investment in these efforts and other ways to connect youth to sustainable agriculture is important in cultivating the next generation of producers.

As noted above, funding and other types of support for farmers are available through programs and initiatives under the **USDA** (NRCS, FSA, Rural Development and others), , together with the Commonwealth's **Departamento de Agricultura**, and its **Cooperative Extension** services. In all of them there is opportunity to better leverage these programs, and more information and in some cases better program execution is needed for farmers and ranchers to make the most of them..

Community gardens, **school gardens**, and especially, in populous Puerto Rico, the development of more **urban farms and gardens** are also promising pieces of momentum when it comes to increasing local food production and improving access to fresh and/or traditional foods for all communities in this subregion. While these types of farms or gardens are very small scale, they represent important community-driven approaches to connecting new generations to local food, and improving food security.

Underpinning all these opportunities on the supply side is the increasing focus over the last decade on regenerative, sustainable practices referred to locally as **ecological farming**. This is a sustainable approach to agriculture that works with natural ecosystems and local conditions to produce food in a way that maintains the health of the environment: soil, air and water. It does not rely on inputs like chemical fertilizers and pesticides, and incorporates traditional farming practices. **El Josco Bravo,** in Toa Alta (outside the Metro region) is one well-known agroecology project that includes a farm (reaching consumers through subscription baskets, farmers markets in San Juan and through other market channels like sales to restaurants) and for its robust education and outreach programs. Regenerative or sustainable agriculture methods are advantageous to production in this region because they reduce reliance on imported inputs, they are adaptive to the conditions/climate of the islands, and they align with other efforts to reduce reliance on fossil fuels.

Processing

Current Reality

The Bureau of Labor Statistics data shows a decline in food manufacturing employment from 2000 to 2020. Puerto Rico's food processing landscape is characterized by a small but significant processing or food manufacturing sector. As of 2012, this sector of the food economy employed around 11,470 people, accounting for 13.7% of total manufacturing employment in Puerto Rico. The sector includes the manufacturing of meat and meat products, processed seafood, dairy, processed fruits and vegetables, bakery products, and

sugar. However, most of the businesses in this processing sector rely heavily on imported raw materials and in many cases do not source any products from the local producers.

Relevant actors and networks

- Various food businesses making value-added products with local ingredients,
- At least **7 USDA-certified meat and poultry slaughter and processing facilities** are spread throughout the islandsStrong **dairy processing sector**, that provides the majority of milk consumed in PR
- Shared-used commissary/commercial kitchen facilities.
- Many midsize commercial & industrial facilities that can be repurpose for food production.

Challenges

- **Access to right-sized processing facilities for small and mid-sized farm and food businesses**

The processing landscape is also limited for small food businesses in Puerto Rico, particularly value-added processing of local produce and other locally-sourced raw materials. The food manufacturing sector here tends to serve larger food businesses and, as such, does not heavily source ingredients from small and mid-sized local producers.

- **High costs of utilities and inputs that hinder scaling processing of local food**

Increasing capacity in local food processing can be difficult due to the high cost of water and energy on the islands. While other utilities in Puerto Rico are well developed (like their road system), infrastructure required to process food is consolidated in private enterprises if not altogether lacking island-wide. Nonetheless, as described in the Production section above, Puerto Rico does have a well-developed dairy processing sector and is fairly self-sufficient in milk production.

Opportunities and Momentum

Opportunities abound when it comes to food processing in the Caribbean. With adequate infrastructure investment, including facilities like **shared-use kitchens and mobile processing** equipment, this subregion could develop a wide range of value-added products that use its bountiful specialty crops like breadfruit, coconut, and mangoes, local medicinal plants like neem and aloe, fresh products like fruit juices and much more. Both food and

non-food products from locally-sourced materials can serve the local, the tourist markets and the substantial marketplace among the enormous **diaspora communities residing off-island**. Value-added products have potential to diversify and strengthen revenue for local farmers, producers and small business owners in Puerto Rico.

A key area to improve value chain coordination in Puerto Rico includes connecting existing processors and food businesses to the islands small and mid-sized producers to **increase sourcing of local ingredients and raw materials** for products already being made. By creating new locally-oriented value-added products, the island can reduce economic leakage (the amount of economic benefits not accrued on-island) and foster more entrepreneurship in the food economy.

Aggregation and Distribution

Current Reality

Puerto Rico's aggregation and distribution landscape includes a few aggregators that function like food hubs, but the overall landscape is fragmented[13]. Large food retailers and supermarket chains like Walmart, Pueblo, SuperMax, and Costco tend to rely on their own supply chain infrastructure or purchase from large-scale food wholesalers and broadline distributors. More locally minded for-profit aggregators like Puerto Rico Produce! (PRoduce) and Frutos del Guacabo specialize in direct-to-consumer (D2C) and restaurant sales respectively, and while they've developed viable business models, they have a much smaller footprint and volume in comparison to broadline distributors.

In between these two ends of the spectrum of scale for aggregators, some small supermarket chains and independent food markets purchase directly from local farmers and fill the role of aggregation in their communities, but this is not a large piece of the marketplace (by volume or sales). Farmers markets, discussed in greater detail in the Access to Markets section of this document, also tend to serve as informal aggregation centers in specific communities.

Relevant actors and networks

- Local food 'hubs', aggregators and distributors
- Traditional distributors and home food delivery companies

[13] While none of the aggregators in Puerto Rico market themselves as "food hubs" explicitly, they source products from multiple small and mid-sized local farms, centralize storage and aggregation of these products onsite, and make them available to multiple sales channels in one place. This, in practice, comprises the core activities food hubs often fill in local food economies across the US.

- Farmer Markets
    - **Mercados Familiares**: publicly managed farmers markets organized through Puerto Rico's Department of Agriculture and Department of Family, which accept card vouchers of the Programa de Asistencia Nutricional (PAN) These markets set fixed prices for items that the local government arranges with producers
    - **Plazas del mercado**: enclosed public markets with vendors offering both local and imported items, located in some but not all municipalities on the island.
    - **Informal markets:** open air markets run by loose cooperatives, community-level collaborations among farmers, and "federated groups" of producers

Challenges and Opportunities

- **Mismatches in scale of aggregation/distribution and local producers create brittle supply chains and limit scale for locally-minded aggregators**

While Puerto Rico has some local food aggregation and distribution there are still many known challenges and gaps. Most of the islands' food distribution occurs via large wholesalers and importers. This centralized, highly corporatized, and fragile system makes Puerto Rico vulnerable to natural disasters and other supply chain disruptions that could interrupt ports and shipping (as the COVID-19 pandemic highlighted). The few organizations that are focused on local food aggregation and distribution have done impressive work but are still limited in capacity and reach.

For example, while PRoduce! has developed a robust direct-to-consumer channel with 40,000 online market-place users and sophisticated home delivery services island-wide, they are not focused on servicing larger wholesale markets like retail grocers, schools, hospitals, or other institutions. Frutos del Guacabo specializes in wholesale sales to restaurants, it is not servicing customers like institutional outlets that reach large numbers of communities. While these existing 'food hubs' do not need to shoulder the burden of serving large market outlets themselves, the fact that they are limited in their scale of customers reflects the opportunity to further develop the landscape of aggregation and distribution (in addition to expanding market share in channels where these hubs are already succeeding).

Facilitating more collaboration between producers and other food systems stakeholders would enhance Puerto Rico's ability to expand the aggregation and distribution footprint. Supporting existing 'food hubs' collaborate with each other will help food system practitioners identify

specific geographic, market channel, or product category gaps and develop strategies on how to best fill them.

- **Access to key infrastructure like cold storage and logistics is limited for small and mid-sized businesses**

The lack of infrastructure available to small and mid-size farms and food businesses is a central challenge hindering the growth of aggregation and distribution. Whether on-farm, shared by a group of farmers in a cooperative, or owned by middle-of-the-value-chain aggregators, enhancing the warehouses and cold storage facilities would support a more resilient network for local food sourcing and more efficient logistics to provide access to local food markets.

Accelerating the growth of these 'food hubs' presents a major opportunity in Puerto Rico. This growth could be nurtured by helping existing food hubs grow their businesses, helping existing food hubs collaborate with each other to scale impact, and/or helping new food hubs and aggregators emerge to serve a broader swath of the market. Aggregators may also have opportunities to expand into new market channels. In order for them to fill market gaps and develop local food channels to other wholesale customers like grocery stores, large, institutional food service, or government programs, they will need consistent, affordable, reliable access to facilities like walk-in coolers and refrigerated trucks.

It is clear that many small-scale farmers need aggregation capacity to access new markets, and this will require them to develop aggregation and distribution networks that interface with existing and emerging middle-of-the-value chain businesses- all of which starts with hard infrastructure.

- **A need for support actors to assist with community education, marketing, and value chain coordination in support of local food economic development**

Additionally, further developing the many decentralized, community-based food outlets that cater to the unique needs of different regions on the island could advance Puerto Rico's food system more broadly. Organizations like these that play the role of support actors in the system (oftentime community-based nonprofits) function like nodes in a regional network and convene community members to discuss alternative food economies, reinvigorate cultural foodways through events, and provide direct access to locally grown products (even when the pursuit of profit doesn't drive their work). Organizations like these could serve different functions such as communal gathering points, as community-run middle of the value-chain enterprises aggregating for sale into local markets, or even as a place where local food aggregation occurs to help local farmers store and chill produce for other enterprises to sell into their market channels.

Access to Markets

Current Reality

Developing a robust mix of markets at which to sell their products is critical for farm and food businesses in the islands. Generally speaking, because the challenges facing production, processing, and aggregation/distribution all influence how (or if) locally produced food can be sold, the reality of market access for small and mid-sized producers in Puerto Rico is largely determined by the rest of the food system (which are discussed at length above). Notwithstanding, there is a very important role for 'middle of the food system local market access players' in committing themselves to innovate their operations with the intention of supporting small scale local agriculture, production, processing, aggregation & distribution. Alignment of outcome is a fundamental part of the work contemplated for Puerto Rico's Food System.

With a market landscape for small and medium-scale farmers and food producers characterized by a mix of D2C sales, local markets, and few institutional and retail opportunities, the island's local food businesses struggle to compete against low cost imported brands and suppliers. Farmers commonly sell their products through a sophisticated, informal network of roadside stands, CSA-style subscriptions, and farmers markets. Mercados familiares (family markets) and "plazas del mercado" serve as local food markets within many of the island's municipalities, providing a more centralized outlet for small-scale producers to sell their products through D2C channels. However, the dominance of imported food in the retail and institutional sectors, coupled with the challenges of aggregation and distribution noted above, limits the market options for small and medium-scale producers.

Relevant actors and networks

In Puerto Rico, local farm and food businesses are largely excluded from the large-scale market outlets in retail and institutional channels (who tend to rely on either their own in-house procurement or broadline distribution companies that favor imports over local sources). On the other end of the spectrum, small markets like the publicly-managed **mercados familiares** and municipal **plazas del mercado** on the island often lack the efficiency and structure needed for farm and food businesses to develop sustainable, reliable sales relationships.

That said, a good number of businesses and organizations are working to support market access for small and mid-sized producers. Some examples we talked to include: **El Viandón,** a for-profit food distribution enterprise that aggregates and distributes food products from local producers across the island, but does so in somewhat limited quantities; and **Frutos del**

Guacabo in Manatí sources products from its own farm and a network of others to sell wholesale to local restaurants and outlets focused on sustainable, fresh, restaurant quality products. By providing aggregation and distribution services, these two businesses are creating an avenue for small producers to indirectly access a wider range of markets beyond direct sales in their local communities.

On a much smaller scale, there are many entities providing aggregation services. For example **La Colmena Cimarrona in Vieques**, and la **Placita Agrícola, a project of Plenitud PR** in Las Marias which sources from small producers while also expanding access to markets that might not have the purchasing power to compete with artificially low cost imported food. Plenitud PR also has a "social kitchen" that sources produce from local farmers and cooks meals that are distributed to customers nearby and Colemna Cimarrona also operates la Sambumbioa a mobile farmers market; and **El Departamento de la Comida, a project** that creates smaller scale market opportunities for local farmers through initiatives like a food hub (which they call a food oasis) and a processing kitchen. By sourcing from small farmers in their region, these smaller aggregators are providing a reliable market outlet for the producers they support.

Challenges and Opportunities

- **Limited cold storage and aggregation infrastructure restrain scale of markets local producers can access**

Perhaps the biggest challenge limiting market access for small and mid-sized producers here is the lack of local aggregation and distribution infrastructure, described in detail above. Limited cold storage and processing infrastructure available to small and mid-sized farm and food businesses prevents scaling the supply of locally-grown food to meet the needs of larger market channels. Even if these businesses did not seek to access these markets (which include schools, hospitals, and large grocery retailers) but sought better connectivity with smaller, localized markets, they would benefit from having access to decentralized infrastructure like mobile coolers and aggregation points to server mercados familiares, colmados, and other important food access points.

Additionally, the classic "chicken or the egg" dilemma about scale noted in the USVI section remains as true in Puerto Rico as it is there: producers cannot scale their production without commitments from purchasers (especially wholesale buyers), and these purchasers feel they cannot commit to sourcing from them until the producers can guarantee their production has scaled. In Puerto Rico, there is significant opportunity to build on small successes with K-12

schools and local food procurement. Providing the schools (and the many, many more institutional buyers) with targeted technical assistance and capacity building around responsive, values-based local procurement could help producers overcome their scaling hurdles and connect to these large, stable markets.

"Despite challenges such as competition from low-cost imported goods and the broader economic policies that have impacted local purchasing power, there are encouraging signs of resilience and innovation in Puerto Rico. Projects like El Depa's CSA and Frutos del Guacabo showcase the growing demand among locals and visitors for locally grown food. These initiatives demonstrate that small producers, when organized, can successfully compete with larger importers in various market channels. The success of these projects highlights the potential for local agriculture to thrive, supporting both the economy and the community.

- **Population centers and developed transportation infrastructure (i.e. road systems) island-wide**

Puerto Rico's population centers and developed transportation infrastructure present significant opportunities for leveraging and expanding the local food economy. The island's main urban areas, particularly the San Juan metropolitan area, Ponce, and Mayagüez, offer concentrated markets with demand for food and, it seems, specifically unmet demand for locally grown products. These population centers, connected by the main island's extensive network of highways and roads (which are not necessarily in good condition but usable), provide local farm and food businesses with relatively easy access to a large consumer base (provided they have the hard infrastructure it requires of them like refrigerated trucks, cold storage, etc.). This public infrastructure allows for efficient distribution of agricultural products from rural areas to urban markets, potentially reducing transportation costs and time compared to more isolated island contexts.

The road system in Puerto Rico enables the development of diverse market channels for local producers and is already a key asset leveraged by larger, more traditional food distributors. Unlike in other contexts (like some of the USVI, for example) the road system has island-wide coverage. The road network is critical for a local food economy to thrive and for local food to be distributed to nearly all market channels. This network also allows complementary economic opportunities to farmers like agritourism, where urban residents and tourists can visit farms and participate in activities that increase their connection to producers, further strengthening the local food economy and cultural connections to agriculture.

Access to Capital

Current Reality

Access to capital is essential to any economic sector from technology to tourism, the food economic sector is no different; this condition needs to be acknowledged for the local farming and food business sector to thrive. In the latest report by the Puerto Rico Planning Board on Agriculture some important public policy and economic recommendations are for the first time in half a century officially recorded.

In the current capital access landscape farmers and small food businesses are at a disadvantage due to the way the capital access industry is organized. Only a handful of organizations provide financing programs that are designed following the needs of "sustainable small and medium farming and food business". This is a significant barrier for food producers which hinders their ability to purchase or upgrade equipment, launch or scale up farms, manage business cash flow cycles and other key aspects of a profitable farming or food business operation.

While producers are generally eligible for the same USDA grant opportunities (through AMS, FNS, NRCS, and other USDA departments), they often do not have support from local or federal partners in meeting the requirements of these grants such as matching funds, proficiency with grant writing language, and tailored support navigating the complexities of Grants.gov.

Loans through the USDA's FSA and other programs are theoretically well-suited to serve producers and food businesses on the islands, but due to structural challenges and a lack of administrative capacity many food businesses remain unable to access the loans. Other agencies like SBDCs and Small Business Administration (SBA) are focused on business development and lack the technical expertise that is required to support businesses in the agricultural sector. Nonetheless they support small food manufacturing enterprises. National ag-focused lenders like Farm Credit have a Puerto Rico chapter do offer some support for small and mid-sized farm and food businesses, but only to those who are at a stage of development where they are capable of collateral and with high debt service ratios.

Furthermore, In 2019, the Law 225 of 1995, better known "*Ley de Incentivos Contributivos Agrícolas de Puerto Rico*" was replaced by the "Ley 60-2019" (*Código de Incentivos de 2019 de Puerto Rico*) as a unified tool for economic development. The old Law 225 was entirely grafted

into the new statute, while preserving the same subsections of the previous statute, outlining the same existing subsidies to the milk industry, subsidies for agricultural laborers for employers, and preserving the "bona fide" agricultural producer certification to access capital or other resources. It remains the same, insufficient and lacking vision.

Finally, there are private philanthropic grants but they tend to be "limited, small and heavy"; and private grants targeting rural development are noticeably lacking in Puerto Rico.
All of this makes critical that a new approach to funding and financing is offered to help producers and food businesses succeed.

Relevant actors and networks

- Banks and Savings and Loans Coops provide a range of traditional credit options. Here, more targeted options and loan structures are needed. Cooperatives are also CDFI's.
- Federal Farm Credit Puerto Rico offer targeted credit options to farmers and farming operations but again they require most of the same as regulars bank and are targeted to mid-sized collateralized operations
- Non-traditional sources of financing like social impact investing funds, private peer-to-peer financing and organizations outside Puerto Rico that have financial products better suited for this stage of the local food sector development.

Challenges and Opportunities

Fundamentally, small farm and food businesses struggle to access the affordable financing needed to invest in critical infrastructure, equipment, and business expansion. Many traditional lenders, such as banks, may perceive these businesses as high-risk due to their small scale, limited collateral, and vulnerability to natural disasters and economic shocks. As a result, small businesses may face high interest rates, short repayment terms, and strict eligibility requirements that make it difficult to secure loans. While some government grant and loan programs exist, such as those offered by the U.S. Department of Agriculture (USDA), small businesses may lack the knowledge, skills, and resources needed to navigate these complex application processes. The limited availability of patient, flexible, and affordable capital tailored to the unique needs and challenges of small farm and food businesses in the islands constrains their ability to make the investments needed to scale up and compete in local and export markets. As such, there is an emergent opportunity for creative, flexible, and patient capital

In many cases, there is a need for basics of business management skills like careful budgeting, record-keeping, tax planning, and risk management. This is a necessary condition to access capital. There is significant opportunity to develop the basic business capacities and in doping so opening up the doors for accessing capital

Summary of RFBC Priorities

Virgin Islands Good Food Coalition (VIGFC) has served as the key partner for the USVI and the broader Caribbean subregion of the Islands and Remote Areas RFBC, with Alliance for Agriculture (A4A) covering the Puerto Rico subregion baseline assessment. Over the course of the RFBC planning year, both organizations held multiple stakeholder meetings and conversations, facilitated focus groups, fielded surveys, and carried out other engagement activities that included farmers, ranchers, other producers, food businesses, community groups, consumers, and representatives from public and private sector entities. Efforts in the USVI and in Puerto Rico have provided both organizations with a substantial current assessment which will serve to inform the work on shared opportunities in year two of the program. .

The community research processes informed the following core priorities the Caribbean subregion intends to address through the RFBC program. They are noted below. By establishing these priorities, VIGF and A4A, along with their networks and key partners, will work together to address the challenges described in detail above. With the Business Builder grants and Technical Assistance capacity this RFBC brings to the subregion, they will be able to provide the support that farm and food businesses in their region need.

US Virgin Islands RFBC Priorities

- ➔ Coordinate and provide technical assistance on topics like record keeping and finances, grant writing, business planning, marketing, and other business-related skills
- ➔ Support growth of value-added processing, through investments in equipment, infrastructure, and training, in a way that promotes new products, improves food security and accessibility of USVI-sourced and produced foods and other products, and opens new sales opportunities to USVI's farm and food businesses
- ➔ Develop the aggregation capacity of the USVI food system through cooperative models, by identifying and supporting organizations that are well-positioned to play this role, and/or by investing in the necessary hard and soft infrastructure

Puerto Rico RFBC Priorities

- ➔ Grow the local food economy focusing on supporting **value-added** products and system wide **logistics** and **market access** capabilities.
- ➔ Invest in **infrastructure** improvements to expand and modernize the "middle" of the local supply chain.
- ➔ Build **financial equity** for Puerto Rico's small-scale farmers, ranches, processors, and food businesses.

Conclusion

The RFBC program is designed to support the "middle" of the value chain in local and regional food systems. This means it focuses not on production (the "beginning" of the chain) or consumption (the "end" of it), but on improving or expanding infrastructure for processing, aggregation and distribution, supporting small and medium-scale farmers and food producers in connecting to new markets, and providing technical assistance and training opportunities, particularly for historically underserved and marginalized food and farm businesses. This is especially meaningful for the Islands and Remote Areas RFBC, whose states and territories face unique challenges given their geographic isolation, uniquely challenging logistics, underdeveloped food systems infrastructure, and the impacts of colonialism, extractive industries, and climate change.

The Centers will coordinate across regions with USDA and other agencies and regional food system stakeholders, identify technical assistance needs for their region and provide TA, and build capacity of their region's food and farm businesses by directing financial assistance in the form of business builder subawards. Through these activities, the Caribbean subregion and the Islands and Remote Areas RFBC will build more diversified, resilient, and localized food systems.